



Data Sheets

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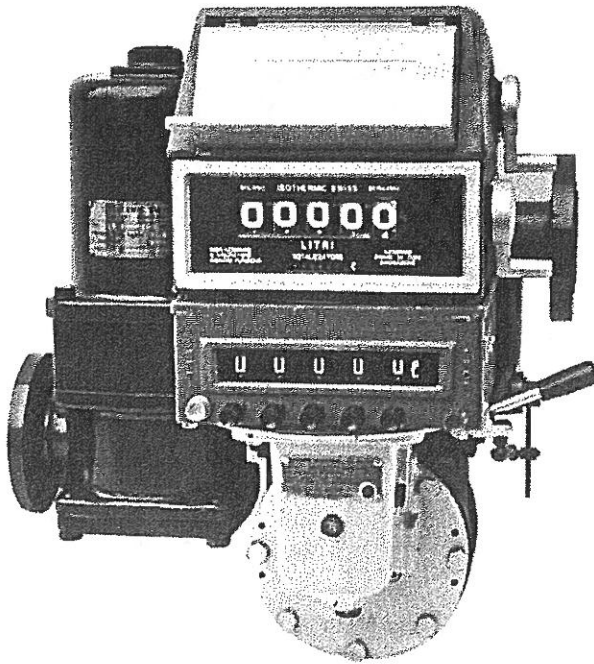
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LIQUIP

METERS—POSITIVE DISPLACEMENT



SBM75

(50 mm)

SBM150

(75 mm)

TYPICAL APPLICATIONS
COMPACT,
COMBINATION
UNITS FOR USE
ON TANK TRUCKS
AND SMALLER
DEPOTS.

Liquid enters the unit via a strainer and air separator chamber. The measuring chamber holds a rotor with vanes which is made to revolve by the liquid. The rotor spindle extends through a seal into a very precise, adjustable gear train in separate housing and then to the register which indicates litres.

The Liquip range of O-M meters retains its accuracy over a very long time. Unlike most other p.d. meters, the motor has four vanes to minimise Liquid 'slip' which causes inaccuracies; and the gear train runs in an oil bath to minimise wear.

'SBM' models are specifically designed to incorporate air eliminator, strainer, meter and preset valve in an assembly of minimum weight and dimensions, making them ideal for vehicle or pipeline use where size and weight are important considerations.

OPTIONS & RELATED EQUIPMENT

Ticket printer.

Preset mechanism and valve
for batching.

Rate of flow indicator.

Mechanical seal or magnetic
drive (specify liquids).

Inlet flange and register can be rotated
to suit various pipe configurations.

Electronic register.

(See over for model numbers.)

TECHNICAL DATA

Aluminium body, manifold
and air eliminator.

Steel end plates.

Stainless steel 400 micron
basket.

ANSI flanges.

N.S.C. approved.

Flow rate

SBM75
50 to 500 litres/min.

SPM150
100 to 1300 litres/min.

Max pressure 1,000 kPa.

NOTES

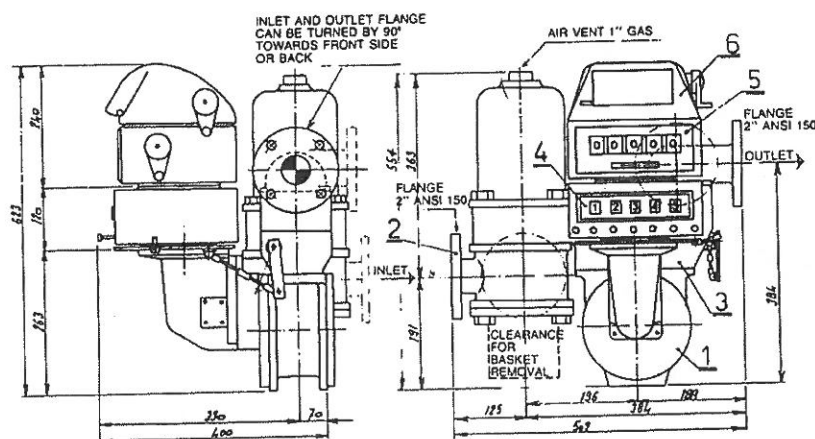


*Equipment for liquid
handling, storage
and transport*

LIQUIP

SBM75 & SBM150 METERS

OVERALL DIMENSIONS SBM 75 COMPLETE OF ACCESSORIES



- (1) BULKHEAD TYPE SBM75
- (2) COMBINED STRAINER AND AIR SEPARATOR
- (3) MANIFOLD COMPLETE WITH PRESET VALVE
- (4) PRESET
- (5) COUNTER
- (6) TICKET PRINTER

Models available

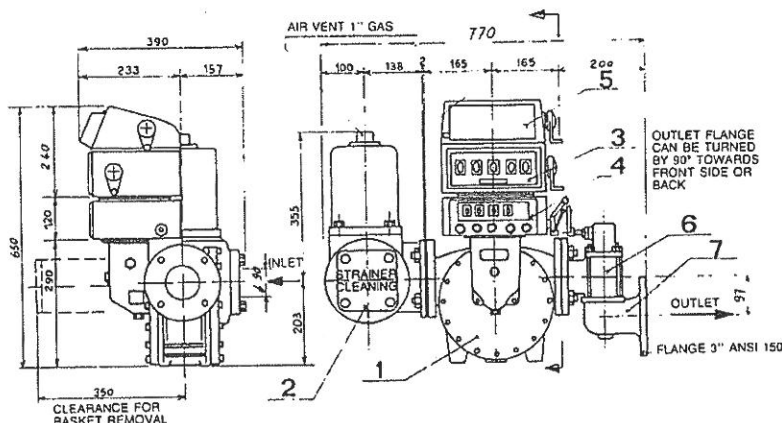
Mod. CFV: meter, counter combined strainer/air separator, quick closing valve.

Mod. CFPV: meter, counter combined strainer/air separator, preset and valve.

Mod. CFS: meter, combined strainer/air separator, ticket printer and counter.

Mod. CFPVS: meter, counter combined strainer/air separator, preset, ticket printer and valve.

OVERALL DIMENSIONS SBM 150 COMPLETE OF ACCESSORIES



- (1) BULKHEAD TYPE SBM150
- (2) COMBINED STRAINER AND AIR SEPARATOR
- (3) COUNTER
- (4) PRESET
- (5) TICKET PRINTER
- (6) PRESET VALVE
- (7) AIR CHECK DEVICE

Models available

Mod. CF: meter, combined strainer/air separator, Counter.

Mod. CFPV: meter, combined strainer/air separator, counter, preset and valve.

Mod. CFPVS: meter, combined strainer/air separator, counter, preset and valve, ticket printer.

Mod. CFS: meter combined strainer/air separator, ticket printer.

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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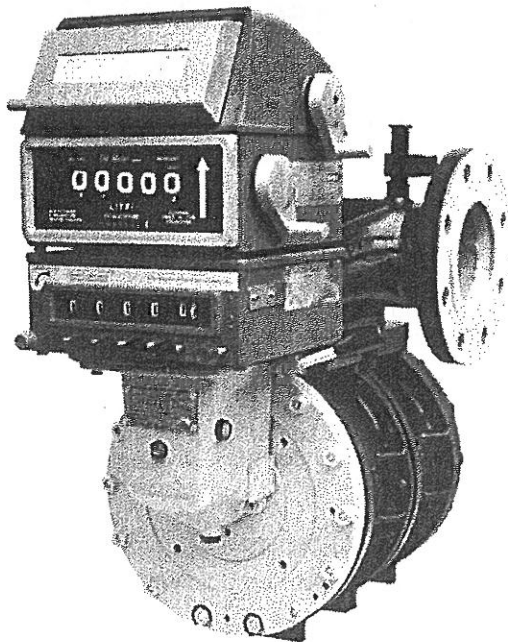
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See inside front cover
for Liquip branches
and Distributors

LIQUIP

METERS—POSITIVE DISPLACEMENT



BM200 (75 mm)
100 TO 1300 LITRES/MIN.

BM400 (100 mm)
200 TO 2200 LITRES/MIN.

BM600 (150 mm)
300 TO 3400 LITRES/MIN.

TYPICAL APPLICATIONS

BULK LOADING
AND UNLOADING
OF ALL
PETROLEUM
FUELS.

BUNKERING.

AIRCRAFT
REFUELLING.

BULK HANDLING
OR BLENDING FOR
REFINERIES AND
CHEMICAL
PLANTS.

Liquip O.M. Meters are exceptionally efficient instruments of the positive displacement type. BM400 and BM600 models are obtained by compounding two or three metering compartments and rotors from the BM200.

- Bulk meters of this type, by virtue of excellent design and development over a number of years, are noted for their exceptional accuracy over a very wide range, and in service, this accuracy is maintained over long periods of use.
- Simplicity is a noteworthy feature, the rotor and rotor blades, which are constantly immersed in liquid, being the only moving parts.
- The counter head is a standard Veeder-Root unit or Liquip electronic register, registering on five large-figure drums. A lever provides zero resetting. A smaller eight-figure series of drum gives the total quantity and this totalizer cannot be reset.
Bulkmeter liters/decaliters may be fitted with one or more ancillary items described below.
- Service and maintenance of O.M. Series Bulk meters are facilitated by the use of many parts that are identical and interchangeable in the three models.

NOTES

OPTIONS & RELATED EQUIPMENT

- strainer
- air separator
- mechanical and electrical preset
- electrical or pneumatic pulse transmitter
- one or two stage automatic valve
- ticket printer
- magnetic drive
- automatic temperature compensator
- rate of flow indicator
- electronic register

Ensure that a strainer is always fitted in pipeline prior to meter.

TECHNICAL DATA

- Manifold — Steel
- Body — Ni-resist cast iron
- Flanges — Steel
- Rotor — Aluminium or Ni-resist
- Vanes — Carbon
- Seals — Nitrile or Viton or Teflon.

Flowrates

- BM200 — 100-1300 litres/min.
- BM400 — 200-2200 litres/min.
- BM600 — 300-3400 litres/min.



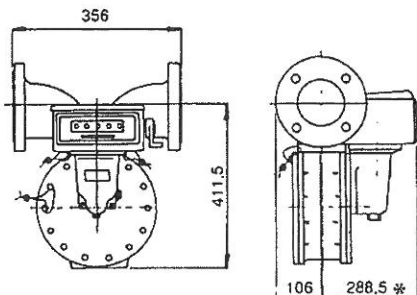
*Equipment for liquid
handling, storage
and transport*

LIQUIP

BM200 — BM400 — BM600 METERS

BM 200

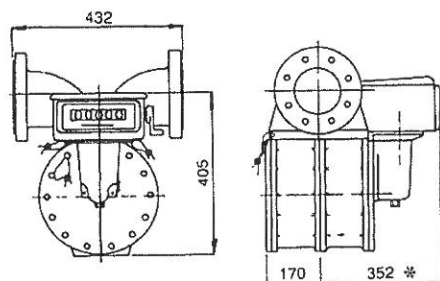
DIMENSIONS IN mm.



* With magnetic coupling dimension is 397.

BM 400

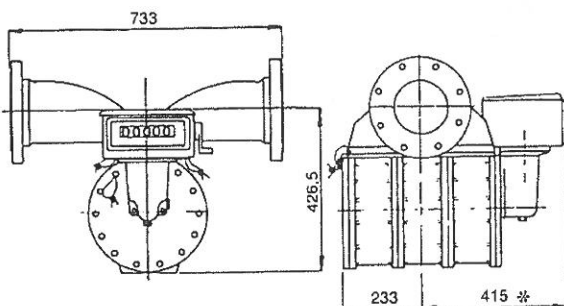
DIMENSIONS IN mm.



* With magnetic coupling dimension is 460.

BM 600

DIMENSIONS IN mm.



* With magnetic coupling dimension is 524.

P.D. METER DIMENSIONS, ANSI150 and ANSI300

FLANGES

GENERAL CHARACTERISTICS

	BM200	BM400	BM600
Max. rated capacity	1300 l/m	2200 l/m	3400 l/m
Min. rated capacity	100 l/m	200 l/m	300 l/m
Vol. per cycle	2.275 litres	4.55 litres	6.825 litres
Indicator graduation	litre or decalitre	decalitre	decalitre
Max. operating pressure			
— ANSI150	1000 kPa	1000 kPa	1000 kPa
— ANSI300	2000 kPa	2000 kPa	2000 kPa
Test pressure	3000 kPa	3000 kPa	3000 kPa
Weight	64 kg	103 kg	136 kg

SPECIAL OPTIONS

- Mechanical rotor spindle seal
- Magnetic coupling
- All stainless steel
- High pressure (up to 10 MPa).
- High temperature (up to 200°C).

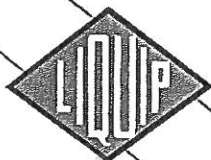
ULTRA-HIGH FLOW

For special applications.
Request Data Sheets on models
LBM1000
up to 7,850 litres/min.
LBM3000
up to 15,700 litres/min.

VERTICAL UNITS

Models BM200, 400 and 600 with strainer/air eliminator all manifolded to fit into a vertical pipeline. Specially for tank-truck loading gantries.

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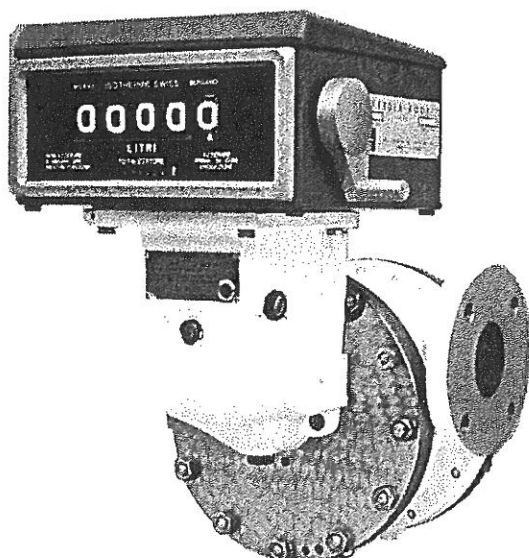
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LIQUIP

METERS — SPECIAL PURPOSE



STAINLESS STEEL

SBM75-S (50 mm)

BM200-S (75 mm)

BM400-S (100 mm)

BM600-S (150 mm)

TYPICAL APPLICATIONS

STAINLESS STEEL meters: for use with chemicals and where high purity is required. Also high pressure and temperature applications.

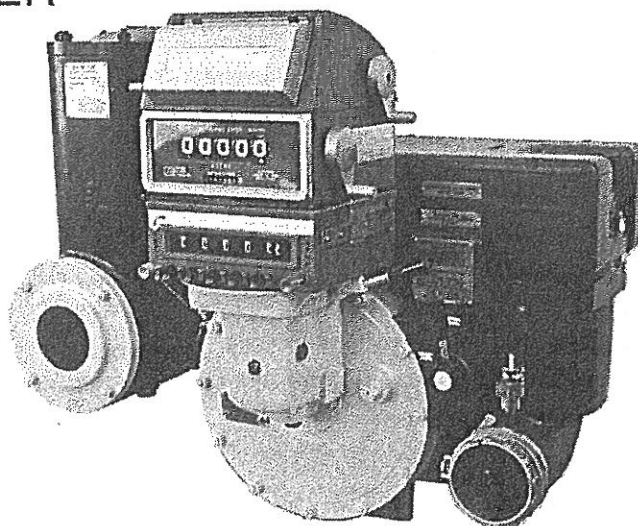
GRAVITY meter for off-loading tankers or storage tanks without a pump.

These meters are constructed in a similar fashion to the standard units but in stainless steel. Manifold, body and rotor are all 316 type. Vanes are carbon, and seals may be Nitrile, Viton or Teflon.

For options, dimensions and flow rates, see data sheets on standard units.

GRAVITY METER

300-G



Normal meters with air eliminators and strainers will not operate at low liquid heads due to their pressure losses and lack of air elimination.

The 300-G incorporates mechanisms to ensure correct, accurate operation. When mounted on a tank-truck, it utilises vehicle air pressure. In a depot or factory, it uses hydrostatic pressure from the storage tank.

Nominal dia is 100 mm, and flow rate at 2.4 metres head of distillate is 1200 l/min., decreasing to 800 l/min. at 500 mm head.

A ticket printer and preset valve may be fitted. Filter incorporates sight glass for inspection. Accuracy $\pm 0.1\%$.

Construction is aluminium with steel end plates. Envelope dimensions 880 long x 700 high x 500 wide.

NOTES



Equipment for liquid handling, storage and transport

LIQUIP

METERS—GRAPHS AND FLOWRATES

PRESSURE DROP

(bulk meters without ancillary equipment)

Pressure drop should not exceed:

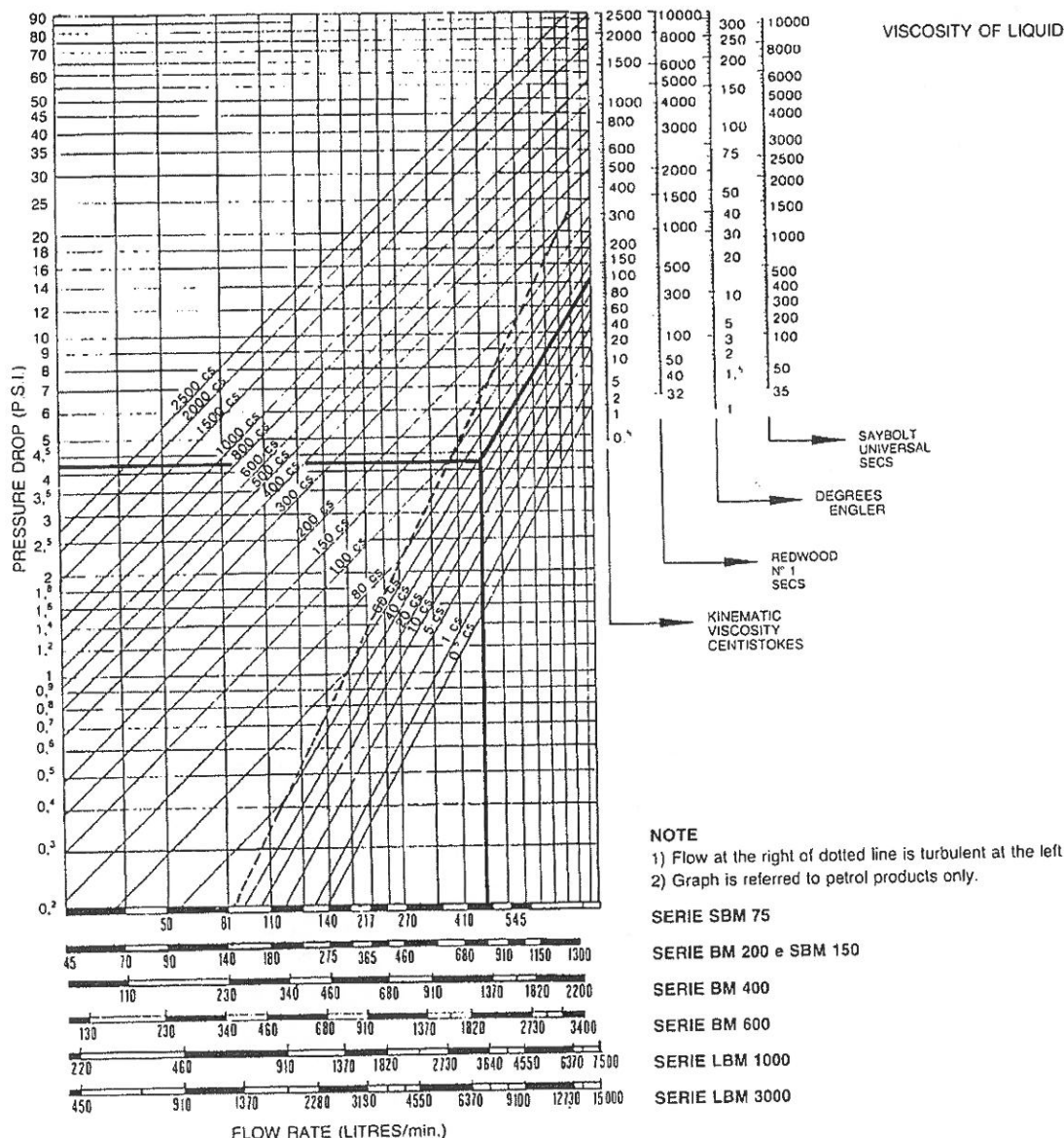
10 p.s.i. for continuous running at maximum speed.

15 p.s.i. for continuous running at half speed.

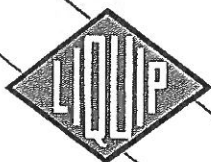
For other conditions refer to Liquip.

An example of the use of the graph would be if it was required to know the pressure drop through the meter at 800 lpm using 100 Centistokes fuel. To find this, read off 100 seconds. Redwood down the diagonal line until this meets the vertical line raised from the figure 800 on the BM200 Series flow rate.

At this point read off horizontally on the left, where it will be seen the pressure drop through the meter is about 4 1/4 psi.



METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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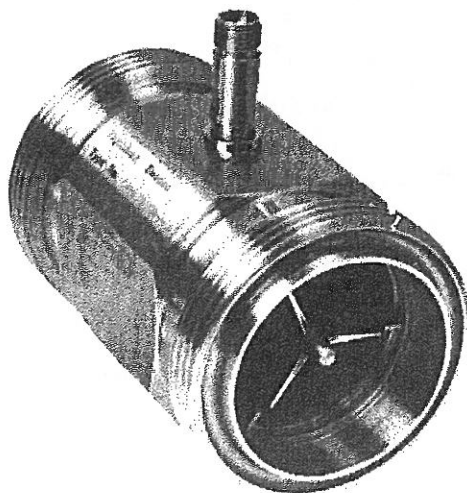
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LIQUIP

TURBINE METERS



PAH series

TYPICAL APPLICATIONS

STAINLESS STEEL
HYGIENIC METERS
FOR PETROLEUM
PRODUCTS, MILK,
FOOD PRODUCTS
AND CHEMICALS,
LPG.

Turbine meters provide a small lightweight alternative to positive displacement meters. P.D. meters can drive a mechanical register and give reasonable accuracy over a wide range of flow rates and viscosities. Turbines are more suited to constant conditions and require electronics to provide a read out, but are very simple and compact and give long life.

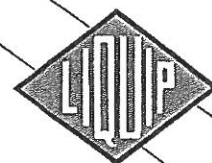
The PAH series has non-magnetic rotor and housing in stainless steel with shaft and bearings of stellite. A magnetic pick-up in the meter body generates a signal from the rotor blades and this signal is processed by the Liquip "EMH" electronic register into litres measured.

Cut-away windows in the bearing housing ensure lubrication, cooling and flushing away of dirt.

Flow straighteners should be fitted upstream and downstream of the meter, with air eliminator.

NOTES

PAH12	12 mm bore	1.4 to 14 l/min.
PAH15	15 mm bore	6.8 to 68 l/min.
PAH18	18 mm bore	14 to 140 l/min.
PAH25	25 mm bore	27 to 270 l/min.
PAH31	31 mm bore	41 to 410 l/min.
PAH37	37 mm bore	70 to 700 l/min.
PAH50	50 mm bore	110 to 1100 l/min.
PAH75	75 mm bore	225 to 2250 l/min.



*Equipment for liquid
handling, storage
and transport*

LIQUIP ELECTRONIC DIGITAL METERS



GPI range

TYPICAL APPLICATIONS

Hand-held refuelling nozzles, pipelines, engine fuel lines to read consumption.

Range from water to aggressive chemicals, low viscosity to lube oils.

A unique turbine meter, includes housing/turbine assembly, micro-processor, power cells and LCD read-out for finger-tip answers.

Pulse signals generated by the turbine flow sensors are magnetically transmitted to a micro-processor computed into litres and exhibited on 10 mm high numbers on a 6 digit liquid crystal display with floating decimal point.

Display is resettable batch and also non-resettable lifetime totaliser. Meter is factory pre-calibrated for distillate viscosity at mid flow range, but may be field calibrated for greater accuracy on different fluids,

Battery life is extended by automatic switch on and switch off — no flow, no power consumption.

Measures equally well with pump or gravity.

IF YOU NEED TO KNOW HOW MUCH YOU ARE BLENDING, PUMPING OR DISCHARGING, FROM 1 TO 1000 litres/min., THIS IS THE CHEAPEST AND SIMPLEST SOLUTION YOU WILL FIND.

NOTES

OPTIONS and RELATED EQUIPMENT

Materials

Nylon
Aluminium
Stainless steel

Sizes

12 mm — 1 to 10 l/min.
25 mm — 10 to 100 l/min.
50 mm — 100 to 1000 l/min.

TECHNICAL DATA

Std accuracy $\pm 1.5\%$.

With field calibration
to $\pm 0.5\%$.

Pressure 350 to 5500 kPa.

Temp. -25°C to $+60^{\circ}\text{C}$.

Battery life 2000 hrs of
actual operation.

- Not for use for retail purposes.
- Consult Liquip for use with flammable liquids and LPG.

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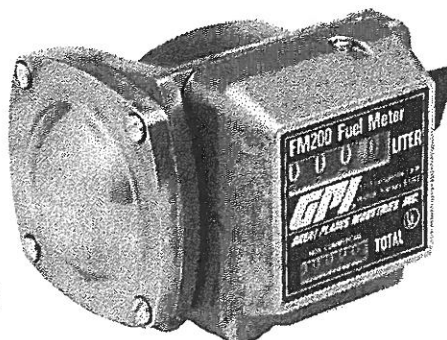
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LIQUIP

FARM/INDUSTRIAL MINI-METER



FM100



FM 200

Simple, inexpensive mechanical meter to help control fuel use on farms, building sites, mines, etc.

Nutating disc drives resettable batch counter (to 999 litres) and also non-resettable totaliser up to 99,999 litres. A built-in calibrator allows fine-tuning of accuracy, but pre-set at factory to give $\pm 1.5\%$ under most conditions.

Model FM100 incorporates a large paper element filter to clean up your fuel before it reaches and damages the meter and your engine. FM200 has 500 micron wire strainer for basic protection.

OPTIONS

See fuel transfer pump in later section.

TECHNICAL DATA

Up to 75 litres/min.

Gravity to 350 kPa.

25 mm female bsp connections.

FM200, 2 kg and 100 x 100 x 100.

FM100, 2.5 kg and 100 x 100 x 220.

TYPICAL APPLICATIONS

METERING FROM OVERHEAD TANKS AND LOW PRESSURE PUMPS.

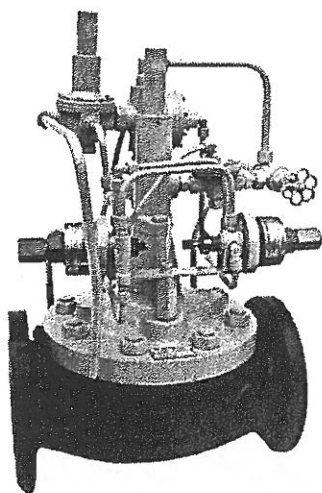
DISTILLATE, PETROL, KEROSENE, MILD CHEMICALS.

NOTES



Equipment for liquid handling, storage and transport

LIQUIP METER ACCESSORIES



854 SERIES PIPELINE CONTROL VALVE

For use with BM200,
BM400 and BM600
meters.

Mechanical preset valves are satisfactory for small meters. However at higher flow rates and pressures, a preset or batching valve requires more sophisticated control.

The 854 series is controlled by the meter preset mechanism via solenoid valves.

These solenoids use pipeline hydraulic pressure to give "soft" opening and closing.

The valve may also be specified to limit flow, limit pressure and act as a check valve.

FDA SERIES STRAINER WITH AIR ELIMINATOR

In certain applications the product being metered may be carrying entrained air. If the product is to be metered accurately, the air must first be removed.

The FDA acts as a strainer, provides a large slowdown chamber to allow the air time to separate, and incorporates an automatic air release mechanism.

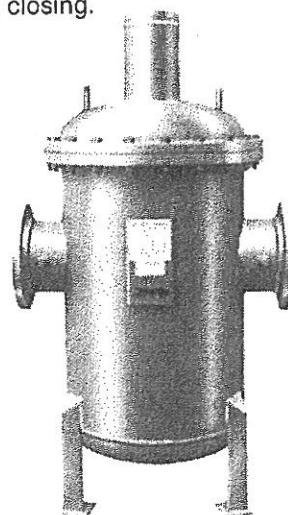
NOTE: If the product is normally air free, and air elimination is required only for start-up and maintenance purposes, see Liquip steel line strainers and air eliminators in later section.

FDA200 — 75 mm

FDA400 — 100 mm

FDA600-150 mm

Steel body 300 micron gauze. Up to 3100 kPa.



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LIQUIP

ELECTRONIC PULSER FOR METERS



SBMEP

Adaptor kit for simple mounting of electronic pulser unit on SBM 75 and SBM 150 meters.

Pulser is driven directly off meter output shaft thereby eliminating the need for calibration mechanism and calibration housing.

Pulser is sturdy and compact with o-ring weather seal and sealed ball bearing on pulser shaft.

Electronic register can be mounted in a convenient location remote from the meter.

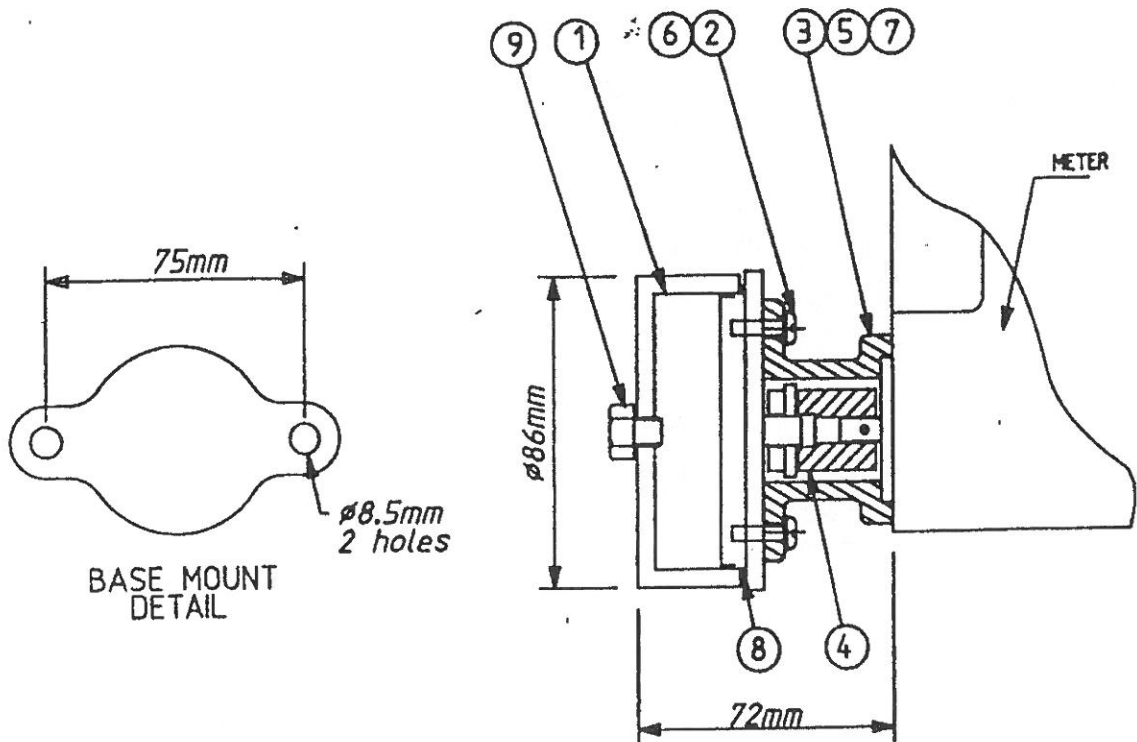
TYPICAL
APPLICATIONS
CONVERSION FROM
MECHANICAL TO
ELECTRONIC
REGISTER

NOTES



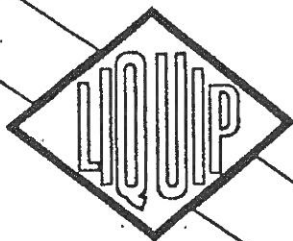
Equipment for liquid
handling, storage
and transport

LIQUIP SBMEP ASSEMBLY



ITEM	PART NO	DESCRIPTION	MATERIAL	QTY.
①		COMPAC PULSER	ELECTRONIC	1
②	P4822	SCREW M4 X 16	M/S Z/P	2
③	SBMEP-2	MOUNTING ADAPTOR	ALUM	1
④	SBMEP-1	DRIVE DOG	ALUM	1
⑤	P4823	CAPSCREW M8 X 20 (OR USE EXISTING SCREWS OFF METER BODY)	M/S Z/P	2
⑥	P0098	3.9 INTERNAL FAN DISC WASHER	M/S Z/P	2
⑦	P0108	7.9 SPRING WASHER	M/S Z/P	2
⑧	P0121	O-RING	BUNA	1
⑨	EMH200-15	PLUG	BRASS	1

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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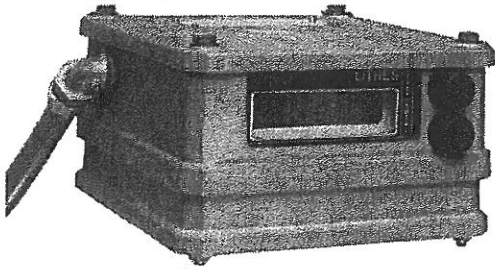
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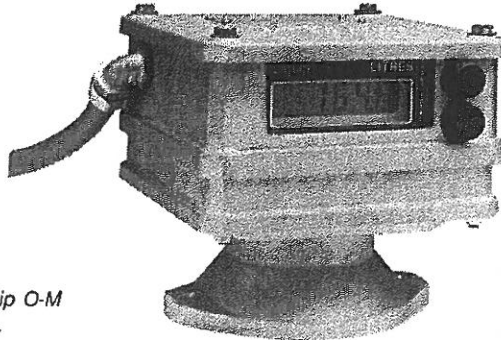
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LIQUIP

ELECTRONIC REGISTER



Mounting pattern to replace Veeder-Root on Liquip O-M meters, L-C, Wayne and Tokheim registers.



*Mounting adaptor to replace Neptune.
Part No. EMH200-5.*

Liquip's electronic register is designed to bolt directly to your existing meter body. It has all solid state electronics inside a cast aluminium housing, being completely water and dust proof. This electronic register will eliminate those mechanical register problems and because of its tanker-proof design it allows direct mounting of register to meter for ease of operator and customer viewing.

- Fully weather sealed with waterproof conduit for wiring.
- Shock absorbing mounts for electronics.
- Solid state memory and battery back-up holds total and current delivery information in event of power loss.
- Dual pulse sensors — if it fails the machine tells you but keeps on working, giving the operator time to rectify.
- Modular design allows stacking of pulser and register as illustrated or allows remote mounting of register in truck cabin.
- Has illuminated display for all hours deliveries.
- Fully approved by National Standards Commission.
- Easy to calibrate and stores management information.

OPTIONS & RELATED EQUIPMENT

We need to know your current meter make and model in order to provide correct mount, rotation and drive adaptor. Also truck or mains voltage.

OPTIONS —

Ticket printer (see over).
Pre-set.
Temperature compensation.
Use register without driver for turbine meters.

TECHNICAL DATA

Batch and permanent totalisor displays.

Sealed calibrator.

Anti-reverse counting feature.

12 mm high digits, batch reads 1/10th litre.

TYPICAL APPLICATIONS

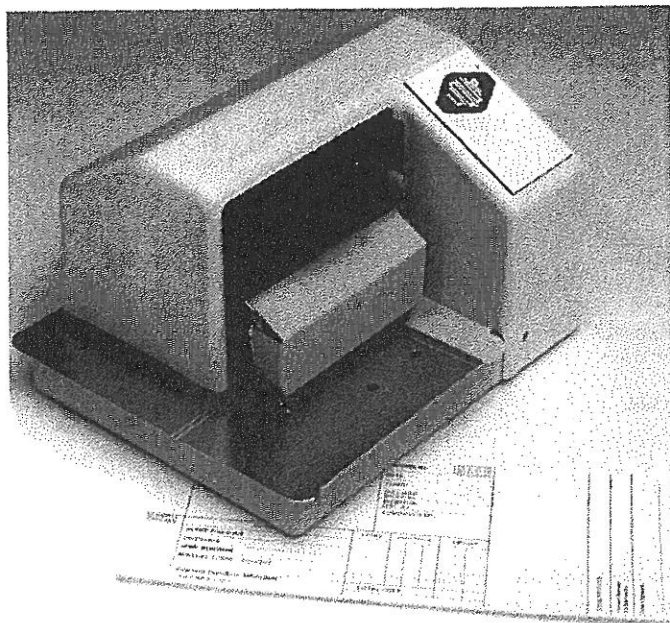
- * Replacing worn out mechanical registers.
- * Improve your delivery accuracy.
- * Eliminate your ongoing mechanical register repairs.
- * Improve your stock control.
- * Interfaces with ticket printers and other electronic equipment.

NOTES



Equipment for liquid handling, storage and transport

LIQUIP ELECTRONIC TICKET PRINTER



TP24

Slip/ticket printer for cab mounting (24v only).

TYPICAL APPLICATIONS

- * In cab mounting for ticket printing for up to three registers on the one vehicle.

This is a slip/ticket impact printer and is designated by TP24 in the model number.

It will print a docket only when the docket is in the correct position on the printing plates and the reset button on the register is depressed.

The printer registers and prints the number of delivery and the quantity delivered.

On return to the depot it can print total litres delivered, total deliveries made and will show if the printer was disconnected at any time. This gives management direct control on stock levels. Once recorded the printer automatically resets the delivery number to zero, ready for the next shift or day's work.

One printer only is required to run up to three electronic registers on the one vehicle.

OPTIONS & RELATED EQUIPMENT

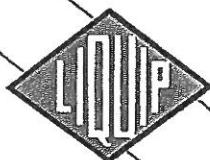
Electronic registers see prior page.
Order as TP24.

TECHNICAL DATA

Note: This printer is for truck cab mount only, and is available in 24 volt only.

NOTES

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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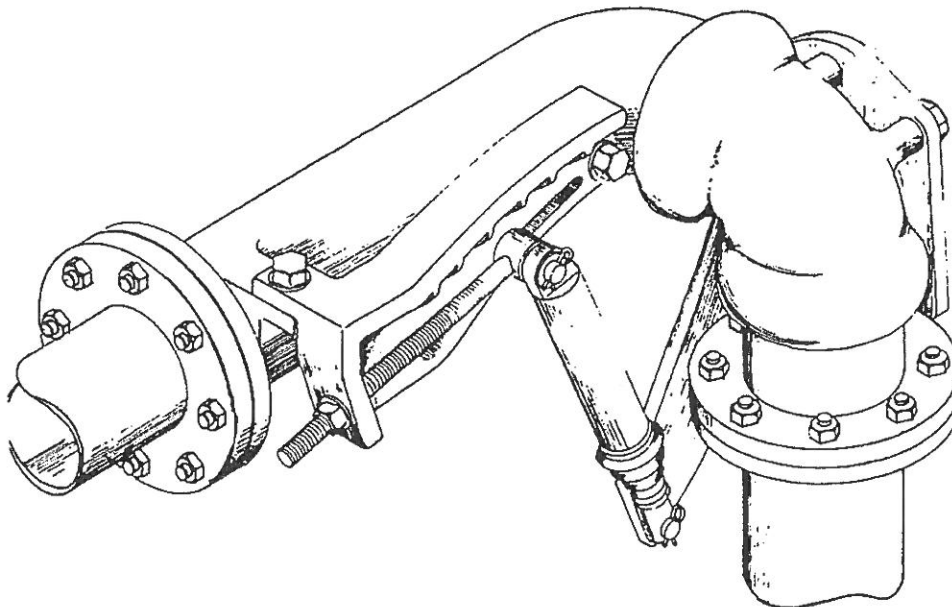
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LIQUIP

LOADING ARMS

"VELVET TOUCH" LOADING ARM



INTRODUCING A REVOLUTION IN LOADING ARMS

Liquip's "Velvet Touch" Loading Arm is a breakthrough in balance systems for bottom loading.

The secret is the use of a gas-spring to counter-balance the weight of the arm.

This provides major advantages over the traditional torsion spring or heavy weights.

These advantages are detailed over-leaf, and include an almost constant force, easy installation, simple adjustment and virtually no maintenance.

Liquip can now offer complete assemblies for bottom loading, including our own bottom loading coupler. All components show those design touches which make the difference between average and outstanding.

Liquip — a tradition of improving on traditional methods.

TYPICAL APPLICATIONS

LOADING ARM
FOR PETROLEUM
PRODUCTS.

BOTTOM LOADING
OF TANK TRUCKS
AND RAIL CARS.

NOTES



*Equipment for liquid
handling, storage
and transport*

LIQUIP

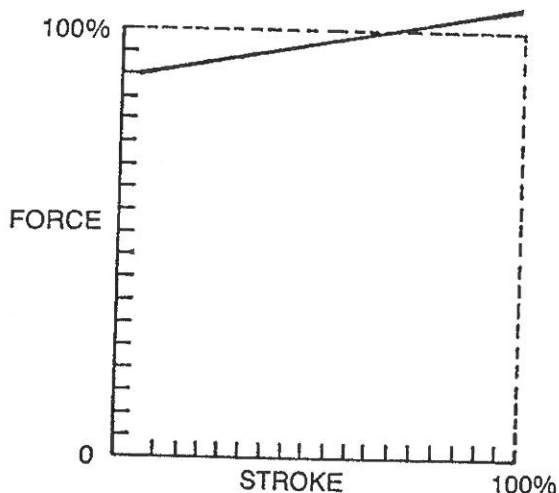
BOTTOM LOADING ARM

"VELVET TOUCH LOADING ARM"

Why "Velvet Touch"?

The gas-spring employed by Liquip is the same principle as those used on your car hatch-back.

Their prime characteristic is an almost constant force throughout the stroke.



What this means in practice is that having adjusted the gas spring for operation at the average truck adaptor height, movement up or down from this position requires very little force.

Contrast this with the effort needed with old-style balance systems, particularly when the arm is moved significantly up or down from its normal rest position.

Installation Advantages

Obviously from the illustrations there are major advantages with the "Velvet Touch" system in size and weight. It is by far the lightest balance assembly, making it much easier and safer to install.

Less obviously, the Liquip mechanism is tucked into the swivel area in a very compact manner which provides greater clearances all round — very useful when installing multiple cross-over arms in a tight gantry.

Contrast our system with old torsion-spring and counter-weight assemblies which need much more room for their mechanisms and being much heavier are awkward to install and have more potential to create handling injuries.

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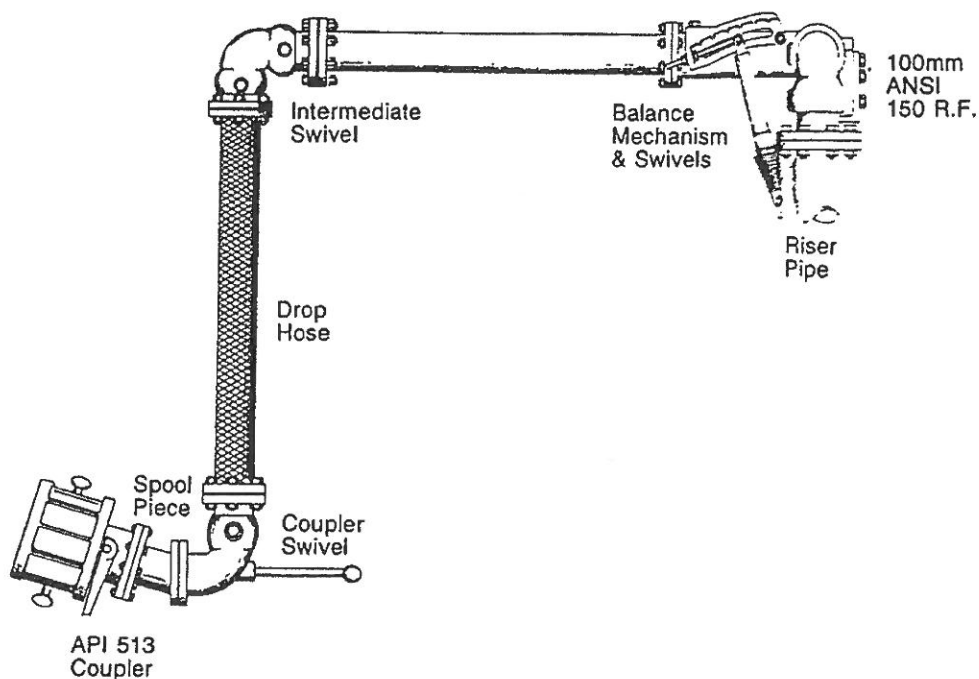
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LIQUIP

LOADING ARMS

"VELVET TOUCH" LOADING ARM



TYPICAL APPLICATIONS

LOADING ARM FOR PETROLEUM PRODUCTS.

BOTTOM LOADING OF TANK TRUCKS AND RAIL CARS.

NOTES

Adjustment

One gas-spring is used whatever the combination of pipe material, pipe length and product density. Different weights are compensated for by adjusting the leverage exerted by the spring on the arm. (This is a once only adjustment, to be set when commissioning the arm.)

Setting the leverage is very simple — loosen the lock-nuts, and use the spanner to screw a roller along a groove to alter the angle of the gas-spring. Adjustment is safe and stepless.

The bottom support of the gas-spring bracket provides a secondary adjustment which will rarely be necessary. This adjustment does not alter the force exerted, but allows the gas-spring to be left centrally in its stroke when the loading arm is in the rest position.

If the arm assembly has been designed so that the API513 coupler is in the centre of the API envelope when the intermediate pipe is horizontal, this secondary adjustment will not need to be changed from the factory setting.



Equipment for liquid handling, storage and transport

LIQUIP

BOTTOM LOADING ARM

"VELVET TOUCH" LOADING ARM

Maintenance

The gas-spring is maintenance free.

However, should replacement be necessary, it is simpler than changing a car shock absorber, being only a five minute job. Simply lift the coupler and rest it on a platform so that the gas spring is fully extended. Pull out the two R-clips from the upper and lower spindles, pull off the spring and fit the new. You don't even need spanners!

The gas-spring, incidentally, is not a high-cost item.

Swivels and Fittings

All swivels run on ball bearings, wide-spread double row for long life. Seals are viton o-rings and grease nipples are standard on all joints.

The gas-spring supports and main base swivels are in heat-treated s.g. iron. Riser pipe flange is 100mm ANSI 150RF, and outlet flange 100mm TTMA.

Intermediate and coupler swivels are in heat-treated aluminium with 100mm TTMA flanges throughout.

The manoeuvring bar is normally supplied with a ball handle — recommended for ergonomic reasons — but can be fitted with a D-handle if preferred.

Pipework should be aluminium to minimise the inertia of the assembly. Full benefits of the "Velvet Touch" are obtained by combining the light feel of the gas-spring with the lowest weight of the components which have to be moved from parking adaptor to truck.

API513 Dry-Break Coupler

Described in detail elsewhere in the catalogue, Liquip's coupler is easiest of all to use because of its ball handle. Drivers overwhelmingly prefer it to the awkward action of a straight handle. Internally, careful attention to design detail has produced a rugged long-life unit which is very simple to maintain.

Just remove one R-clip and the whole valve can be dismantled: a two minute job, and re-assembly is equally quick and simple.

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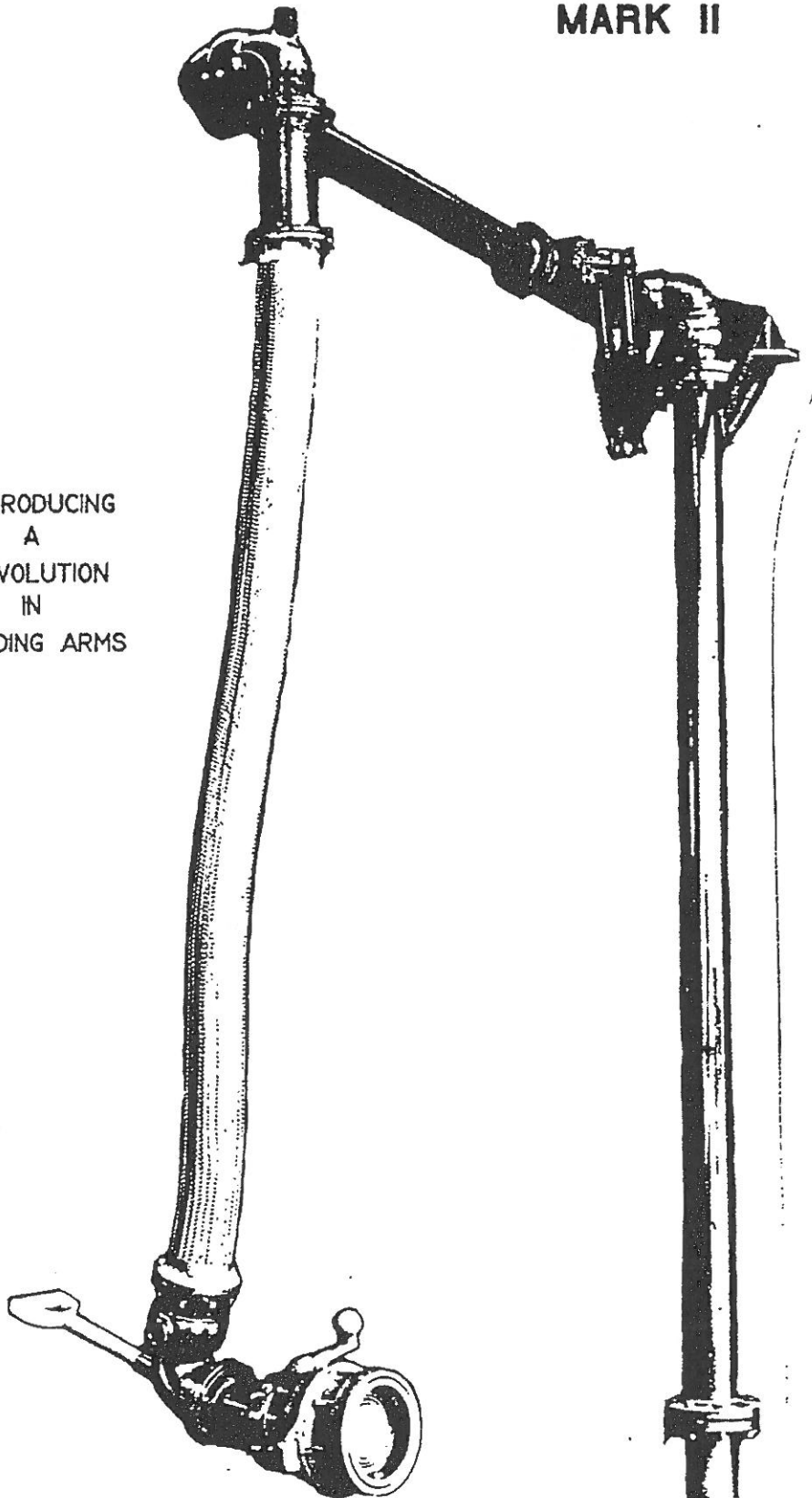
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LIQUIP

LOADING ARMS

"VELVET TOUCH" LOADING ARM MARK II

INTRODUCING
A
REVOLUTION
IN
LOADING ARMS



TYPICAL APPLICATIONS

LOADING ARM
FOR PETROLEUM
PRODUCTS.

BOTTOM LOADING
OF TANK TRUCKS
AND RAIL CARS.

NOTES



LIQUIP - A tradition of improving on traditional ideas

Equipment for liquid
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LIQUIP

BOTTOM LOADING ARM

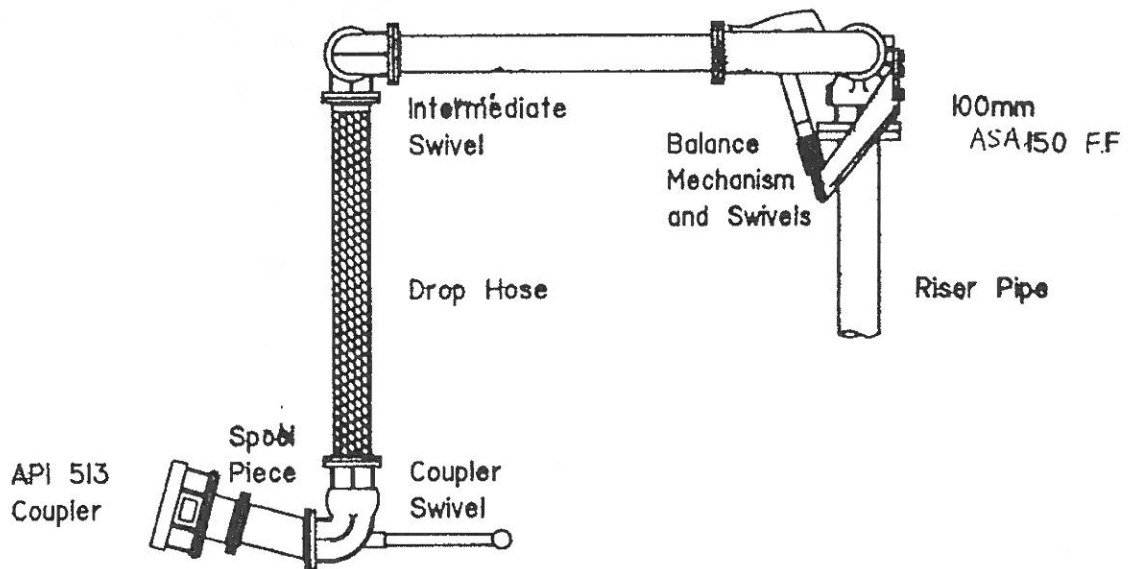
Liquip's "Velvet Touch" Mark II loading arm is a break through in balance systems for bottom loading.

There are a few secrets in making this arm, the lightest-to-use of any currently available. Firstly, we use dual gas-springs to counter-balance the weight of the arm. This provides major advantages over the traditional torsion spring or heavy counter-balance weights as discussed below.

Secondly, the swivels run on needle roller bearings with much lower friction than the traditional double row ball bearings.

Thirdly, Liquip have designed in a proper greasing system to keep the swivels in top condition.

Liquip now offer complete assemblies for bottom loading including our own bottom loading coupler. All components show those design touches which make the difference between average and outstanding.



WHY "VELVET TOUCH" ?

The gas-spring employed by Liquip is the same principle as those used on your car hatch-back. Their prime characteristic is an almost constant force throughout the stroke.

What this means in practice is that having adjusted the gas springs for operation at the average truck adaptor height, movement up or down from this position requires very little force.

Contrast this with the effort needed with old style balance systems, particularly when the arm is moved significantly up or down from its normal rest position.

INSTALLATION ADVANTAGES

There are major advantages with the "Velvet Touch" system in size and weight. It is by far the lightest balance assembly, making it much easier and safer to install.

Less obviously, the Liquip mechanism is tucked into the swivel area in a very compact manner which provides greater clearance all round - very useful when installing multiple cross-over arms in a tight gantry. Six arms in one bay are no problem.

Contrast our system with old torsion-spring and counter-weight assemblies which need much more room for their mechanisms and being much heavier are more difficult to install and have more potential to create handling injuries.

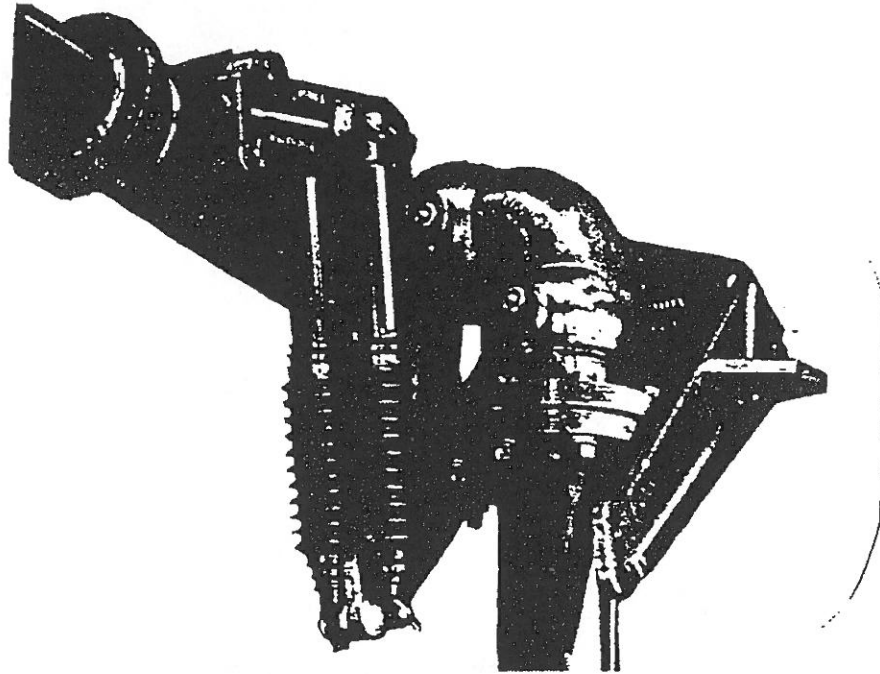
Velvet Touch Mark II also has a built-in adjustable safety stop for up and down limits, so that if there is a component failure the coupler will not drop to ground level.

LIQUIP

BOTTOM LOADING ARM

ADJUSTMENT

The same gas-spring is used whatever the combination of pipe material, pipe length and product density. Different weights are compensated for by adjusting the leverage exerted by the spring on the arm. (This is a once only adjustment, to be set when commissioning the arm).



Setting the leverage is very simple - loosen the lock-nuts and use a spanner to screw the hinge-pin along a groove to alter the angle of the gas-spring. Adjustment is safe and stepless.

The bottom support of the gas-spring bracket provides a secondary adjustment which will rarely be necessary. The adjustment does not alter the force exerted, but allows the gas-spring to be left centrally in its stroke when the loading arm is in its rest position.

If the arm assembly has been designed so that the API 513 coupler is in the centre of the API envelope when the intermediate pipe is horizontal, the secondary adjustment will not need to be changed from the factory setting.

The gas-springs are maintenance free. However, should replacement be necessary, simply lift and rest the coupler on a platform to allow full extension of the gas-springs. Pull out the R-clips from the upper and lower spindles, pull off the spring and replace with new one. (A five minute job).

All swivels run on needle bearings for minimum friction and long life. Seals are viton o-rings and grease nipples are standard on all joints. The gas-spring supports and the main base swivel are in heat treated s.g iron. Riser pipe flange is 100 mm ASA 150°F, and outlet flange 100 mm TTMA. Operating Torque of the Liquip swivel is virtually unchanged from nil pipeline pressure to 1,000 kPa pipe pressure.

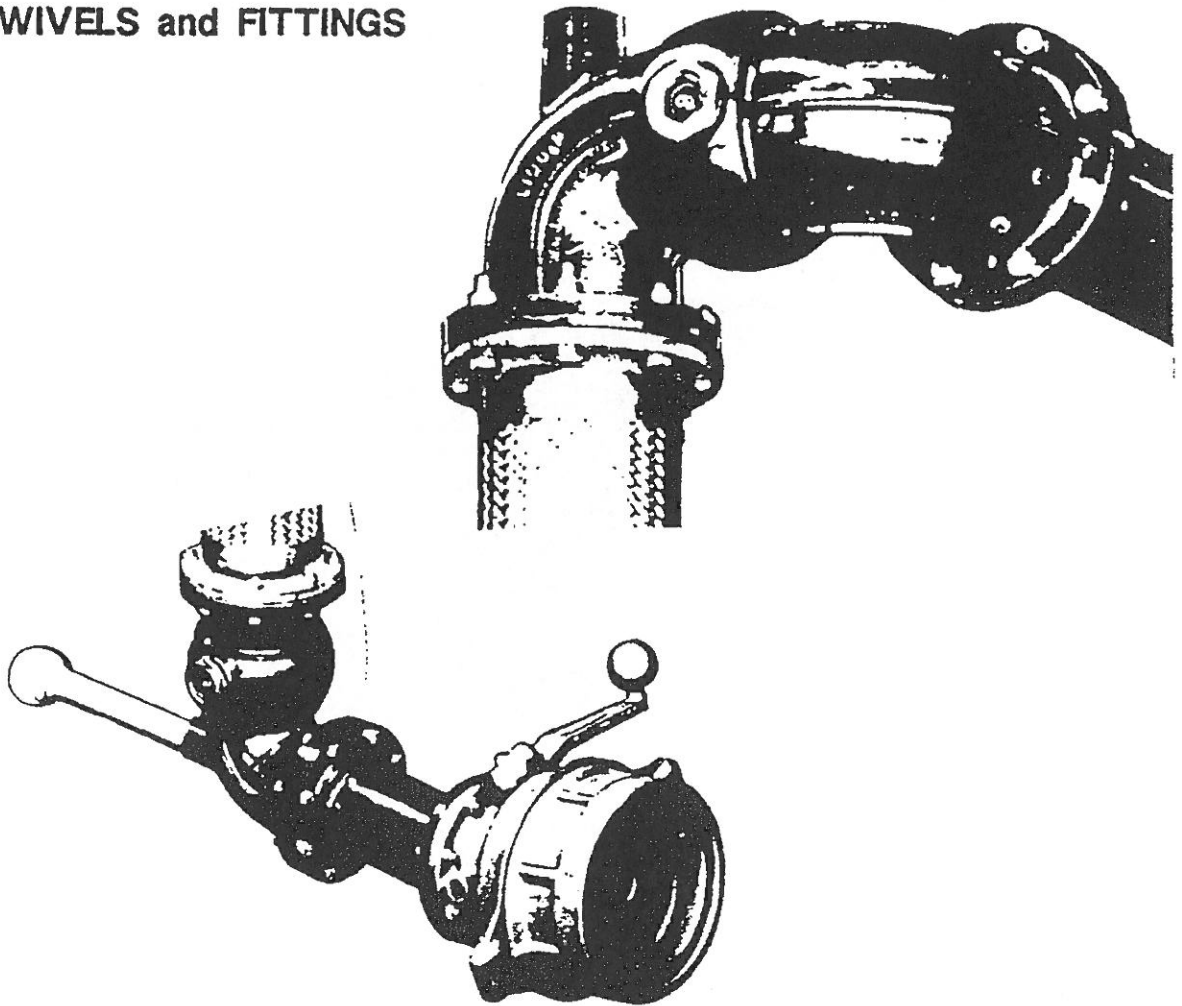
Intermediate and coupler swivels are in heat treated aluminium with 100 mm TTMA flanges throughout.

The manoeuvring bar is normally supplied with a ball handle - recommended for ergonomic reasons - but a D-handle can be fitted if preferred.

Pipe work should be aluminium to minimise the inertia of the assembly. Full benefits of the "Velvet Touch" are obtained by combining the light feel of the gas-spring with the lowest weight of the components which have to be moved from the parking adaptor to the truck.

LIQUIP BOTTOM LOADING ARM

SWIVELS and FITTINGS



WAIT...THERE'S MORE

Lubrication

In the past others have only provided a grease nipple, the grease has nowhere to go and simply mixes with the old grease and particles. If the swivel is over greased, the pressure build up can be such that the swivel tightens up and in extreme conditions the casting can split.

NOW! - During design and development stages Liquip have seized the opportunity to improve on this. A simple, cheap pressure relieving nipple fitted opposite the grease nipple. It allows old grease and particles to be expelled, gives visible evidence of greasing being thorough and prevents over pressurising.

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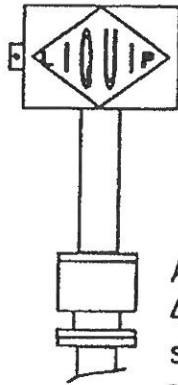
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LIQUIP

LOADING ARMS

COUNTER-BALANCED LOADING ARM



A budget loading arm for up to 4-arm bays. Uses counter-weight system for applications where low capital cost is a major consideration.

Liquip's 'Velvet Touch' loading arm has set new performance standards for loading arms.

The counter-balanced style is a simpler design for use where capital investment needs to be minimised. While retaining easy movement in the vertical and horizontal sense, this style arm has no intermediate swivel and instead relies on the excellent flexibility of of Liquip's specially made stainless steel drop hose.

Counter-balance is achieved by the use of lead shot, the canisters being filled during commissioning to the correct level for each arm and final 'tuning' being by sliding the canisters.

The horizontal arm includes a short length of flexible stainless steel hose to allow movement.

All other Velvet Touch features are also incorporated in Bottom Liner: such as up and down safety stops, pressure relief valves on the swivels, and main liquid seals which can be replaced without dismantling the roller assemblies.

OPTIONS AND RELATED EQUIPMENT

Purchase as a kit or a complete assembly.

See Liquip 'Velvet Touch' for the arm with the ultimate performance.

Isolating valve by coupler for maintenance purposes.

TECHNICAL DATA

Consult Liquip for bay layout and spacing.

Needle roller swivels.

Viton seals.

Steel bodies.

Working pressure 1000kPa.

TYPICAL APPLICATIONS

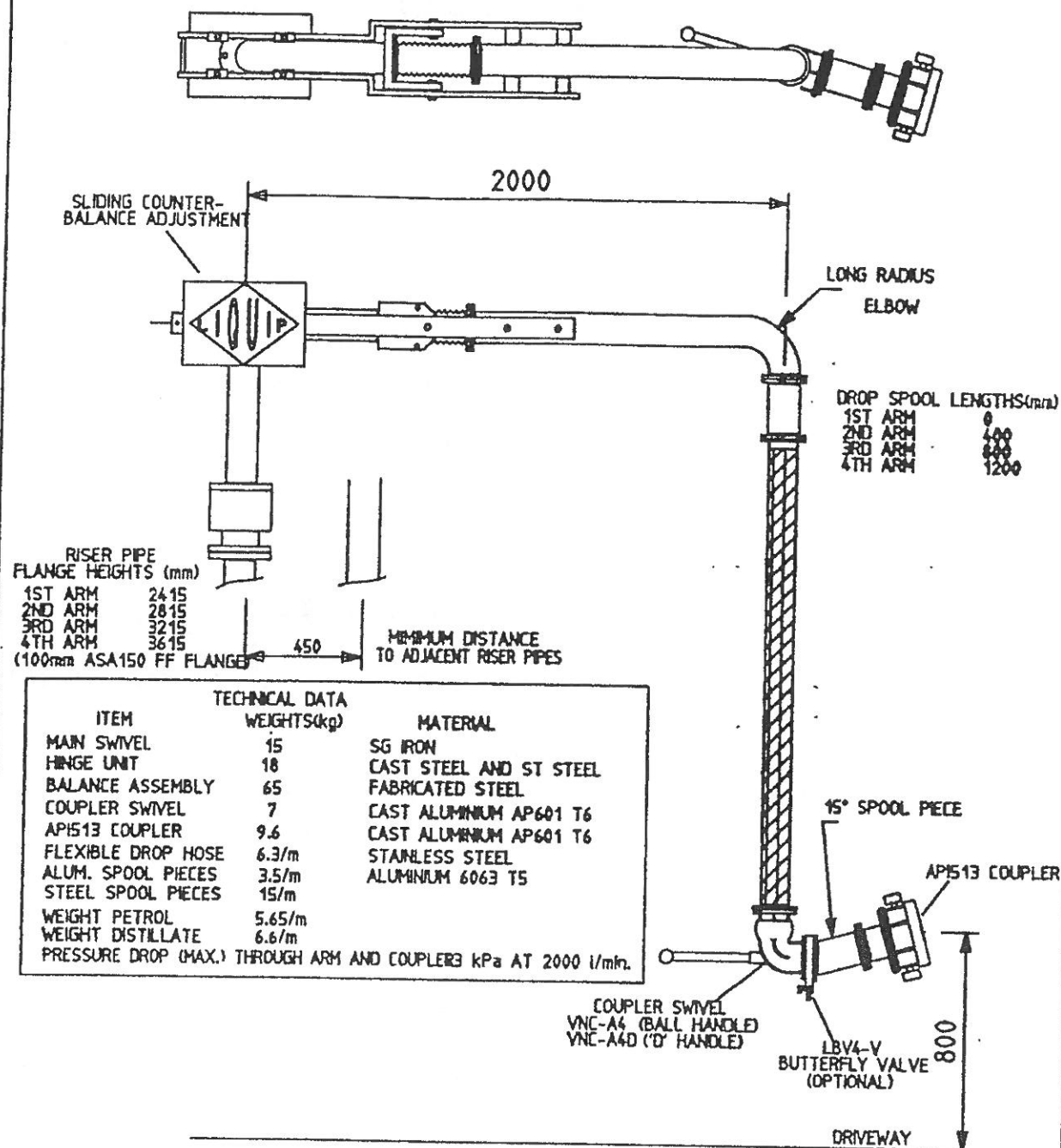
BOTTOM LOADING FOR PETROLEUM PRODUCTS

NOTES

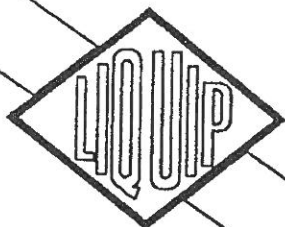


Equipment for liquid handling, storage and transport

LIQUIP BOTTOM LOADING ARM



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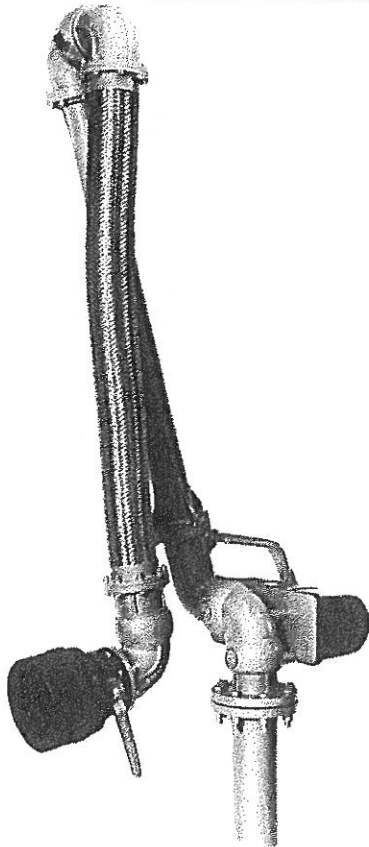
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LIQUIP

LOADING ARMS



SERIES 1402

Loading arms illustrated in this catalogue are only a sample of a wide range which can be custom built to specifications.

75 mm — 100 mm — 150 mm.

TYPICAL APPLICATIONS

LOADING ARM FOR PETROLEUM PRODUCTS.

BOTTOM LOADING OF TANK TRUCKS AND RAIL CARS.

NOTES

Series 1402 is specifically for bottom loading of road tankers and rail cars. Geometry provides for maximum flexibility of reach with swivels at all points of the triangle, and the stainless steel-braided drop hose may be canvas covered to protect the tank surface.

Bottom load API coupler and adjustable heavy duty spring balance are detailed in following pages. All swing joints are flanged for maximum strength and operate on ball bearings. Whole unit rotates horizontally around spring balance, gives 90° vertical movement and swivel by coupling allows final alignment to match adaptor on vehicle.

OPTIONS and RELATED EQUIPMENT

Swivels in alum. or steel.

Length of pipework and drop hose to customer specification.

Other dry-break couplers may be fitted.

Check valves available.

Male API mount with sensor available for "parking" arm when not in use.

TECHNICAL DATA

Standard size 100 mm dia. throughout.

Typical weight 100 kg.

Typical pressure drop through whole assembly at 2000 l/min. is 43 kPa.

Viton o-ring seal.

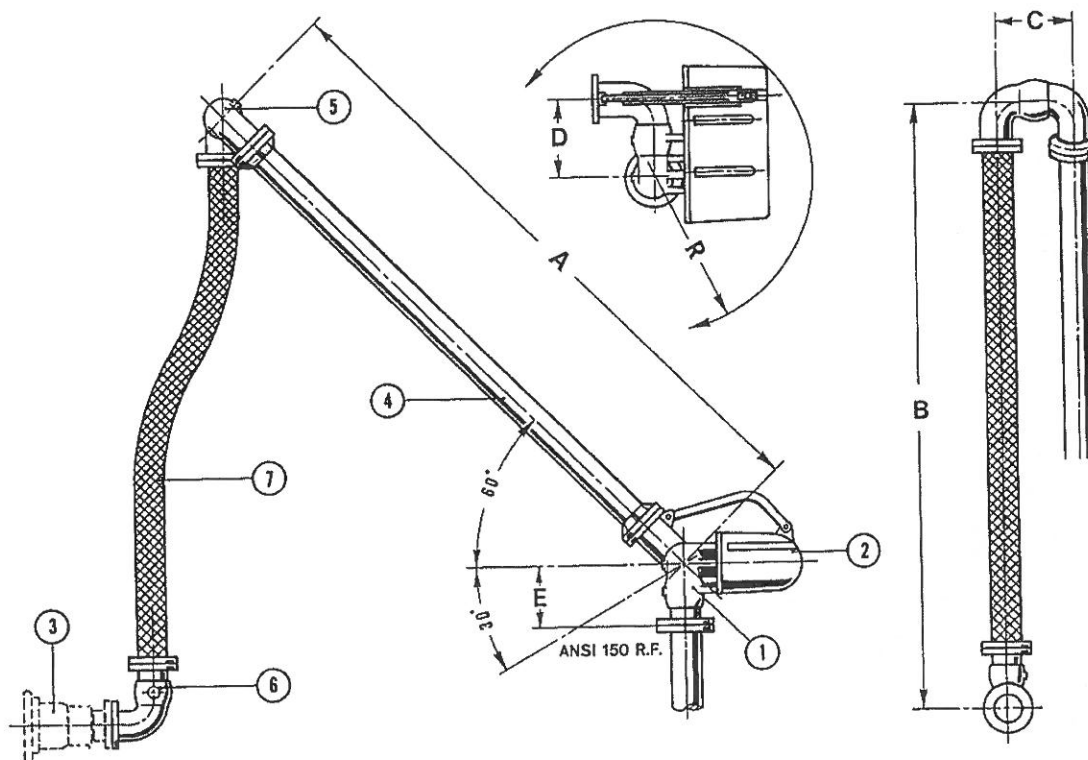
Ball bearings.



Equipment for liquid handling, storage and transport

LIQUIP

BOTTOM LOADING ARM-1402 SERIES



SERIES	TYPICAL DIMENSIONS mm					
	A	B	C	D	E	R
1402 100 mm dia.	1350	1500	232	232	220	415

ITEM	ASSY No.	DESCRIPTION
1	864	Double swing joint at base of Loading Arm
2	3000	Spring balance
3	API513	API coupling
4	3116	Horizontal arm
5	858	Swing joint
6	866	Swing joint 90°
7	To spec.	Flexible Hose

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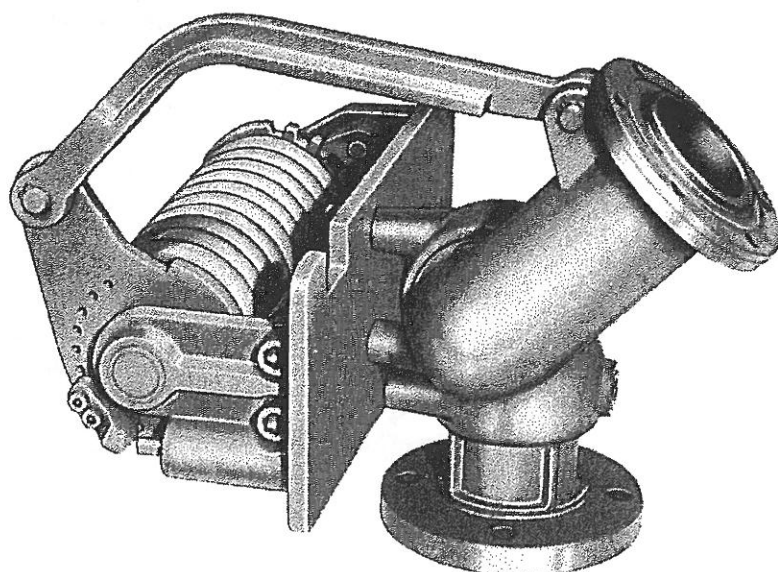
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LIQUIP

SPRING BALANCE FOR LOADING ARMS



(Illustrated
without
safety cover)

Series 3000

Adjustable spring means this one assembly will operate any style arm from 50 mm to 150 mm.

The spring balance takes the effort out of moving the loading arm. The assembly is bolted directly onto the base swivel assembly to give a very compact, efficient unit.

Base plate is cast steel, heavily ribbed and reinforced at stress points to give a very rigid structure.

Vertical movement is adjustable upwards and downwards, with a compression spring snubber unit for soft-stop.

Pivot pins are stainless steel, end bearings oil impregnated bronze. A fibreglass safety cover is standard fitment (omitted above for clarity).

OPTIONS and RELATED EQUIPMENT

See 1402 loading arm assemblies.

Illustrated is 100 mm size.

Spring may be varied
for different weights.

TECHNICAL DATA

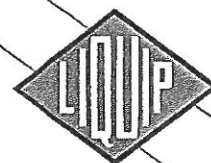
Cast steel base, st.st. pivots, oil-
impregnated main bearings.

Spring shot-peened in special
alloy steel for maximum fatigue
resistance.

TYPICAL APPLICATIONS

FORMS INTEGRAL
PART OF LOADING
ARM WITH
ADJUSTABLE
STRENGTH
SPRING TO
COUNTER-
BALANCE WEIGHT
OF ARM
ASSEMBLY.

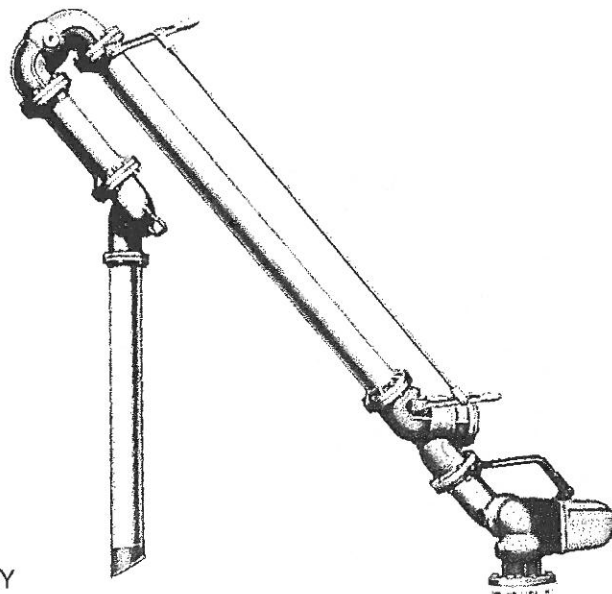
NOTES



*Equipment for liquid
handling, storage
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LIQUIP

TOP LOADING & FLOATING SUCTION



TOP LOADING
ARM ASSEMBLY

TYPICAL APPLICATIONS

TOP LOADING ARMS

For filling rail-cars,
tank-trucks, barges
and ships.

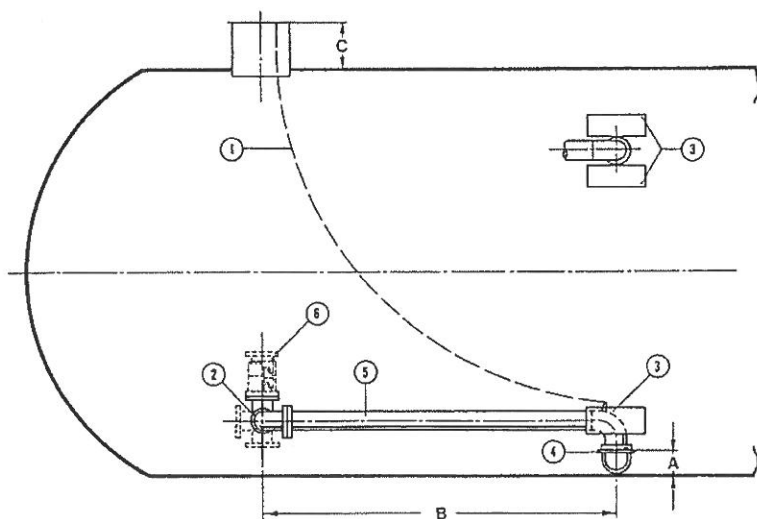
FLOATING SUCTIONS

Used particularly in
aviation tanks to
ensure only clean
fuel is taken, not dirt
from the floor.

The Liquip range of swivels, spring balances and valves can be applied to various applications.

Illustrated are two common units. These are normally tailor-made to customer specifications and we invite your enquiry.

NOTES



FLOATING SUCTION

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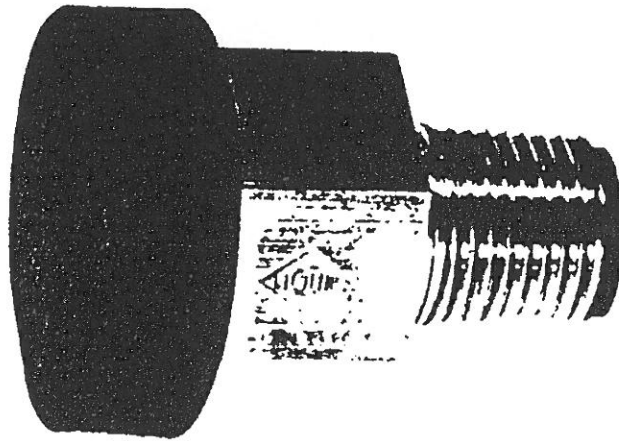
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LIQUIP

VACUUM BREAKER



TYPICAL APPLICATIONS

LOADING AND DISCHARGE LINES AND VALVES.

VB100

This effective vacuum breaker has been designed for use on loading valves and in other loading and unloading applications where positive discharge is necessary.

VB100 features :-

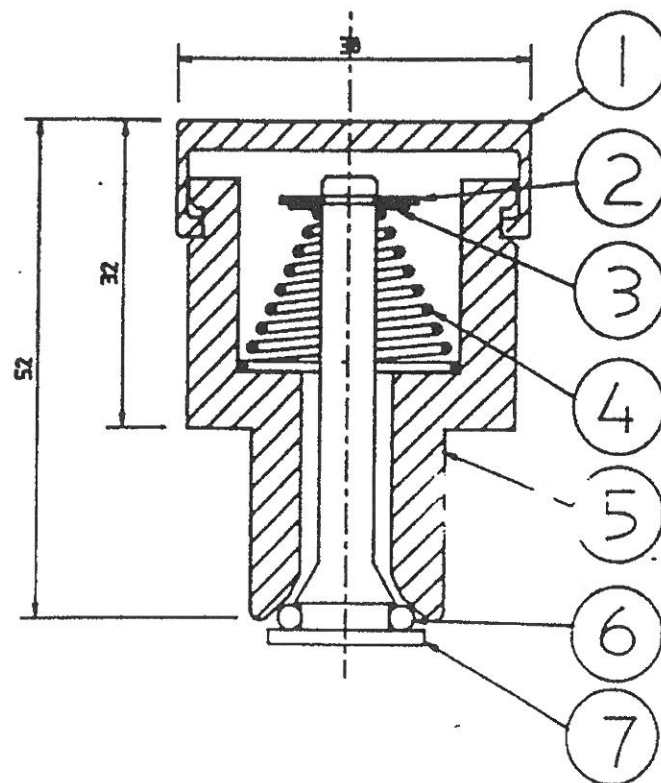
- One piece machined brass body.
- A 12.7mm BSP male tapered thread.
- Specially shaped inlet and poppet for self centring of the poppet onto it's seat.
- Delrin poppet complete with viton o'ring seal.
- Stainless steel poppet spring.
- Poppet activates at 1-2 kpa.
- Flexible polyurethane cap allows effortless manual operation for clearing of poppet.
- Flow area is equivalent to a 7mm diameter hole.
- Unit can be checked with the simple removal of the cap.

NOTES



Equipment for liquid handling, storage and transport

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ITEM	PART No:	DESCRIPTION	QTY	MATERIAL
1	VB100-1	CAP	1	POLYURETHANE
2	P0093	CIRCLIP	1	STEEL
3	P0922	FLAT WASHER	1	STEEL
4	P4412	SPRING	1	ST/ST
5	VB100-3	BODY	1	BRASS
6	P0410	O'RING	1	VITON
7	VB100-2	POPPET	1	DELTRIN

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LIQUIP

API DRY-BREAK COUPLER - GRAVITY



API NZ

TYPICAL APPLICATIONS

LIGHTWEIGHT API COUPLER WITH DRY-BREAK FOR DISCHARGING TANKERS AND RAIL CARS.

A lightweight gravity discharge dry-break for use with API adaptors on tankers and railcars. Eighty (80)mm outlet has 3" BSP thread to provide for fitting of any size male camlock.

Operation of handle on coupler opens poppet on API adaptor. Handle has over-centre operation and also has locks in open and closed position.

Unique one-piece seal engages nose of API adaptor before poppet opens to ensure no product loss. Seal can be replaced without stripping coupler, but in any case strip requires removal of one R-clip only. Design of seal with multiple lips gives best-ever tolerance to damage from dirt or other problems.

Although designed for use in gravity drops, the coupler will operate at up to 350kPa to couple and will hold pressure up to 1000kPa. The S-springs which make this possible are the subject of a patent application.

To minimise weight and cost, this coupler does not have an interlock and can be opened while disconnected.

NOTES

OPTIONS and RELATED EQUIPMENT

Order required end fitting to fit 75mm BSP socket.

Fits all API adaptors.

TECHNICAL DATA

Aluminium body with hard anodised bearing surfaces.

Viton seals.

80mm diameter bore.

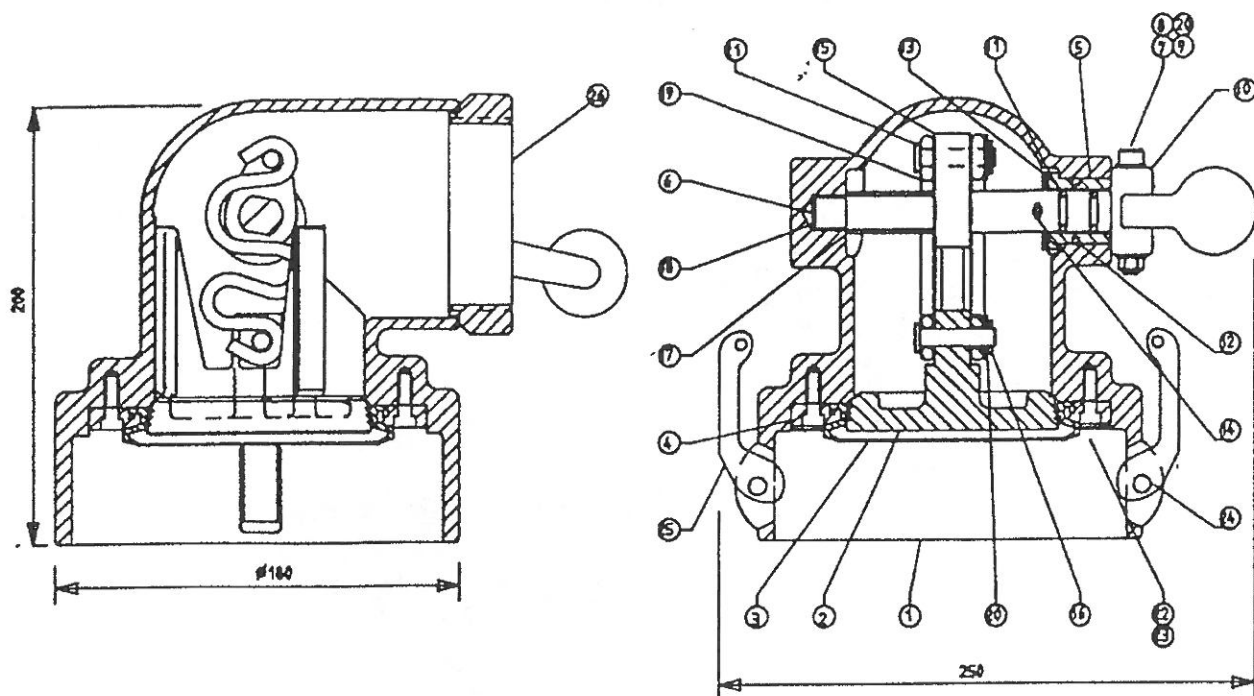
350 kPa maximum coupling pressure, 1000kPa product retention.



Equipment for liquid handling, storage and transport

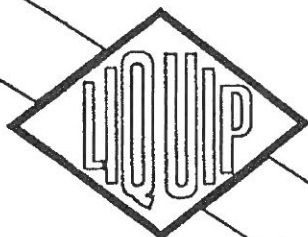
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ASSEMBLY-API NZ



26	SOCKET	APINZ-9	1	A1039	ALUMINIUM
25	CAM LOCK LEVERS	CLC3.0-2	2	-	ZP STEEL
24	CAM LOCK PIN	API-DC3	2	-	ZP STEEL
23	SPRING WASHER 1/4	P0107	4	-	ZP STEEL
22	SLHCS 1/4x3/4	P4831	4	-	ZP STEEL
21	CLEVIS PIN 5/16x1.3/8	P4830	2	-	ZP STEEL
20	WASHER 5/16x3/4	P0101	4	-	ZP STEEL
19	S-SPRING	P4425	2	-	ZP SP STEEL
18	TETRA BEARING	P5607	1	-	TEFLON
17	SPACER TUBE	API NZ-008	1	A1038	ALUMINIUM
16	SPLIT PIN	P0763	2	-	ZP STEEL
15	ECCENTRIC ARM	API 513-7	1	A1007	ST STEEL
14	R-CLIP	P0945	1	-	ST STEEL
13	WASHER 20x37x2.0	P4332	1	-	ST STEEL
12	O-RING BS213	P4501	1	-	BUNA-N
11	O-RING BS206	P0235	2	-	VITON
10	OPERATING HANDLE	API NZ-007	1	A1037	AP601 AL
9	ENGAGEMENT SPRING	P4415	1	-	ZP SP STEEL
8	NYLOC NUT 5/16	P0149	1	-	ZP STEEL
7	SHCS 5/16x2	P0717	1	-	ZP STEEL
6	OPERATING SHAFT	API NZ-006	1	A1036	ST STEEL
5	BUSH	API NZ-005	1	A1035	DELIN
4	RETAINING RING	API NZ-004	1	A1034	ALUMINIUM
3	COMBINATION SEAL	P4534	1	A1033	VITON
2	LIGHTWEIGHT POPPET	API NZ-002	1	A1032	AP601 AL
1	BODY	API NZ-001	1	A1031	AP601 AL
ITEM	DESCRIPTION	PART NO.	QTY.	DRG.	MATERIAL

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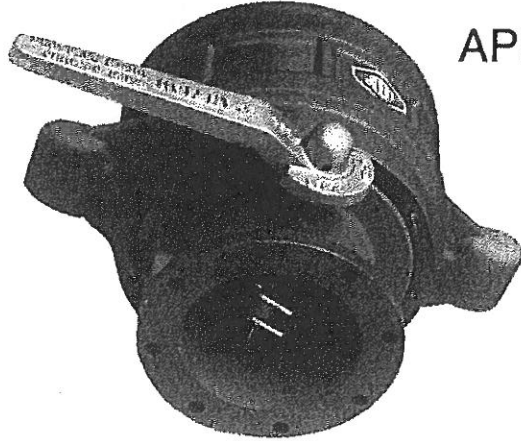
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LIQUIP

FEMALE LOADING VALVE



API 513

TYPICAL APPLICATIONS

**BOTTOM LOADING
IN TERMINALS.**

The Liquip Female API Bottom Loading dry break coupler, is manufactured in lightweight aluminium, with all Viton seals and 'o'-rings. Operation of the coupler is simple with the use of operating handle.

The coupler complies with the American petroleum institute (API) and ensures compatibility at all terminals.

Coupler features:

- (a) Twin handles on slide collar.
- (b) Double cams to keep slide collar square.
- (c) Piston poppet has extra strength on pivots to take extra pressure.
- (d) Standard TTMA flange drilling.
- (e) Interlock to ensure valve can only be operated when coupled.

OPTIONS and RELATED EQUIPMENT

Liquip Loading Arms.

TECHNICAL DATA

Flange 100 mm TTMA.

Weight — 10 kg.

For dimensions and parts list see
over page.

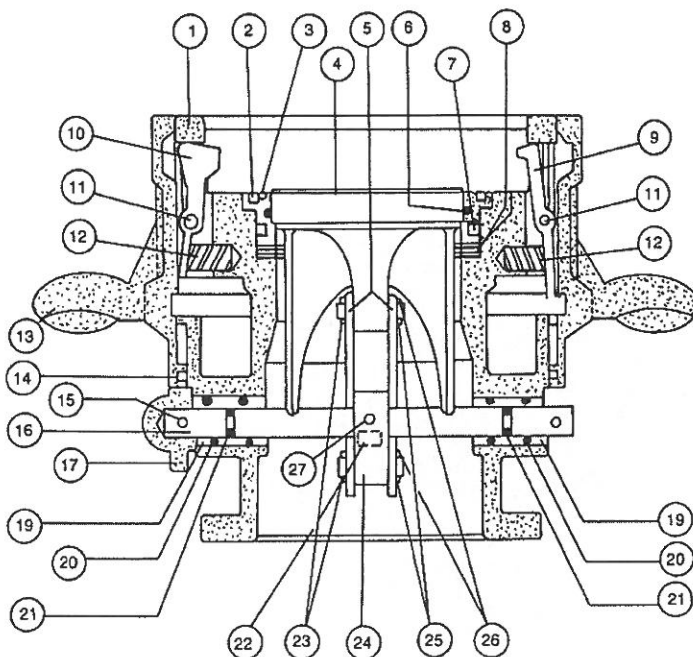
NOTES



*Equipment for liquid
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ASSY-API513



ITEM NO.	DESCRIPTION	QTY	PART NO.
1	BODY	1	P 3870
2	'O' RING	1	P 3871
3	ADAPTOR RING	1	P 3872
4	POPPET PISTON	1	P 3873
5	SIDE PLATE	2	P 3874
6	'O' RING	1	P 3875
7	'O' RING	1	P 3876
8	WAVE WASHER	3	P 3877
9	DETENT PAWL	1	P 3878
10	PAWL	3	P 3879
11	SPRING PIN	4	P 3880
12	SPRING	4	P 3881
13	RING	1	P 3882
14	GASKET	1	P 3883
15	PIN	1	P 3884
16	SHAFT	1	P 3885
17	ECCENTRIC CAM	1	P 3886
18	HANDLE	1	P 3887
19	BUSH	2	P 3888
20	'O' RING	4	P 3889
21	'O' RING	2	P 3890
22	CLEVIS	1	P 3891
23	PIN	2	P 3892
24	ECCENTRIC CAM	1	P 3893
25	WASHER	2	P 3894
26	SPLIT PIN	2	P 3895
27	PIN DRIVE	1	P 3896

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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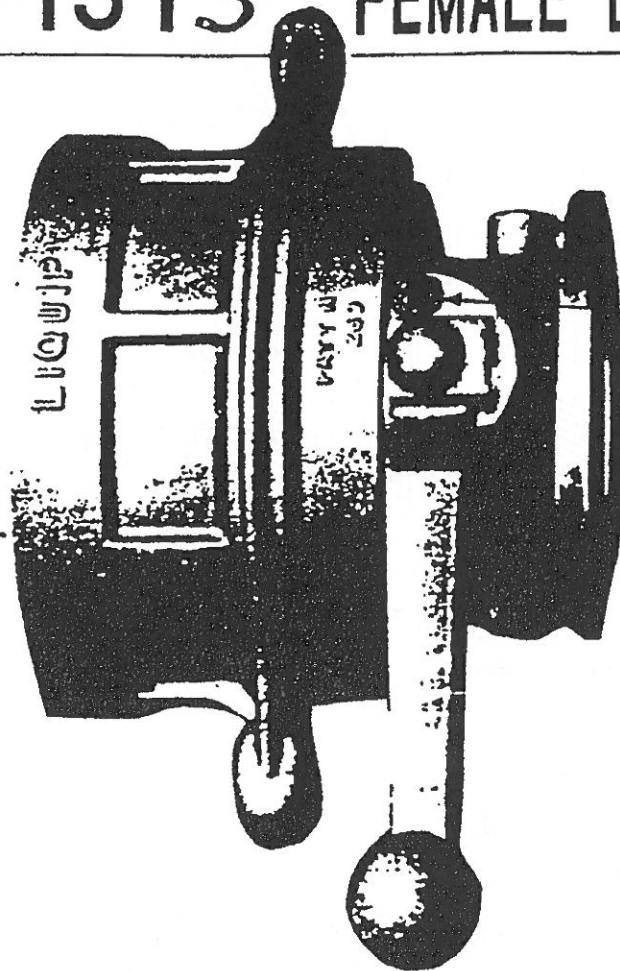
DISTRIBUTORS

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and Distributors

LIQUIP

API513 FEMALE LOADING COUPLER

TYPICAL APPLICATIONS



DELFIN ROLLER
WHICH ACTS
AGAINST THE
COLLAR FACE
FOR ONE HAND
SIMPLE SMOOTH
ACTION

NOTES

API514

The Liquip Female API Bottom Loading dry break coupler is an Australian made. Manufactured in light weight heat-treated aluminium, with all viton seats and o-rings. All sliding surfaces are hard anodised to give a smooth surface finish and prevent wear. Operation of the coupler is simple with the use of a specially designed operating handle to meet ergonomic requirements.

The coupler complies with American Petroleum Institutes (API) standards and ensures compatibility at all terminals. Naturally it is fully interlocked to prevent opening unless coupled to the adaptor.

Coupler features:

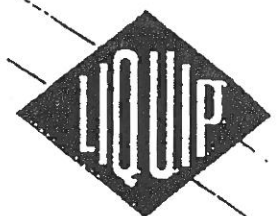
- *Ergonomic handle designed to international standards with delphin roller which acts against the sliding collar face for one hand simple action.
- *Extra-heavy connecting plates to prevent damage from pressure build-up.
- *Large diameter camshaft with bushes both ends
- *Large diameter drive pin on handle to prevent shearing
- *Popping seal damage virtually eliminated due to geometry of design
- *Simplest of all units to disassemble and reassemble

OPTION AND RELATED EQUIPMENT

- *Liquip loading arms
- *API 513 adaptor

TECHNICAL DATA

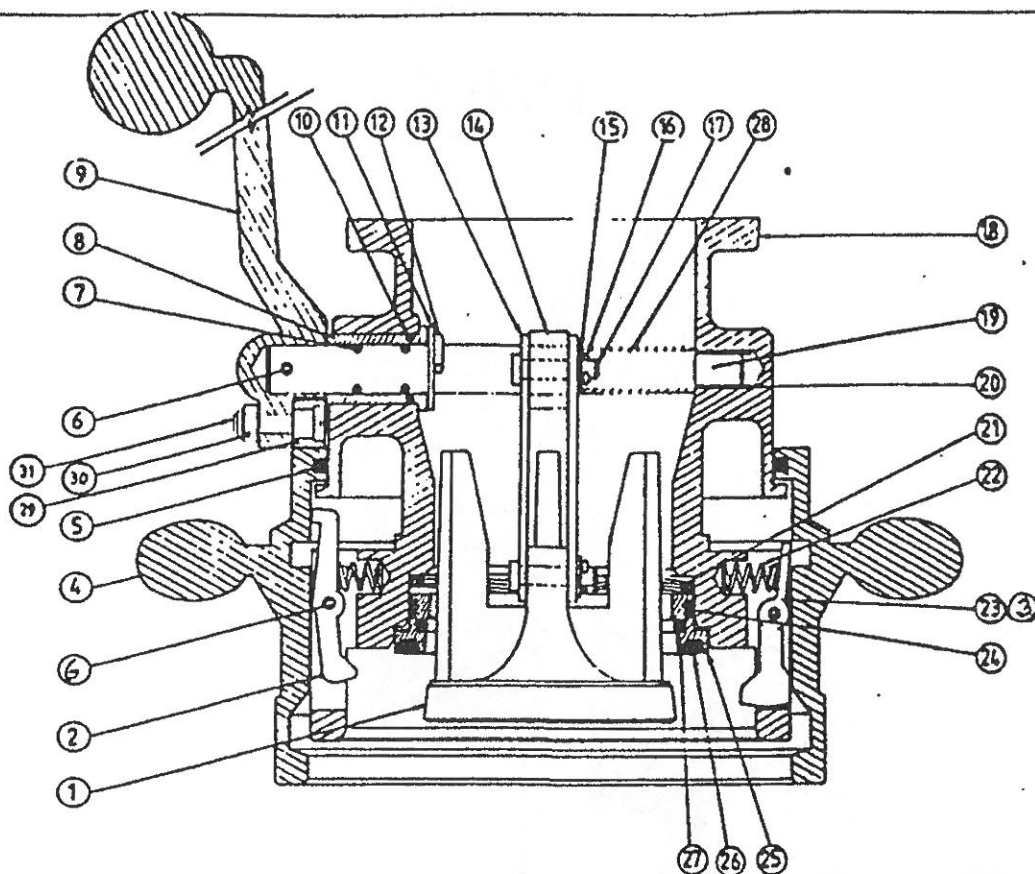
Flange 100mm TMA
Weight 2.5kg



Equipment for liquid
handling/storage

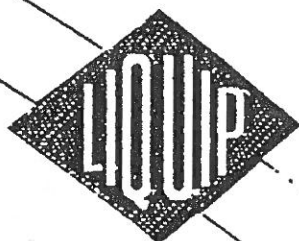
LIQUIP

API513 FEMALE LOADING COUPLER



ITEM	PART No	DESCRIPTION	QTY	MAT	ITEM	PART No	DESCRIPTION	QTY	MAT
1	AP513-3	POPPET PISTON	1	CAST ALUM	17	IP0974	CLEVIS PIN	2	MS/ZP
2	AP513-9	OUTER BODY O-RING LATCH	1	CASIS/S	18	AP513-1	BODY	1	CAST ALUM
3	P0926	SELOC PIN	3	MS/ZP	19	AP513-10	OPERATING SHAFT	1	S/STEEL
4	AP513-2	OUTER BODY O-RING	1	CAST ALUM	20	IP2698	TETRA BEARING	1	TEFLON
5	P3883	FELT WIPER SEAL	1	FELT	21	IP3877	WAVE WASHER	2	SPGSTEEL
6	P0925	SELOC SPRING PIN	2	MS/ZP	22	P3881	PAWL SPRING	4	SPGSTEEL
7	P0235	O-RING	2	VITON	23	AP513-8	BODY LATCH	2	CASIS/S
8	AP513-6	SHAFT BUSH	1	DELPH	24	P0279	O-RING	1	VITON
9	AP513-5	OPERATING HANDLE	1	CAST ALUM	25	AP513-4	POPPET ADAPTOR RING	1	CAST ALUM
10	P4501	O-RING	1	VITON	26	P0289	O-RING	1	VITON
11	P4322	FLAT WASHER	1	MS/ZP	27	P0203	O-RING	1	VITON
12	P0945	R-CLIP	1	SPGSTEEL	28	AP513-12	SPACER TUBE	1	ALUM
13	AP513-11	CAM PLATE	2	MS/ZP	29	AP513-14	ROLLER	1	DELPH
14	AP513-7	ECCENTRIC CAM	1	CASIS/S	30	P0149	NUT	1	MS/ZP
15	P0101	FLAT WASHER	2	MS/ZP	31	AP513-13	PIN	1	MS/ZP
16	P0763	SPLIT PIN	2	MS/ZP	32				

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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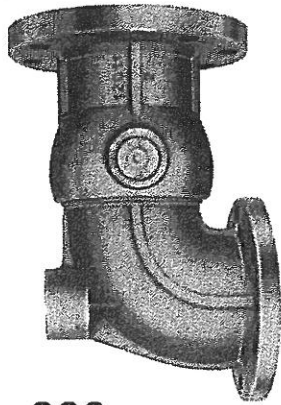
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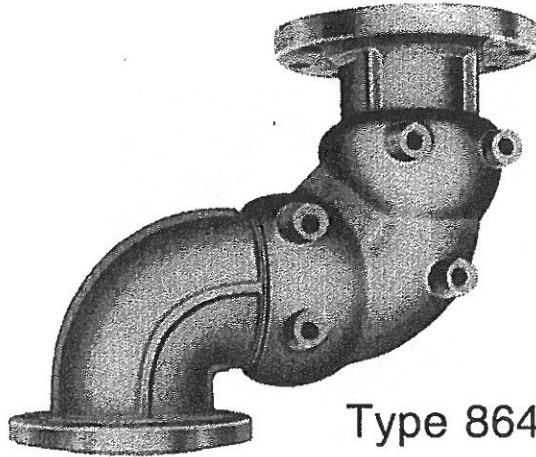
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LIQUIP

SWIVEL JOINTS



Type 866



Type 864

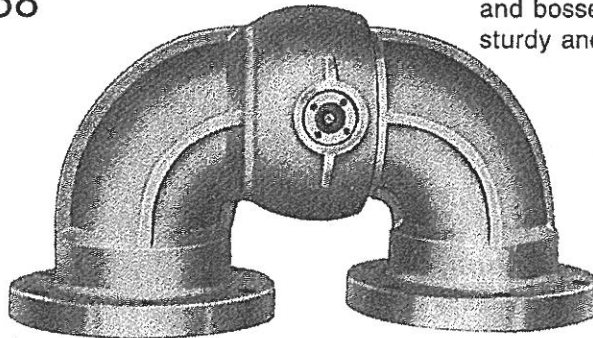
TYPICAL APPLICATIONS
TO PROVIDE FLEXIBILITY AND MOVEMENT IN PIPE AND HOSE ASSEMBLIES.

Swivel joints are manufactured in a range of sizes, commonly 75 mm dia., 100 mm dia. and 150 mm diameter.

Bodies are aluminium or steel, seals are Viton and ball bearings provide the pivot.

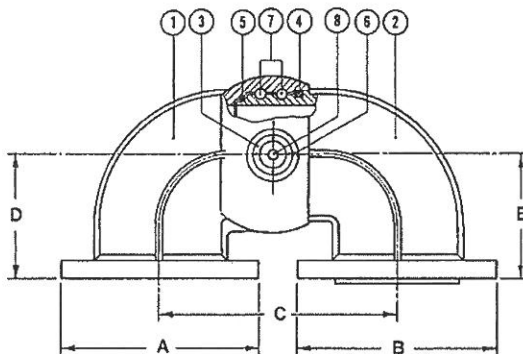
Flanged construction ensures good joint seals and ribbing and bosses provide a very sturdy and stiff structure.

Type 858



TYPICAL CONSTRUCTION

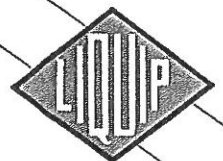
NOTES



Illustrated is type 858 swing joint.

SIZE	DIMENSION mm				
	A	B	C	D	E
75	154	154	195	115	115
100	190	190	232	120	120
150	233	233	300	173	173

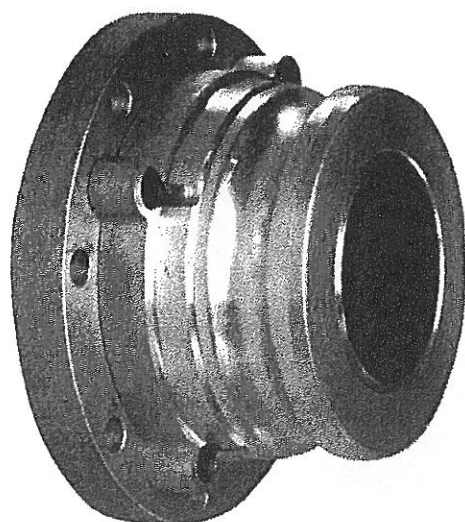
ITEM	DESCRIPTION
1	Elbow (female)
2	Elbow (male)
3	Plug
4	Felt packing
5	Seal O-Ring
6	Plug blocking device
7	Ball bearing
8	Lubricator



Equipment for liquid handling, storage and transport

LIQUIP

VAPOUR RECOVERY ADAPTOR



VCM3-F

TYPICAL APPLICATIONS

SPECIFICALLY
DESIGNED FOR
VAPOUR
RECOVERY
CONNECTION AT
TERMINALS.

MEETS AIP CODE
CP-6.

This adaptor is the connection point from the road tanker into the terminal vapour recovery pipe-work system.

It provides a "dry-break" connection with the mating coupler on the tank-truck, part number VCF3-G. Both components are designed to AIP Code CP-6 to ensure automatic operation when coupled and interchangeability between manufacturers.

Basic operation is NATO camlock, but selective features in the design ensure that vapour adaptors and couplers will only fit each other and not onto standard camlocks.

For ease of service and parts stocking, many components are interchangeable with service station vapour recovery elbow VTE-3.

NOTES

OPTIONS and RELATED EQUIPMENT

VCM-DC dust cap.

VCF3-G truck coupler.

Standard flange 100 mm TTMA
ASA150 as option.

Flange to BSP socket available
as option.

TECHNICAL DATA

Alum. body Viton seal.

Open area equal to
75 mm dia. orifice.

Poppet opens 4 kPa vacuum.

Poppet travel 19 mm.

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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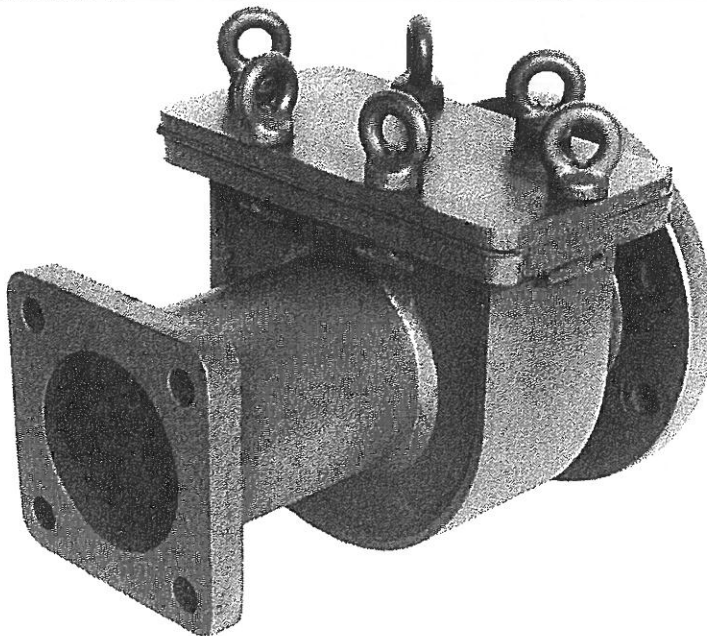
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LIQUIP

IN-LINE STEEL STRAINER



**ILS400-M
ILS600-M
ILS800-M**

TYPICAL APPLICATIONS
PIPELINES PRIOR TO EQUIPMENT WHICH MUST BE PROTECTED FROM SCALE AND LOOSE OBJECTS.

METERS, PUMPS AND VALVES TYPICALLY NEED SUCH PROTECTION.

The ILS range of strainers are very compact and fit into pipelines where old-fashioned Y-type or drum strainers take up too much room.

Steel bodies are fully welded internally and externally, gasket faces are machined flat and close spacing of studs provides high pressure capability.

All models have high-strength malleable iron eye-nuts which require no spanners to open for inspection. Strainer baskets are shaped so that they only fit in the correct direction, and have lips to trap and hold dirt as the basket is lifted out.

Many options are available in length, type and material of strainer, flanging, air eliminator, connections for differential pressure and so on. Please specify your requirements.

NOTES

OPTIONS and RELATED EQUIPMENT

Air eliminator.

Various mesh baskets, in different materials.

Standard flange ASA150, TTMA available in 100 mm.

Drain point is standard, differential pressure gauge connections optional.

TECHNICAL DATA

Working pressure to 1200 kPa.

Test pressure to 2800 kPa.

Standard mesh 1500 micron — others to order.

Pressure drop, petrol:—
2 kPa at 1000 l/min. with 1500 micron basket.

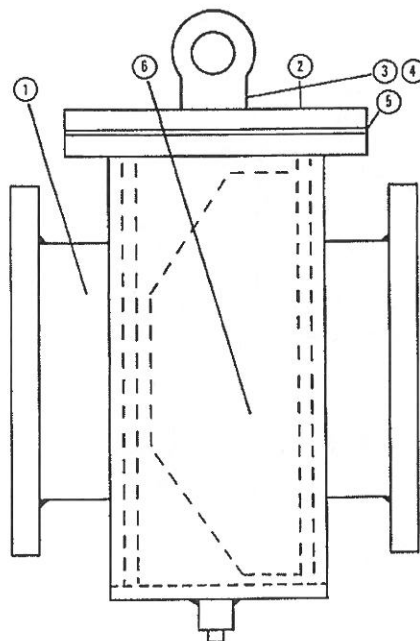
10 kPa at 2300 l/min. with 300 micron basket.



Equipment for liquid handling, storage and transport

LIQUIP

ASSY — STEEL STRAINERS



ITEM NO.	DESCRIPTION	QTY	ILS400-M	PART NO. ILS600-M	ILS800-M
1	Body Assy. c/w ASA 150 Flanges	1	ILS400-M-13	ILS600-M-13	ILS800-M-13
2	Cover	1	ILS400-M-5	ILS800-M-5	ILS800-M-5
3	Eye Nut	10	ILS400-4	ILS400-4	ILS400-4
4	Stud	10	PO688	PO688	PO688
5	Gasket	1	ILS400-M-6	ILS800-M-6	ILS800-M-6
6	Strainer Basket 1500 micron	1	ILS400-3	ILS800-M-7	ILS800-M-7

NOTE: Dimensions vary according to specification. Consult Liquip.

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



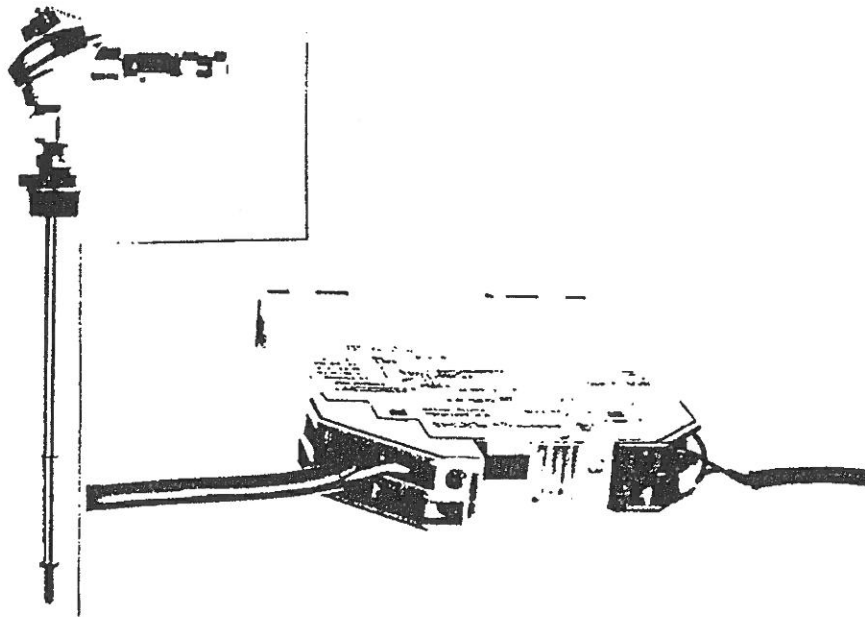
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STORAGE TANK OVERFILL PROTECTION



TYPICAL APPLICATIONS

ELECTRONIC OVERFILL PROTECTION FOR STORAGE TANKS AND REMOTE AREAS.

This overfill protection system is ideally suited for use in bulk storage tanks at depots every where, a simple effective system that can be connected to a light, alarm or another types of warning device, to reduce the risk of overfill during delivery. A great safety asset where night deliveries or unattended sites are common.

The STO system consists of a capacitive probe mounted to a 32 mm BSP male for fitting into tank socket or flange. Connected by specified cable a monitor/amplifier is mounted remotely in a safe area (up to 2 km away from the probe). A weather-proof junction box is provided to ensure clean, sealed connections are maintained at all times.

The monitor/amplifier has a LED to indicate when sensor has been triggered and the relay output can be chosen to be normally open or normally closed. It is nomally set up to be fail-safe, i.e. it will "close" if probe wiring is cut, short circuited or if the power supply fails.

The unit has been deliberately chosen to have one monitor/amplifier for each probe (and tank) for ease of identification and installation.

STO300 kit comprises probe, screwed assembly and junction box. Monitor/ amplifier should be ordered separately.

NOTES

OPTIONS AND RELATED EQUIPMENT

STO300	Probe assembly 300 mm long.
STO450	Probe assembly 450 mm long.
STO600	Probe assembly 600 mm long.

* Other lengths available to order.

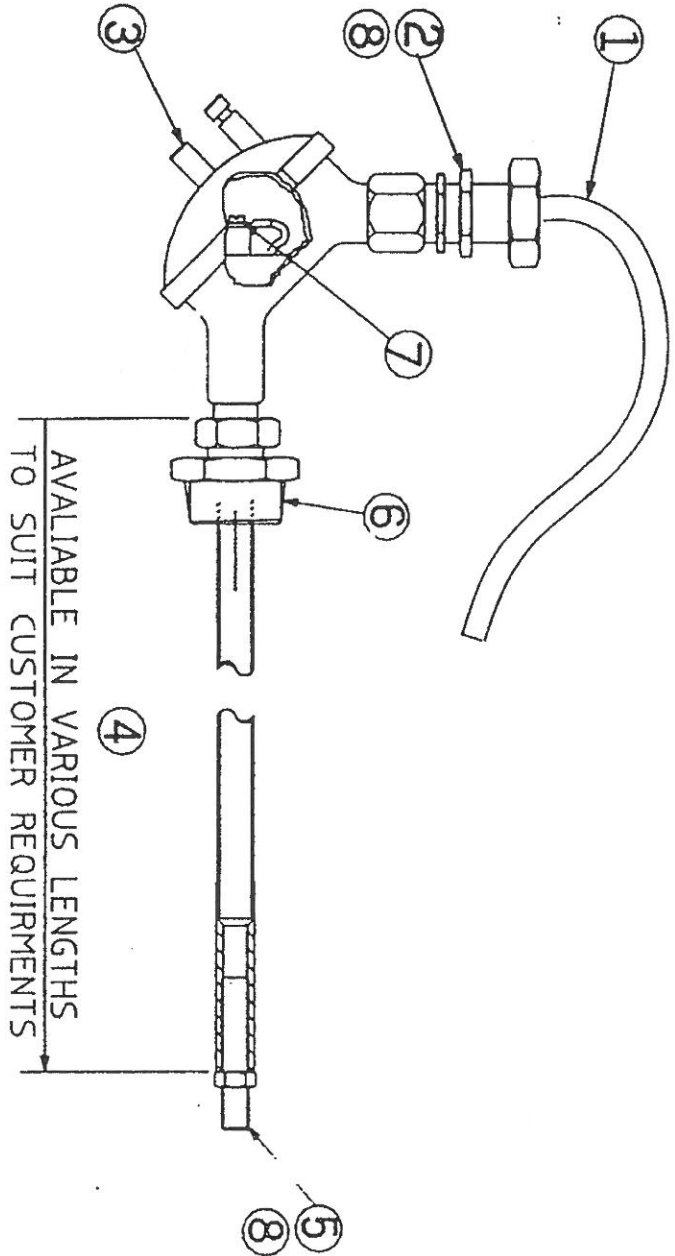
P4168 240 volt monitor/amplifier assembly.

* Other voltages available to order



Equipment for liquid handling, storage and transport

LIQUIP



ITEM	PART No:	DESCRIPTION	QTY	MATERIAL
1	----	Dekoron IEF184AC001 1.5mm cable.	1	----
2	P1985	Weatherproof cable gland.	1	St. steel
3	P1982	Weatherproof terminal head.	1	Aluminium
4	----	Probe support stem.	1	St. steel
5	P4169	Proximity sensor C14.	1	----
6	P0431	Reducing bush.	1	Z/P steel
7	P1411	Terminal eye.	2	Z/P steel
8	P3367	Pipe sealant.	As Req.	----

NOTE: Item 1 not supplied.

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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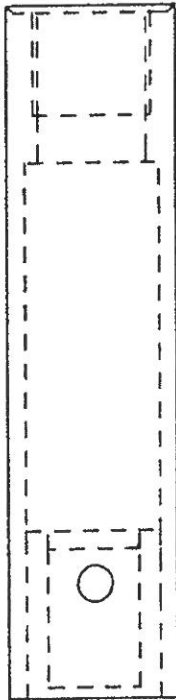
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LIQUIP

UNIVERSAL LIQUID SENSING PROBE



SP27

The "Universal" Probe.

Short enough to use as a bottom sensor.

Short enough for direct mount to tank top.

Or make as long as you want with screw-on extension pieces.

NEW size : NEW design : NEW technology

This probe is smarter than the average. Design incorporates watch-dog circuitry to provide checks within itself as well as from the gantry. Dual sensing paths provide even more safety.

Construction is with surface-mount components for maximum strength and reliability. Naturally a high-tech board like this is manufactured on an automatic robotic assembler.

Probe housing is mechanically earthed to eliminate any hazard from static electricity.

The SP27 is sized to allow interchangeability with existing probes and housings. It is robust, all external parts being metallic, and the electronics fully encapsulated.

Operation is instant "on", no warmup time being necessary.

OPTIONS & RELATED EQUIPMENT

Extension piece

Dummy probe P4201

TECHNICAL DATA

Aluminium housing.

Nickel plated brass tip.

95mm overall length.

TYPICAL APPLICATIONS

ON-BOARD
OVERFILL SENSING.
EMPTY SENSING.

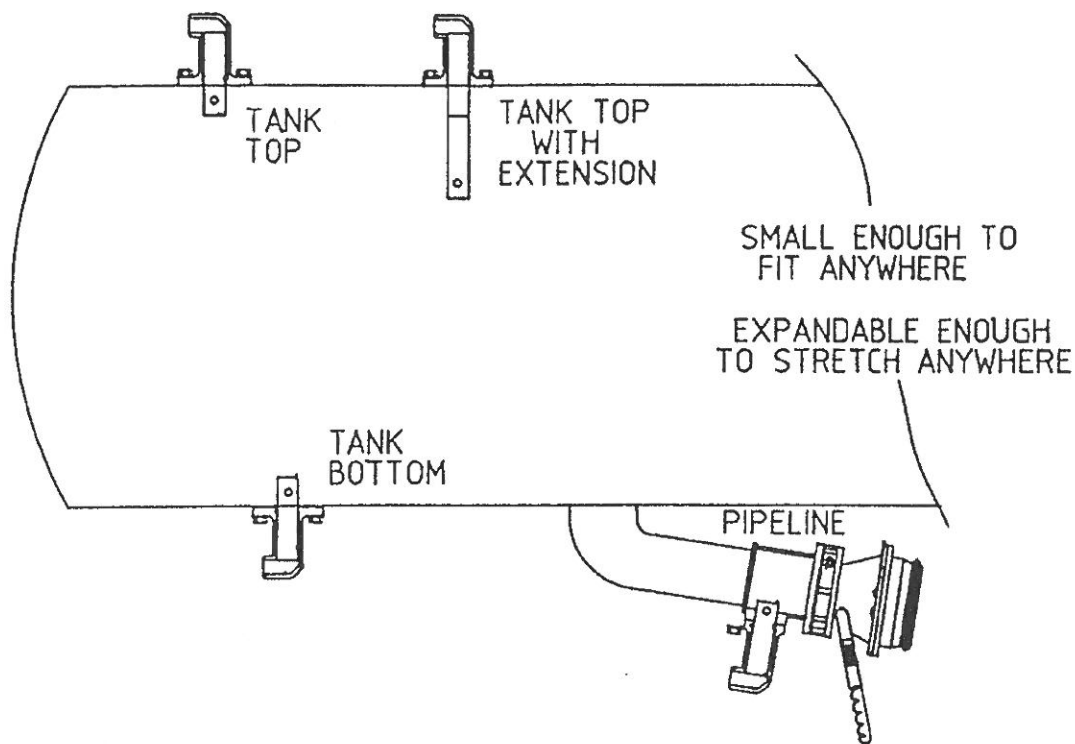
NOTES



Equipment for liquid
handling, storage
and transport

LIQUIP

UNIVERSAL LIQUID SENSING PROBE SP27



The Long and the Short of it is that Liquip's new probe is adaptable to any odd-ball tank and will provide any length adjustment. Just screw on an adaptor to suit.

Short enough to double as an Empty sensor.

Liquip have a new pipeline adaptor to neatly mount the probe for 'drain-dry' sensing. Part no. BF4-10.

All-new circuit design.

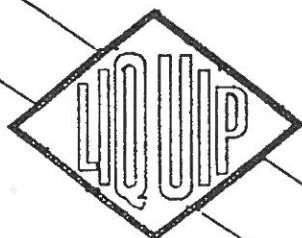
Not only does the circuit board employ the latest technology with IC's and surface mount components to minimise the size, the circuit has also been improved with even more safety features.

Rugged all-metallic exterior to withstand abuse because it uses the capacitance principle. The probe uses solid-state electronics fully encapsulated in an aluminium housing.

Made and designed in Australia to minimise cost and maximise availability.

Interchangeable with any existing standard housing.

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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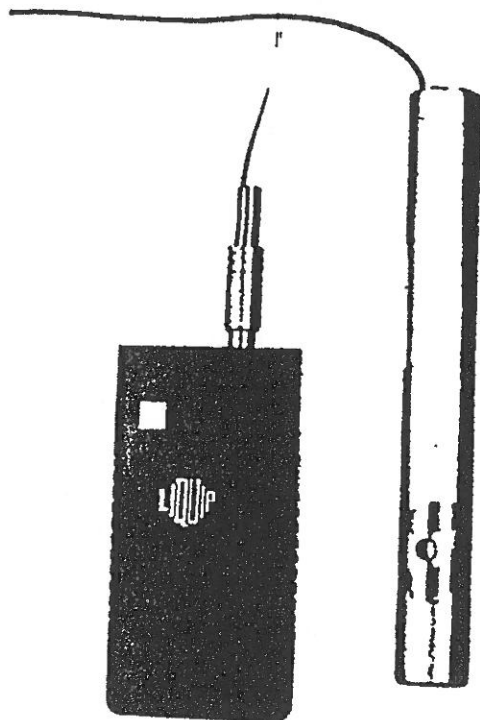
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LIQUIP

ELECTRONIC PROBE TESTER



TYPICAL APPLICATIONS
Testing capacitive and optical overfill probes

SAA approved for
Class 1 Zone 0

OPTO-CAP TESTER Part Number P4198

An inexpensive hand-held tester to check optical or capacitive overfill protection probes in road tankers. Can check via the truck plug which also tests the wiring and any dummy probe assemblies in the plug; or individual probes on the bench.

This tester helps solve one of your most annoying problems—defining why a truck cannot get a green light!

Use the Opto-cap unit for capacitive and optical probes plus any electronic dummy. Continue to use a multi-meter to test thermistor probes.

For new probes order as P2920.

Tester size 120 x 60 x 25mm thick
weight 150 gm

Battery 9v Carbon eg. Eveready 216 type 6F22

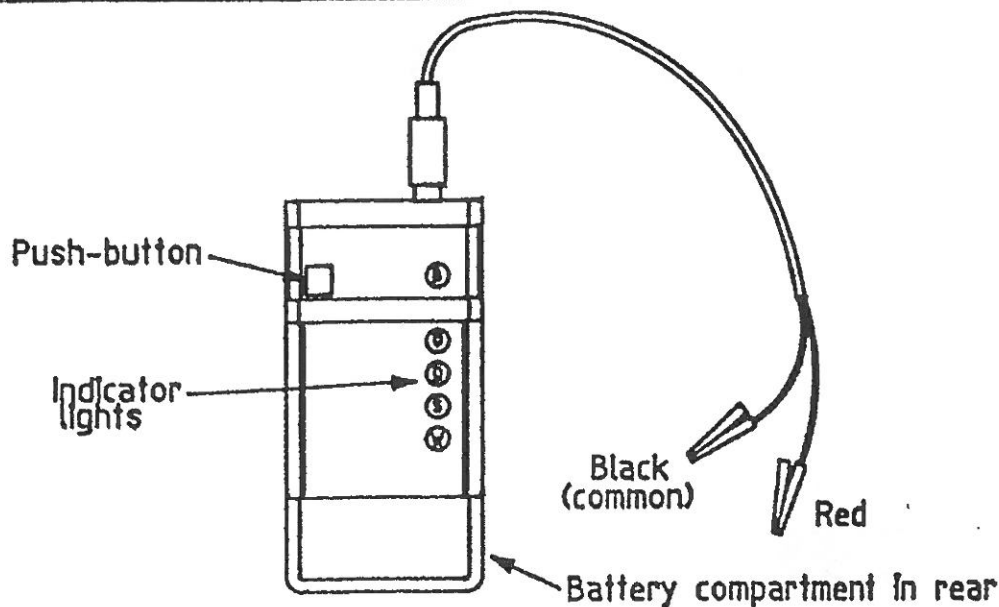
NOTES



Equipment for liquid handling, storage and transport

LIQUIP

OPTO-CAP TESTER - INSTRUCTIONS



Connect black crocodile clip to tanker chassis (or to white lead on probe if testing single probe) and red clip to required compartment pin on truck plug (or to black lead on probe if testing single probe). Press push-button and hold.

One of the indicator lights will operate.

O = Open circuit. Probe or wiring faulty.

S = Short circuit. Probe or wiring faulty.

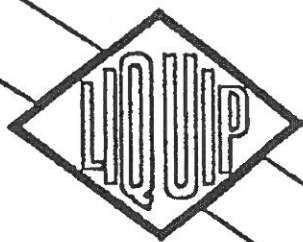
W = Wet. Probe submerged or faulty.

D = Dry. Probe and wiring OK.

B = Battery almost flat. Replace with type 6F22 9 volt carbon type (the old-fashioned cheapest type).

Do not use tester in any part of the tanker wiring until the gantry monitor plug is disconnected.

METERS VALVES VENTS MANHOLES PUMPS HOSE REELS OVERFILL PROTECTION



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LIQUIP

OVERFILL PROTECTION



STARSHIP— NO HEAT INPUT

TANK TOP SENSOR

Liquip's Starship probe is compatible with all common gantry over fill control monitors. However compared with thermistors there is no heat input, no effect from draught, better resistance to steam and fouling and is independent of ambient temperature. Fully Interchangeable.

P2920

S.A.A. approved

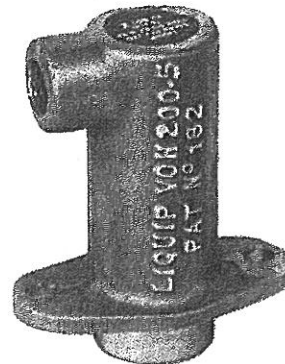
TYPICAL APPLICATIONS
ELECTRONIC
OVERFILL
PROTECTION FOR
ROAD TANKERS
AND STORAGE
TANKS.

SENSOR JUNCTION BOX

A lightweight junction box for starship or thermistor sensors.

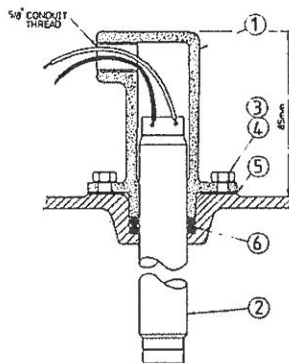
Mounts directly onto VOH200 and VOH300 manholes, or remote mount to VRB-13 weld flange (see over page).

Blank cover is VOH200-14 if Sensor is not required.



VOH200-5

NOTES



SENSOR JUNCTION BOX PARTS

Item No.	Description	Qty.	Part No.
1	Junction Box	1	VOH200-5
2	Sensor	1	P2920
3	Screw	2	P0012
4	Washer	2	P0108
5	Gasket	1	P3097
6	'O' Ring	2	P3114
7	Mount Flange	1	VRB-13

SENSOR MOUNT FOR CHEMICAL TANKS

A quick detachable over-fill Sensor mount for chemicals which may attack the sensor. The unit will clamp onto dummy on walkway when sensor is not required.

75 mm camlock cap has full Teflon seal. The kit includes male camlock to mount as dummy.



TM3-AT



Equipment for liquid
handling, storage
and transport

LIQUIP OVERFILL PROTECTION



TRUCK PLUG

Truck plug with dummy elements for normal gantry socket operates with both Starship and thermistor Sensors.

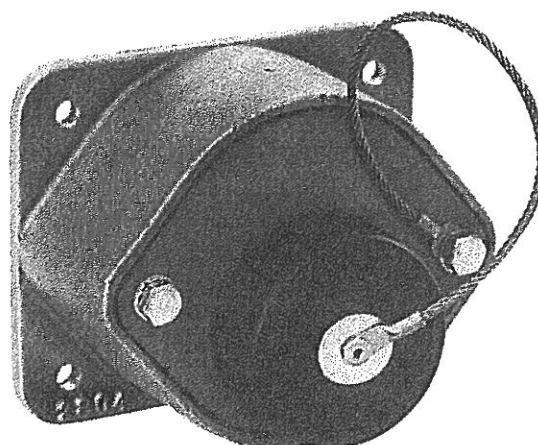
P2938 PLUG LESS DUMMY, NO CAP.

P2921 DUMMY FOR 1 TO 6 COMPARTMENT TANKERS.

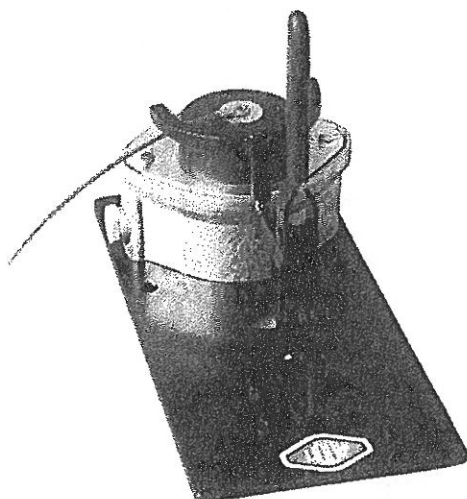
LIQUIPS LIGHTWEIGHT TRUCK PLUG CAP

Many truck plugs wear in the bayonet fittings and prevent good contact at the gantry. This push-on plastic moulded cap prevents such wear and provides excellent weather protection for the contacts.

Comes with stainless steel securing cable.



FCC-1



TRUCK SOCKET CLAMP

A faulty connection causes havoc at loading gantries. The socket clamp supports the weight of socket and cable and holds the contacts firmly together. The truck plug bolts onto the base plate to ensure correct position with the over centre action of the clamp.

FLC-100

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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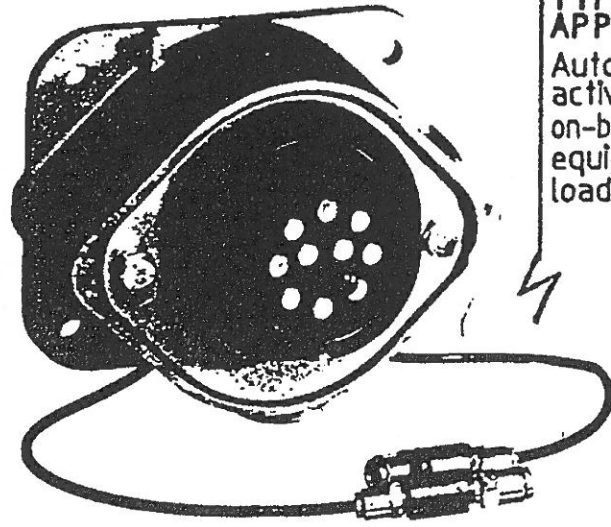
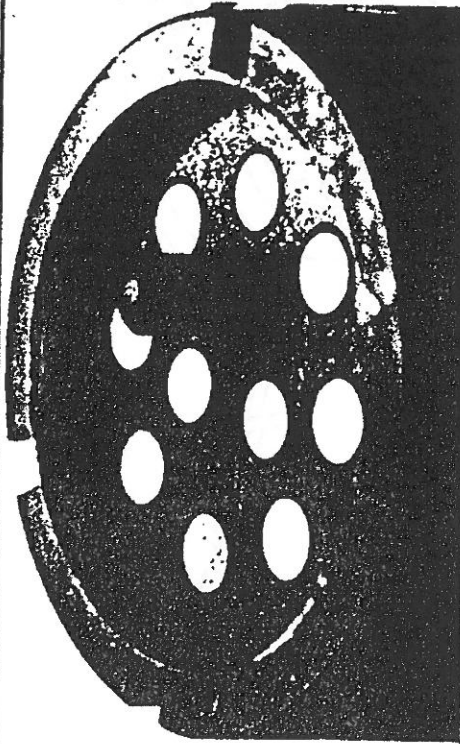
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LIQUIP

INTERLOCK TRUCK PLUG



TYPICAL APPLICATIONS

Automatic activation of on-board pneumatic equipment at loading rack.

ITP100

NOTES

A pneumatic interlock has been built into a standard truck socket by adding an air valve and plunger.

The simple and compact design automatically provides a pneumatic signal when the scully plug is connected before loading.

Latest generation tankers use this interlock to automatically inflate air suspension and raise bottom loading valves to correct height for filling.

Signal may be used to initiate other functions as required.

TECHNICAL DATA

3/2 poppet valve

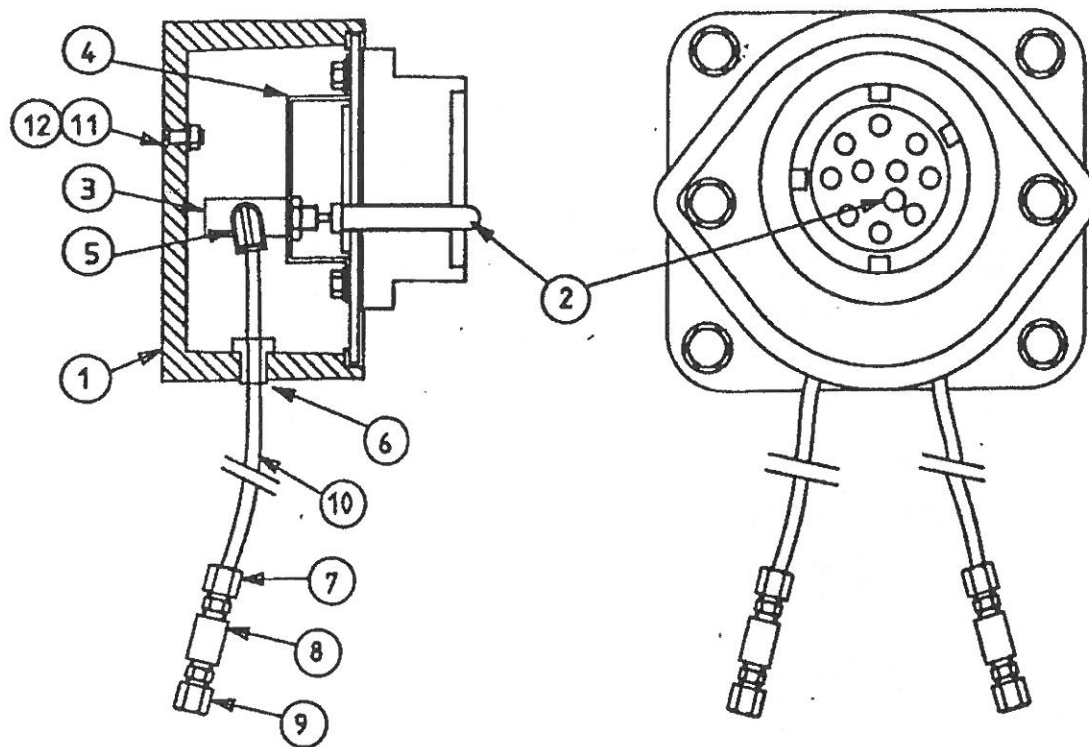
Delrin plunger

1/4" air line connections



Equipment for liquid handling, storage and transport

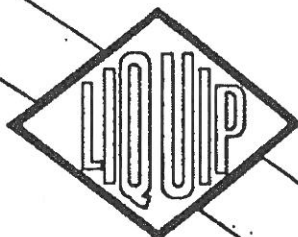
LIQUIP ASSY - ITP100



ITEM	PART NO	DESCRIPTION	MATERIAL	QTY/ASS
1	P2938	TRUCK PLUG	ALUM.	1
2	ITP100-1	PUSH ROD	DELRIN	1
3	P5622	AIR VALVE	BRASS	1
4	ITP100-2	BRACKET	M/S Z/P	1
5	P5621	PUSH-IN ELBOW M5 X 4mm	BRASS	2
6	P5618	GROMMET	RUBBER	2
7	P5619	COMP. FITTING 4mm X 1/8" BSP	BRASS	2
8	P0623	1/8" BSP SOCKET	M/S	2
9	P1888	COMP. FITTING 1/4" X 1/8" BSP	BRASS	2
10	P5620	AIR LINE 4mm	NYLON	1
11	P0036	SCREW C'SINK 3/16" X 1/2"	M/S Z/P	1
12	P0153	NUT NYLOCK 3/16"	M/S Z/P	1

* Optional:-converts 4mm air line to 1/4" air line.

METERS VALVES VENTS MANHOLES PUMPS HOSE REELS OVERFILL PROTECTION



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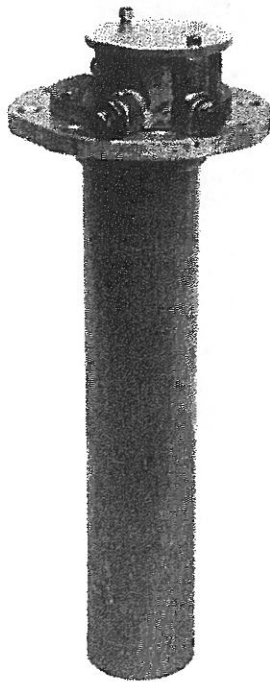
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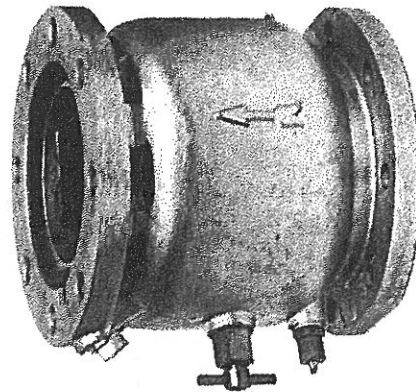
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LIQUIP

SENING OVER-FILL PROTECTION



FLOAT VALVE
HA NV3



AIR OPERATED
LINE VALVE
DV80 (75 mm)
DV100 (100 mm)

TYPICAL APPLICATIONS

ROAD TANKERS
RAIL TANKS
STORAGE TANK
BARGES
SULLAGE TANKS
UNDERGROUND TANKS
BATCHING TANKS
CHEMICAL TANKS

NOTES

A new and exciting concept in tank over-fill protection for both mobile and static installations.

ROAD — RAIL — STORAGE TANK

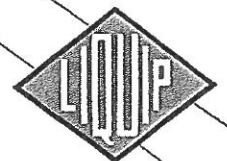
The basic unit features a float mounted on top of the tank and an air-operated in-line valve in the tank inlet pipework. The pipeline valve is spring closed, air operated, being controlled by a 3-way pneumatic valve in the float assembly. As the liquid level in the tank rises, the float lifts and switches the pneumatic valve to close off the pipeline valve. Uniquely this is achieved by a magnet operating through a membrane which completely seals the tank from atmosphere.

OPTIONS and RELATED EQUIPMENT

- * No electricity required.
- * Air supply from site or from vehicle.
- * Suitable for all petroleum and most chemical products.
- * Simple, reliable and lightweight
- * Easy to install and maintain.
- * Adjustable height.
- * May be linked in various networks.
- * All air valving design and components can be supplied by Liquip.
- * Unique magnetic actuation allows complete sealing of tank.
- * Very low pressure drop through line valve.

TECHNICAL DATA

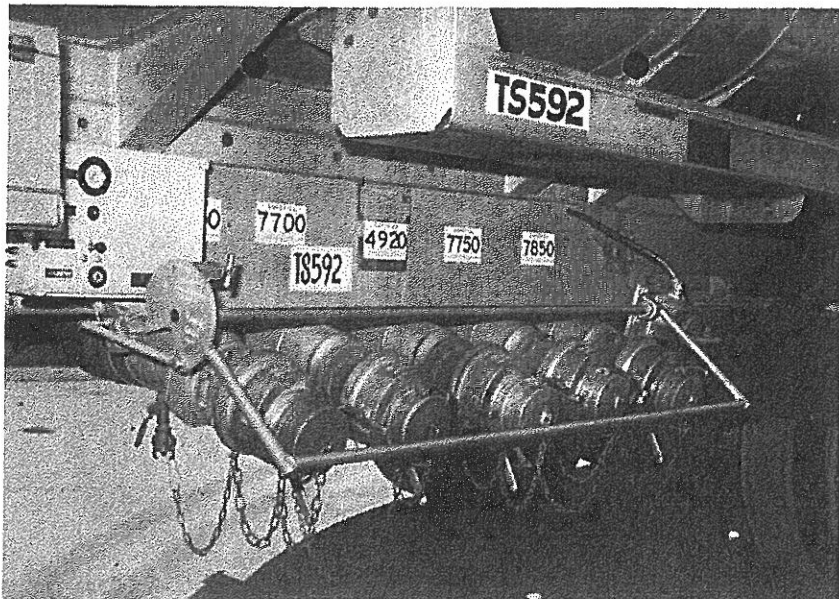
- * Epoxy float with aluminium body.
- * Line valve aluminium, Viton seals, flanged TTMA.
- * Height repeatability ± 1 mm.
- * Air supply pressure 350 kPa min, 1000 kPa max.
- * Line valve working pressure 1000 kPa
- * Operates with over 100 metres separation from float valve to line valve.
- * Response time to close line valve from 1.0 seconds (1 metre separation) to 12.0 seconds (100 metres separation).



Equipment for liquid
handling, storage
and transport

LIQUIP

VAPOUR INTER-LOCK GATE



GC100

A STANDARD GATE FOR ALL TANKERS

- * A bar across the outlet valves has become the standard method of inter-locking functions on a road tanker.
- * The GC100 is a do-it-yourself Universal Kit, fitting virtually any tanker with no welding required.
- * Bolts onto standard 100 mm API flange.
- * Supplied at full length — simply cut back for shorter systems.
- * Built-in cam to operate your choice of air valve, and over-centre spring for safety with positive lock.
- * Rides on Ball-bearings.
- * Lightweight yet very robust.

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



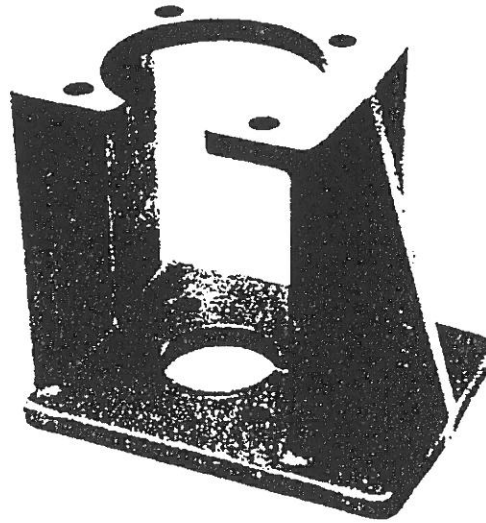
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BELL HOUSING



TYPICAL APPLICATIONS

MOUNTING OF
HYDRAULIC
MOTORS
TO V25 PRODUCT
PUMPS.

**BH2.5-1
BH2.5-2**

NOTES

**BELL HOUSING FOR MOUNTING A HYDRAULIC DRIVE TO
V25 EBSRAY PUMP.**

- * A strong, close tolerance machined Bell Housing that aligns the pump and motor without shims and provides self-centering.
- * The housing is designed to locate on a spigot machined on the pump bearing cap on one end and locate on the hydraulic motor spigot at the other end. This perfectly lines-up the shafts both concentric and parallel. Also provided is a large "V" slot in the lower spigot area to prevent any build up of dirt that may affect the pump seal.
- * Bell housing BH2.5-1 has been designed to be used in conjunction with a Lamborghini hydraulic motor and flexible coupling.
- * Bell housing BH2.5-2 has different drilling to accept Danfoss or Charlynn 'H' series 4-bolt mount.

OPTIONS AND RELATED EQUIPMENT

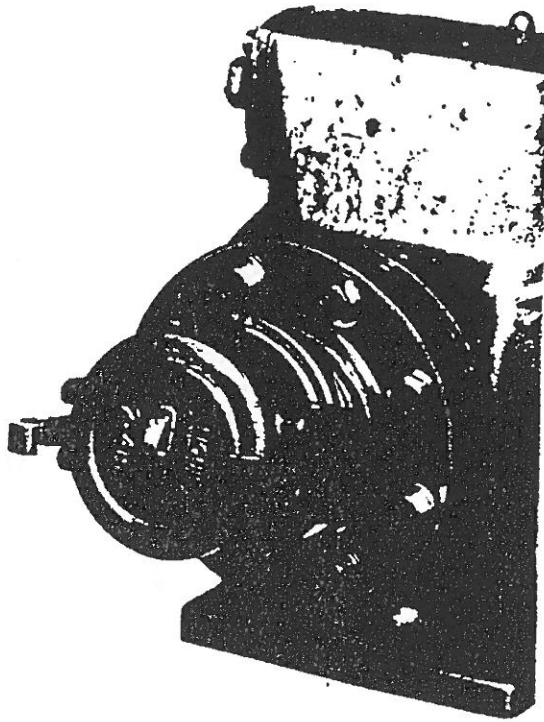
P2439	Coupling spider.
P2436	Coupling half 30mm bored to suit V25 pump.
P2435	Coupling half 20mm bored to suit Lamborghini hydraulic pump.
P2437	Coupling half 25.4mm bore top suit Danfoss or Charlynn hydraulic motors.
P1274	Lamborghini hydraulic pump.



Equipment for liquid
handling, storage
and transport

LIQUIP

50mm SIGHTGLASS STRAINER



ILS2.0-V20

TYPICAL APPLICATIONS

INLINE STRAINER
ON INLET SIDE
OF V20 PUMP

NOTES

This is a simple and compact strainer for use with the V20 pump.

The sightglass side of the strainer bolts directly to a 75mm TTMA flange.

Strainer basket is 1500 micron mesh to trap any debris that could enter the pump and damage it.

Construction permits visual inspection of the strainer through the sightglass, eliminating the need to remove inspection covers.

Inlet side of strainer is normally fitted with Liquip flanged camlock.

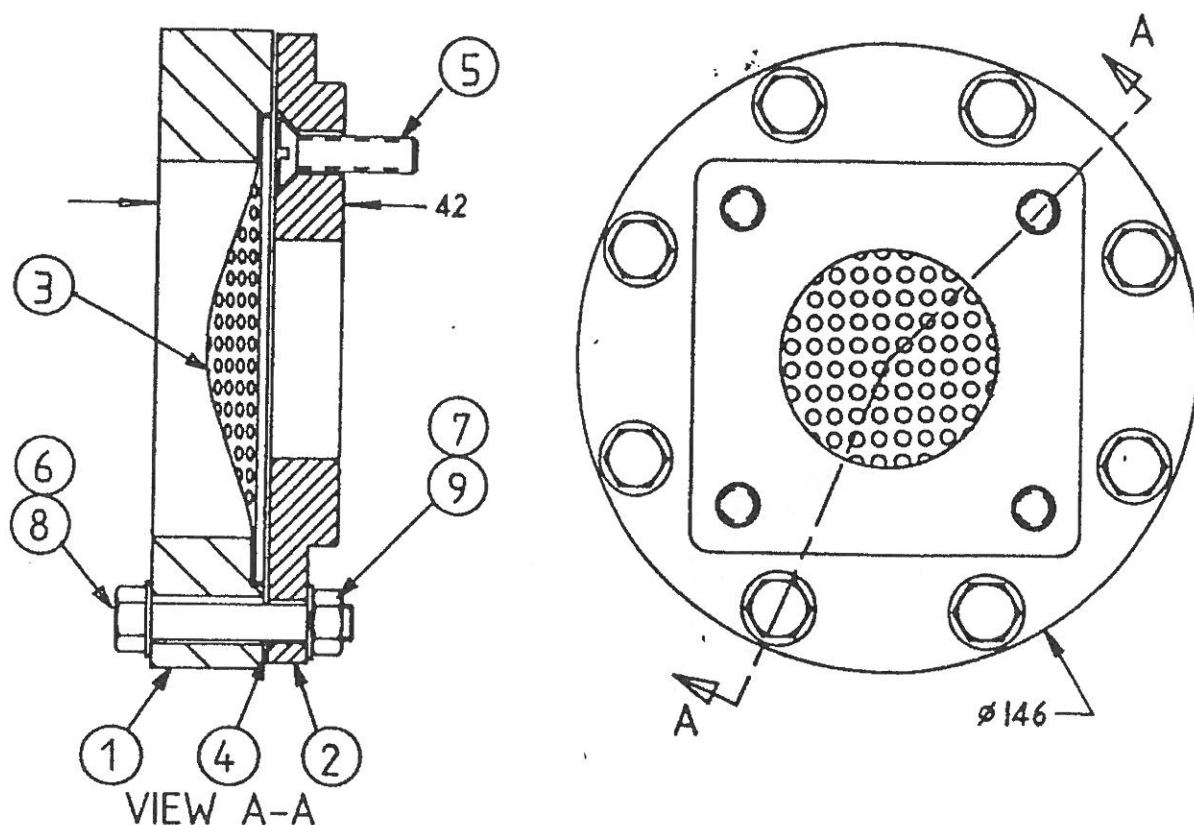
MC2-V3	(50mm camlock)
MC2.5-V3	(63mm camlock)
MC3.0-V3	(75mm camlock)



Equipment for liquid
handling, storage
and transport

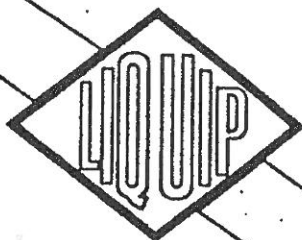
LIQUIP

ASSY ILS2.0-V20



ITEM NO	PART NO	DESCRIPTION	MATERIAL	QTY/ASS
1	ILS2.0-V20-3	SIGHT GLASS	ACRYLIC	1
2	ILS2.0-V20-1	FLANGE	ALUM.	1
3	ILS2.0-V20-2	STRAINER	M/S Z/P	1
4	P0656	GASKET	NEOCORK	1
5	P4836	CAPSCREW C'SINK 3/8"BSW X 1"	H/T STEEL	4
6	P0026	SCREW 3/8"BSW X 2 1/4"	Z/P STEEL	8
7	P0130	NUT 3/8"BSW	Z/P STEEL	8
8	P0102	WASHER FLAT 3/8"	Z/P STEEL	8
9	P0109	WASHER SPRING 3/8"	Z/P STEEL	8

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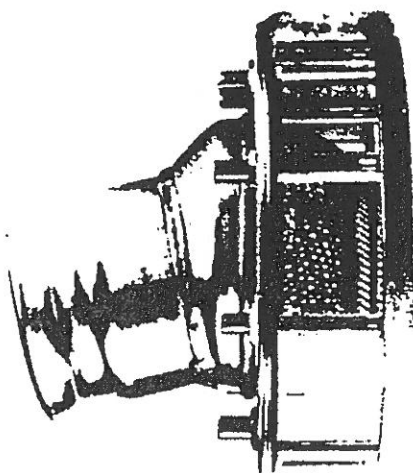
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185

LIQUIP

VISI - STRAINER



TYPICAL APPLICATIONS

EXTREMELY COMPACT
LIGHTWEIGHT STRAINER
FOR PUMP APPLICATIONS.
INCORPORATES SIGHT-
GLASS TO IDENTIFY
CONTENTS AND SHOW
DIRT ENTRAPMENT.

THE ILS2.5 STRAINER ASSEMBLY CAN BE USED WITH THE BF4-2.5A FLANGE TO SUIT EBSRAY V25 PUMP. ALTERNATIVELY BF4-SERIES FLANGES MAY BE USED TO SUIT VARIOUS PIPE SIZES AND MATERIALS.

THE ILS2.5-SG ACRYLIC SIGHT GLASS ENABLES QUICK AND CONVENIENT INSPECTION FOR DIRT IN THE BASKET PLUS SHOWS THE COLOUR OF THE PRODUCT FOR QUICK IDENTIFICATION. SAFETY IS IMPROVED BY HAVING CONFIRMATION THAT THE HOSE MAY BE DISCONNECTED WHEN PIPE IS EMPTY.

THE ASSEMBLY INCORPORATES A SUCTION CAMLOCK.
THE LBV4-V BUTTERFLY VALVE IS OPTIONAL.

NOTES

OPTIONS AND RELATED EQUIPMENT

THE BUTTERFLY VALVE (ITEM 3) IS OPTIONAL.
INCORPORATES YOUR CHOICE OF CAMLOCK CONNECTION.
VARIOUS BF4-SERIES FLANGES (ITEM 6) TO SUIT SIZE AND MATERIAL.

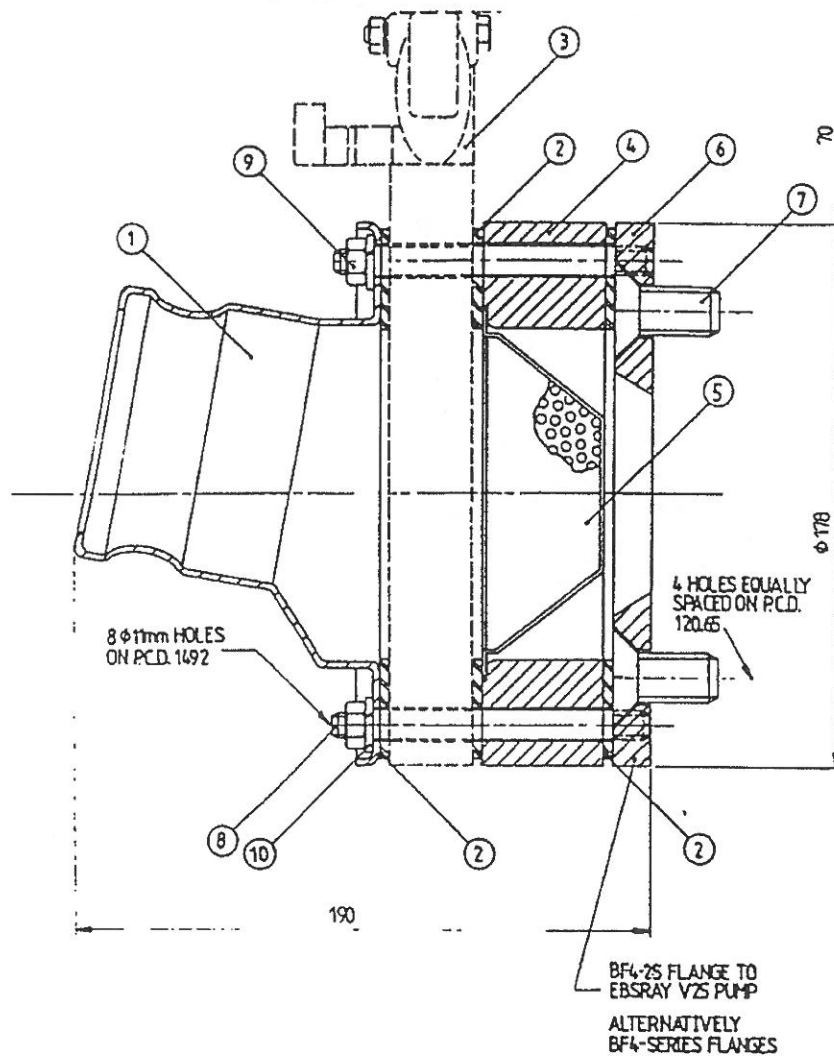
TECHNICAL DATA

STRAINER BASKET -
ZINC PLATED STEEL, 2060 MICRON HOLES.
SIGHT GLASS - ACRYLIC.
FLOW AREA THROUGH MESH
EQUIVALENT TO 70MM IN DIAMETER.



Equipment for liquid
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LIQUIP ASSEMBLY ILS 2.5



ITEM	DESCRIPTION	QTY	PART NO
1	CAMLOCK	1	MC3-V4 10 deg
2	NEO CORK GASKET	3	P0657
3	BUTTERFLY VALVE	1	LBV4-V
4	ACRYLIC GLASS FLANGE	1	ILS2.5-SG
5	STRAINER ZINC PLATED	1	ILS2.5-1
6 *	FLANGE	1	BF4-V25A
6	BF4-SERIES FLANGE TO SUIT SIZE	1	VARIOUS
7 *	M16 x BN00DB 02453503 UNBRAKD SCREWS	4	P 3.2.5.1
8 **	STUD 3/8" x 4" BSW ZINC PLATED	8	P 3.2.5.1
8	STUD 3/8" x 2-3/4" BSW ZINC PLATED	8	P 3.2.5.6
9	NUT 3/8" BSW ZINC PLATED	8	P0130
10	SPRING WASHER	8	P0109

- * SPECIFY FOR DIRECT MOUNT TO V25 PUMP
 ** USE LONG STUDS IF LBV TO BE FITTED

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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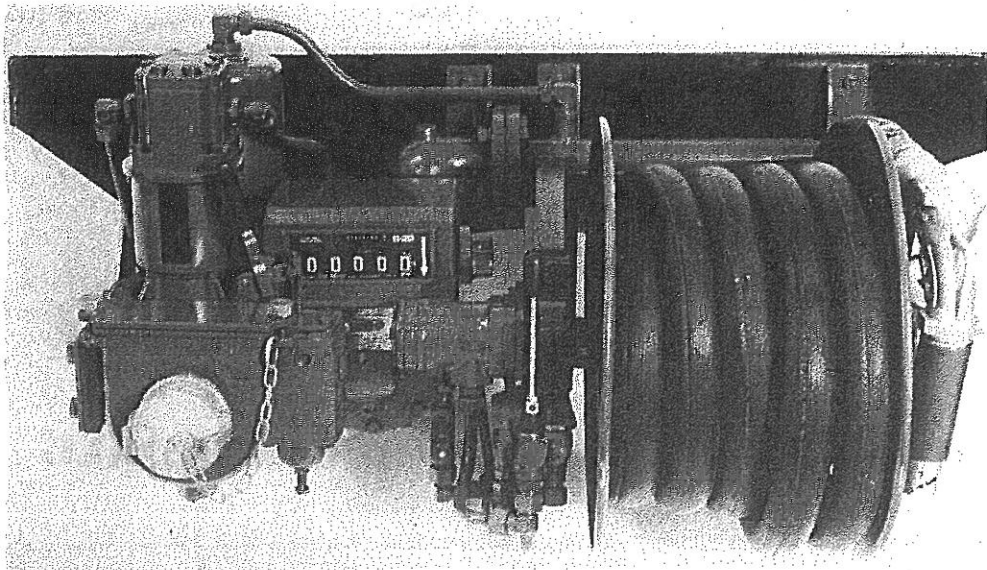
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LIQUIP

PACKAGED PUMPING UNIT



LIQUIP HI-FLOW/LO-FLOW FOR HI PROFITS WHEN PUMPING

420 LITRES PER MINUTE PACKAGED — JUST BOLT-ON

SELF-CONTAINED HYDRAULIC DISPENSING PACKAGE WET TESTED AND CALIBRATED READY FOR FITTING.

Traditionally dispensing systems have been hand crafted around each chassis.

Liquip's package not only allows off-truck building but it can easily be changed from chassis to chassis (just disconnect hydraulic hoses and unbolt from chassis rail) and in the specification illustrated it will deliver over 420 l/min. A special control valve is fitted to allow either full flow rate through nozzle or a slow rate at 180 l/min. and lower pressure for small farm drops.

Specification can be varied to suit customer but standard unit has hydraulic rewind hose reel, hydraulic drive EBSRAY V25 pumps, SBM75 meter, and 18 metres of 38 mm hose and nozzle. Connection is 75 mm camlock on integral strainer.

OPTIONS and RELATED EQUIPMENT

Liquip can build your precise requirements for a pumping system that will do exactly what you want it to do. There are unlimited variations of design. We manufacture everything from 20 l/min. flow rate through to 1500 l/min. plus.

TECHNICAL DATA

N.S.C. approved.
Up to 600 kPa pressure.
Flow rates can be set to customer requirements.
Weight 230 kg.
Size 650 x 650 x 1150 long.

TYPICAL APPLICATIONS

A PACKAGE FOR METERING FUELS AND DELIVERING BY HOSE REEL. TRUCK MOUNT TRAILER MOUNT STATIC INSTALLATIONS AVIATION REFUELLING.

NOTES



Equipment for liquid handling, storage and transport

LIQUIP PUMPS

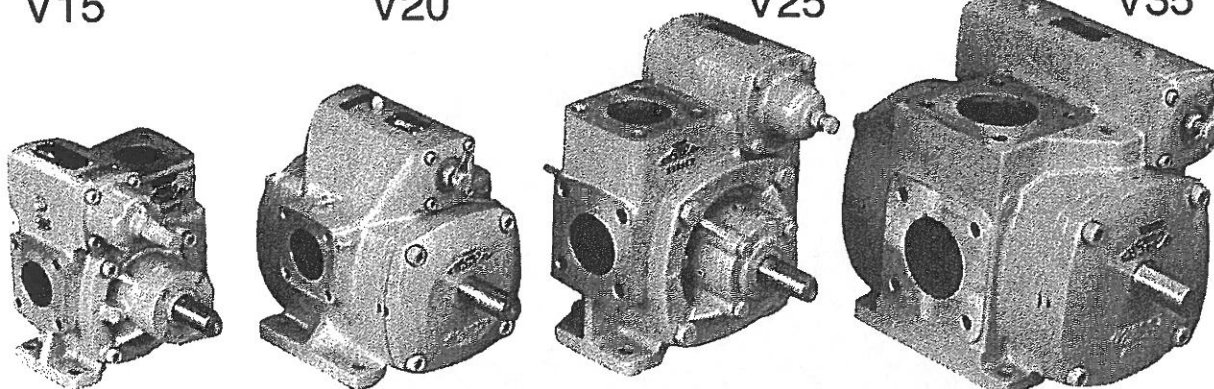
SLIDING VANE PUMPS

V15

V20

V25

V35



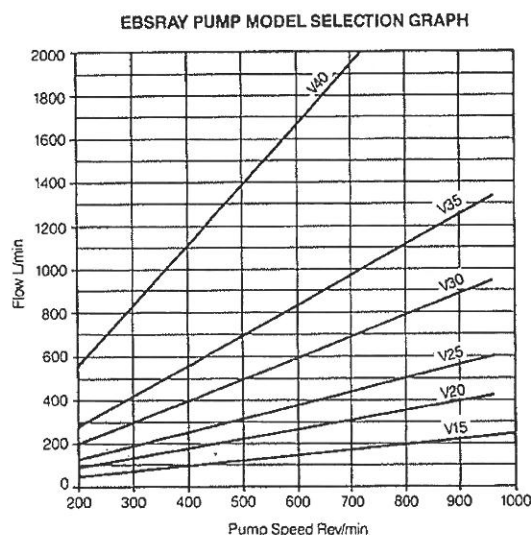
EBSRAY PUMPS FOR FUELS AND CHEMICALS

V SERIES

Highly efficient self priming Positive Displacement Sliding Vane Pumps for low to medium viscosity lubricating and non-lubricating liquids. Designed and precision built to optimise all the advantages of the simple Sliding Vane action.

Automatic compensation for vane wear assures the pump will maintain its superior priming operation and line stripping ability over a long service life. Smooth output flow ensures quiet operation within the NPSH range. The pumps can be direct connected to synchronous speed motors.

EBSRAY PUMP MODEL SELECTION GRAPH



Fields of Application

Road tanker mounting and fixed installation loading and unloading of Petroleum products such as: petrol, distillate, aviation fuels, lubricating oils, LP Gas, chemicals, solvents and edible oils.

Pumps can be driven directly from PTO's or by hydraulic motors. For depot or storage pumping, close coupled electric drive motors are also available.

Range of Performance

Flow to 106 L/s.
Pressures to 1050 kPa.
Viscosities to 10,000 cSt.
Temperatures to 100°C.

Constructional Features

- Replaceable wearing components.
- Balanced mechanical seals/ wave pattern lip seals.
- Positive axial location of rotor.
- Multiple porting arrangements.
- Integral Bypass Valve — adjustable.
- Standard or lightweight. Compact and robust.

Materials of Construction

Casing — Cast iron, SG iron, Aluminium.
Rotor — High tensile cast iron.
Vaness — Synthetic.
Liner — Cast iron.
Shaft — Alloy steel induction hardened or stainless steel.
Special materials to Specification.

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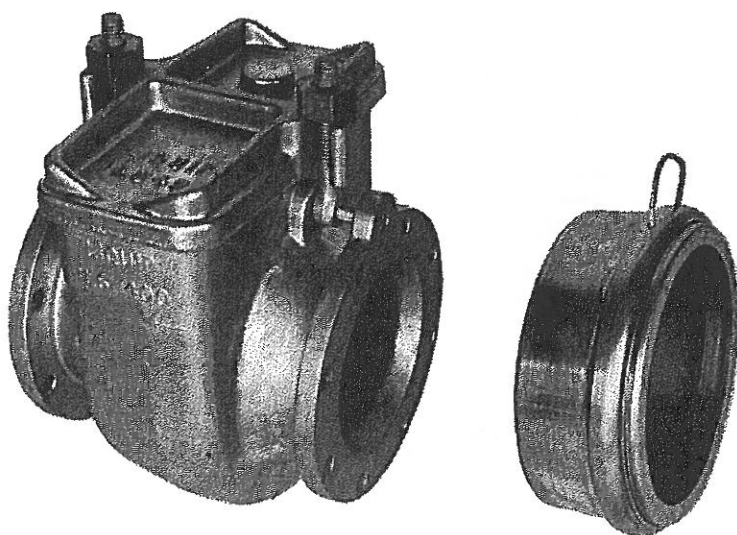
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LIQUIP

STRAINERS



ILS400

LIGHTWEIGHT SUCTION LINE STRAINER FOR 76 mm and 102 mm DIA.

- A strainer for the larger pumps such as those fitted to large vehicles and prime movers for bulk industrial deliveries.
- All-metal construction for reliability.
- Strainer basket can only be fitted for correct direction of flow — drain bosses provided in body and lid to suit any mounting angle.
- Liquip LBV-4 butterfly valve bolts directly onto either flange and the full range of BF series weld flanges is available.
- Special adaptor flanges for 76 mm dia. pipelines also available — see overleaf.
- Available to aviation standard on special order.

OPTIONS and RELATED EQUIPMENT

See Steel Strainers in "Terminal and Depot" section.

Small strainers overleaf.

Liquip manufacture strainers from 50 mm to 200 mm diameter.

TECHNICAL DATA

Max. working vacuum to 90 kPa.

Max. working pressure to 700 kPa.

Cast alum. body and lid.

Steel mesh with alum. surround.

Buna seal.

Standard mesh size 1.5 mm dia. perforations (1500 microns).

Weight 4.7 kg.

TYPICAL APPLICATIONS
A LIGHTWEIGHT INEXPENSIVE ALUMINIUM STRAINER TO PROTECT EQUIPMENT SUCH AS METERS AND PUMPS FROM DEBRIS. COMMONLY USED ON TRUCKS WHERE SIZE AND LIGHTNESS ARE EXTREMELY IMPORTANT.

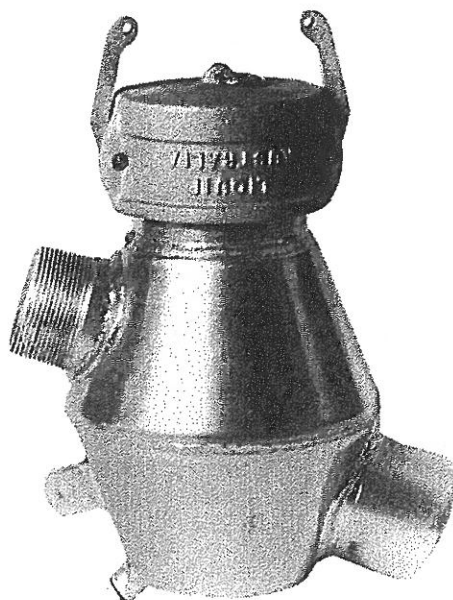
NOTES



Equipment for liquid handling, storage and transport

LIQUIP

SMALL STRAINERS



LS series

LIGHTWEIGHT SUCTION LINE STRAINERS UP TO 63 mm DIA.

- Every pump should have a strainer fitted to the suction inlet to prevent damage through ingestion of objects such as nuts and bolts, weld slag, etc. The LS series is ideal for dispensing systems.
- These strainers incorporate the simplest possible cleaning method — simply remove the camlock cap to extract the strainer basket.
- The two versions are identical except for connection method, being compact, lightweight and having drain plugs as standard.
- Basket mesh is available in many different grades according to working conditions. 600 micron (30 mesh) is supplied as standard.
- Inlet connection is male BSP, outlet female BSP to bore size.

MODEL	BORE DIA. mm	WEIGHT kg
LS150/S	38	3.0
LS200/S	51	3.1
LS250/S	63	3.2

OPTIONS and RELATED EQUIPMENT

See other sections for steel and aluminium strainers in 75 mm, 100 mm, 150 mm and 200 mm sizes.

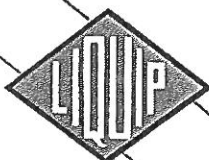
TECHNICAL DATA

Max. vacuum 80 kPa.

Max. working pressure 700 kPa.

Plated steel body, aluminium cap.

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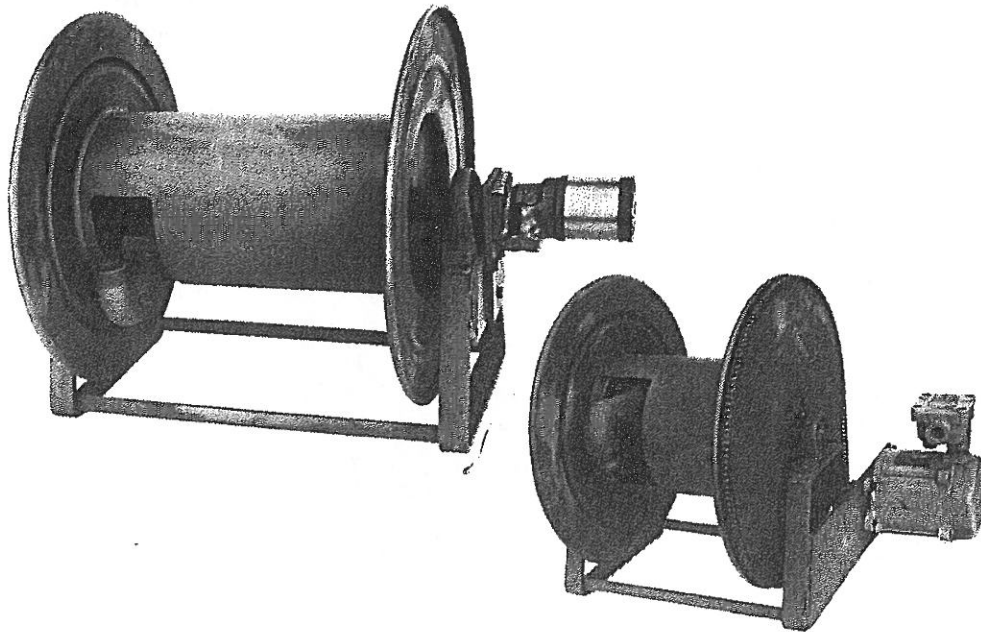
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LIQUIP

HOSEREELS DRUM TYPE



TYPICAL APPLICATIONS
PETROL, FUELS,
LUBE OILS,
WATER
SOLVENTS, LPG,
GASES.

The basic Liquip drum-type hosereel adapts to a variety of drive mechanisms, hose length and products.

All enjoy the same robust construction: stiffened steel cheek-plates, extremely sturdy thick-wall manifold with added strength from steel inner drum, steel base frame and self-aligning bearings. Flow area is equal to 38 mm throughout. Standard sealing is by dual lip-seals, and all models incorporate a lock.

Standard sizes are given in table below.

FR12 — FR18 — FR24 Hand rewind by bevel gear drive.

ER12 — ER18 — ER24 Electric motor rewind by 12 volt or 24V d.c. motor, with switch.
Fully flameproof for use with flammable liquids.

HR12 — HR18 — HR24 Hydraulic rewind with hydraulic motor direct-driving onto end of manifold. Ideal when hydraulic power is already available.

SR12 Spring rewind with ratchet "pull-to-release" mechanism. In SR12 model only as maximum hose length retrievable is 15 metres.

Swivels Special swivels are fitted for LPG, high pressures and awkward chemicals.

*Using 32 mm (1¼ inch) hose

MODEL	HOSE CAPACITY * METRES	OVERALL HEIGHT	OVERALL WIDTH	OVERALL LENGTH	DRUM LENGTH	DRUM DIA.	CHEEK-PLATE DIA.	WEIGHT kg (NO HOSE)
FR12	30	580	580	510	305	254	550	30
FR18	45	580	580	660	460	254	550	33
FR24	60	580	580	815	610	254	550	36

NOTES

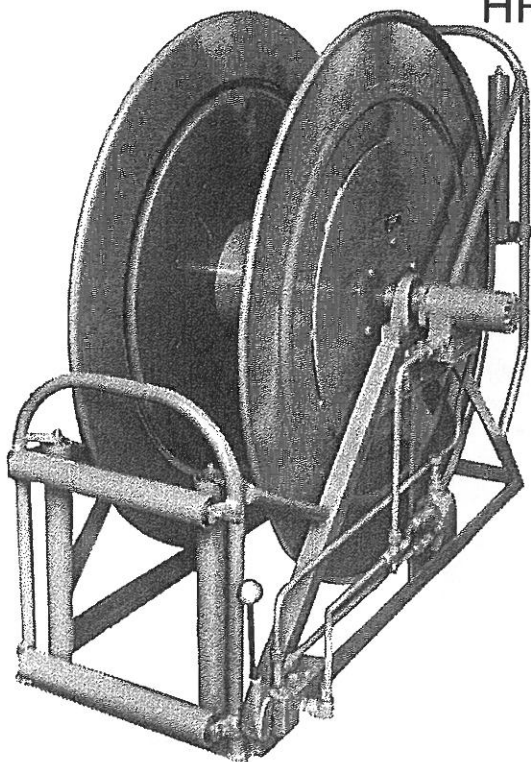


*Equipment for liquid
handling, storage
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LIQUIP

HOSEREELS CARTWHEEL TYPE

HR6
HR9



ER6
ER9



TYPICAL APPLICATIONS
WHEN EXTRA LONG HOSE IS TO BE USED AND SPACE IS LIMITED. e.g. CARTWHEEL FITS EASILY BETWEEN CAB AND TANK ON A ROAD TANKER.

NOTES

Available in hydraulic or flameproof electric motor drive (12V or 24V) and with a drum width of 150 mm or 225 mm, the cartwheel reel carries long hoses yet fits into narrow spaces.

Construction is similar to the drum type overleaf. Hose guide rollers are supplied as standard, and the hose can be pulled out from either side of the reel.

Details of ER6 and ER9 are similar to those for hydraulic models in table below.
*Using 32 mm (1¼ inch) hose

MODEL	HOSE CAPACITY* METRES	OVERALL HEIGHT	OVERALL WIDTH	OVERALL LENGTH	DRUM LENGTH	DRUM DIA.	CHEEK-PLATE DIA.	WEIGHT kg (NO HOSE)
HR6	60	1150	1350	550	150	254	1100	175
HR9	100	1150	1350	625	225	254	1100	180

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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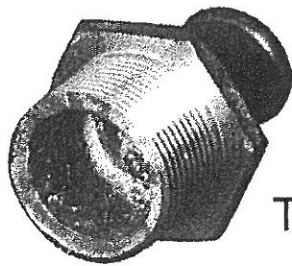
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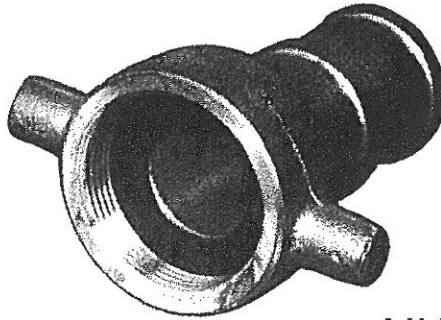
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LIQUIP

SMALL HOSE FITTINGS



TAILS



NUTS

TYPICAL APPLICATIONS
HOSEREELS.

OVERHEAD TANK
HOSES.

SMALL PUMP AND
METER SYSTEMS.

NUTS AND TAILS WITH BSP THREADS

- NUTS provide a swivel nut with a shouldered hometail for connection to male BSP threads such as Liquip hosereel outlets.

PART No.	SIZE
N1.0-T1.0	25 mm female BSP with 25 mm tail
N1.25-T1.25	32 " " " " 32 " "
N1.5-T1.0	38 " " " " 25 " "
N1.5-T1.25	38 " " " " 32 " "
N1.5-T1.5	38 " " " " 38 " "

- TAILS are brass adaptors from male BSP thread to hose-tails.

M1.0-T1.0	25 mm male BSP with 25 mm tail
M1.25-T1.0	32 " " " " 25 " "
M1.25-T1.25	32 " " " " 32 " "
M1.5-T1.5	38 " " " " 38 " "

Other combinations, large sizes and different materials also available.

LIQUIP HAS A FULL RANGE OF HOSES

- HOSE is supplied loose, to length, or assembled with specified fittings. All assemblies are pressure-tested prior to despatch and checked for electrical continuity if for flammable liquids use.

The following common types are held in stock:

- Code 1,000 for petroleum products.
- Code 951 for chemicals.
- Blue Heliflex plastic for chemicals.
The above in 25 mm to 150 mm bore.
- Rubber lined for hosereel use on dispensing equipment.
25 mm to 50 mm bore.

Other types readily available to order.

NOTE!

See following section for full range of Camlock couplers.

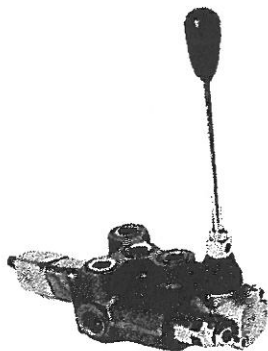
NOTES



*Equipment for liquid
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LIQUIP

PUMP FITOUT ACCESSORIES



Hydraulic hand control.
Detent for pump run and
spring loaded control for
hosereel rewind.
Built-in by-pass.

Order as part number
P0415.

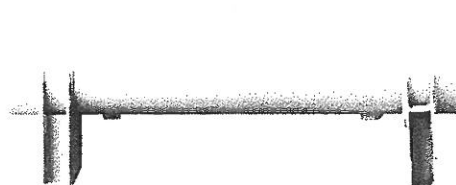


Hydraulic in line filter assy.

Model No. P0411.

Threaded 25 mm BSP (F).

Replacement Cartridge P0416.

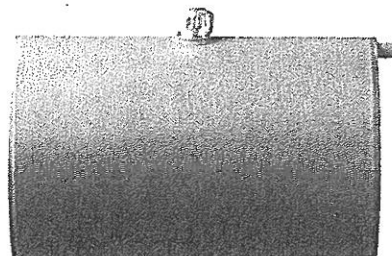


Hydraulic Reservoir tank 158 litres.

For back of cab mounting.

Comes complete with breather cap and
mountings.

CONSULT LIQUIP FOR YOUR
REQUIREMENTS.

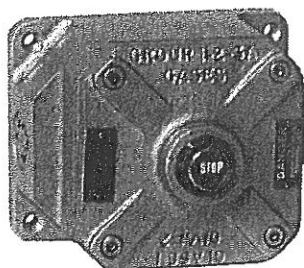


Hydraulic Reservoir tank 122 litres.

For chassis mounting.

Comes complete with breather cap and chassis
mounting bkts.

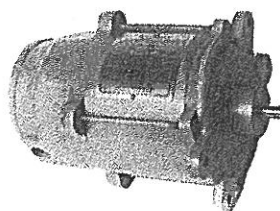
Order as P2935.



Electric Hosereel
Rewind Switch.

12 volt or 24 volt,
flame proof.

Part number P1334,
12 volt or 24 volt.



Electric Hosereel Rewind
Motors

12 volt and 24 volt.

Part No. P1335 12 volt.

Part No. P1336 24 volt.

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



LIQUIP SALES PTY. LTD.

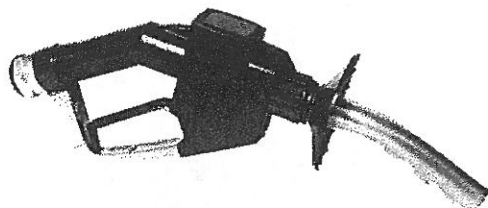
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DISTRIBUTORS

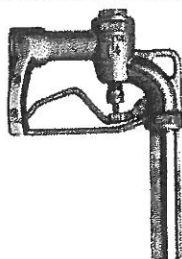
See inside front cover
for Liquip branches
and Distributors

LIQUIP

NOZZLES



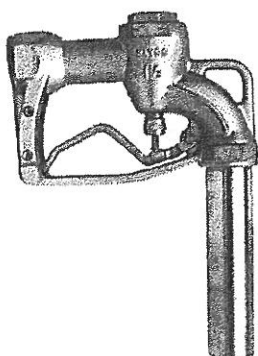
25 mm \varnothing Automatic nozzles for bowser in Super and U.L.P.



114-D Manual and Automatic (32 mm)

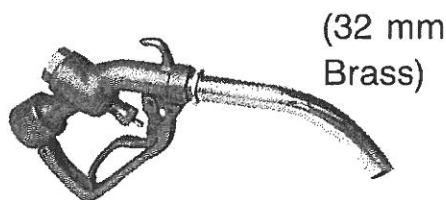
TYPICAL APPLICATIONS FOR LIQUID DISPENSING

- * Fuel Truck
- * Bowser
- * Drum filling
- * Mines
- * Farm trade
- * Chemical plants
- * Refineries



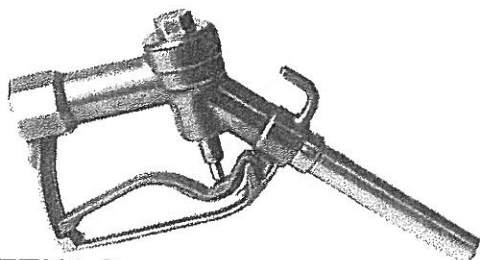
112-D Manual and Automatic (38 mm)

Identical to the 114-D but is 38 mm. Also available as Automatic.



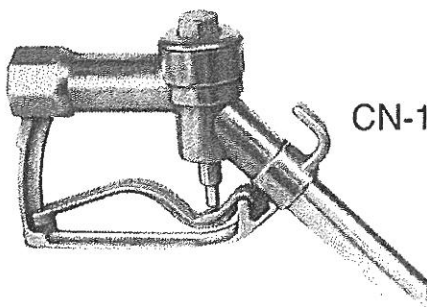
(32 mm Brass)

All Brass nozzle. Ideal for underground mines, etc., where Aluminium is forbidden. An excellent robust nozzle. Manual only.



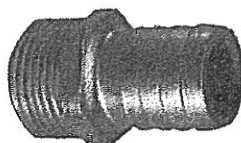
FTN1.0

These nozzles are for gravity flow applications: ideal for farm tank, etc. 25 mm \varnothing , also available in U.L.P. style. Aluminium construction.



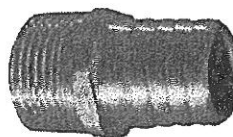
CN-1

25 mm Concrete Wash nozzle designed for Agitator Wash down. Has special spout to provide a jet of water.



FTN1-T1

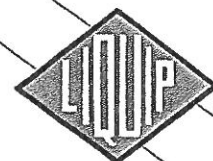
Hose tail in all Aluminium for farm trade nozzles.



CN1-T1

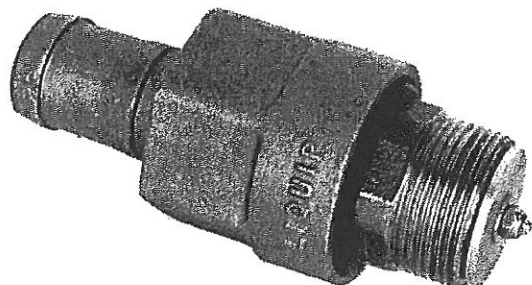
Hose tail in machined Aluminium for concrete wash nozzles only.

NOTES



Equipment for liquid handling, storage and transport

LIQUIP NOZZLE SWIVELS



SJ1.25



SJ1.5

A SWIVEL JOINT TO CONNECT HOSE TO A NOZZLE

- To minimise twisting and kinking, hoses should be connected to a nozzle with a swivel joint.
- Designed specifically for dispensing systems, the swivel incorporates a check valve (mandatory under N.S.C. regulations) to retain residual pressure in the hose.
- Integral hose tail for 32 mm i/dia. hose. Can be supplied for other less common sizes to special order.
- Easy maintenance — simply remove one circlip to disassemble.

OPTIONS and RELATED EQUIPMENT

38 mm dia. unit also available, without check valve for larger systems.

Order as SJ1.50.

TECHNICAL DATA

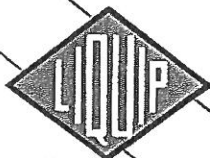
SJ1.25

Poppet opens at 60 kPa.
Thread 32 mm male BSP.
Tail to suit 32 mm i/dia. hose.
Alum. outer body and poppet.
Brass inner body.
Plated steel shaft and spring.
Viton poppet seal, others Buna.
Weight 0.7 kg.

SJ1.5

Thread 38 mm male BSP outlet
and 38 mm female BSP inlet.
NOTE: Does not have integral
hose tail.

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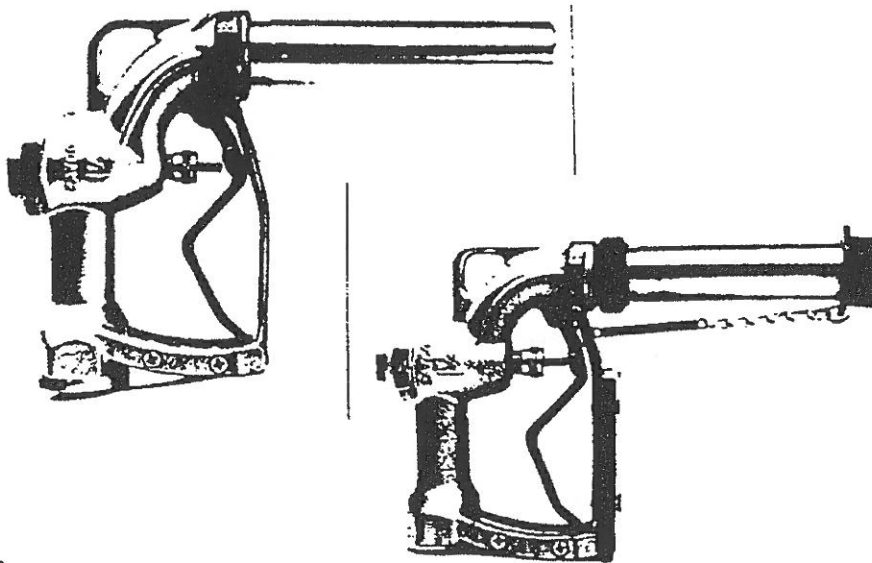
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LIQUIP

NOZZLES - MANUAL



112D
114D
114AVN

- * The 114D and 112D nozzles are available in manual form only.
- * Flow area is equivalent to 32mm diameter for 114D and 38mm for 112D.
- * The 114AVN nozzle is suited for aviation refuelling, it features a bonding clip, dust cap and screw-in strainer of 100 mesh stainless steel. It is suited for flow rates up to 250 LPM.
- * All have dash-pots for ease of control.

OPTIONS AND RELATED EQUIPMENT

SWIVELS

- * SJ1.25 with built in hosetail and hold back valve for 114D.
- * SJ1.5L with hold back valve for 112D.
- * A full range of Gossler swivels are available for aviation use.

SPOUTS (see over)

- * Reduced spouts available on request.
- * Spouts with swivel nuts available on request.

WHEN ORDERING

114D - 32mm manual nozzle.
112D - 38mm manual nozzle.
114AVN - 32mm aviation refuelling nozzle.

TYPICAL APPLICATIONS

FOR LIQUID
DISPENSING.

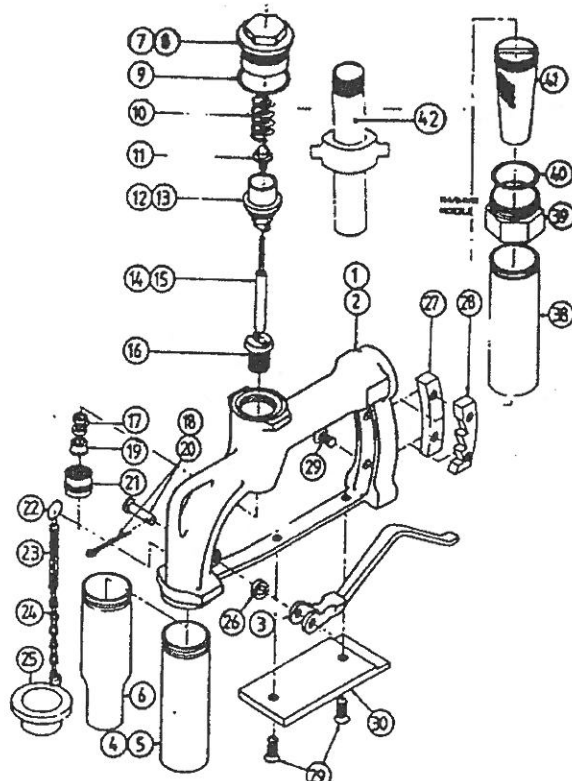
NOTES



Equipment for liquid
handling, storage
and transport

LIQUIP

ASSEMBLY-112D,114D,114AVN



ITEM NO.	DESCRIPTION	PART NO. 114-D	112-D	114AVN
1	body aluminium 1.25 -	P2642		P2662
2	body aluminium 1.50 -		P2679	
3	trigger bronze -	P2658	P2658	P2658
4	spout aluminium 1.25 -	P2682		
5	spout aluminium 1.50 -		P2687	
6	spout rack 1.25 x 1 -	P2711		
7	cap bronze -	P2641		P2661
8	cap bronze -		P2688	
9	o'ring cap -	P0166	P0167	P0166
10	spring stainless steel -	P2644	P2646	P2666
11	second poppet -	P2647	P2647	P2667
12	main poppet 1.25 -	P2648		P2668
13	main poppet 1.50 -		P2716	
14	valve stem 1.25 -	P2659		P2659
15	valve stem 1.50 -		P2717	
16	valve stem guide -	P2678	P2678	P2678
17	valve stem pack -	P2649	P2649	P2649
18	trigger pin mild steel -	P2657	P2657	P2657
19	stem pack sleeve -	P2671	P2671	P2671
20	split pin zinc plated -	P0756	P0756	P0756
21	stem pack nut -	P2672	P2672	P2672
22	key ring zinc plated -			P2727
23	spring -			P2729
24	chain -			P2728
25	dust cap -			P2726
26	trigger bush PVC -	P2643	P2663	P2663
27	trigger space -			P2645
28	trigger ratchet -	P2644	P2644	
29	screw -	P2656	P2656	P2656
30	rust pad -			P2725
38	spout -			P2682
39	adaptor nut -			P2718
40	o'ring (adaptor) -			P0172
41	strainer heavy -			P2681
42	adaptor spout to suit storage tanks c/w 2" loose nut	114D-50		

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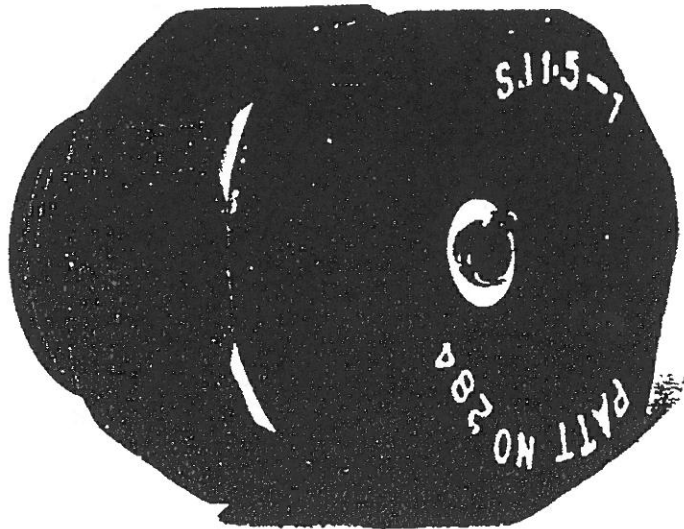
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LIQUIP

NOZZLE SWIVEL



SJ1.5L

A 38 mm SWIVEL TO CONNECT HOSE TO NOZZLE

- * The swivel body is manufactured from light weight aluminium, anodised for long life.
- * The swivel allows a trouble free rotation by the utilisation of ball bearings, thus eliminating thrust and kinking.
- * The swivel incorporates a check valve, to retain residual pressure in the hose. (mandatory under NSC regulations).

OPTIONAL AND RELATED EQUIPMENT

Hosetails (refer page 5/7)

TECHNICAL DATA

- * Anodised aluminium body.
- * Nylon poppet opens @ 35 kpa.
- * Thread 38mm tapered male and female BSP (no seal required)
- * Steel ball bearings.
- * Viton o'rings.
- * Weight 0.55 kg.

TYPICAL APPLICATIONS

CONNECTION OF HOSE TO NOZZLE MINIMISES TWISTING AND KINKING.

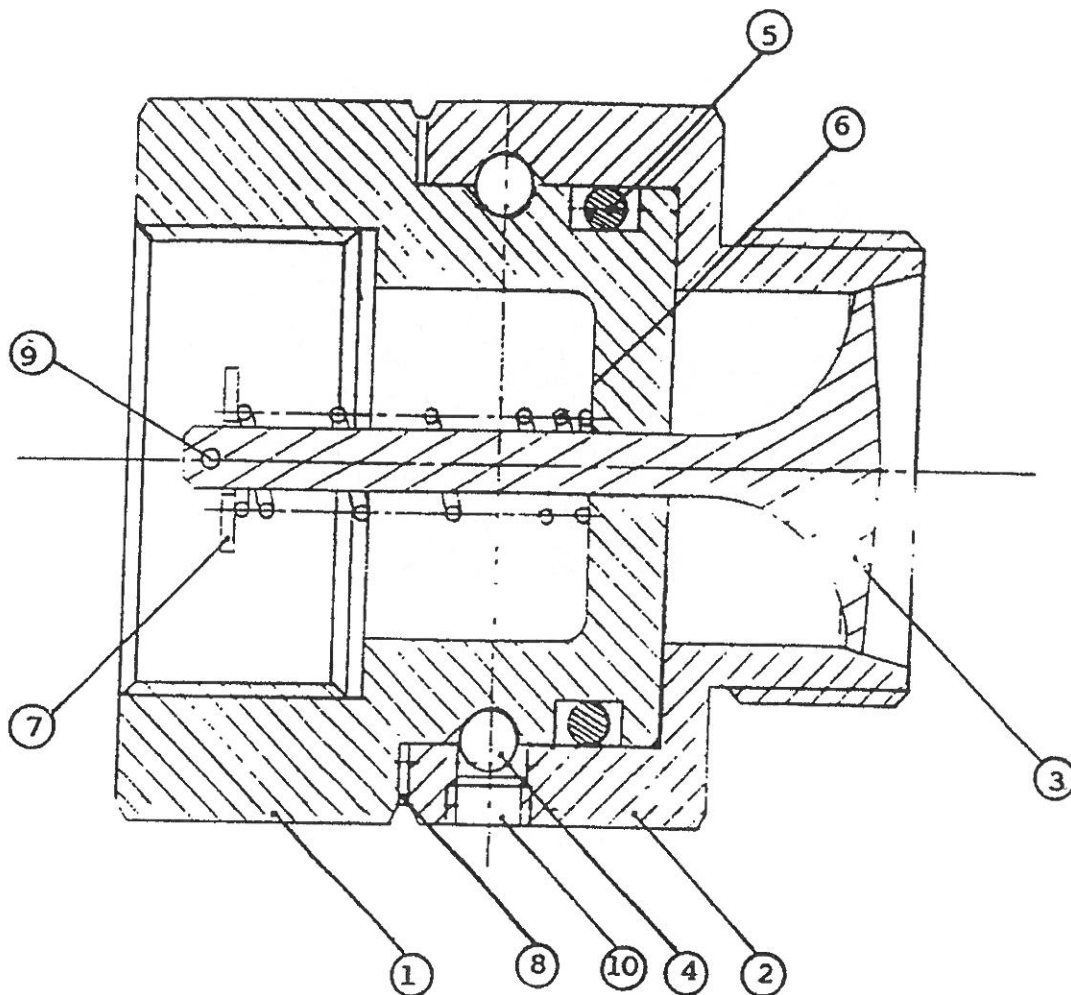
FOR LIQUID DISPENSING.

NOTES



Equipment for liquid handling, storage and transport

LIQUIP



ITEM	PART No.	DESCRIPTION	QTY	MATERIAL
1	SJ1.5L-1	Female body half 38mm	1	cast aluminium
2	SJ1.5L-2	Male body half 38mm	1	Cast aluminium
3	SJ1.5L-3	Swivel poppet	1	Nylon
4	P1031	Ball bearing	28	Steel
5	P4506	O'ring	1	Viton
6	P4404	Spring	1	Stainless steel
7	P4334	Washer	1	Z/P steel
8	P4505	Dust seal	1	Felt
9	P0758	Cotter pin	1	Z/P steel
10	SJ1.5L-4	Retaining plug	1	Brass

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LIQUIP

ANTI - DRIP POPPET



ADP1.25
ADP1.50

The new anti-drip poppet can be incorporated in the 114D and 112D manual nozzle assemblies.

- * Stops the product from dripping once the delivery is complete.
- * Mandatory for various weights and measures departments.
- * Simplicity of installation - (no tools required).
- * Fits into the aluminium spout and is secured by the body of the nozzle.

OPTIONS

ASSEMBLY PART No:	NOZZLE SIZE.	PRESSURE
ADP1.25	32 mm	8.50 kpa
ADP1.50	38 mm	10.50 kpa

TECHNICAL DATA

- * Delrin poppet
- * Aluminium body
- * Stainless steel spring

TYPICAL APPLICATIONS

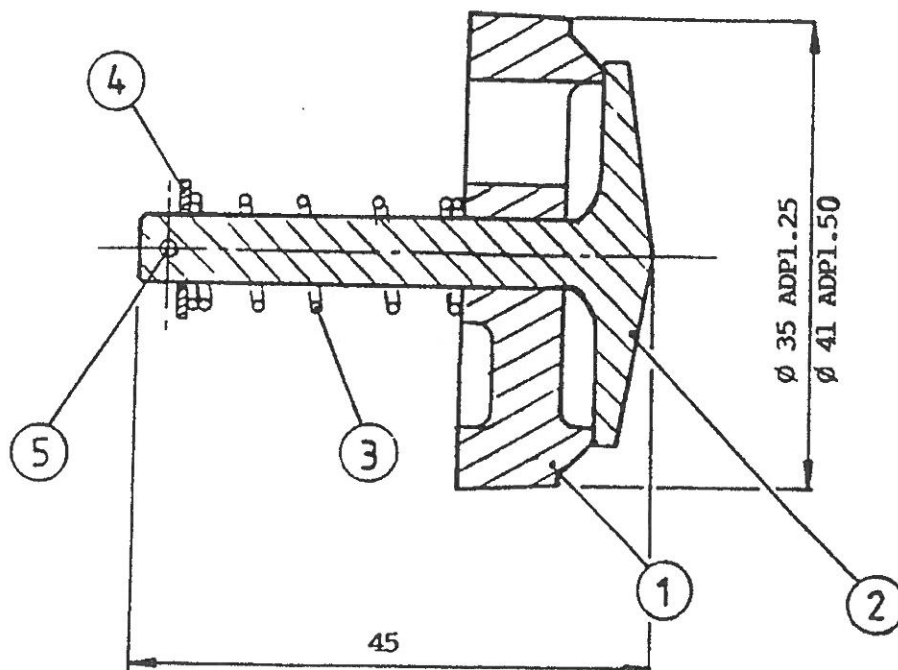
MANDATORY FOR
WEIGHTS AND
MEASURES
DEPARTMENTS.

NOTES



Equipment for liquid
handling, storage
and transport

LIQUIP



ITEM No.	DESCRIPTION	QTY	MATERIAL	ADP1.25	ADP1.5
				PART No.	PART No.
1	Ring	1	Aluminium	ADP1.25-1	ADP1.5-1
2	Poppet	1	Delrin	ADP1.25-2	ADP1.5-2
3	Spring	1	S/Steel	P4402	P4402
4	Washer	1	M/S Z/P	P0101	P0101
5	Cotter pin	1	M/S Z/P	P0757	P0757

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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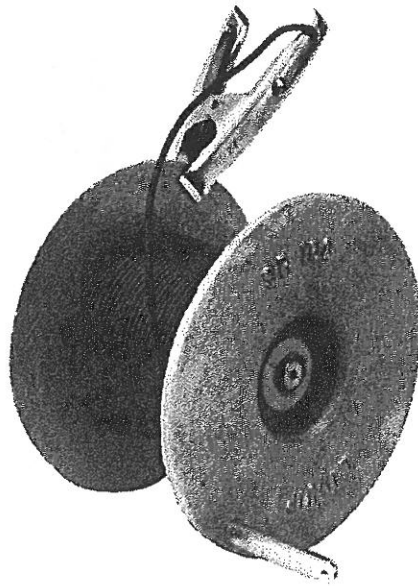
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LIQUIP

STATIC EARTH REEL



SR100

TYPICAL APPLICATIONS
DISSIPATION OF ELECTROSTATIC CHARGES FROM EQUIPMENT PRIOR TO CONNECTING HOSES OR NOZZLES.

STATIC EARTHING REEL FOR ELECTRICAL BONDING

- Electrostatic charges can be generated by a variety of circumstances including product flow and vehicle or aircraft movement. Ignition of flammable vapours is possible by discharge of static at a gap, e.g. as a hose or nozzle is connected or parted.
- The Liquip SR100 provides a ready means of bonding two components with a maximum assurance of continuity. Primary continuity is by a carbon brush bearing on the stainless steel shaft. Secondary paths are through the solid aluminium body to the shaft and also by spring-loaded stainless steel washers to the end face.
- Dust seals (o-rings) protect the assembly internals and graphite grease ensures easy rotation without electrical resistance, and long life.
- Manufactured to your specifications of wire, clamp and crimp fittings.
- Normally supplied with threaded shaft and inner nut locked on. Outer nut and spring washer fit outside your mounting bracket.

NOTES

OPTIONS and RELATED EQUIPMENT

SR101 (225 mm dia.)
holds 50 m of
6 mm dia. wire.

TECHNICAL DATA

Alum. body, carbon brush, balance
stainless steel. Shaft screwed 12 mm
(1/2 BSW) for direct mounting.

Standard wire 4 mm dia. tinned copper.
Other types readily available.

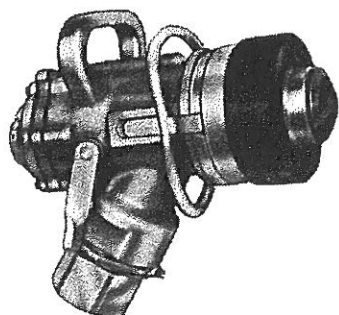
Note: The carbon brush is readily
available in 6 mm dia. rod lengths
at low cost.



*Equipment for liquid
handling, storage
and transport*

LIQUIP AUTOMATIC FUELLING SYSTEM

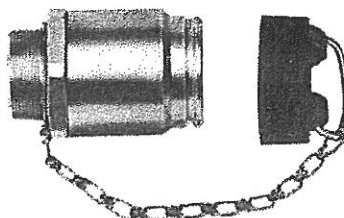
NOZZLE



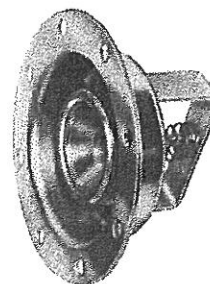
VENT



RECEIVER



RECEIVER
RECESSED

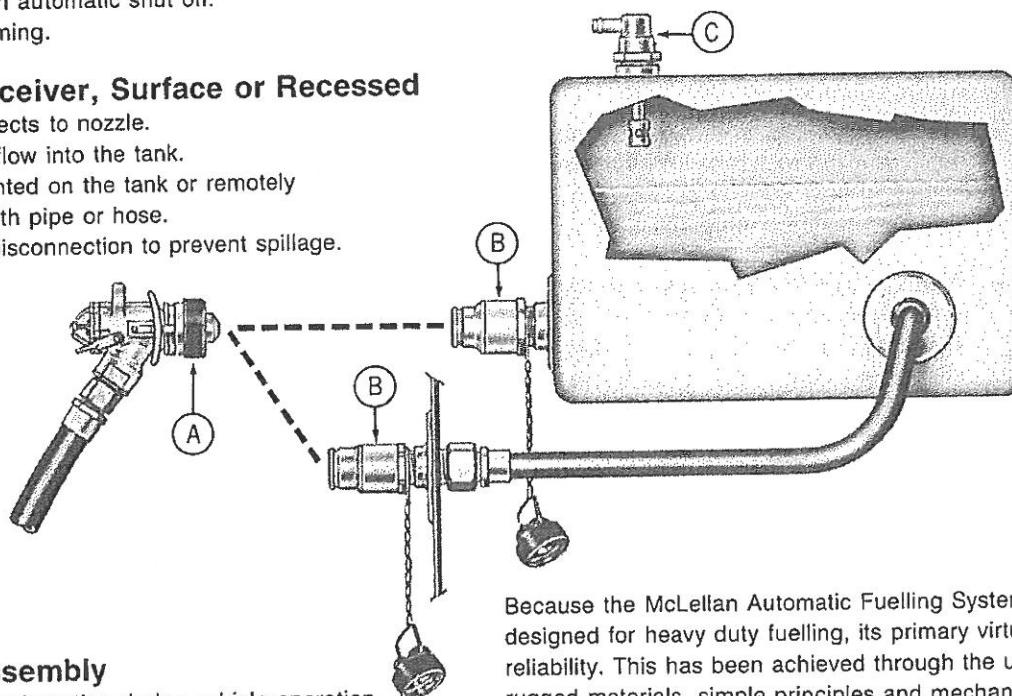


A. Nozzle

- Dispenses fuel into fuel tank.
- Quickly connects to tank receiver, without spillage.
- Connected by hose to fuel truck or storage facility.
- Equipped with automatic shut off.
- Reduces foaming.

B. Tank Receiver, Surface or Recessed

- Quickly connects to nozzle.
- Permits fuel flow into the tank.
- May be mounted on the tank or remotely connected with pipe or hose.
- Reseals on disconnection to prevent spillage.



C. Vent Assembly

- Permits normal venting during vehicle operation.
- Senses fuel level during fuelling to signal shut-off.
- Permits safe overflow in emergency.
- Protects tank from excessive internal pressure.

**DRY-BREAK
AUTOMATIC SHUT-OFF**
600 LITRES/MIN.
(N.B. not interchangeable with Wiggins).

Because the McLellan Automatic Fuelling System is designed for heavy duty fuelling, its primary virtue is reliability. This has been achieved through the use of rugged materials, simple principles and mechanisms, and proven techniques. As a result, the McLellan FD65 Automatic Fuelling System offers reliable performance.

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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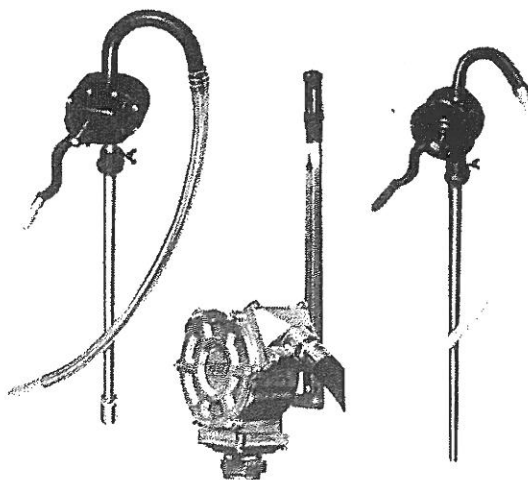
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LIQUIP

DRUM PUMPS



LP32

HP100

HC-25B

Handpumps for 200 l drums, petroleum products.

HC-25B. Rotary vane type, reversible and self syphoning. 30 l/min. 4 kg.

LP32. High flow rate rotary. Roots type with gear drive. 100 l/ml. 7 kg.

HP100. Reciprocating action, high flow and pressure. Simple adjustment gives 2 litre/stroke or 1 litre/stroke for maximum flexibility. 7.5 kg.

TYPICAL APPLICATIONS
TRANSFER FROM DRUMS OF PETROCHEMICALS.

IDEAL FOR FARMS, FACTORIES AND CONSTRUCTION CREWS.

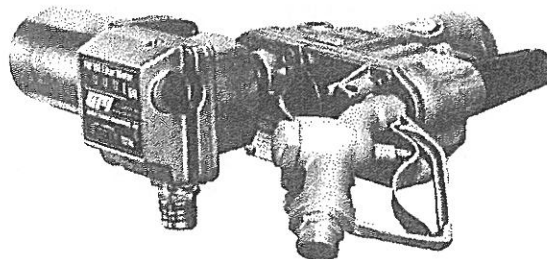
12 V d.c. pump for distillate or other non-flammable liquids.

Aluminium gear pump for light weight. Delivers 50 l/min. at 70 kPa with a duty cycle of 30 minutes.

Saves time.

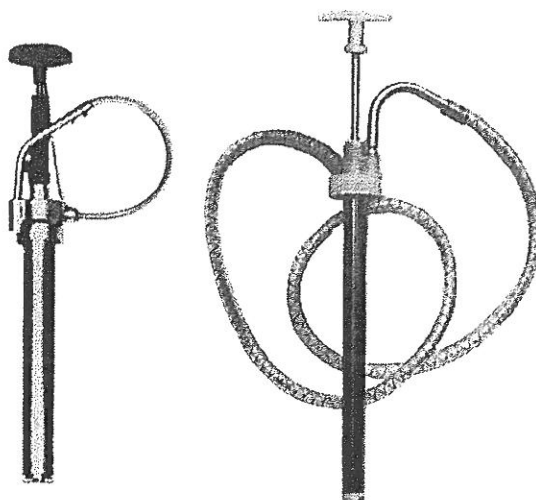
Saves money.

M120 can also be fitted with a meter to keep a check on usage. Meter models FM100 or FM200.



M120

NOTES



465G
480G

467G

Hand pumps for 20 l and 60 l drums.

Used for dispensing lube and hydraulic oils from small drums.

465G fits 20 l drum.

480G is similar but has built-in variable ratio to help in mixing 2-stroke oils.

467G fits 60 l drum.

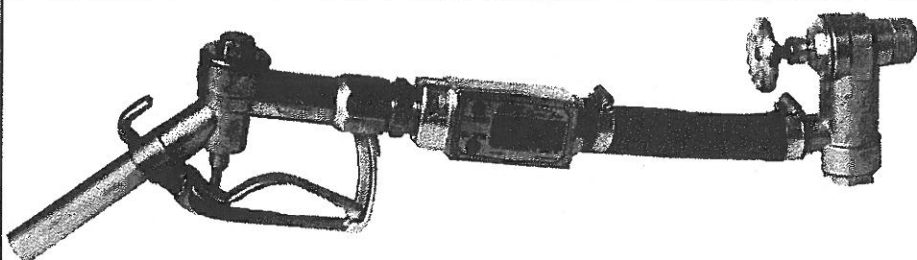
All come complete with hose and spout.



Equipment for liquid handling, storage and transport

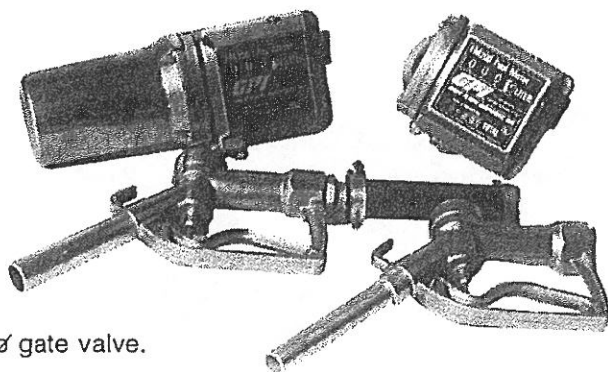
LIQUIP

FARM TRADE DISPENSING KIT



TYPE 1 — KIT

- ① Stop Valve Assy — SVA1-0.
25 mm BSP with built in strainer and hose tail.
- ② 25 mm Zero Temp Hose c/w hose clips.
Standard length 5 metres.
- ③ Electronic Digital Meter for non-flammable liquids complete with tails.
- ④ FTN1-0 25 mm nozzle and FTN1-T1 hose tail. Customer to specify ULP or super spout.



TYPE 2 — KIT

- ① 25 mm \varnothing gate valve.
- ② FM100 meter c/w filter or FM200 is without filter.
- ③ 25 mm \varnothing zero temp hose c/w hose clips.
Standard length 5 metres.
- ④ FTN1-0 nozzle and FTN1-T1 hose tail.
Customer to specify ULP or super spout.

Note: All of the above are in kit form — or they are available separately.

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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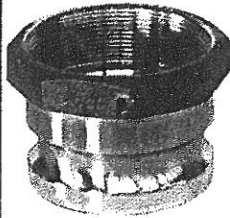
LIQUIP

CAMLOCK COUPLINGS

TYPICAL APPLICATIONS

Part No. NA-1

MALE ADAPTOR TO FEMALE BSP



Equivalent to 633A and Part A.

Sizes 13 mm to 150 mm (1/2" to 6").

Part No. NA-2

DUST CAP TO SUIT MALE ADAPTORS



Equivalent to 634B and Part DC.

Sizes 13 mm to 150 mm (1/2" to 6").

Part No. NA-3

FEMALE COUPLING TO MALE BSP



Equivalent to 633B and Part B.

Sizes 19 mm to 100 mm (3/4" to 4").

Part No. NA-4

MALE ADAPTOR TO MALE ADAPTOR



Equivalent to 633AA and Part AA.

Sizes 25 mm to 100 mm (1" to 4").

NOTES

Part No. NA-8

DUST PLUG TO SUIT FEMALE COUPLINGS

Equivalent to 634A and Part DP.

Sizes 25 mm to 150 mm (1" to 6").



Part No. NA-9

FEMALE COUPLING TO HOSETAIL

Equivalent to 633C and Part C.

Sizes 13 mm to 150 mm (1/2" to 6").



Includes wire-lock for static electricity conductivity.

THE STANDARD RANGE OF CAMLOCKS ARE TO NATO SPECIFICATION MIL-C-27487

AUSTRALIAN STANDARD AVAILABLE IN MOST SIZES

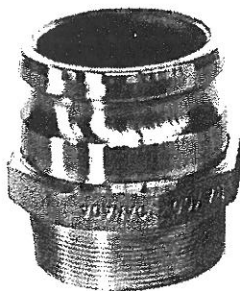
AVAILABLE IN ALUMINIUM, BRONZE, STAINLESS STEEL & POLYPROPYLENE



Equipment for liquid handling, storage and transport

LIQUIP

CAMLOCK COUPLINGS



Part No. NA-10
MALE ADAPTOR TO
MALE BSP

Equivalent to 633F and
Part F.

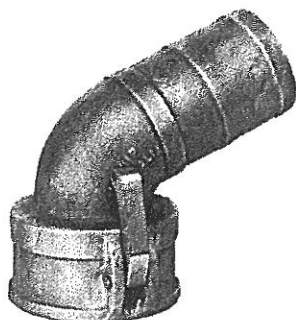
Sizes 13 mm to 150 mm
(1/2" to 6").

Part No. NA-12
and NA-11

MALE ADAPTOR TO
FEMALE BSP
(HYDRANT)

Equivalent to 633HA.

Sizes as required.

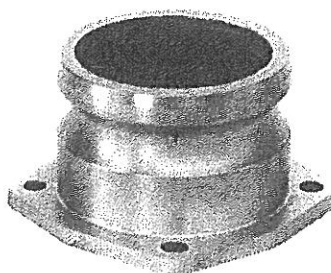


Part No. NA-13
FEMALE COUPLING
TO HOSETAIL
68° BEND

Equivalent to 633BC.

Sizes 50 mm to 100 mm
(2" to 4").

Includes wire-lock for static electricity
conductivity.



Part No. NA-18
MALE CAMLOCK
ADAPTOR TO
SQUARE FLANGE

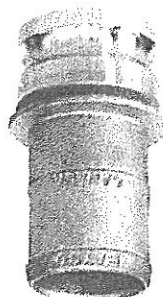
Sizes 50 mm to 100 mm
(2" to 4").



Part No. NA-20
FEMALE COUPLING
TO FEMALE BSP

Equivalent to 633D and
Part D.

Sizes 19 mm to 150 mm
(3/4" to 6").



Part No. NA-22
MALE ADAPTOR TO
HOSETAIL

Equivalent to 633E and
Part E.

Sizes 19 mm to 150 mm
(3/4" to 6").

Includes wire-lock for static
electricity conductivity.

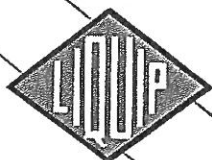
THE STANDARD RANGE OF CAMLOCKS ARE TO NATO
SPECIFICATION MIL-C-27487

AUSTRALIAN STANDARD AVAILABLE IN MOST SIZES

AVAILABLE IN ALUMINIUM, BRONZE, STAINLESS STEEL & POLYPROPYLENE

ANY SPECIAL COMBINATION MADE TO ORDER

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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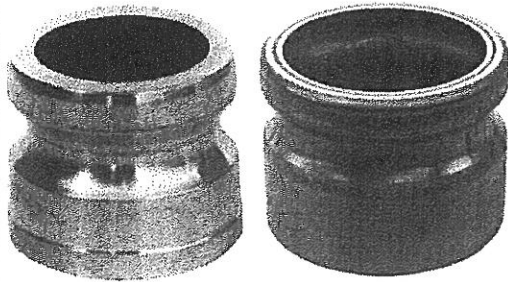
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LIQUIP

LIQUIP SPECIAL CAMLOCKS



WELD-ON MALE CAMLOCK ADAPTORS

Weld straight onto a pipe end for simplicity and lightweight.

Available in aluminium, mild steel and stainless steel from 50 mm to 100 mm.

Order as MC * — 1 *
Size in inches, e.g. 3 }
Suffix blank is m.steel }
A is aluminium }
S is st.steel }

TYPICAL APPLICATIONS

IF YOU NEED A SPECIAL TYPE OF CAMLOCK WE CAN SUPPLY IT.

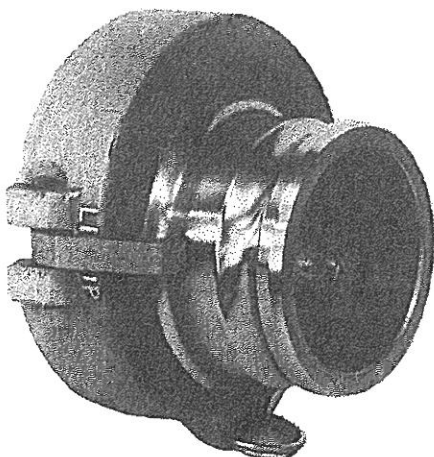
MIX AND MATCH YOUR SIZES

Liquip manufacture any odd-ball adaptors you may need. Illustrated is 100 mm male camlock to 63 mm female camlock.

Just give us your specification.



NOTES



API TO CAMLOCK ADAPTORS

Used on the tankers to allow normal discharge hoses to be connected.

Available in sizes 50 mm, 63 mm, 80 mm and 100 mm, aluminium only.

e.g. API-MC4 is API to 100 mm camlock adaptor.



Equipment for liquid handling, storage and transport

LIQUIP VAPOUR HOSE COUPLING



VCF3-G

TYPICAL APPLICATIONS

TRUCK MOUNTED
VAPOUR
RECOVERY HOSE
COUPLING.

AUTOMATIC CLOSURE COUPLING FOR GAS AND VAPOUR WITH FLAME ARRESTOR

- Emission of hazardous or polluting vapours can occur when hoses are parted. This unit is similar to a liquid "dry-break" connection in that the poppets automatically close when the joint is parted.
- Based on 102 mm NATO camlock with selective feature to conform to A.I.P. code CP-6. Fits other adaptors to same code.
- Designed for gases up to 35 kPa, lightweight for operator acceptability.
- Used in conjunction with male adaptor VCM3. Simply clamping the two units together opens the poppets a fixed amount.
- Floating-head poppet and bushed shaft ensure excellent seal.
- Body incorporates gauze as flame arrestor.

NOTES

OPTIONS and RELATED EQUIPMENT

Matching male adaptor VCM3-F.
Dust plug is standard NATO.
Camlock part no. NA-100-8A.

TECHNICAL DATA

Fits into any 102 mm i/dia. hose.
Poppet opens at 4 kPa internal vacuum.
Flow area equivalent to 75 mm dia.
Tested at 6,000 l/min. loading rate with back pressure only 12 kPa.
Alum. body, st.st. shaft and spring, Delrin bush, Viton seal.
Weight 1.9 kg.

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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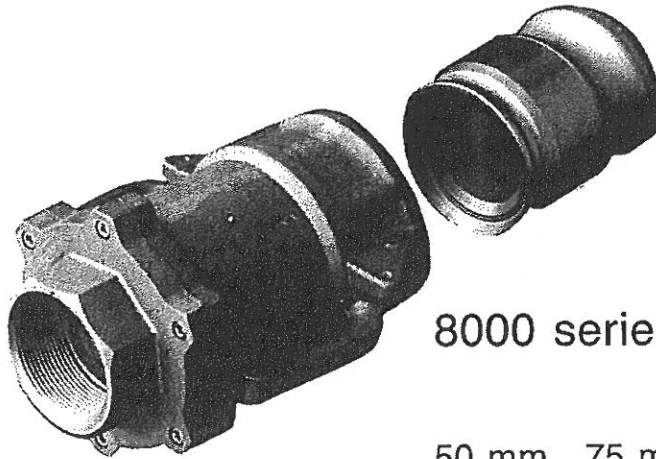
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LIQUIP

DRY-BREAK CAMLOCK COUPLINGS



8000 series

50 mm 75 mm 100 mm

The 8000 series dry-break couplings operate in a similar fashion to standard camlocks.

Operation is achieved simply by coupling together the two components — no handle or lever to leak, break or move accidentally.

As the camlock levers are closed, the coupling first seals against the adaptor and then, with further movement the two internal poppets push each other open to provide a full flow path. Opening the camlock levers reverses the action, and springs close the poppets before the main body seal is opened.

When disconnected, the higher the line pressure the greater the sealing force exerted by the poppet seals. However line pressure should be reduced before connecting or disconnecting the coupling.

OPTIONS and RELATED EQUIPMENT

Female screwed ends, in BSP or NPT.

Sizes 50 mm, 75 mm or 100 mm.

Body is Aluminium, Brass or Stainless steel.

Viton seals standard, Buna option.

Dust caps available for all sizes.

TECHNICAL DATA

Sample pressure drop:

50 mm, coupled, kerosene.

7 kPa at 200 litres/min.

20 kPa at 400 litres/min.

60 kPa at 800 litres/min.

TYPICAL APPLICATIONS
SELF-SEALING
COUPLINGS TO
PREVENT
PRODUCT LOSS
WHEN
DISCONNECTING.

NOTES



*Equipment for liquid
handling, storage
and transport*

LIQUIP

API DRY-BREAK COUPLER



API-FD

TYPICAL APPLICATIONS

LIGHTWEIGHT
API COUPLER
WITH DRY-BREAK
FOR SMALL PUMP
SYSTEMS.

A dry-break coupler to fit API adaptors for small pumping systems.

Product loss can occur when disconnecting hoses from the API adaptor, particularly when using centrifugal pumps.

The API-FD provides a light, simple dry-break hose-end for these situations. Normal camlock levers couple the unit to the adaptor, then a throw-over cam lever opens both the poppet in the coupler and the API adaptor. A floating spring-loaded sleeve engages the nose of the API adaptor to provide a face seal before the poppets open to minimise product loss.

The coupler is for use on the suction side of the pump or for gravity drops — it is not suitable for pressure lines.

NOTES

OPTIONS and RELATED EQUIPMENT

50 mm hose-tail standard.
Body can be adapted to other sizes if required.
Fits all API adaptors.

TECHNICAL DATA

Aluminium body with hard anodised bearing surfaces.
Stainless steel trim, Viton seals.
50 mm diameter bore.
Poppet opens at 28 kPa internal pressure.

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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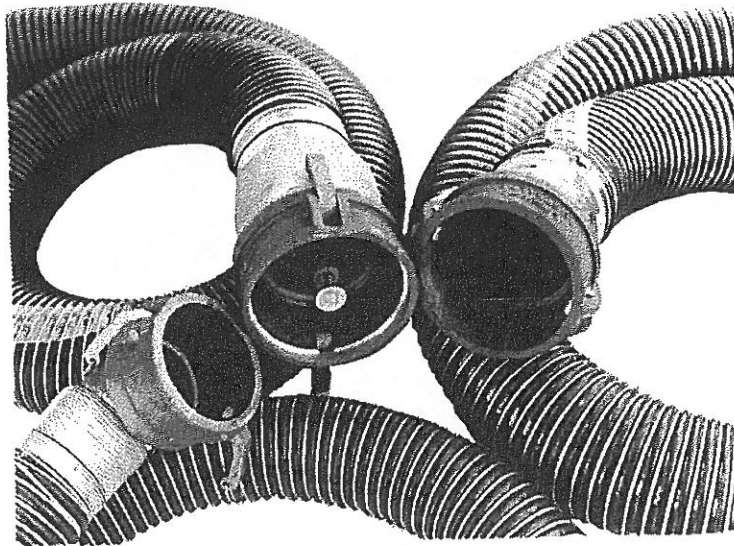
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LIQUIP

CODE HOSES FOR PETROLEUM FUELS AND INDUSTRIAL USES



SIZES 25 mm DIA. to 150 mm DIA.

A.I.P.-STANDARD WIRE-LOCK FOR ELECTRICAL CONTINUITY.

Compoflex codes 1000/1002 are manufactured from polypropylene fabric and film with a weatherproof and abrasion resistant outer cover.

Inner and outer wire spirals are in galvanised steel and give full end-to-end electrical continuity.

Liquip make and repair hose assemblies using the wire whipping technique. AIP codes are used where applicable.

Other types of hose are stocked, e.g. for aviation refuelling, hose reels, lay-flat hose, etc. Only code 1000 type is detailed in this section.

Variants supplied include:

Type VRH — Vapour recovery hose.

Code 951 — Hose for chemicals.

Stainless steel braided — for loading arms.

OPTIONS and RELATED EQUIPMENT

Hoses can be manufactured to suit all requirements, with a wide variety of camlocks or male BSP hose tails available.

TECHNICAL DATA

Manufactured in Australia to the requirements of BS3492/1972, can also be supplied in accordance with AS2683-1984.

Size range

Code 1000—25 mm (1") to 150 mm (6").

Code 1002—65 mm (2½") to 100 mm (4").

Temperature

Suitable for conveyant temperatures to + 65°C for continuous service or up to + 82°C for occasional use.

TYPICAL APPLICATIONS

A STRONG AND SUPPLE LIGHTWEIGHT SUCTION AND DISCHARGE HOSE FOR ROAD TANKERS AND INDUSTRIAL IN-PLANT USAGE.

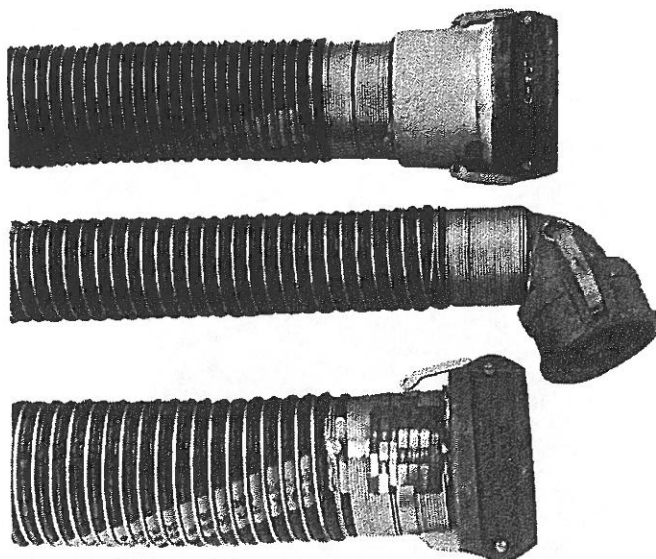
IDEAL FOR A WIDE RANGE OF HYDROCARBONS AND SOLVENTS.

NOTES



Equipment for liquid handling, storage and transport

LIQUIP HOSE SPECIFICATIONS



Code hoses as detailed here are wire-whipped and incorporate Liquip's own wire-lock system to ensure bonding on inner and outer wires for electrical continuity.

Rubber-lined 32 mm and 38 mm reeling hose is also available and this incorporates dual wires for static electricity dispersal.

NOMINAL INTERNAL DIAMETER		EXTERNAL DIAMETER		WEIGHT				MINIMUM BEND RADIUS		MAXIMUM WORKING PRESSURE	
				Code 1000		Code 1002					
mm	ins	mm	ins	kg/m	lb/ft	kg/m	lb/ft	mm	ins	kPa	lb/in ²
25	1	32	1¼	0.80	0.54	—	—	50	2	690	100
32	1¼	38	1½	0.90	0.60	—	—	75	3	690	100
38	1½	50	2	1.02	0.69	—	—	75	3	690	100
50	2	65	2½	1.60	1.07	—	—	75	3	552	80
65	2½	75	3	2.49	1.67	2.09	1.40	90	3½	483	70
75	3	90	3½	2.73	1.83	2.33	1.57	112	4½	483	70
100	4	112	4½	3.63	2.44	3.03	2.04	200	8	414	60
150	6	175	7	ON APPLICATION							

NOTE: ALL LIQUIP DELIVERY HOSES are tagged with date of manufacture and test and with your fleet number if required. All hoses are pressure and electrically continuity tested after manufacture.

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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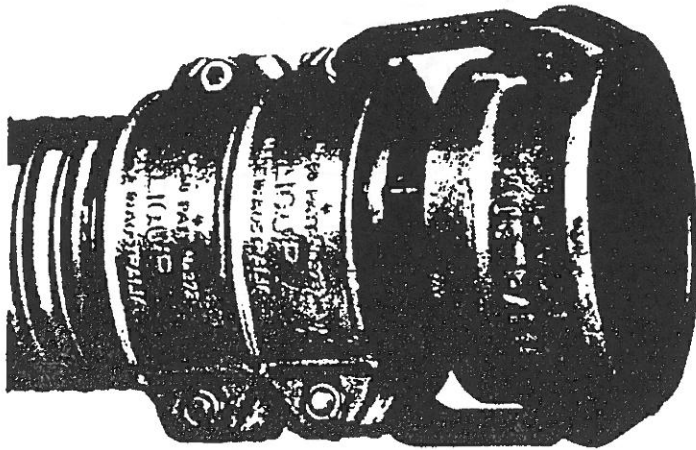
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LIQUIP

RE-USEABLE HOSECLAMP



HC80

These clamps do away with wire whipping and swaging of end fittings. You can make your own hoses—just keep a coil on hand, cut to length and bolt up with the Liquip hosetail and clamp kit. All you need is a vice and Allen key.

Also hoses don't need to be sent away for costly repairs but can be quickly repaired with simple tools.

Both straight and 68° female 3" camlock end fittings are available. Standard NATO type.

All hositails are static-safe with twin grub screws to secure inner and outer wires.

IMPORTANT Before use, pressure and continuity test to AIP code CP17 and fit label. Full instruction sheet supplied with kits.

OPTIONS and RELATED EQUIPMENT

Straight or 68° end fittings.

Static safe supplied as standard to suit any petroleum product.

ORDERING DETAILS

HC80 straight includes tail, clamps, and seal.

HC80 68° as above but bent end.

Order hose, tape, and labels separately.

TECHNICAL DATA

Die cast aluminium clamps.

Buna seals.

Torque capscrews to 20 ft.lb.

Hositails in aluminium only.

TYPICAL APPLICATIONS

MAKE YOUR OWN HOSES TO SUIT YOURSELF AND WHEN YOU NEED THEM.

REUSABLE HOSE-CLAMP ALLOWS FIELD REPAIR OF DAMAGED CODE HOSES.

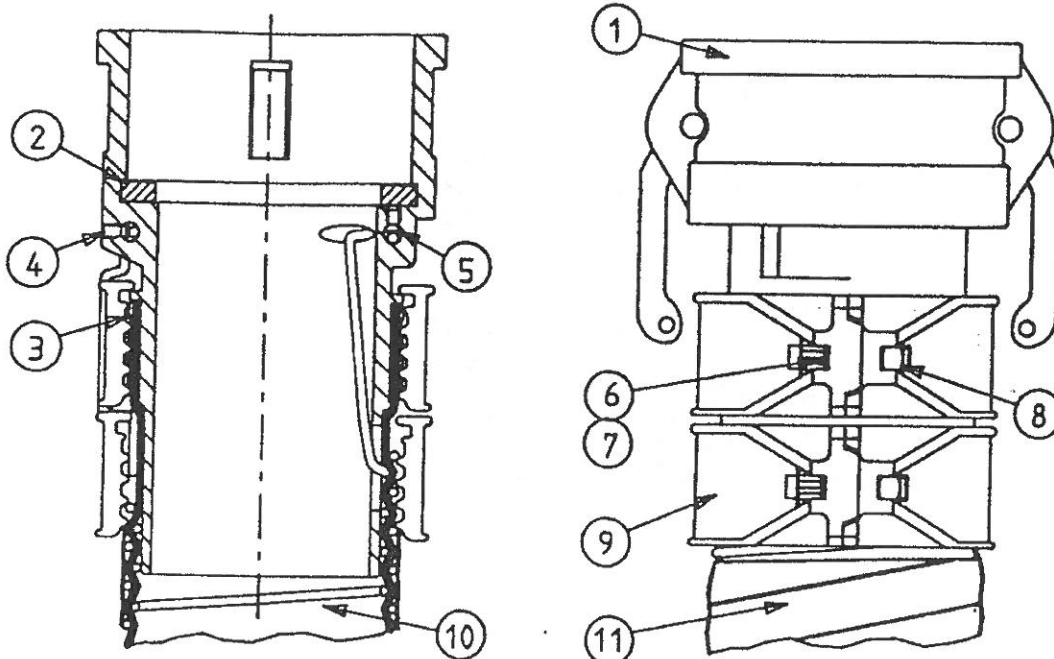
NOTES



Equipment for liquid
handling, storage
and transport

LIQUIP

ASSY - 75mm HOSECLAMP

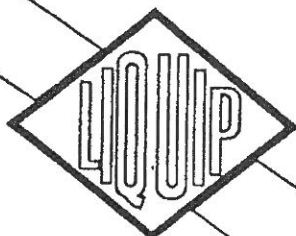


ITEM	PART NO	DESCRIPTION	MATERIAL	QTY/END	QTY/HOSE
* 1	NA80-9CL	HOSETAIL STRAIGHT	ALUM.	1	2
2	P0429	CAMLOCK SEAL	BUNA	1	2
3	P4545	U-SECTION SEAL	BUNA	1	2
4	P0034	GRUB SCREW 1/8" BSW X 3/8"	H/T STEEL	2	4
5	P0351	GRUB SCREW 1/4" BSW X 3/8"	S/S	2	4
6	P0920	CAPSCREW 5/16" BSW X 1 1/4"	M/S Z/P	4	8
7	P0108	SPRING WASHER 5/16"	M/S Z/P	4	8
8	P0149	NUT NYLOC 5/16" BSW	M/S Z/P	4	8
9	HC80-1	HOSE CLAMP HALF	ALUM.	4	8
** 10	P3305	75mm CODE 1000 HOSE	COMPOSITE	—	AS REQ'D
11	P2878	CLOTH TAPE	—	AS REQ'D	AS REQ'D
12	P5626	FITTING INSTRUCTIONS	—	1	1
13	P3294	LABEL	ANOD. ALUM.	—	1

*1. OPTIONAL 68° HOSETAIL NA80-13CL

**10. OTHER TYPES OF CODE HOSE MAY BE USED

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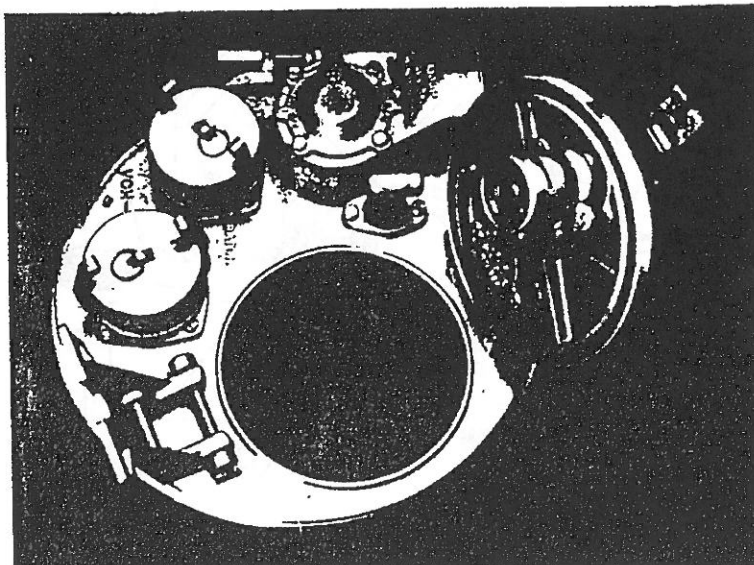
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LIQUIP

VOH400



TYPICAL APPLICATIONS

Road tankers
for petroleum
products

VOH400

VOH400 is model number used for VOH300 main cover with the new lid-bridge assembly. Main cover is unchanged from VOH300, and old and new lid-bridge assemblies are completely interchangeable.

Development of this unit was due to the growing requirement for regular hydro-testing of road tankers. The pressure/vacuum vents on the VOH400 are very simple to blank off so testing can be achieved without removing or dismantling the PV vent.

If the vent must be removed for inspection, only two screws must be loosened and the vent remains otherwise complete.

Mounting method of the vent also provides improved weather protection.

NOTE:

PVV104 is a thermal relief vent only and is not designed to allow for closed hatch filling. If this is required, order with two vents (only one fitted as standard) and if flow rate greater than 500l/min consult Liquip.

OPTIONS

One PVV fitted as standard—second aperture blanked.

May be ordered with two vents for greater fill/discharge capacity. Mandatory for closed hatch filling, maximum 500l/min rate.

Lid/bridge/vent available as conversion kit to fit into existing VOH300 manholes.

Buna seal standard. Viton optional.

TECHNICAL DATA

Emergency vent opens 30 kPa.
Capacity 8500 m³/hr free air at 45 kPa.

Pressure/vacuum vent PVV104
Pressure opens 15 kPa.

Vacuum opens -2 kPa.

Capacity 98 m³/hr at 35 kPa.

Locks shut at 60° from vertical.

Approved to AS2809-1990.

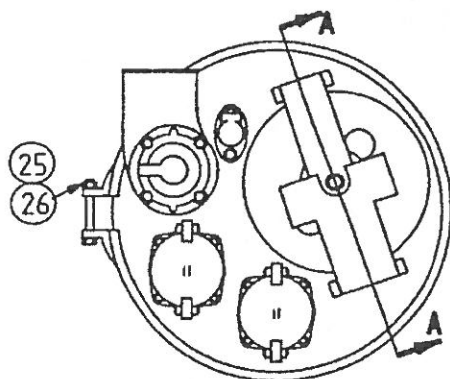
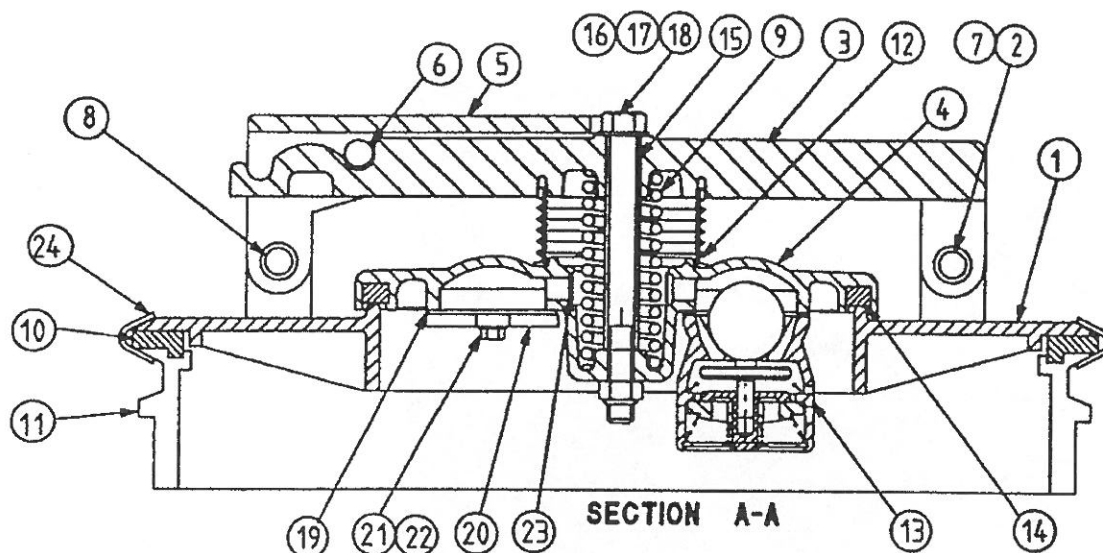
NOTES



Equipment for liquid
handling, storage
and transport

LIQUIP

ASSEMBLY - VOH400

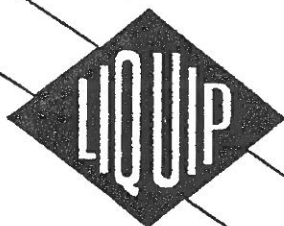


NOTE

ALL BOLT ON HARDWARE
AND OVERALL DIMENSIONS
SAME AS VOH300

PART NO	DESCRIPTION	QTY/ASS
1 VOH300/1	MANHOLE COVER	1
2 VOH200/9	BRIDGE PIN	1
3 VOH200/2	BRIDGE	1
4 VOH300/4	9" EMERGENCY VENT/INSPECTION HATCH	1
5 VOH200/3	HANDLE	1
6 VOH200/10	CAH PIN	1
7 P0096	E-CLIP	6
8 VOH200/11	HANDLE PIN	1
9 P4418	EMERGENCY SPRING	1
10 VOH300/7	MAIN SEAL	1
11 VOH300/5	COAMING	1
12 VOH200/8	BELLOWS	1
13 PVV104	PRESSURE VACUUM VENT	1
14 P0236	SEAL	1
15 VOH300/6	SPACER TUBE	1
16 P0045	BOLT 1/2" BSW X 5 1/2"	1
17 P0104	WASHER PLAT 1/2"	1
18 P0152	NUT NYLOCK 1/2" BSW	1
19 P4250	GASKET	2
20 PVV104/2	BLANKING PLATE	1
21 P0001	SCREW 1/4" BSW X 3/4"	4
22 P0107	SPRING WASHER 1/4"	4
23 PVV104-4	SPARK ARRESTOR GAUZE	1
24 VOH300/16	CLAMP BAND	1
25 P0028	CLAMP BAND BOLT	1
26 PH100/3	CLAMP BAND NUT	1

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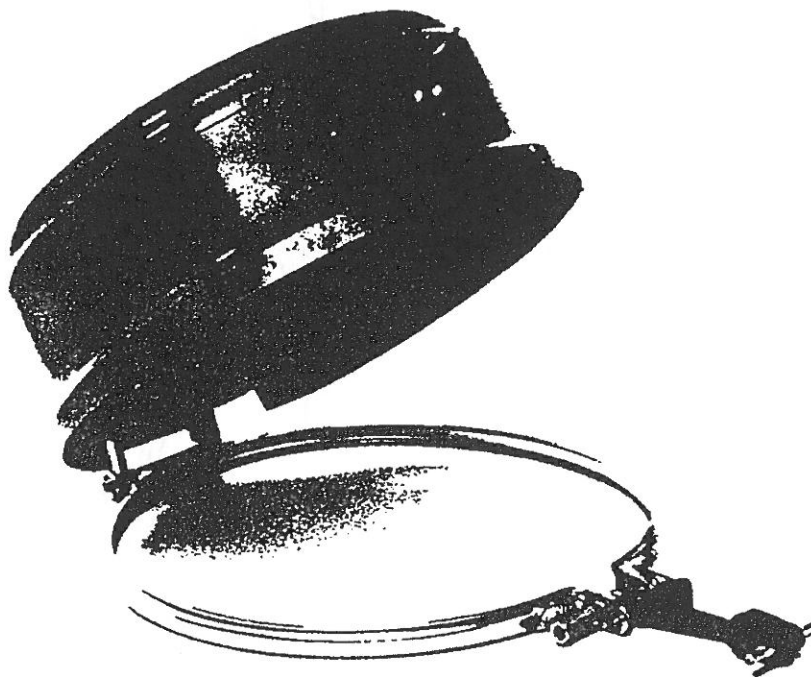


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LIQUIP

HATCH WEATHER COVER



TYPICAL APPLICATIONS

AVIATION
REFUELLERS AND
OTHER TANKERS
NEEDING SPECIAL
PRECAUTIONS
AGAINST
CONTAMINATION.

NOTES

- The new LIQUIP Hatch Weather Cover kit now mounts directly onto the manhole. No more welding of lugs to the walkway or degassing the tanker.
- Comes as a complete assembly, including new clampband.
- Requires only one (1) bolt to fit.
- The quick release rubber clamp allows quick opening and closing of the cover. One only operation is required.
- The clamp is made of petrol resistant Neoprene.
- Covers are available in standard form to fit VOH100, VOH200 and VOH300 manholes. (A special version is required for oval manholes).

OPTIONS

HWC301 kit to suit VOH300 manhole.
HWC101 kit to suit VOH100 manhole.

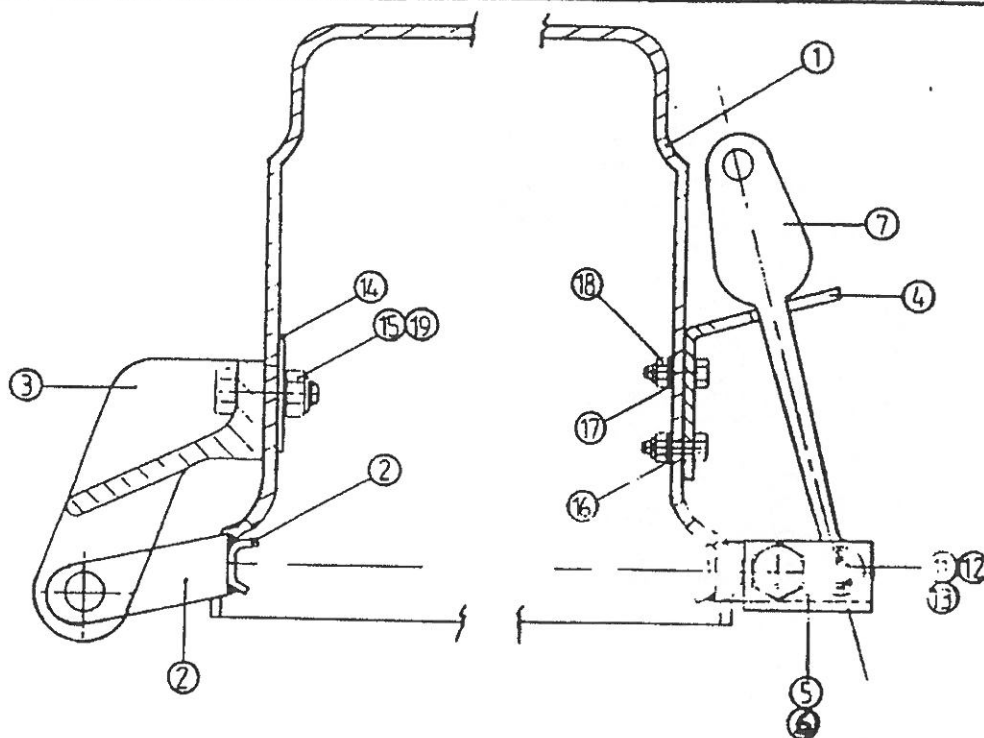
TECHNICAL DATA

- Fibreglass cover for long life.
- Standard colour green.
- Overall size 495 mm.
- Weight 4 kg.



Equipment for liquid
handling, storage
and transport

LIQUIP



ITEM	PART No:	DESCRIPTION	QTY	MATERIAL
1	HWC100-2	Cover	1	Fibreglass
2	(see note)	Clamp band	1	Z/P steel
3	SH201-17	Hinge brkt	1	Cast alum.
4	HWC301-2	Clamp catch	1	Z/P steel
5	HWC301-3	Clamp brkt-LH	1	Z/P steel
6	HWC301-4	Clamp brkt-RH	1	Z/P steel
7	P0987	Rubber clamp	1	Neoprene
8	SH201-13	Hinge pin	1	St. steel
9	P0104	Washer	2	Z/P steel
10	P0769	Split pin	2	Z/P steel
11	HWC301-5	Clamp pin	1	St. steel
12	P0100	Washer	2	Z/P steel
13	P0762	Split pin	2	Z/P steel
14	P0500	Washer	2	Z/P steel
15	P0012	Set screw	2	Z/P steel
16	P3090	Set screw	3	Z/P steel
17	P0100	Washer	3	Z/P steel
18	P0148	1/2 nyloc nut	3	Z/P steel
19	P0149	Nyloc nut	2	Z/P steel

* **NOTE:** Use HWC301-1 clamp band for HWC301 & HWC101-1 clamp band for HWC101.

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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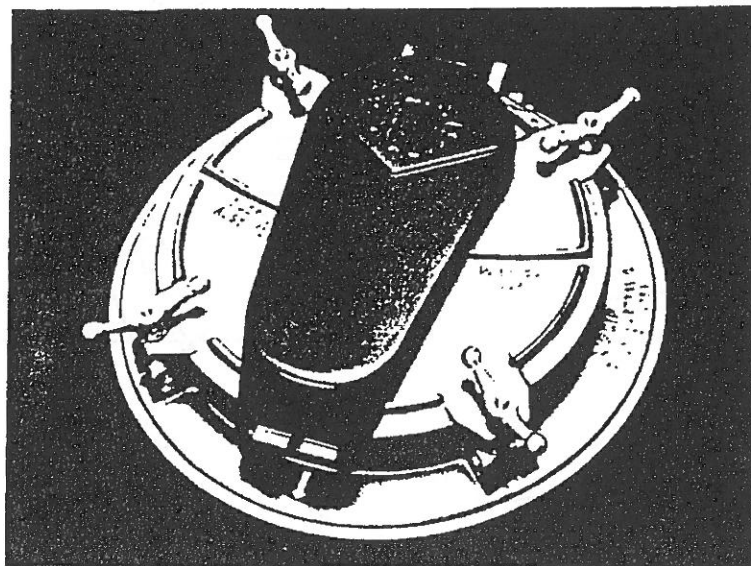
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LIQUIP

WEATHER COVER - SH SERIES



TYPICAL APPLICATIONS

Aviation and other tankers requiring extra precautions against contamination

NOTES

HWC 304

Fits SH 301, SH 303 and SH 304 swing-back hatches.

Provides extra protection against ingress of dust and water through vents. Simple spring clip allows for removal for maintenance, plus clip has built-in movement providing ample venting should overfill occur through the emergency vent.

Option and Related Equipment

To fit Liquip swing-back hatches only.
Stock colour green.

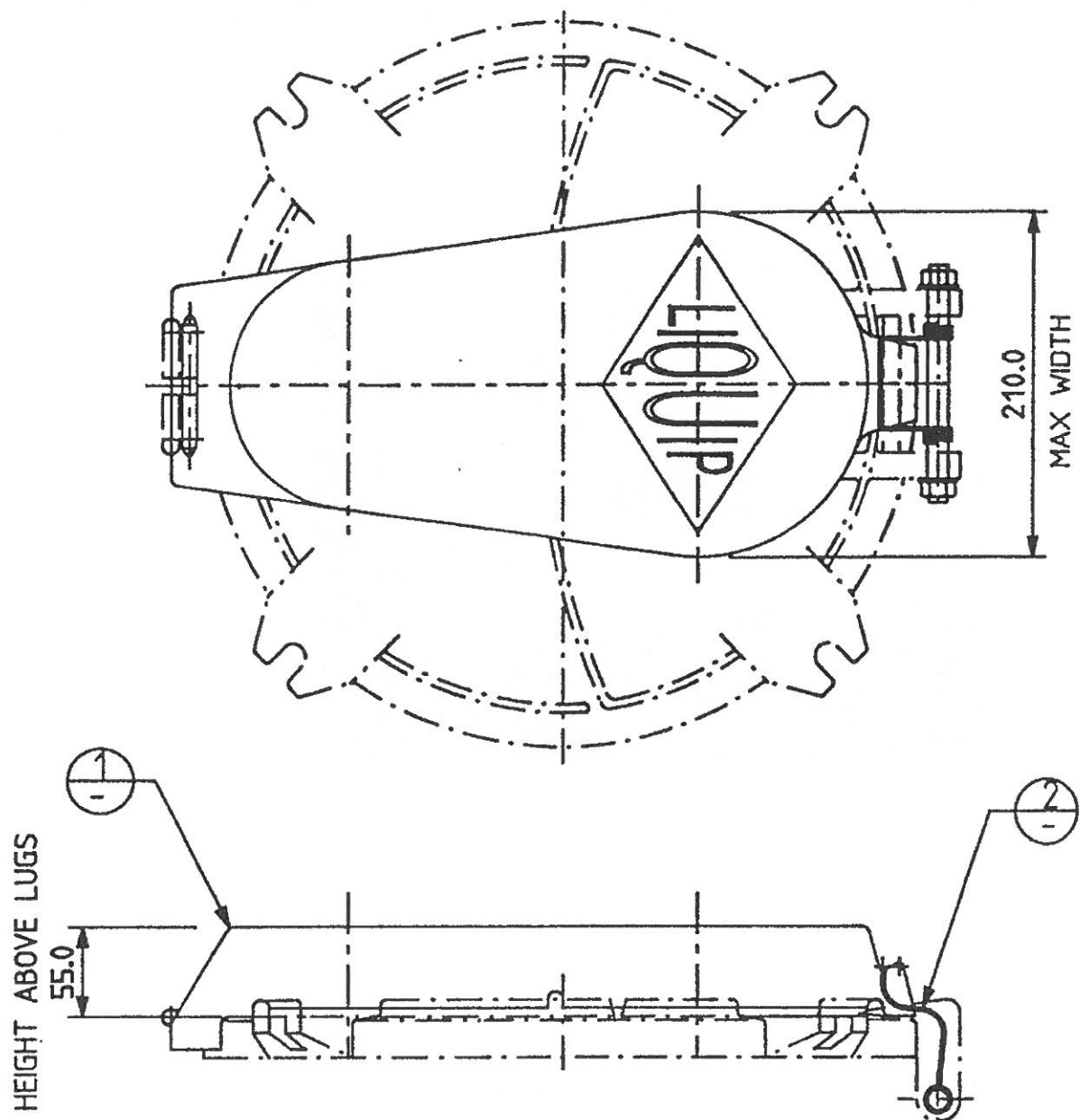
Technical Data

Fibreglass cover.
Stainless steel spring clip.
Lifts at equivalent of 1 kPa pressure.
Wt.0.43 kg.



Equipment for liquid
handling, storage
and transport

HWC304-Z



2	COVER	P5612	1	FRP
1	SPRING CLIP	P4428	1	Z/P SP STEEL
ITEM	DESCRIPTION	PART No	QTY	MATERIAL

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION

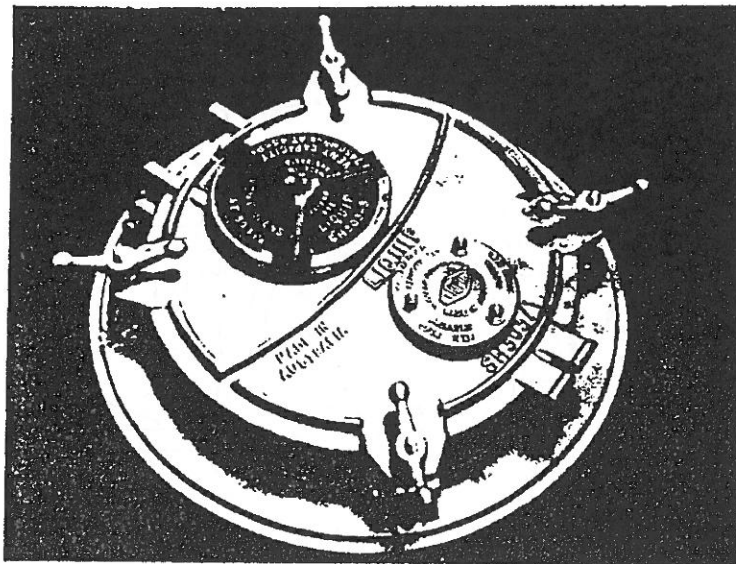


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LIQUIP

SWING-BACK HATCH



TYPICAL APPLICATIONS

Storage tanks
Blending tanks
Road tankers

SH304

A variant to existing model SH303.

Coaming is cast with a flange to reduce height of assembly when welded to a road tanker walkway. An added safety feature is that the coaming is fitted from inside the tanker prior to welding, with an overlap on the coaming sitting inside the tank shell. Therefore there is significant extra strength compared with a simple butt weld.

SH304 also includes mounting for PVV104 vent, which is much simpler to blank off for hydro testing than previous models. Also the emergency vent now incorporates a bonded lip seal for greater repeatability and integrity against leaks.

All items except coaming are interchangeable with SH303.

NOTES

OPTIONS

Cover and coaming available in aluminium only.

For stainless steel or steel, order previous models SH302 or SH303.

Main seal available in Buna, Viton or Teflon.

Emergency vent seal bonded Viton.

PVV104 vent aluminium only.

For stainless steel order with PVV204.

Blank for vent aperture, order VRB-2.

TECHNICAL DATA

Emergency vent opens 30 kPa.

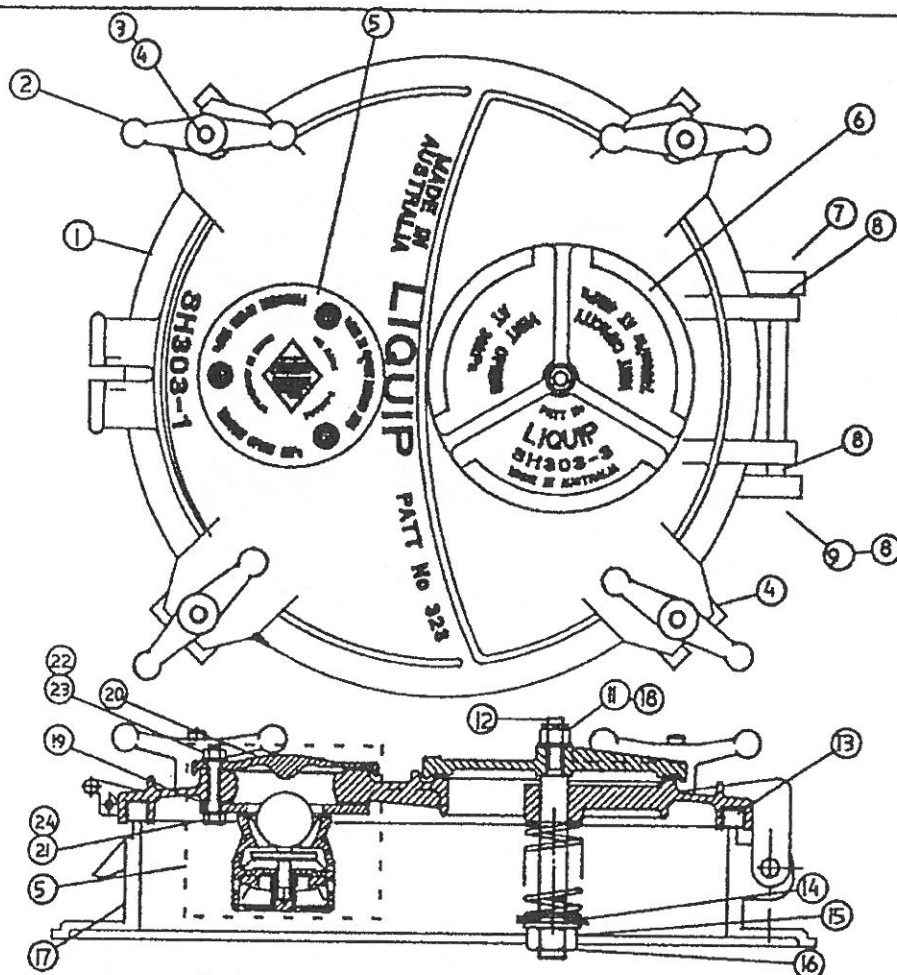
Capacity 7450 m³/hr at 45 kPa.

Weight 16.0 kg.



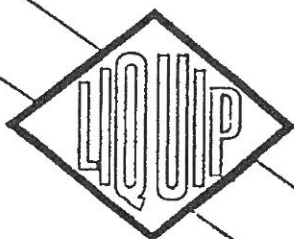
Equipment for liquid
handling, storage
and transport

LIQUIP SH304 HATCH



ITEM	PART NO.	DESCRIPTION	MATERIAL	QTY/ASS.
1	SH303-1	HATCH	CAST ALUM	1
2	SH304-4	TEE HANDLE	S/STEEL	4
3	SH304-5	SWING PIN	S/STEEL	4
4	SH304-6	SWING BOLT	Z/P STEEL	4
5	PVY104	PRESSURE & VACUUM VENT ASSEMBLY	CAST ALUM	1
6	SH303-3	EMERGENCY VENT POPPET	CAST ALUM	1
7	PO152	NUT NYLOC 1/2" BSW	Z/P STEEL	1
8	PO104	WASHER FLAT 1/2"	Z/P STEEL	4
9	PO052	BOLT HEX HD 1/2" BSW X 7" LONG	Z/P STEEL	1
10	PVY104-10	ADAPTOR FLANGE	CAST ALUM	1
11	PO150	NUT NYLOC 3/8" BSW	Z/P STEEL	1
12	SH303-7	EMERGENCY VENT SPINDLE	S/STEEL	1
13	PO241	HATCH SEAL	BUNA	1
14	P4413	SPRING EMERGENCY VENT	S/STEEL	1
15	SH303-4	SPRING RETAINER	S/STEEL	1
16	PO157	NUT 3/4" BSW NYLOC	Z/P STEEL	1
17	SH304-2	COAMING	CAST ALUM	1
18	PO102	WASHER FLAT 3/8"	Z/P STEEL	1
19	P4243	GASKET	NEOCORK	1
20	PVY104-8	WEATHER COVER	CAST ALUM	1
21	P4818	SET SCREW HEX HD 5/16" BSW X 2" LONG	Z/P STEEL	3
22	PO101	WASHER FLAT 5/16"	Z/P STEEL	3
23	PO149	NUT NYLOC 5/16" BSW	Z/P STEEL	3
24	P4341	WASHER #5/16"	FIBRE	3

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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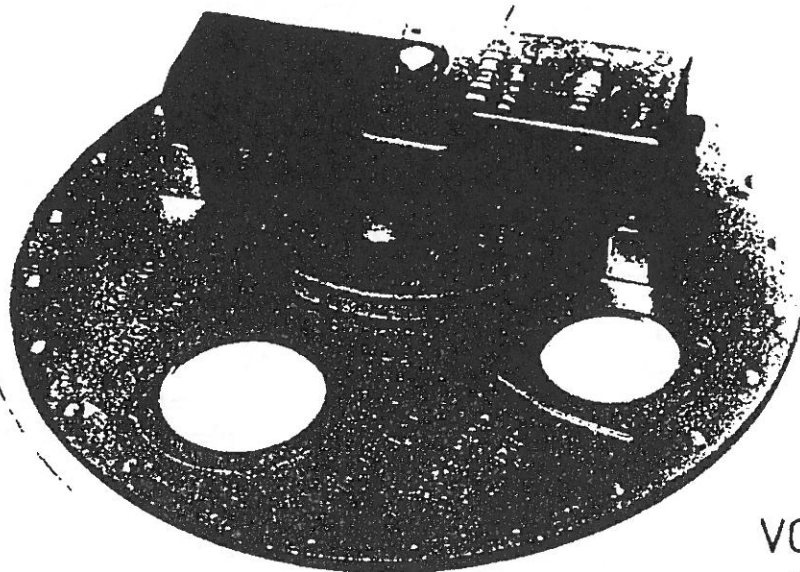
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LIQUIP

VOH 600 / VOH 700



VOH 600
(AUST)

VOH 700
(UK & USA)

TYPICAL APPLICATIONS

ROAD TANKERS
WITH BOLT ON
MANHOLE COVERS

A development of the well proven range of liquip "VOH" series manholes, incorporating bolt on fastening of coaming to interchange with units already in the field.

Quick-opening hatch provides 225mm dia. aperture and also acts as an emergency vent. The mechanism incorporates a two-stage opening with a safety catch to protect against the presence of internal pressure.

Weather protection for the emergency vent mechanism and the pressure-vacuum vent outlet is provided by a rubber "boot".

Two accessory mounting positions are provided on the cover. Typically they can be used for a vapour recovery vent and a dip tube attachment. If not required, they can be fitted with blanking plates.

One pressure-vacuum vent is fitted to the underside of the hinged hatch lid, with a second mounting provided but normally blanked off. If a second unit is required it must be specified at the time of order.

Roll-over protection is built into the pressure vacuum vent a poppet completely seals off the vent if it reaches an angle of 60 deg. or more from the vertical. Flame proofing is provided by gauze.

Coaming is normally supplied by the tank manufacturer, but Liquip can supply in aluminium or mild steel if requested. The assembly part number determines the vent settings for different authorities.

Specifications:-

Aluminium - cover, hatch, bridge & handle.
Stainless steel - hinge pins.
24-holes 9.5mm dia. on a 431 p.c.d.

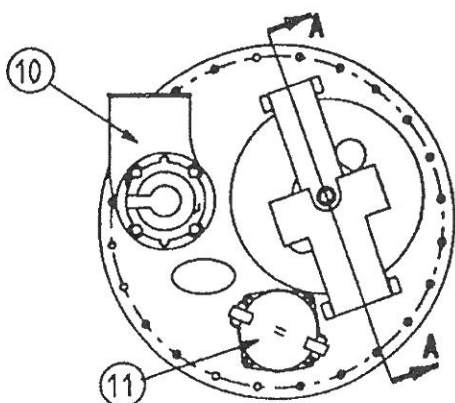
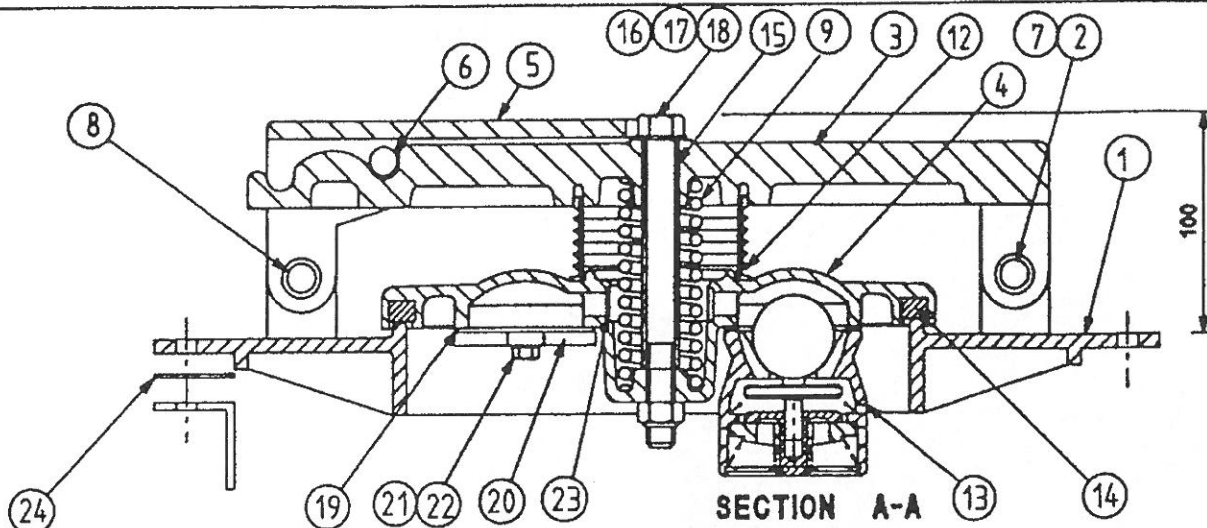
NOTES



Equipment for liquid
handling, storage
and transport

LIQUIP

VOH600 / VOH700

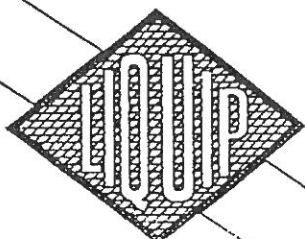


COVER OVERALL DIAMETER 460mm
24 MOUNTING HOLES $\varnothing 9.5$ EQUALLY
SPACED ON A 431mm PCD
COAMING APERTURE $\varnothing 410$

ITEM	PART NO	DESCRIPTION	QTY
1	VOH600/1	MANHOLE COVER	1
2	VOH200/9	BRIDGE PIN	1
3	VOH200/2	BRIDGE	1
4	VOH400/4	9" EMERGENCY VENT/INSPECTION HATCH	1
5	VOH200/3	HANDLE	1
6	VOH200/10	CAM PIN	1
7	P0096	E-CLIP	6
8	VOH200/11	HANDLE PIN	1
9	P4418	EMERGENCY SPRING	1
10	AVV3L	VAPOUR VENT 3" (OPTIONAL BLANKING PLATE)	1
11	DTA80	DIP TUBE ADAPTOR 3" (OPTIONAL BLANK PLATE)	1
12	VOH200/8	BELLOWS	1
13	PVV104	PRESSURE VACUUM VENT	1
14	P0236	SEAL	1
15	VOH400/6	SPACER TUBE	1
16	P0045	BOLT 1/2" BSW X 5 1/2"	1
17	P0104	WASHER FLAT 1/2"	1
18	P0152	NUT NYLOCK 1/2" BSW	1
19	P4250	GASKET	2
20	PVV104/2	BLANKING PLATE	1
21	P0001	SCREW 1/4"BSW X 3/4"	4
22	P0107	SPRING WASHER 1/4"	4
23	PVV104-4	SPARK ARRESTOR GAUZE	1
24	P4260	GASKET (CORK)	1

	EMERGENCY VENT		P/V VENT-PRESSURE		P/V VENT-VACUUM	
	OPENS KPa	Cap. M ³ /HR.	OPENS KPa	Cap. M ³ /HR.	OPENS KPa	Cap. M ³ /HR.
U.K. (1993)	21	6,900 @ 35 KPa	2 to 12	98 @ 35 KPa	2	57 @ 7 KPa
U.S.A. NFPA 385 (1990)	21	6,900 @ 35 KPa	7	98 @ 35 KPa	2 1/2	57 @ 7 KPa
AUST. AS2809.2 (1990)	30	8,500 @ 45 KPa	15	98 @ 35 KPa	2	57 @ 7 KPa

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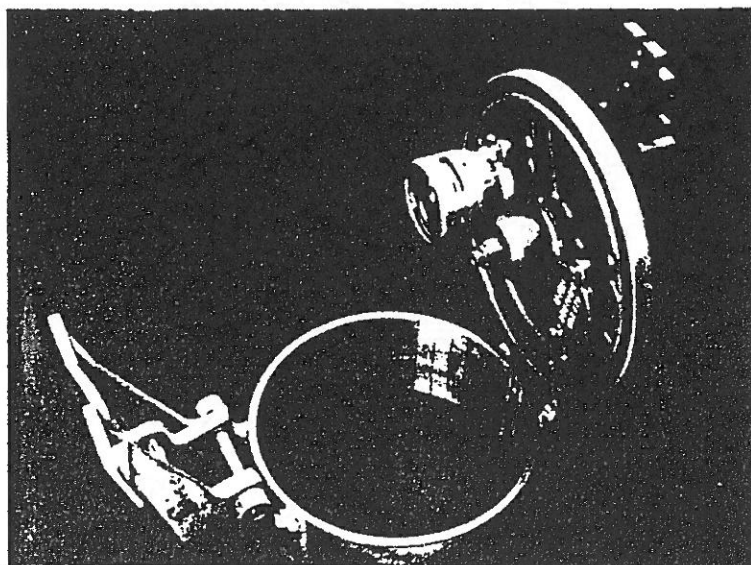
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LIQUIP

VENTING INSPECTION HATCH



TYPICAL APPLICATIONS

Storage or road tankers requiring a quick-opening fill or inspection hatch

EH9
EHV9

NOTES

A development of existing model, it uses the new lid from VOH400 which allows use of two pressure vacuum vents model PVV104.

Normally supplied without pressure-vacuum vents as model EH9: or order as EHV9 with either one or two vents (customer to specify).

The lid/bridge assembly will interchange with existing EH9 units.

OPTIONS

Order as:-

EH9 - * * - *

V = Adds pressure-vacuum vent option

A = Alum. lid

A = Alum. coaming

M = Mild steel coaming

B = Buna seal

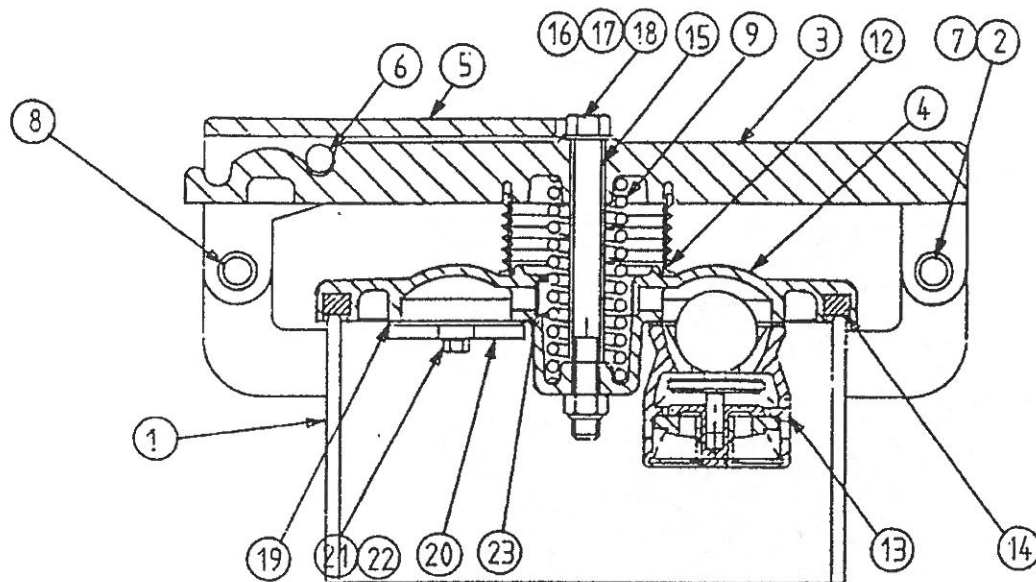
V = Viton seal



Equipment for liquid handling, storage and transport

LIQUIP

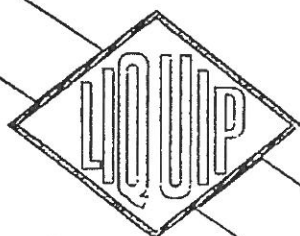
EH9 AND EH9V9



ITEM	PART NO	DESCRIPTION	QTY/ASS
1*	EH9-1A	COAMING - ALUMINIUM	1
	or EH9-1M	COAMING - MILD STEEL	1
2	VCH200/9	BRIDGE PIN	1
3	VCH200/2	BRIDGE	1
4	VCH400/4	9" EMERGENCY VENT/INSPECTION HATCH	1
5	VCH200/3	HANDLE	1
6	VCH200/10	CAM PIN	1
7	P0096	E-CLIP	6
8	VCH200/11	HANDLE PIN	1
9	P4418	EMERGENCY SPRING	1
10	VCH300/7	MAIN SEAL	1
11	VCH300/15	COAMING	1
12	VCH200/12	BELLOWS	1
13	PVV104	PRESSURE VACUUM VENT	1
14*	P0236	SEAL - BUNA	1
	or P0237	SEAL - VITON	1
15	VCH400/16	SPACER TUBE	1
16	P0045	BOLT 1/2" BSW X 5 1/2"	1
17	P0104	WASHER FLAT 1/2"	1
18	P0152	NUT NYLOCK 1/2" BSW	1
19	P4250	GASKET	2
20	PVV104/2	BLANKING PLATE	1
21	P0001	SCREW 1/4" BSW X 3/4"	4
22	P0107	SPRING WASHER 1/4"	4
23	PVV104-4	SPARK ARRESTOR GAUZE	1

* Order as required

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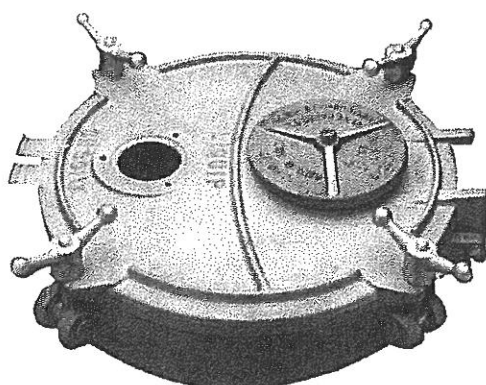
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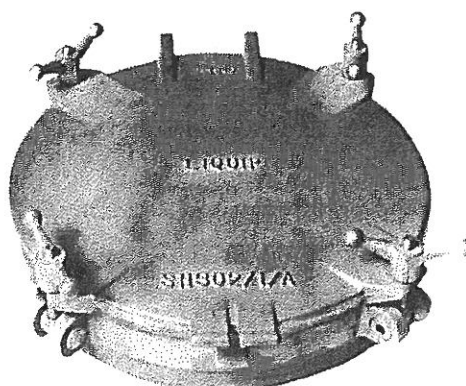
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LIQUIP

SWING-BACK HATCH



SH301



SH302

TYPICAL APPLICATIONS

STORAGE TANKS.
BLENDING TANKS.
ROAD TANKERS
FOR CHEMICALS AND
FOODS.

For storage tanks and tankers where frequent entry is required for cleaning, mixing, sampling or inspection.

SH301 series incorporates both an emergency vent and a built-in flange for a pressure-vacuum vent (PVV204), enabling it to be used on flammable liquids tankers.

SH302 series has a "clean-skin" plain domed cover for ease of cleaning and is ideal for hygienic applications. The stainless steel version can be polished.

Both types have 4-point wing-nut clamps for excellent sealing.

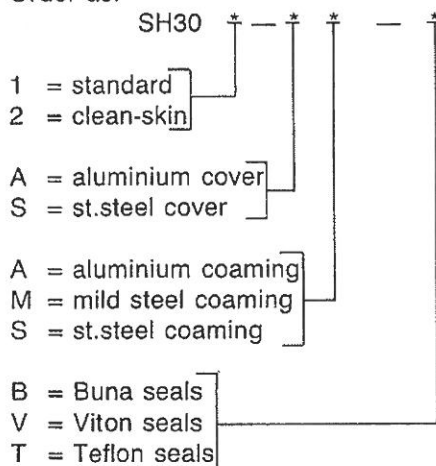
Coaming is integral with hinge and clamp mechanisms — just weld assembly in to tank top. Components are inter-changeable between the two series.

SH301 approved under AS2809.

NOTES

OPTIONS

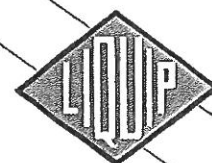
Order as:—



Pressure-vacuum vent
See PVV204
Blank plate VRB-2

TECHNICAL DATA

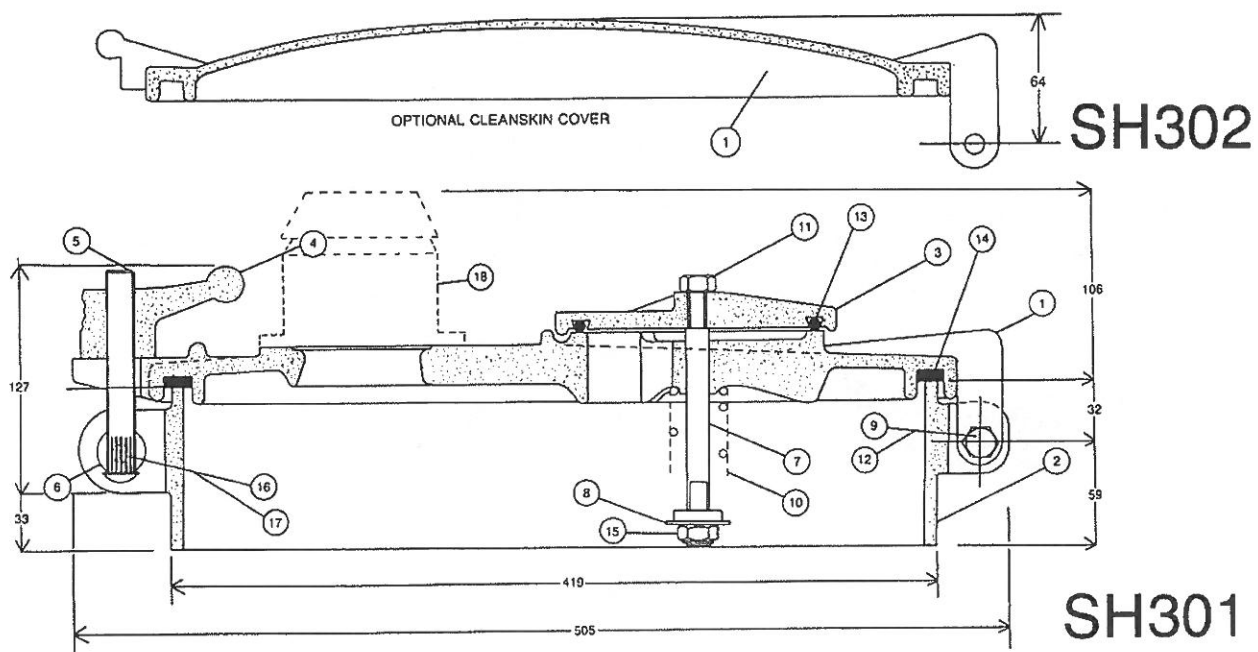
All internal trim in st.steel.
Emergency Vent
Opens 30 kPa
Capacity 5000 m³/hr free
air at 45 kPa
Clean-skin covers on
SH302 may be ordered
polished to food-grade.
Weight, SH301-AA-B,
15 kg.



Equipment for liquid
handling, storage
and transport

LIQUIP

ASSY — SH301 & SH302



Item No.	Description	Qty.	Part No.	Item No.	Description	Qty.	Part No.
1*	Aluminium Cover	1	SH301/1	11	Nut	1	P0150
	Stainless Steel Cover	1	SH301/1S	12	Nut	1	P0152
	Aluminium Cover Clean Skin	1	SH302/1	13*	O-Ring Buna	1	P0053
	Stainless St. Cover Clean Skin	1	SH302/1S		Viton	1	P0205
2*	Aluminium Coaming	1	SH301/2		Teflon	1	P2548
	Stainless St. Coaming	1	SH301/2S	14*	Seal Buna	1	P0241
	Mild Steel Coaming	1	SH301/2M		Viton	1	P0242
3	Emerg Vent Cover Alum	1	SH301/3		Teflon	1	P1021
	Emerg Vent Cover Stainless	1	SH301/3S	15	Nut	1	P0798
4	Ball Handle	4	SH301/4	16	Nylon Plug	4	PH18/6
5**	Swing Bolt	4	SH301/5	17	Grub Screw	4	P0188
6**	Swing Pin	4	SH301/6	18	*Optional Vent	1	PVV204
7	Emergency Vent Spindle	1	SH301/7				
8	Spring Retainer	1	SH301/10				
9	Bolt	1	P0052				
10	Spring	1	P0054				

* Customer to specify.

** For Clamp bolt replacement, kit order as SH301/17.

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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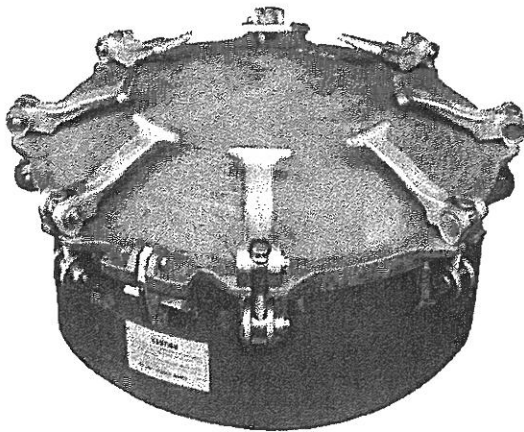
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LIQUIP

PRESSURE VESSEL HATCHES



PH18 PH18V — 470mm

PH20 PH20V — 510mm

PH24 — 610mm

TYPICAL APPLICATIONS

PRESSURE VESSELS, ROAD, RAIL OR STORAGE. TANKS FOR SEA-FREIGHT REQUIRING EXTRA CARGO SECURITY.

GENERAL DESCRIPTION

THE PH18, PH20 and PH24

- Provides ready access, with security, to pressure vessels such as pneumatic tankers for cleaning, filling or inspection.
- Cam-handles adjustable with normal spanners without releasing tension or de-pressurising vessel.
- Seal dove-tailed into lid for maximum protection and easy replacement.
- Supplied as complete assembly ready to weld into tank.
- Complies with AS1210 and common types approved in all States.

THE PH18V and PH20V

- Identical to units PH18 and PH20 except these versions have two-stage opening for additional protection against residual pressure.
- The wing-nuts by the cover handle cannot be swung away until they have been part loosened. In so doing the cover is lifted by 4mm minimum thus ensuring release of any pressure in the vessel.
- Other details as for PH18 and PH20.

OPTIONS AND RELATED EQUIPMENT

Models shown are stock lines. A wide range is available to order, sized from 200mm dia. to 600mm dia. with pressure ratings up to 2100 kPa.

Any combination of aluminium, mild steel or stainless steel covers and coamings can be supplied with a range of clamp styles and seal materials.

TECHNICAL DATA

Aluminium cover, Neoprene seal, cadmium plated steel clamps. Standard coaming length 150mm.
Part No. PH18-AC-AR. Weight 17kg.
Alum. coaming, 470mm dia., 170 kPa rating.
Part No. PH18-AC-SR. Weight 23kg.
Steel coaming, 470mm dia., 400 kPa rating.
Part No. PH20-AC-AR. Weight 24kg.
Alum. coaming, 510mm dia., 275 kPa rating.
Part No. PH20-AC-SR. Weight 31kg.
Steel coaming, 510mm dia., 620 kPa rating.
Part No. PH24-AC-AR. Weight 32kg.
Alum. coaming, 610mm dia., 280 kPa rating.

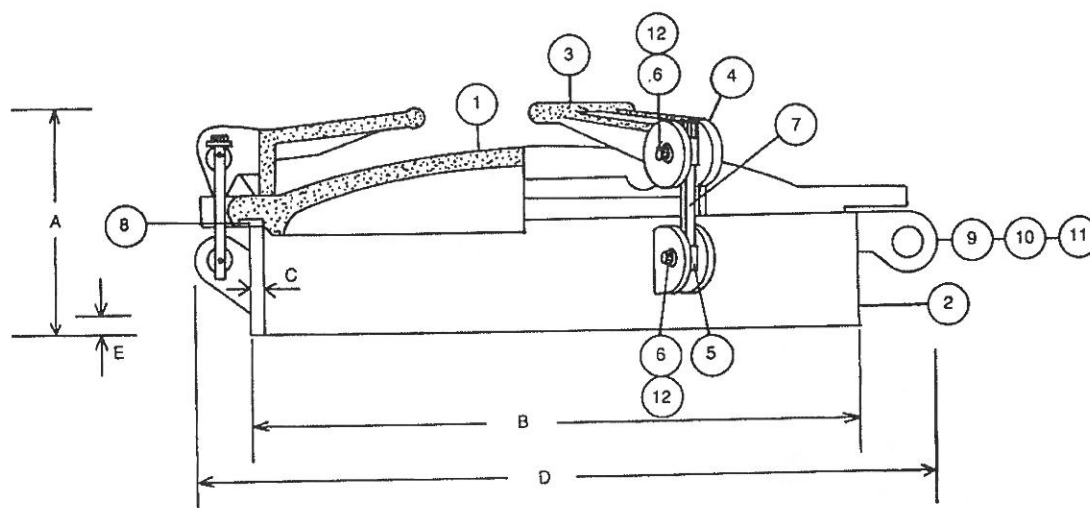
NOTES



Equipment for liquid handling, storage and transport

LIQUIP

ASSY — PH HATCHES



MODEL	MATERIALS	A OVERALL HEIGHT	B COAMING O/D	C COAMING THICKNESS	D OVERALL O/D	E LUG HEIGHT
PH18-AC-AR	Alum. Cover Alum. Coaming	230	470	7	530	85
PH18-AC-SR	Alum. Cover Steel Coaming					
PH20-AC-AR	Alum. Cover Alum. Coaming	250	508	7	600	75
PH20-AC-SR	Alum. Cover Steel Coaming					
PH24-AC-AR	Alum. Cover Alum. Coaming	250	622	7	750	75
PH24-AC-SR	Alum. Cover Steel Coaming					

ITEM NO.	DESCRIPTION	QTY	470mm Hatch	PART NO. 510mm Hatch	620mm Hatch
1	Cover Alum.	1	PH18/16	PH20/16	PH24/16
2	Coaming Assy. Alum.	1*	PH18/19	PH20/19	PH24/19
	M.St.	1*	PH18/20	PH20/20	PH24/20
3	Cam Handle	6	PH18/8	PH20/8	PH20/8
4	Cam Pin	6	PH18/9	PH20/9	PH20/9
5	Neck Pin	6	PH18/10	PH20/10	PH20/10
6	Lock-Screw	12	PH18/12	PH18/12	PH18/12
7	Cam Bolt	6	PH18/11	PH20/11	PH20/11
8	Seal	1	PH18/13	PH20/13	PH24/13
9	Hinge Bolt	1	PH18/14	PH18/14	PH24/14
10	Nut	1	PH18/15	PH18/15	PH18/15
11	Washer	1	P0111	P0111	P0111
12	Nylon Plug	12	PH18/6	PH18/6	PH18/6

* ORDER AS REQUIRED

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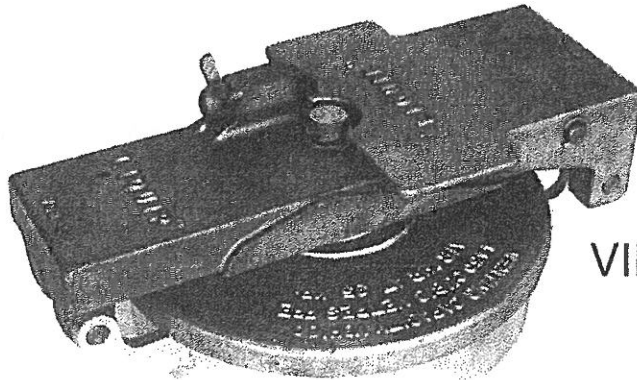
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LIQUIP

VENTING INSPECTION HATCH



VIH-9 SERIES

TYPICAL APPLICATIONS
STORAGE OR
ROAD TANKS
REQUIRING A
QUICK-OPENING
FILL OR
INSPECTION
HATCH.

Even though many tanks do not need to be entered regularly, there is a requirement for a small quick-opening inspection/fill hatch. The VIH-9 series provides this, and also acts as an emergency vent.

It incorporates 2-stage safety cam opening to protect against flying open if there is internal pressure.

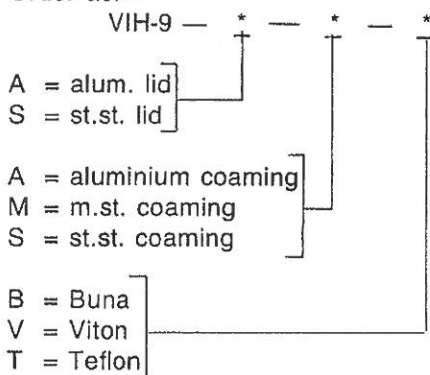
Supplied as complete assembly ready to weld into tank in a variety of materials.

Approved for use on flammable liquids tankers.

NOTES

OPTIONS AND RELATED EQUIPMENT

Order as:—



TECHNICAL DATA

Alum. bridge and handle,
st.st. hinges.

Vent opens at 30 kPa,
capacity 7,000 m³/hr
free air at 45 kPa.

Standard coaming height
50 mm. Extensions
available to special order.

Wt. all alum. 6.5 kg.

Wt. st.st. 10.5 kg.



*Equipment for liquid
handling, storage
and transport*

LIQUIP

LIGHT DUTY MANHOLE & HATCH



MANHOLE
PH100

TYPICAL APPLICATIONS
REPLACES
BOLTED
FLANGES IN LOW
PRESSURE, LIGHT
DUTY TANKS AND
BINS.

A plain single-clamp manhole 430 mm internal dia.
Cuts initial capital cost and subsequent maintenance costs compared with multiple-bolt plate flanges — remove only one bolt for access.

OPTIONS

Order as:— PH100 — * — *

A = aluminium cover
M = plated steel cover
S = st. steel cover
A = aluminium coaming
M = m. steel coaming
S = st. steel coaming

TECHNICAL DATA

Plated steel clamp band.
Buna seal.
Pressure 35 kPa maximum.
Wt. (Mild Steel assembly) 6.5 kg.

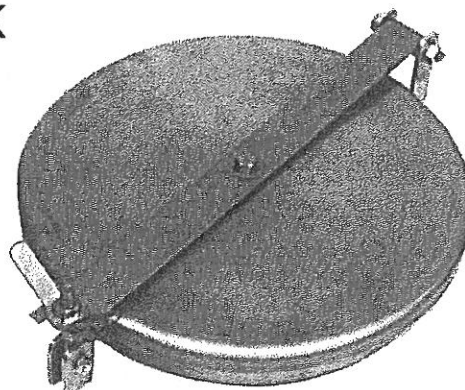
NOTES

TYPICAL APPLICATIONS

WHERE FREQUENT LARGE
DIA. ACCESS IS NECESSARY
AND WEATHER-PROOFING
IS REQUIRED.

**SWING-BACK
HATCH**
SH100

An inexpensive swing-back hatch
for tanks with non-volatile
products such as water and
grease. Single clamp nut for
quick access, large overhang
on cover for excellent weather-
proofing.



NOTES

OPTIONS

Order as:— SH100 — * — *

A = aluminium cover
M = m. st. cover
S = st. st. cover
A = aluminium coaming
M = m. steel coaming
S = st. steel coaming

TECHNICAL DATA

Not for use in conditions of pressure
or vacuum.
Plated steel bridge, handle and
fasteners, Buna seal.
Customer to supply hinge brackets
and bolts and nuts for hinges.
Internal dia. 406 mm.
Weight (alum. assembly) 8.0 kg.

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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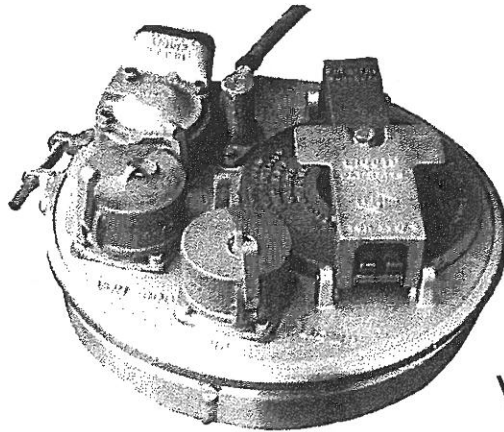
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LIQUIP

MULTI-FUNCTION MANHOLE



VOH300

TYPICAL APPLICATIONS

ROAD TANKERS
FOR PETROLEUM
PRODUCTS.

GENERAL DESCRIPTION

Designed specifically for modern light-weight road tankers, the VOH300 gets it all together.

By incorporating all statutory and operational requirements in one assembly, tanker manufacture is less costly, the walkway has no clutter, and maintenance accessibility is superb.

Basic manhole includes emergency vent/inspection hatch, quick-release single bolt clampband, and pressure-vacuum vent with roll-over protection.

Mountings are provided for dip tube and adaptor, fill tube and adaptor, vapour recovery vent and Starship or equivalent electronic over fill sensor.

Dip and fill tubes are flanged to enable removal and refit without removing the manhole.

Coaming incorporates a collar to automatically set the height for welding and to minimise distortion.

Ease of access through the manhole into the tank is assured as the aperture is larger than previous models.

Should any of the functions not be required, blanking plates are available for all mountings.

All this plus low profile and minimum weight. Meets Australian Standards requirements for road tanker use.

NOTES

OPTIONS

AVV3.0 vapour vent.
VOH200-5 Starship junction box.
P2920 Starship sensor.
VOH200-14 Blank, if no sensor.
DTS3-6F Dip tube.
FTB3-6F Fill tube.
VOH-13 Dip and fill adaptor.
VOH-16 Blank plate for dip,
fill or vapour vent.
HWC100-F Weather cover.

TECHNICAL DATA

Aluminium with st. steel trim.
Seals, Buna std, Viton optional.
Emergency vent —

Opens 30 kPa.
Capacity 8500 m³/hr free air
at 45 kPa.

Pressure/vacuum vent
pressure opens 15 kPa
vacuum opens — 2 kPa
capacity 240 m³/hr free air at
35 kPa
locks shut at 60° from vertical
incorporates free air bleed.

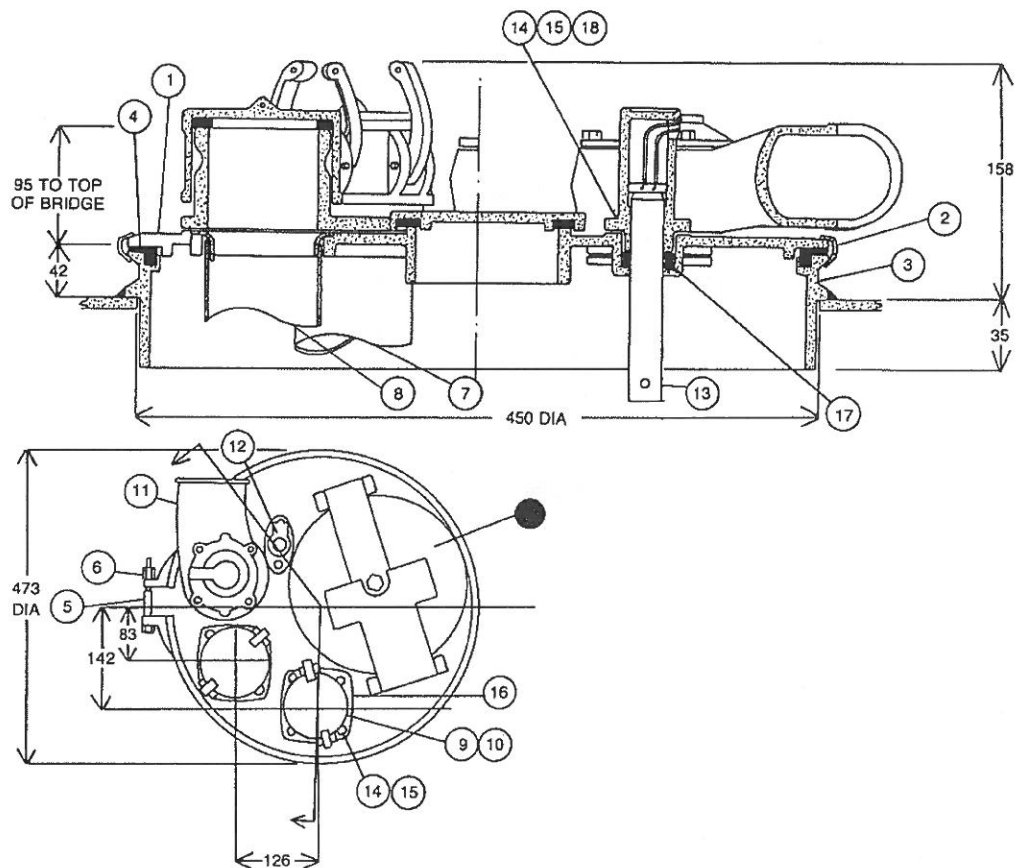
Approved under AS2809-1985.
Weight of basic assembly 10.8 kg.
c/w coaming.

*Equipment for liquid
handling, storage
and transport*



LIQUIP

ASSY — VOH300



ITEM NO	DESCRIPTION	QTY	PART NO.
1	MANHOLE COVER	1	VOH 300/1
2	CLAMP BAND	1	VOH 300/16
3	COAMING	1	VOH 300/15
4	MAIN SEAL	1	VOH 300/7
5	CLAMP BAND BOLT	1	P 0028
6	CLAMP BAND NUT	1	PH 100/3
7	FLANGED FILL TUBE	1	FTB 3-6F
8	FLANGED DIP TUBE	1	DTS 3-6F
9	DIP AND FILL ADAPTOR	2	NA 80-18A
10	DIP AND FILL CAP	2	NA 80-2A
11	VAPOUR VENT	1	AVV 3-0
12	SENSOR JUNCTION BOX	1	VOH 200/5
13	STARSHIP SENSOR	1	P 2920
14	SET SCREW	10	P 0012
15	SPRING WASHER	10	P 0108
16	GASKET	2	P 0661
17	O-RING	2	P 3114
18	GASKET	1	P 3097

NOTE!
FOR DETAILS ON BRIDGE AND LID ASSEMBLY
REFER TO DRAWING ON VOH 200

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



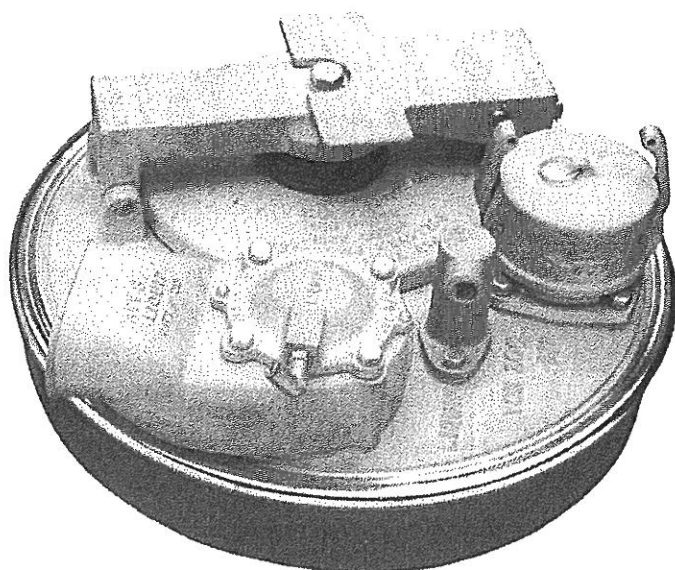
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DISTRIBUTORS

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FEATHER-WEIGHT TANKER MANHOLE



VOH200

TYPICAL APPLICATIONS

ROAD TANKERS
BEING USED
ONLY FOR
BOTTOM LOADING.

GENERAL DESCRIPTION

If you are looking for maximum weight saving, this is the one. Designed specifically for tankers which do not require top loading, the fill adaptor and tube have been eliminated to give a smaller, lighter, assembly but still containing all other necessary equipment.

Incorporates emergency vent/inspection hatch, quick-release single bolt clamp-band and pressure-vacuum vent with roll-over protection. Mounting pads are provided for the vapour vent, electronic overfill sensor and dip tube and adaptor. Dip tube is rivetted to manhole.

Walkway is safe and clean and accessibility of equipment for repair and maintenance is unmatched.

Aluminium coaming has a stiffening collar which minimises distortion, sets the height and allows large tolerances on the cut hole in the walkway.

Meets Australian and overseas standards for use on road tankers.

NOTES

OPTIONS

AVV3.0 vapour vent.
VOH200-5 Starship junction box.
P2920 Starship sensor.
VOH200-14 Blank, if no sensor.
DTS3-6F Dip tube.
VOH-13 Dip adaptor.
VOH-16 Blank plate for
dip or vapour vent.
HWC200-F Weather cover.

TECHNICAL DATA

Aluminium with st. steel trim.
Seals, Buna std, Viton optional.

Emergency vent —

Opens 30 kPa.

Capacity 8500 m³/hr free air
at 45 kPa.

Pressure/vacuum vent

pressure opens 15 kPa

vacuum opens — 2 kPa

capacity 240 m³/hr free air at
35 kPa

locks shut at 60° from vertical

incorporates free air bleed.

Approved under AS2809-1985.

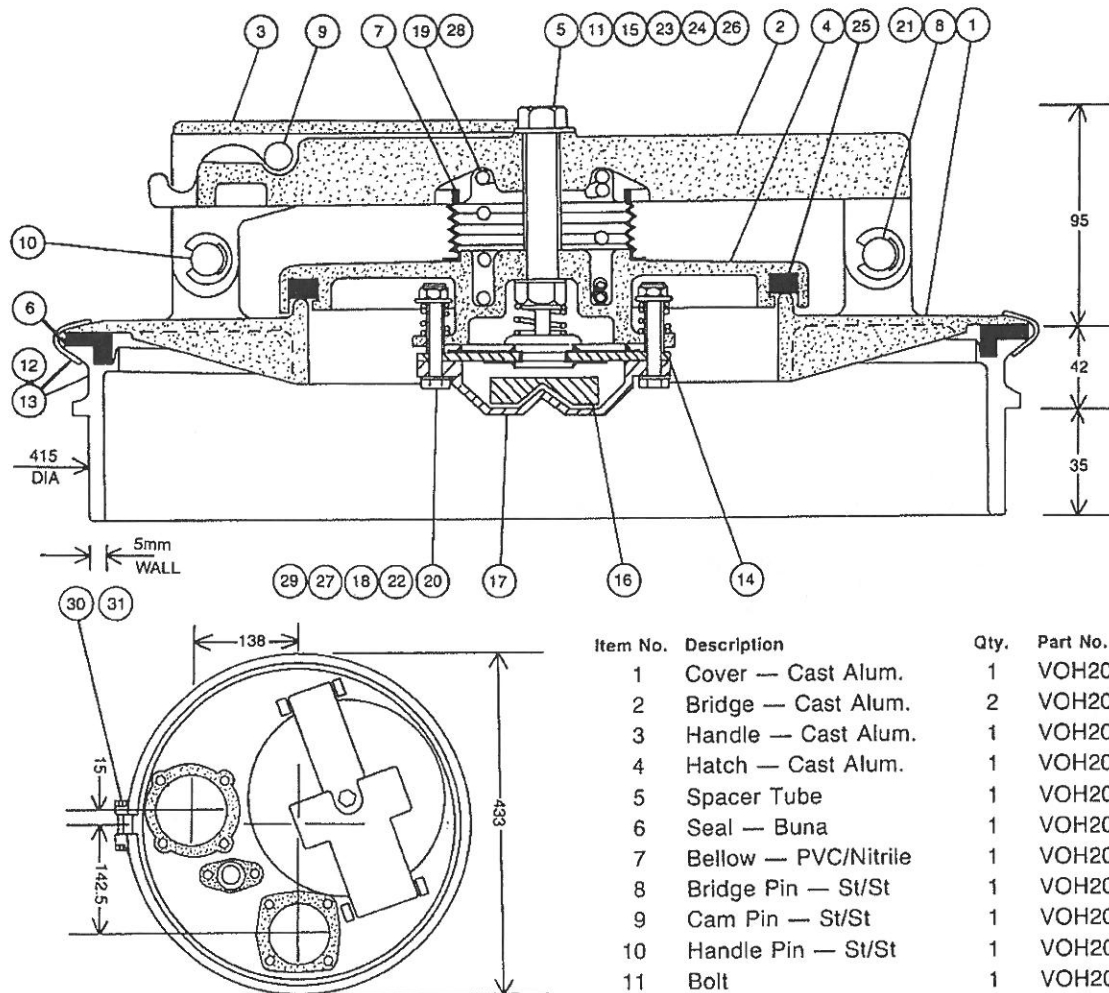
Weight of basic assembly 9.8 kg.
c/w coaming.



*Equipment for liquid
handling, storage
and transport*

LIQUIP

ASSEMBLY VOH200-A



23	Flat Washer	1	P0104
24	Nyloc Nut	1	P0152
25	Hatch Seal	1	P0236*
26	Pressure Spring	1	P0339
27	Vacuum Springs	2	P0340
28	Emergency Pres. Spring	1	P3091
29	Nyloc Nut	2	P0148
30	Clampband Bolt	1	P0028
31	Clampband Nut	1	PH100/3

Item No.	Description	Qty.	Part No.
1	Cover — Cast Alum.	1	VOH200/1
2	Bridge — Cast Alum.	2	VOH200/2
3	Handle — Cast Alum.	1	VOH200/3
4	Hatch — Cast Alum.	1	VOH200/4
5	Spacer Tube	1	VOH200/6
6	Seal — Buna	1	VOH200/7
7	Bellow — PVC/Nitrile	1	VOH200/8
8	Bridge Pin — St/St	1	VOH200/9
9	Cam Pin — St/St	1	VOH200/10
10	Handle Pin — St/St	1	VOH200/11
11	Bolt	1	VOH200/12
12	Coaming — Alum	1	VOH200/15
13	Clamp Band Assy	1	VOH200/16
14	Vacuum Poppet	1	PVV100/1
15	Pressure Poppet	1	PVV100/2
16	Rollover Poppet	1	PVV100/3
17	Rollover Cage	1	PVV100/4
18	Spacer Tube	2	PVV100/5
19	Gauze	1	PVV100/6
20	Bolt	2	P0050
21	E-Clips	6	P0096
22	Flat Washer	2	P0922

*Alternative, Viton, P0237.

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DIP/FILL TUBES and ADAPTORS



**DTS
SERIES**

DIP TUBE



**FTB
SERIES**

FILL TUBE

OPTIONS

Order as:— DTS * — * — *
FTB * — * — *

3 = 80 mm dia.
4 = 100 mm dia.
4 = 1200 long
5 = 1500 long
6 = 1800 long
6S = 1800 long in st.st.

Blank = straight tube
F = flanged

All current dip and fill adaptors are based on NATO camlocks.

The VOH series bolt directly on to the VOH300 and VOH200 manholes and the remote mounting pads DP3.0 and DP4.0.

Other types and variants are available to special order as below.

OPTIONS

Order as:— VOH — * — 1

12 = 65 mm camlock.
13 = 80 mm camlock.
14 = 100 mm camlock.
15 = 50 mm camlock.

1 = supplied less cap
order separately

Available to special order

Viton seal or Teflon seal.
Australian Standard camlock.
Stainless steel.
Locking cap.
CONSULT LIQUIP.

TECHNICAL DATA

Standard construction is alum. with st. steel gauze 600 micron.

Mounting on VOH300 is for flanged type.

Mounting on VOH200 is plain type.

Mounting on to remote pad is for flanged type.

(Note — flanged units are removeable without lifting the manhole).

**VOH
SERIES**



TECHNICAL DATA

Standard unit aluminium with Buna seal.

Kit includes screws and gasket.

Weight of VOH13 including cap 0.9 kg.

TYPICAL APPLICATIONS

REQUIRED BY LAW
ON TANKERS
CARRYING
FLAMMABLE
LIQUIDS.

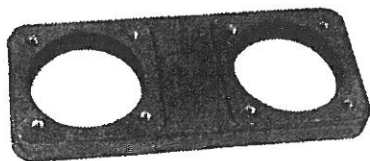
NOTES



*Equipment for liquid
handling, storage
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LIQUIP

BLANKS & ADAPTORS FOR MANHOLES



DIP/FILL REMOTE
MOUNT PAD
DP3.0
DP4.0

Normally used with SH301 hatches which cannot have dip and fill tubes mounted in them. Welds direct to tank walkway and accepts flanged dip or fill tubes and VOH series adaptors.

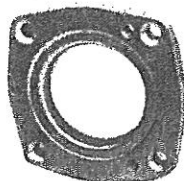
Available in aluminium and stainless steel.
80 mm and 100 mm. Single or double.
CONSULT LIQUIP.



BLANKING PLATE FOR
MOUNTS FOR VOH12
VOH13
VOH15
AVV3.0
DP3.0

Aluminium.

ADAPTOR TO
FIT PVV204 ON
TO VOH13 MOUNT



VOH22

BLANKING PLATE
FOR PVV204
MOUNT



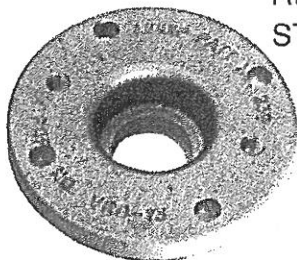
VRB2

Aluminium.

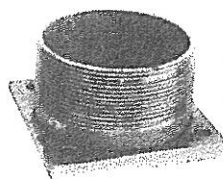
Used to add a second PVV204 vent to the manhole when extra venting capacity is required.
Aluminium.

REMOTE MOUNT FOR
STARSHIP SENSOR

Aluminium.



VRB-13 (Weld-On)
VRB-13-1 (Bolt-On)



VOH17 ADAPTOR FROM
VOH18 VOH13 MOUNT
TO MALE BSP

Bolts on to the standard VOH13 mount on manhole or remote pad to provide 75mm BSP (VOH17) or 65mm BSP (VOH18) male threads.

Zinc plated steel.



VOH200-14
Aluminium.

BLANKING PLATE
FOR STARSHIP SENSOR
MOUNT ON VOH300,
VOH200 AND VRB-13

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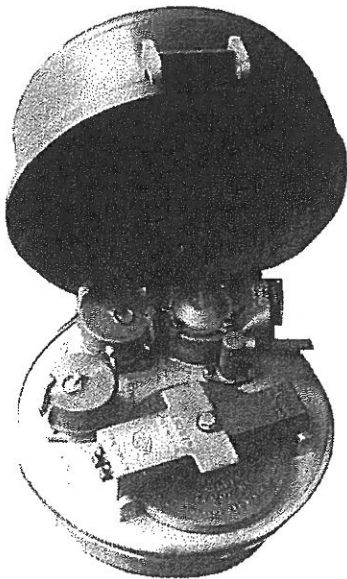
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MANHOLE ACCESSORIES



WEATHER COVER

HWC100-F

HWC200-F

A fibreglass cover to shield the manhole from dirt and water to provide additional protection to the tanker contents. Quick release toggle pin, hinge welds to walkway.

HWC100-F — fits VOH300.

HWC200-F — fits VOH200.

If used in conjunction with vapour recovery, cut section out of rim to clear vapour hose connection to coaming. Cover has reinforcing internal ribs to suit.

Std. colour Green.
Built-in aluminium reinforcing plate at hinge.
Weight 1.0 kg.

TYPICAL APPLICATIONS
AVIATION
REFUELLERS AND
OTHER TANKERS
NEEDING SPECIAL
PRECAUTIONS
AGAINST
CONTAMINATION.

NOTES

DIP TUBE GUIDE

DTG series

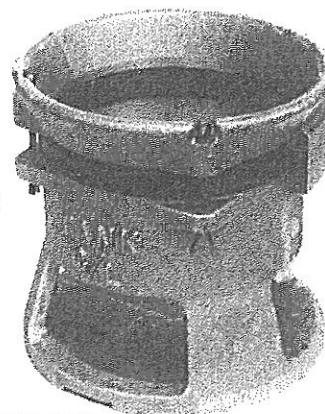
Bolt or weld to tank floor to brace bottom of dip tube and locate dip stick in correct position. Not all models have all features — See below.

OPTIONS

DTG3-A	Alum., weld-on, built-in striker pad, plain bore.
DTG3-R	Alum., weld-on, built-in striker pad, elastomer bearing.
DTG3-RR	Alum., bolt-on, built-in striker pad, elastomer bearing.
DTG3-AT	Alum., weld on, built-in striker pad, teflon bearing.
DTG3-M	M.steel, weld-on, no striker pad, plain bore.
DTG4-A	Alum., weld-on, no striker pad, plain bore.
DTG4-M	M.steel, weld-on, no striker pad, plain bore.

TWIN UNIT DTF 3 x 3 AVAILABLE TO SPECIAL ORDER

Has second guide incorporated to accept fill tube on VOH300 spacing. Allows dip and fill tubes on VOH300 to be withdrawn separately as no steady is needed.

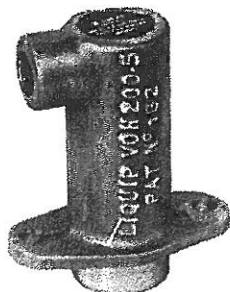


*Equipment for liquid
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LIQUIP

MANHOLE ACCESSORIES

STARSHIP SENSOR JUNCTION BOX



VOH200-5

A very lightweight and inexpensive junction box to mount any electronic sensor.

Manholes VOH300 and VOH200 incorporate matching recesses to bolt straight on, or use remote mount VRB-13.

When bolted down, dual o-rings both seal and clamp the sensor.

Material — aluminium.

Port — conduit thread, 16 mm.

Dipsticks carried in road tankers rattle and bounce.

It is common to have engraved numbers abraded away and for accuracy to be lost because of wear on the dipstick plug and striker plate.

DSR-21 polyurethane ring prevents rattling.

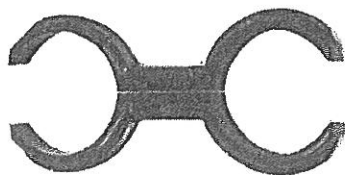
DSS-21 provides a handy finger pull but is also compressed by the cap of the dip adaptor to stop bouncing.

(Cut dip-stick to sit 35mm below rim of dip adaptor. Spring simply screws into the hollow section stick).

ANTI-RATTLE DIPSTICK

DSS-21

DSR-21



TUBE STEADY TS series

Used to brace the fill tube off the dip tube.

Model TS 3 x 3 suits VOH300 and old style VOH100-A manholes with 80 mm dia. dip and fill tubes.

TS 3 x 4 and TS 4 x 4 suit VOH100 with 80 x 100 and 100 x 100 dia. tubes respectively.

Material aluminium.

Hole centres 139 mm spacing.

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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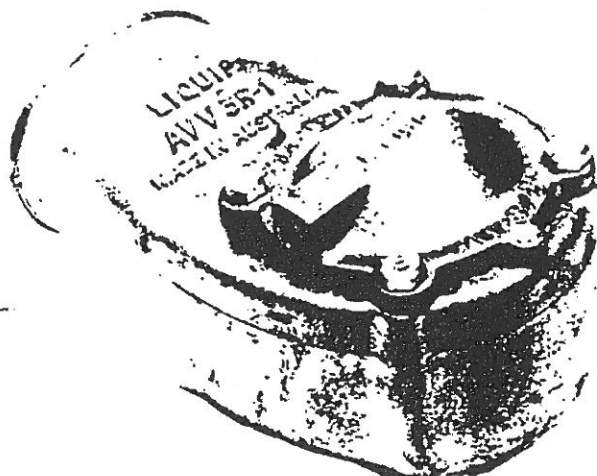
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LIQUIP

VAPOUR VENT



AVV3L - SERIES

A very light and simple air actuated vent. When pressurised air supply is activated, main poppet opens and vapour is ducted out of the tank via 90mm nominal diameter outlet.

The actuator is a diaphragm for reliability and simplicity: it is identical to that used in the SLV5-AO valve and is completely isolated from vapour. The mounting bolts are isolated from the venting chamber eliminating any vapour leakage. The poppet opens inwards to prevent leakage from product surge. A tapered seat is used for improved sealing.

Mounting is directly onto VOH300 and VOH200 manholes or onto tank top via a weld flange (see below). Bolts are the same thread and P.C.D. as those on the VOH-13 adaptors for versatility in choice of positions.

Different materials are available (as listed below), plus an option of having a built in sequencing valve. This valve on the "V" version, does not allow the next vent to open until the main poppet is fully opened. The end signal is then used in the certainty that all the vapour vent poppets are open. If no signal, it can be used as a cut-off until the problem is fixed.

OPTIONS AND RELATED EQUIPMENT

AVV3L Aluminium with viton.
AVV3LV Adds sequencing valve.
AVV3LAT Aluminium with teflon.
AVV3LVAT Adds sequencing valve.
AVV3.0-ST Stainless steel with teflon.

AVV3.0-7 Weld flange aluminium.
AVV3.0-8 Weld flange mild steel.
AVV3.0-9 Weld flange st. steel.

VH3.5 90mm U connection hose.

VRB3.5-1 Coaming connector alum. straight.
VRB3.5-2 Coaming connector m/s. straight.
VRB3.5-3 Coaming connector alum. @ 45°.

TECHNICAL DATA

Operating air
Pressure 70 kpa
to 850 kpa.
(normal 500 kpa)

Consumption/stroke
1 litre free air.

Main poppet opens
@ 7 kpa vacuum.

Stainless steel
trim with viton
seal is std.

Weight 1.9 kg

TYPICAL APPLICATIONS

STORAGE TANKS
AND ROAD
TANKERS WITH
VAPOUR
RECOVERY.

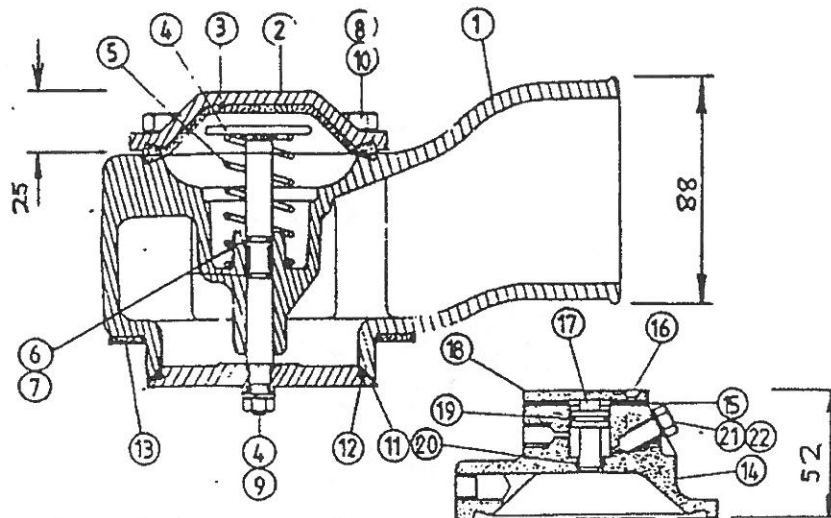
NOTES



Equipment for liquid
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and transport

LIQUIP

ASSY — AVV SERIES



ITEM NO.	DESCRIPTION	AVV3R QTY	MATERIAL	PART NO.	AVV3RV QTY	MATERIAL	PART NO.
1	body	1	aluminium	AVV3R-1	1	aluminium	AVV3R-1
2	top cover	1	aluminium	AVV3.0-2	-	-	-
3	diaphragm	1	buna	P3095	1	buna	P3095
4	spindle	1	st/st	AVV3R-3	1	st/st	AVV3R-3
5	spring	1	st/st	P4401	1	st/st	P4401
6	o ring	2	viton	P0124	2	viton	P0124
7	o ring	-	-	-	-	-	-
8	spring washer	4	z/p steel	P0108	4	z/p steel	P0108
9	lock nut	1	z/p steel	P0635	1	z/p steel	P0635
10	bolt	4	z/p steel	P3236	4	z/p steel	P3236
11	poppet	1	aluminium	AVV3R-2	1	aluminium	AVV3R-2
12	o ring	1	viton	P4507	1	viton	P4507
13	gasket	1	neocork	P3096	1	neocork	P3096
14	top cover	-	-	-	1	aluminium	AVV3-2V
15	sequential	-	-	-	1	neocork	P0684
16	gasket	-	-	-	3	z/p steel	P0982
17	screw	-	-	-	1	st/st	AVV3-5V2
18	poppet	-	-	-	1	aluminium	AVV3-5V3
19	top plate	-	-	-	1	nitril	P0684
20	o ring	-	-	-	1	viton	P0159
21	breather plug	-	-	-	1	brass	AVV3-5V5
22	washer	-	-	-	-	fiber	P0892

ITEM NO.	DESCRIPTION	AVV3RAT QTY	MATERIAL	PART NO.	AVV3RVAT QTY	MATERIAL	PART NO.
1	body	1	aluminium	AVV3R-1	1	aluminium	AVV3R-1
2	top cover	1	aluminium	AVV3.0-2	-	-	-
3	diaphragm	1	buna	P3095	1	buna	P3095
4	spindle	1	st/st	AVV3R-3	1	st/st	AVV3R-3
5	spring	1	st/st	P4401	1	st/st	P4401
6	o ring	1	viton	P0124	1	viton	P0124
7	o ring	1	teflon	P0216	1	teflon	P0216
8	spring washer	4	st/st	P0824	4	st/st	P0824
9	lock nut	1	st/st	P0635	1	st/st	P0635
10	bolt	4	st/st	P3238	1	st/st	P3238
11	poppet	1	aluminium	AVV3R-2	1	aluminium	AVV3R-2
12	o ring	1	teflon	P4508	1	teflon	P4508
13	gasket	1	teflon	P2477	1	teflon	P2477
14	top cover	-	-	-	1	alum	AVV3-2V
15	sequential	-	-	-	1	neocork	P0684
16	gasket	-	-	-	3	z/p steel	P0982
17	screw	-	-	-	1	st/st	AVV3-5V2
18	poppet	-	-	-	1	alum	AVV3-5V3
19	top plate	-	-	-	1	nitril	P0684
20	o ring	-	-	-	1	viton	P0159
21	breather plug	-	-	-	1	brass	AVV3-5V5
22	washer	-	-	-	1	fiber	P0892

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LIQUIP

PRESSURE & VACUUM VENT



TYPICAL APPLICATIONS

Thermal relief vent for road tankers incorporating roll-over protection.

PVV104

A smaller version of the Liquip model PVV204.

Developed to suit the growing need for regular hydro-testing of road tankers, the vent is very easily blanked off to enable testing without removal.

Vent mounts on to Liquip manholes VOH300, EHV9, SH301, SH303 and also is available with flanges for direct mounting to a tank top.

As most modern tankers incorporate vapour recovery equipment, the PVV104 is designed for thermal relief only, not as a high capacity vent for loading and unloading. If your tanker does not have vapour recovery, consult Liquip for required vent capacity. Typically PVV104 limited to 500 l/min inflow and outflow.

OPTIONS

Specify where vent is to be mounted.
See reverse of this page for differing covers and flanges.

TECHNICAL DATA

Aluminium body & poppets.
Stainless steel springs.
Bonded buna-to-metal seats.
Rubber coated lead ball.
Pressure: opens 15kPa.
Vacuum: opens -2kPa.
Capacity 98 m³/hr free air at 35kPa.
Locks shut at 60° from vertical.
Approved to AS2809-1990.

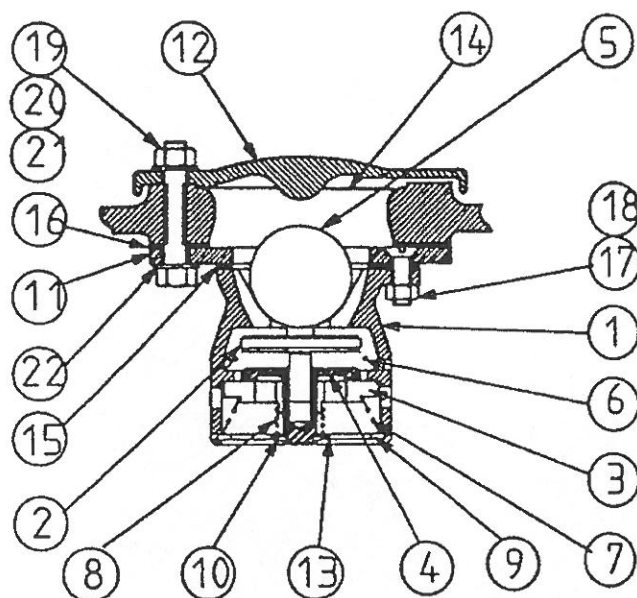
NOTES



Equipment for liquid handling, storage and transport

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PVV104 PRESS./VACUUM VENT



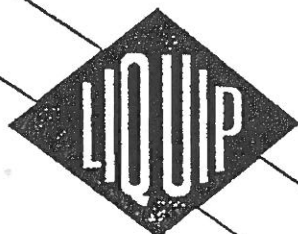
PARTS LIST

QTY	PART NO.	DESCRIPTION	MATERIAL	QTY/ASS
1	PVV104/1	PRESSURE VACUUM VENT BODY	ALUM	1
2	PVV104/7	ROLLOVER POPPET BONDED SEAL	ALUM/BUNA	1
3	PVV104/9	VACUUM POPPET BONDED SEAL	ALUM/BUNA	1
4	PVV104/8	PRESSURE POPPET	ALUM	1
5	P0986	1 1/2" BALL	BUNA/LEAD	1
6	P4421	ROLLOVER SPRING	S/S	1
7	P4419	VACUUM SPRING	S/S	1
8	P4420	PRESSURE SPRING	S/S	1
9	P4367	ORCLIP INTERNAL DIA. 60	Z/P	1
10	P0096	E-CLIP 1/2"	M/S Z/P	1
11	PVV104/10	ADAPTOR FLANGE REMOTE MOUNT	ALUM	1
12	PVV104/11	WEATHER COVER REMOTE MOUNT	ALUM	1
13	P0104	FLAT WASHER 1/2"	M/S Z/P	1
14	PVV104-4	SPARK ARRESTOR GAUZE	S/S	1
15	P4250	GASKET	NEOCORK	2
16	P4243	GASKET	NEOCORK	1
17	P0721	SCREW C'SINK 1/4"BSW X 25	M/S Z/P	2
18	P0168	NUT 1/4"BSW NYLOC	M/S Z/P	2
19	P4818	SCREW 5/16"BSW X 2"	M/S Z/P	3
20	P0149	NUT 5/16" BSW NYLOC	M/S Z/P	3
21	P0101	WASHER 5/16" FLAT	M/S Z/P	3
22	P4341	WASHER 5/16" FLAT	FIBRE	3

* DELETE THESE ITEMS FOR DIRECT MOUNT TO VOH400 AND ADD THE FOLLOWING:

PVV104-4	SPARK ARRESTOR GAUZE	S/S	1
P0001	SCREW 1/4" BSW X 3/4"	M/S Z/P	2
P0107	SPRING WASHER 1/4"	M/S Z/P	2

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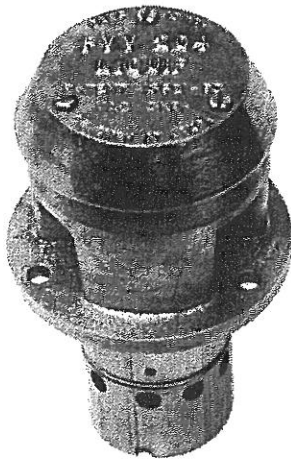


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LIQUIP

PRESSURE & VACUUM VENT



PVV204

STANDARD

PVV204—AT

CHEMICALS

PVV204—S

STAINLESS STEEL

TYPICAL APPLICATIONS

STORAGE TANKS
WITH
INFLOW/OUTFLOW
RATES LESS THAN
1000 l/min.

(CHECK TANK
PRESSURE
CAPABILITY.)

BLENDING TANKS.
ROAD TANKERS.

A vent of this type is mandatory for flammable liquids tankers and the PVV204 is approved to AS2809—1985 and A.I.P. code CP-7 in all States.

Should a tanker overturn, the roll-over poppet locks positively closed at any angle exceeding 60° from vertical to completely close off all openings.

This occurs regardless of how slowly the tanker turns and sealing actually improves with higher internal pressure.

In normal conditions a small bleed hole is permanently open to allow the tank to "breathe" and remain at atmospheric pressure.

The vent may also be used on storage and blending tanks, but it is important that the pressure and vacuum capability of the tank is given.

Different settings may need to be specified on the vent for other applications.

Mounting of the vent is directly on to tank tops or VOH100 manholes, and also SH301 swing-back hatch. When mounting directly onto a tank, a weld flange is necessary. See below.

OPTIONS AND RELATED EQUIPMENT

For chemicals, use PVV204-AT in aluminium, stainless steel and Teflon.

For stainless steel tanks specify PVV204-S in all stainless steel and Teflon.

Mounting flanges:—

PVV200-11: m.steel.

PVV200-11S: st.steel.

VRB-1: aluminium.

PVV200-21: conical

adaptor to 50 mm male

BSP thread. Plated steel.

TECHNICAL DATA

Alum. body and poppets.

St.st. housing, shafts and springs.

Viton seals.

Pressure setting 15 kPa*.

Vacuum setting 3 kPa*.

Gas capacity 240m³/hr free air at
35 kPa.

Max recommended liquid loading
rate 1000 l/min.

* These settings comply with
AS2809-1985.

Other settings available to
order.

Wt. 1.6 kg.

NOTES

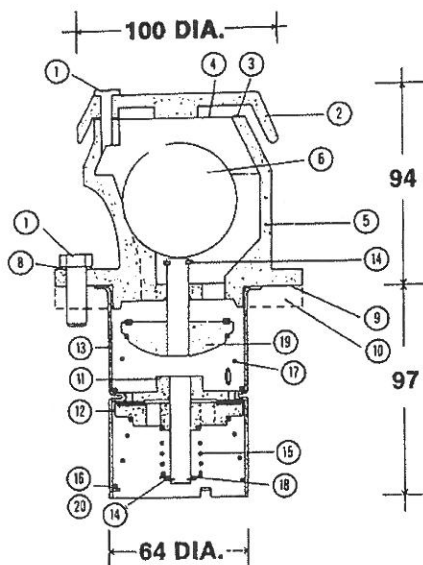


*Equipment for liquid
handling, storage
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LIQUIP

ASSEMBLY PVV204

Flange 115 O/D
3 Holes 8 dia.
on 95 PCD



ITEM No.	DESCRIPTION	QTY.	PART No.		
			PVV 204	PVV 204-AT	PVV 204-S
1	Screw	3	P961	P961	P789
2	Top Cover	1	PVV204/2	PVV204/2	PVV204/2S
3	Gauze Retainer	1	PVV204/5	PVV204/5	PVV204/5S
4	Gauze	1	PVV204/4	PVV204/4	PVV204/4S
5	Body	1	PVV204/1	PVV204/1	PVV204/1S
6	Ball	1	PVV204/3	PVV204/3	PVV204/3
7	Setscrew	3	P12	P783	P783
8	Spring Washer	3	P108	P824	P824
9	Gasket	1	P658	P2470	P2470
10	Weld Flange — Alum.	1*	VRB-1	VRB-1	VRB-1
	Weld Flange — M.st.	1*	PVV200/11	PVV200/11	PVV200/11
	Weld Flange — St.st.	1*	PVV200/11S	PVV200/11S	PVV200/11S
	Adaptor to VOH Hatch	1*	VOH-22	VOH-22	VOH-22
	Adaptor to 50mm male BSP — M.st.	1*	PVV200/21	PVV200/21	PVV200/21
11	Pressure Valve Assembly	1	PVV204/8	PVV204/8	PVV204/8S
12	Valve Seat Assembly	1	PVV204/9	PVV204/9C	PVV204/9S
13	Cage	1	PVV204/6	PVV204/6	PVV204/6
14	Circlip	2	P43	P43	P43
15	Spring — Pressure	1	P302	P302	P302
16	Spring — Vacuum (5 Coils)	1	P58	P58	P58
17	Spring — Rollover (8 coils)	1	P57	P57	P57
18	Washer	1	P813	P813	P813
19	Rollover Poppet Assembly	1	PVV204/7	PVV204/7C	PVV204/7S
20	Spring Retainer	1	PVV204/20	PVV204/20	PVV204/20

* ORDER AS REQUIRED

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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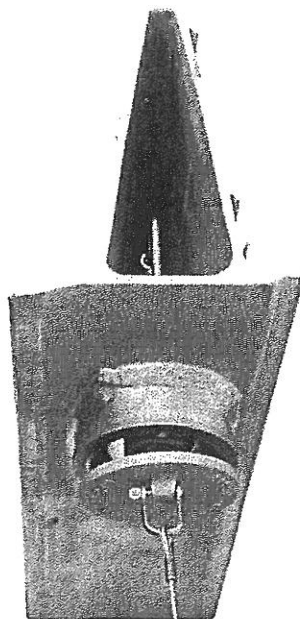
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LIQUIP

MECHANICAL VAPOUR VENT



MVV3.0

TYPICAL APPLICATIONS

A VENT OPERATED BY CABLE FROM THE INTERNAL VALVE FOR USE IN BOTTOM LOADING TANKERS.

Loading tankers at high flow rates requires a high capacity vent on top of the tanker.

Traditionally this has been achieved by air operation with equipment such as the AVV3.0. However with the introduction of the revolutionary Liquip hinged-poppet SLV5-AO internal valve, the vent can now be operated mechanically. Lighter weight, less cost, no air lines to fit up on the walkway.

An extended slotted arm on the SLV5 poppet is linked by cable to the poppet of the vapour vent. This poppet is cleverly shaped to operate at any angle of pull, and is spring loaded to return.

The vent can be welded directly into the roll-over coaming from inside the tank or bolted into the walkway or Liquip manhole.

Even if fitted into the sealed roll-over coaming the poppet seal and spring are readily removeable for overhaul.

Commonality of components is achieved by use of same seal as in AVV3.0 and operating cable is LW400 as used with all top-operated valves.

OPTIONS and RELATED EQUIPMENT

SLV5-AO-L
LW400
AVV3.0

TECHNICAL DATA

Alum. body

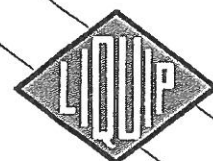
Viton seal.

Trim stainless steel
and plated steel.

Opens to give equivalent
of 75 mm dia. hole.

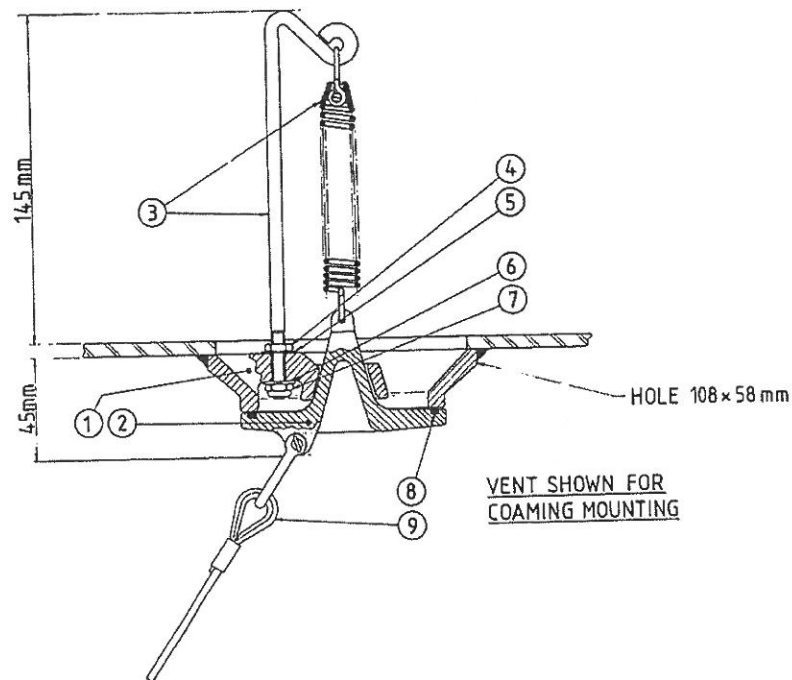
Poppet opens at -7 kPa
vacuum.

NOTES



*Equipment for liquid
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LIQUIP ASSEMBLY MVV3.0



Illustrated is type to weld into roll-over coaming.

ITEM	DESCRIPTION	QTY.	PART No.
1	BODY	MVV3.0-1	1
2	POPPET	MVV3.0-2	1
3	SPRING & SUPPORT ROD	MVV3.0-3	1
4	ADJUSTING NUT	P0128	1
5	WASHER	P0100	1
6	SPRING WASHER	P0107	1
7	NYLOC NUT	P0148	1
8	'O' RING	VITON *	1
		TEFLON *	
9	LIFTING WIRE KIT	LW400	1

*SPECIFY

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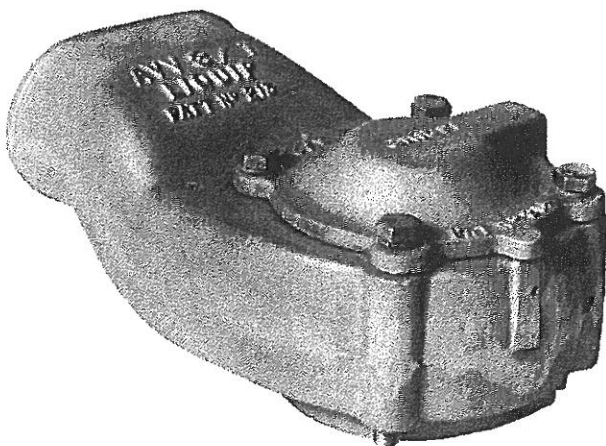
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LIQUIP

VAPOUR TRANSFER VENT



AVV3.0 SERIES

TYPICAL APPLICATIONS
STORAGE TANKS
AND ROAD TANKERS
WITH VAPOUR
RECOVERY

A very light and simple air actuated vent. When pressurised air supply is activated, main poppet opens and vapour is ducted out of tank via 90 mm nominal dia. outlet.

Actuator is diaphragm for reliability and simplicity: it is identical to that used in the SLV5-AO valve, and is completely isolated from vapour. Spindle is bushed, and poppet opens inward to prevent leakage from product surge.

Mounting is directly onto VOH300 and VOH200 manholes or on to tank top by weld flange (see below). Bolts are same thread and p.c.d. as those on the VOH13 adaptor for versatility in choice of positions.

Different materials are available as listed below, plus an option of having a built-in sequencing valve. This valve, on the "V" version, does not allow the next vent to open until the main poppet is fully opened. The end signal is then used in the certainty that all the vapour vent poppets are open. If no signal, it can be used as a cut-out until the problem is fixed.

NOTES

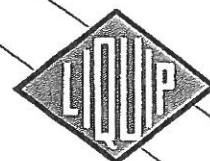
OPTIONS AND RELATED EQUIPMENT

AVV3.0 Aluminium and Viton
AVV3.0-V Adds sequencing valve
AVV3.0-AT Aluminium and Teflon
AVV3.0-V-AT Adds sequencing valve
AVV3.0-ST Stainless steel and Teflon
AVV3.0-7 Weld flange, alum.
AVV3.0-8 Weld flange, m.steel
AVV3.0-9 Weld flange, st.steel
VH3.5 90mm i/dia. hose
VRB-12 Louvre kit for outlet
VRB3.5-1 Coaming connector, straight, alum.
VRB3.5-2 Coaming connector, straight, m.steel
VRB3.5-3 Coaming connector, 45°, alum.
(Illustrations on next page.)

Also see MVV3.0 for mechanically actuated unit.

TECHNICAL DATA

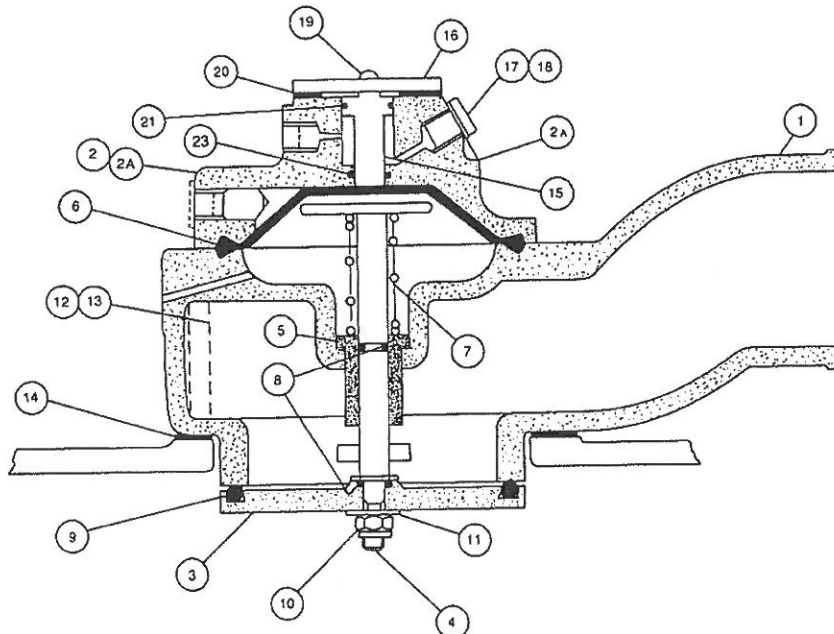
Operating air pressure
70 kPa to 850 kPa
(Normal, 500 kPa).
Consumption/stroke
1 litre free air.
Main poppet opens
at -7 kPa vacuum.
St.steel trim with Viton seals is standard.
Wt. 1.8 kg.



*Equipment for liquid
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LIQUIP

ASSY — AVV SERIES



ITEM NO.	DESCRIPTION	QTY.	MATERIAL	AVV3.0 & V PART NO.	MATERIAL	AVV3.0 ST PART NO.	MATERIAL	AVV3.0 AT PART NO.
1	Main Body	1	Aluminium	AVV3.0/1	Stainless Steel	AVV3.0/1S	Aluminium	AVV3.0/1
2	Top Cover	1	Aluminium	AVV3.0/2	Aluminium	AVV3.0/2	Aluminium	AVV3.0/2
2A	Diaphragm Housing							
	Sequential	1	Aluminium	AVV3.0/2V	Aluminium	AVV3.0/2	Aluminium	AVV3.0/2
3	Poppet	1	Aluminium	AVV3.0/3	Stainless Steel	AVV3.0/3S	Stainless Steel	AVV3.0/3
4	Poppet Spindle Assy.	1	Stainless Steel	AVV3.0/4	Stainless Steel	AVV3.0/4	Stainless Steel	AVV3.0/4
5	Bush	1	Delrin	AVV3.0/6	Teflon	AVV3.0/6T	Teflon	AVV3.0/6T
6	Diaphragm	1	Buna	P3095	Buna	P3095	Buna	P3095
7	Spring	1	Stainless Steel	P3094	Stainless Steel	P3094	Stainless Steel	P3094
8	"O" Ring	2	Buna	PO214	Viton	PO124	Viton	PO124
9	"O" Ring	1	Viton	P3042	Teflon	P2487	Teflon	P2487
10	1/4in. BSW Nyloc Nut	1	Cad/P.M./Steel	PO148	Encapsulated Stainless Steel	PO796	Encapsulated Stainless Steel	PO796
11	1/4in. Flat Washer	2	Z/P M/Steel	PO100	Stainless Steel	PO810	Stainless Steel	PO810
12	5/16in. BSW x 3in. Bolt	4	Z/P M/Steel	PO049	Stainless Steel	PO935	Stainless Steel	PO935
13	5/16in. DIA Spring Washer	4	Z/P M/Steel	PO108	Stainless Steel	PO824	Stainless Steel	PO824
14	Gasket	1	Neo Cork	P3096	Teflon Encapsulated	P2477	Teflon Encapsulated	P2477
15	Sequential Poppet	1	Stainless Steel	AVV3.5/V2				
16	Top Plate	1	Aluminium	AVV3.5/V3				
17	Breather Plug	1	Brass Hex	AVV3.5/V5				
18	Washer	1	Fibre	PO892				
19	3/4in. BSW x 1/2in. Round Screws	3	Mild Steel	PO982				
20	Gasket	1	Neo Cork	P684				
21	"O" Ring	1	Nite Rile	PO160				
22	Plug (Packing Only)	2	P.V.C.	P1310				
23	"O"-Ring	1	Viton	PO159				

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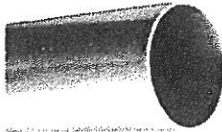
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VAPOUR VENT ACCESSORIES

CONNECTING STUBS TO COAMING



VRB3.5-1 Alum., straight
VRB3.5-2 M.steel, straight

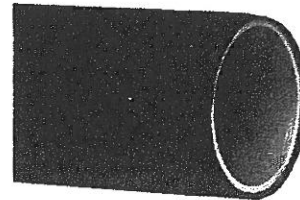


VRB3.5-3 Alum., 45°

90 mm o/dia. stubs which weld into the tanker roll-over coaming and provide a connection point for the VRH3.5 hose from the vapour vent.

The 45° angled unit in cast aluminium is an alternative to minimise back pressure as the air flow enters the coaming.

VAPOUR CONNECTION HOSE KIT



VRH3.5

90 mm i/dia. extruded rubber hose to connect AVV3.0 vent to coaming stub.

Supplied in kit for a normal tanker complete with clamps.

Note: For hose lengths greater than 225 mm unsupported, fit internal spring P0314 to increase strength under vacuum.

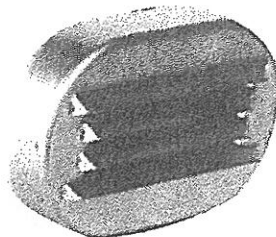
TYPICAL APPLICATIONS

EQUIPMENT TO SUIT
AVV3.0 VAPOUR
VENT ON ROAD
TANKERS.

NOTES

LOUVRE OUTLET COVER

VRB-12



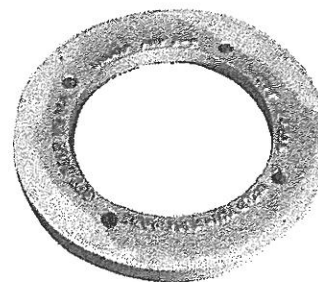
Fits directly on to outlet spout of AVV3.0. For use when bottom loading but vapour recovery is not required.

Free venting of flammable vapour is not allowed, so the kit contains a full covering of 600 micron st.steel gauze.

The louvre outlet directs the vapours downwards and also keeps out the weather.

Supplied complete with clamp.

Material aluminium.



MOUNTING FLANGES

AVV3.0-7 Alum.
AVV3.0-8 M.steel
AVV3.0-9 St.steel

Weld onto tank top when VOH300 or VOH200 manholes are not being used.

Supplied complete with gasket.



*Equipment for liquid
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LIQUIP VENTS



PV401

TYPICAL APPLICATIONS

Emergency pressure relief in tanks, bins and pipework systems. May also be inverted and used as vacuum relief in certain circumstances.

A simple and reliable emergency pressure relief vent. Flange welds directly onto tank top. Materials as below and opening pressure can be specified to suit your requirements.

OPTIONS

Order as:— PV401 — * — *

- A = Alum. cover
- S = St.st. cover
- A = Alum. flange
- M = M.st. flange
- S = St.st. flange
- B = Buna seal
- V = Viton seal
- T = Teflon seal

TECHNICAL DATA

Standard setting:

Vent opens 30 kPa.

Capacity 3250 m³/hr free air at 45 kPa.

(Other settings to order).

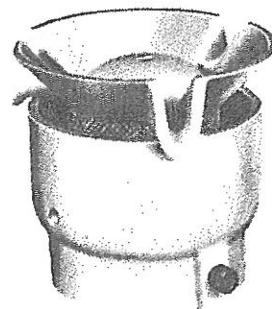
Weight, alum. assembly, 1.3 kg.

Updraught and downdraught free vents for small storage tanks and service station tanks.

FREE VENTS

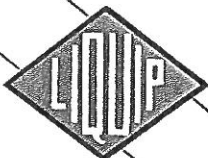
Gauzed for flash protection and dirt prevention, but otherwise free flow.

Sizes 13 mm to 50 mm, and for large tanks the PVV401 vent may be used, less its valving mechanisms.



CONSULT LIQUIP FOR
YOUR REQUIREMENTS

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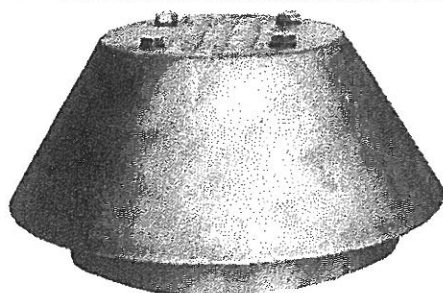
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LIQUIP

VENTS



STORAGE TANK PRESSURE-VACUUM VENT

PVV401

For storage tanks where a free vent is undesirable for reasons of product loss or pollution control.

However can also be used as a gauzed, free, vent by removing valve mechanisms.

Allows high filling and discharge rates. Pressure and vacuum settings may be specified other than standard.

Gauzed to provide dirt and flame trap.

May be mounted direct to a flat surface or onto a weld flange.

OPTIONS

VRB-3: Mount flange, alum.
VRB-8: Mount flange, m.st.
VRB-9: Mount flange, st.st.

TECHNICAL DATA

Aluminium body, poppets and covers.
Plated steel springs and spindle.
Viton seals, brass gauze.
Standard pressure setting 15 kPa.
Standard vacuum setting -3 kPa.
Maximum liquid loading rate 3600 //min. at 21 kPa tank pressure.
Maximum liquid discharge rate 2000 //min. at -7 kPa tank vacuum.

TYPICAL APPLICATIONS

PVV401
ON STORAGE
TANKS AS P/V
VENT OR AS FREE
VENT

BITUMEN AND BLACK OIL TANKER VENT

Specially designed for use on bitumen and high viscosity products.

Separate pressure and vacuum vents for ease of servicing.

Each vent can be set to the customer's requirements.

Vents have flexibly-mounted knife-edge seats which are angled to encourage drainage of product.

Entry to vent is baffled to minimise effect of surge.

Screws into standard socket welded into tank top.

Supplied ready for work complete with weather-covers as illustrated.

OPTIONS

Also available as BV300 incorporating boil-over dispersal.
This version to special order only.

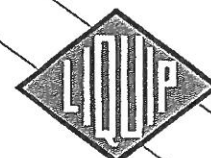


BV300-Y

TECHNICAL DATA

Plated steel body, poppets and spindles.
St.st. bushes. Buna seals.
Standard pressure setting 21 kPa.
Standard vacuum setting 10 kPa.
Flow area equivalent to 75 mm dia. orifice.
Weight 11 kg.

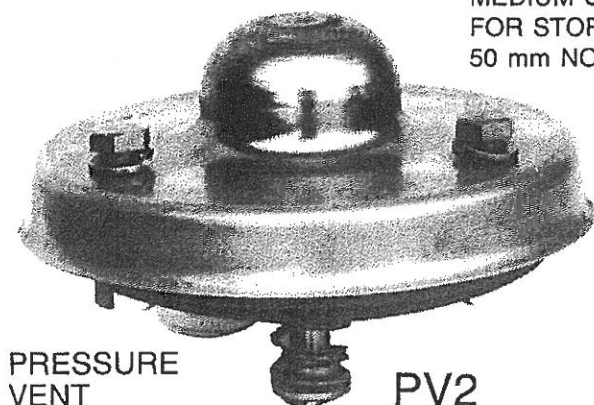
NOTES



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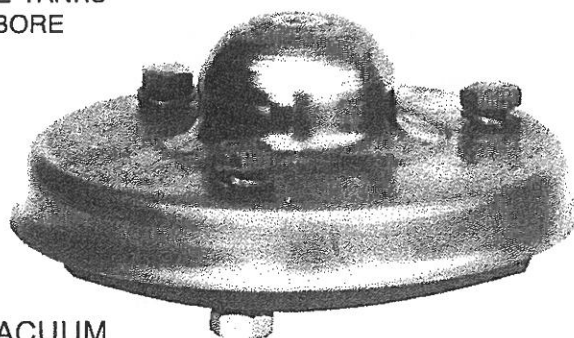
LIQUIP VENTS

MEDIUM CAPACITY VENTS
FOR STORAGE TANKS
50 mm NOM. BORE



PRESSURE
VENT

PV2



VACUUM
VENT

VV2

Spring-operated separate pressure and vacuum vents with gauzed exits. Cuts down contamination of product in storage tank and vapour loss from volatile liquids.

Easy to clean and maintain.

Available in a variety of materials as listed below.

Mount on to tank by weld flange, or in some circumstances can be bolted directly through tank top.

Opening pressures may be specified by customer, but ensure tank pressure and vacuum capabilities are known.

OPTIONS

Order as: PV2 — * *
or VV2 — * *

A = alum. body

S = st. steel body

B = Buna seal

V = Viton seal

T = Teflon seal

VRB-1: Weld flange, alum.

PVV200-11: Weld flange, m.st.

PVV200-11S: Weld flange, st.st.

PVV200-21: Adaptor to 50 mm male BSP.

Spring settings may be changed, to special order.

TECHNICAL DATA

Pressure vent opens 15 kPa, capacity
430m³/hr free air at 35 kPa.

Allows loading rate of 1500 L/min.
at 21 kPa tank pressure.

Vacuum vent opens 3 kPa, allows discharge
rate of 2000 L/min. at 10 kPa vacuum.

All models have stainless steel trim.

Weight, aluminium assembly, 0.4 kg.

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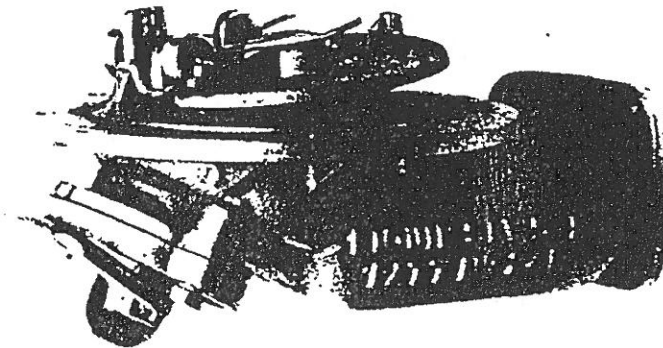
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LIQUIP

SLV5 - MANUAL OVERRIDE



**TYPICAL
APPLICATIONS**
ROAD TANKERS
WHERE LIGHT
WEIGHT, LOW
COST AND
MINIMUM
PRESSURE DROPS
ARE IMPORTANT.

NOTES

LIQUIP'S new manual override mechanism bolts directly to the existing SLV5 internal valve (See page 9/7 of this catalogue. It can be used in top or bottom operation. The units are low and compact, hence possible interference with the chassis of the vehicle is avoided.

The override is handle operated and the opening of the SLV5 poppet occurs almost immediately. Due to the cam mechanism, very little force is required to move the handle. The return spring and the gravitational force of the handle always returns the SLV5 valve poppet back to its closed position, therefore accidental spillage is avoided.

OPTIONS

SLV5-33 **MANUAL OVERRIDE MECHANISM**
(for retrofitting to existing SLV5 elbows).

SLV5-4M **MANUAL OVERRIDE MECHANISM**
(for retrofitting to existing SLV5-AO air operated elbows).

SLV5-9M **AIR RAM ASSEMBLY c/w MANUAL OVERRIDE MECHANISM.**

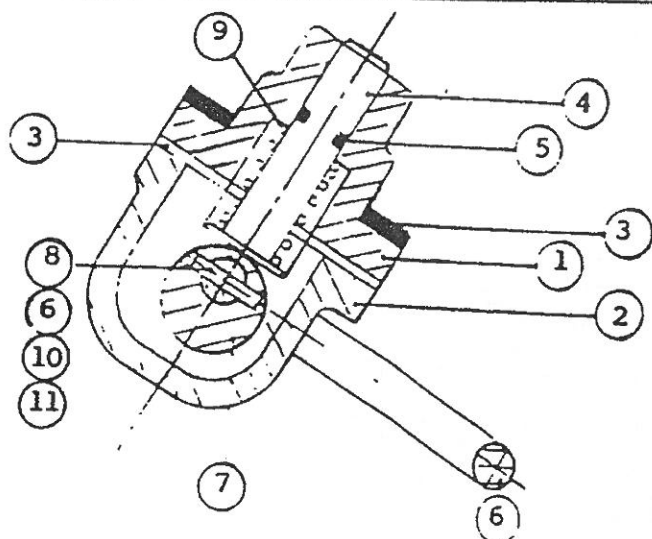
SLV5-M **TOP OPERATED ELBOW c/w MANUAL OVERRIDE.**

SLV5-AOM **BOTTOM AIR OPERATED ELBOW c/w MANUAL OVERRIDE.**

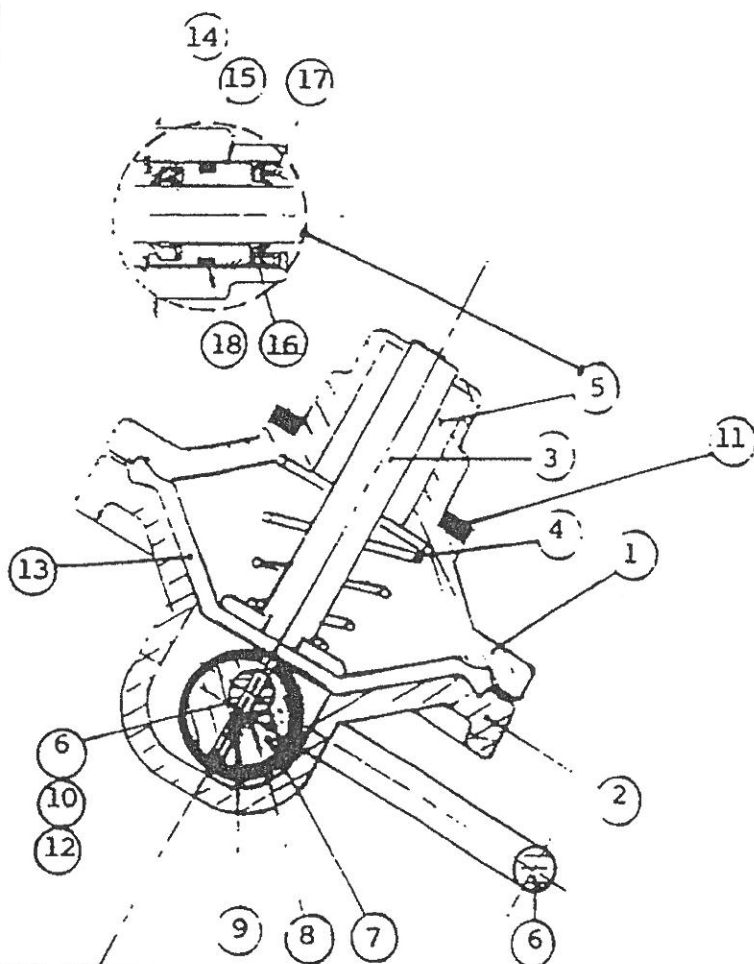


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LIQUIP



ITEM	PART No:	DESCRIPTION
1	SLV5-29	Body
2	SLV5-30	Cover
3	P0273	Gasket
4	SLV5-31	Plunger
5	P4512	O'ring
6	SLV5-27	Handle
7	SLV5-28	Cam
8	P0895	Selox pin
9	P4409	Spring
10	P0214	O'ring
11	P1408	Return spring



ITEM	PART No:	DESCRIPTION
1	SLV5-3	Diaphragm body
2	SLV5-26	Diaphragm cover
3	SLV5-5	Operating plunger
4	P0991	Spring
5	SLV5-15	Bush
6	SLV5-27	Handle
7	SLV5-28	Cam
8	SLV5-32	Roller
9	P0895	Selox pin
10	P0241	O'ring
11	P0273	Gasket
12	P4408	Return spring
13	P3095	Diaphragm
14	P0988	Circlip
15	P0990	Rod wiper
16	P0989	U-cup seal
17	SLV5-10	Support washer
18	P0164	O'ring

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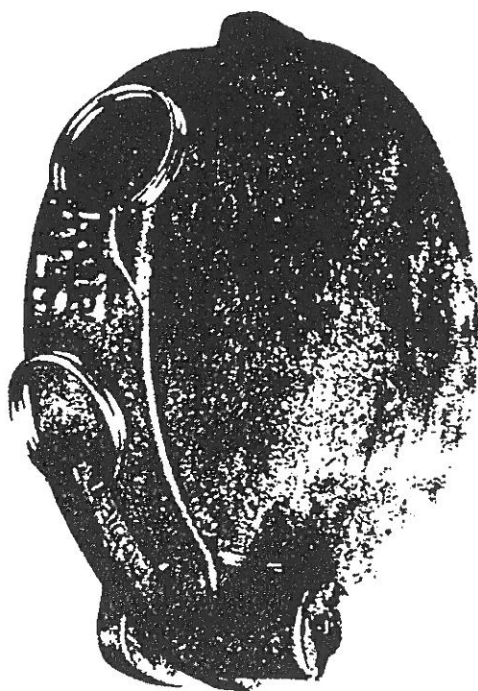
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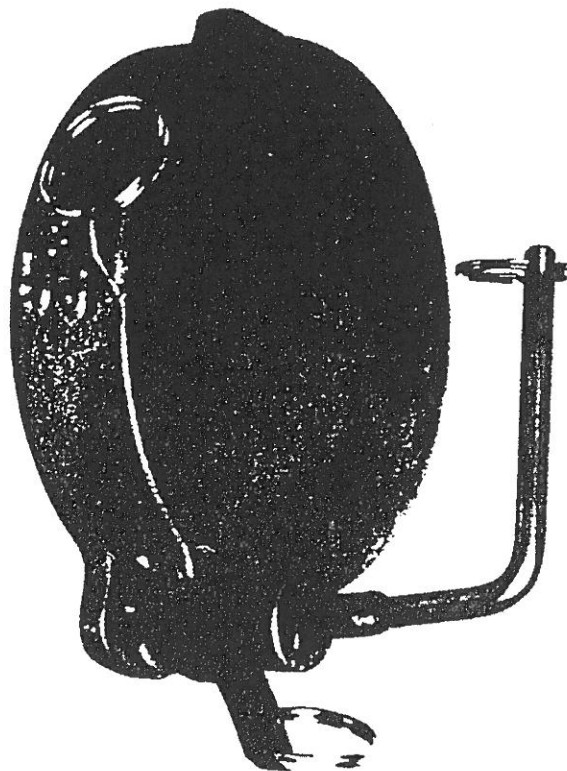
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LIQUIP

LOCKING API CAP



LOCKED CLOSED



OPENED WITH KEY

An anti-vandal cap which locks the lever when the cap is fitted to the api adaptor.

Requires a special mechanical "key" to open - insert key, twist to locate and pull to free latch.

Provides that extra security for rail cars or trucks when parked unattended.

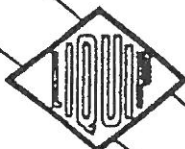
Part No. API LC Cap assembly

Part No. APILC-3 Key assembly

Materials: Aluminium cap

Stainless steel key.

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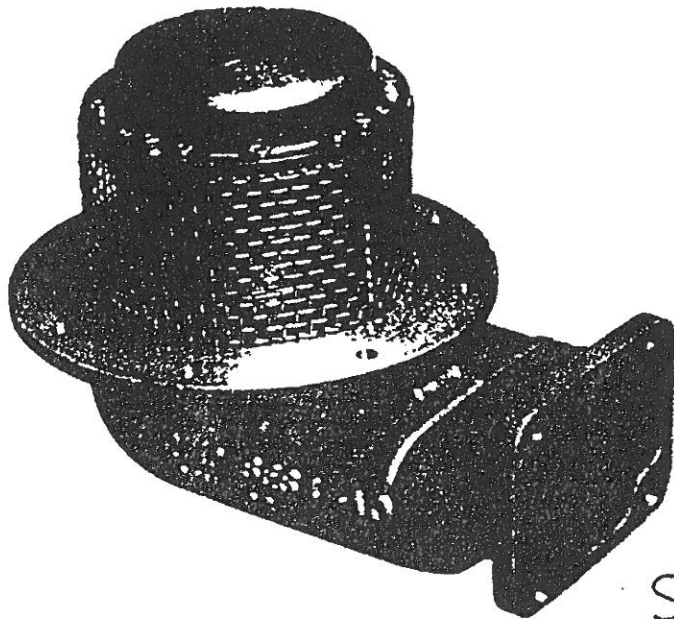
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LIQUIP

PRESSURE BALANCED VALVE



SES4

TYPICAL APPLICATIONS

Internal valve for tankers able to close against pressure

Internal valve for tankers which will close off against pressure.

Provides the ability for on-board overfill protection for aircraft refuellers or for normal vehicles where it is preferred not to have sophisticated electronics on the gantry.

Valve is pneumatically controlled, and actuation and guidance is by rolling diaphragms - no sliding seals or bearings.

Signals can be direct pneumatic from any pneumatic overfill sensor or from the Liquip on-board ECOPS electronic system. With sophisticated controls like this the pressure balanced valve is also used to prevent loading on top of returns as well as for overfill protection.

Base flange and outlet dimensions are the same as for the Liquip SLV5 and so can be fitted as a replacement at little cost.

OPTIONS & RELATED EQUIPMENT

All matching flanges as for SLV5.

Protective gauze standard.

TECHNICAL DATA

Aluminium and St. steel.

Working pressure 1000kPa. minimum.

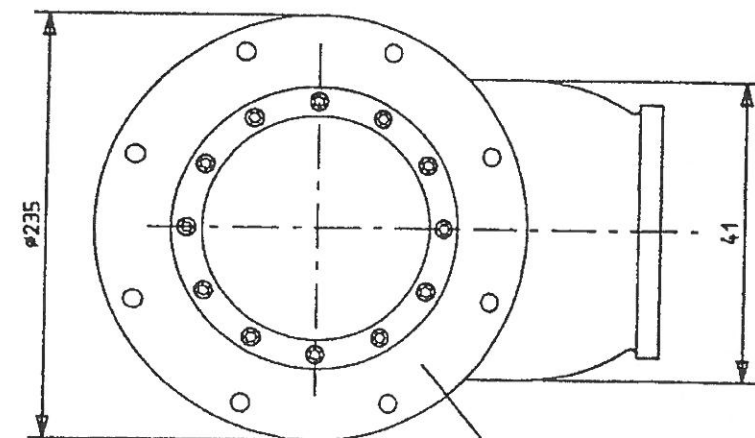
Flow rate to 2500 l/min.

NOTES

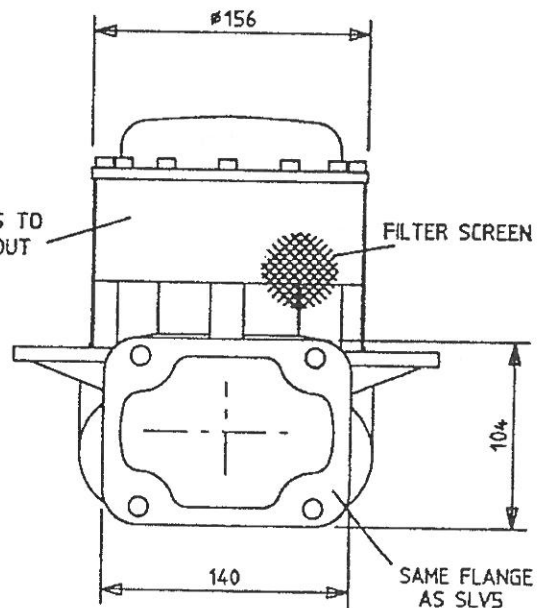
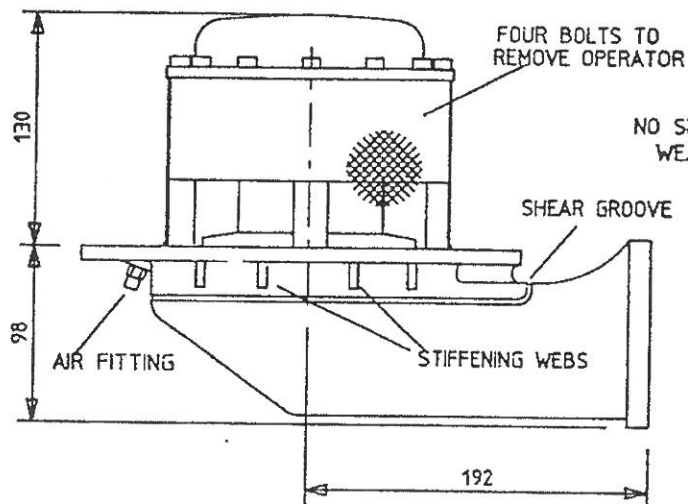


Equipment for liquid handling, storage and transport

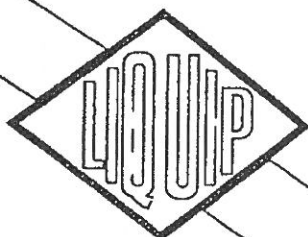
LIQUIP ASSEMBLY SES4



SAME MOUNTING
AS SLVS



METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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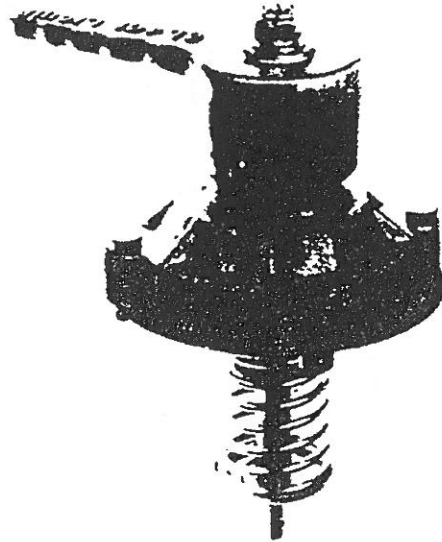
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LIQUIP

TOP OPERATOR - PNEUMATIC



ACL405-R ACL405-RAT

- * The ACL405R incorporates a device which, when air actuation is used, lifts the handle such that it automatically drops back into the rest position. An extra safety device and very simple mechanical application.
- * Now mounts main flange and is lower by 20mm than previous model.
- * Provides the same functions as manual models on previous pages but air operation permits easy integration of control systems such as those required for vapour recovery.
- * Safe - drivers spend less time on top of tanks.
- * Diaphragm powered for minimum moving parts and maximum reliability.
- * Manual emergency handle for split-drops or in case of loss of air.
- * Spindle return spring ensures lifting cable is slack and internal valve is closed.
- * Bolt directly to tank walk way or use weld-on flanges.
- * Available as standard (ACL405-R) or for use with chemicals (ACL405-RAT).

SPECIFICATIONS

Normal operating pressure
500 kpa.
Permissible range 150 to 850 kpa.
Maximum lift 44 mm.

ACL405-R - Aluminium body & handle,
st./st. spindle, delrin bush,
viton o'ring.

ACL405-RAT - Aluminium body &
handle, st./st. spindle, spring
and retainer, teflon bush & o'ring.

WEIGHT 3.0 kg

RELATED EQUIPMENT

Weld flanges
ACL405-11A (Alum.)
ACL405-11M (m/s.)
ACL405-11S (st./st.)

LW400 lifting wire
LW400-B lifting wire
ball type.

TYPICAL APPLICATIONS

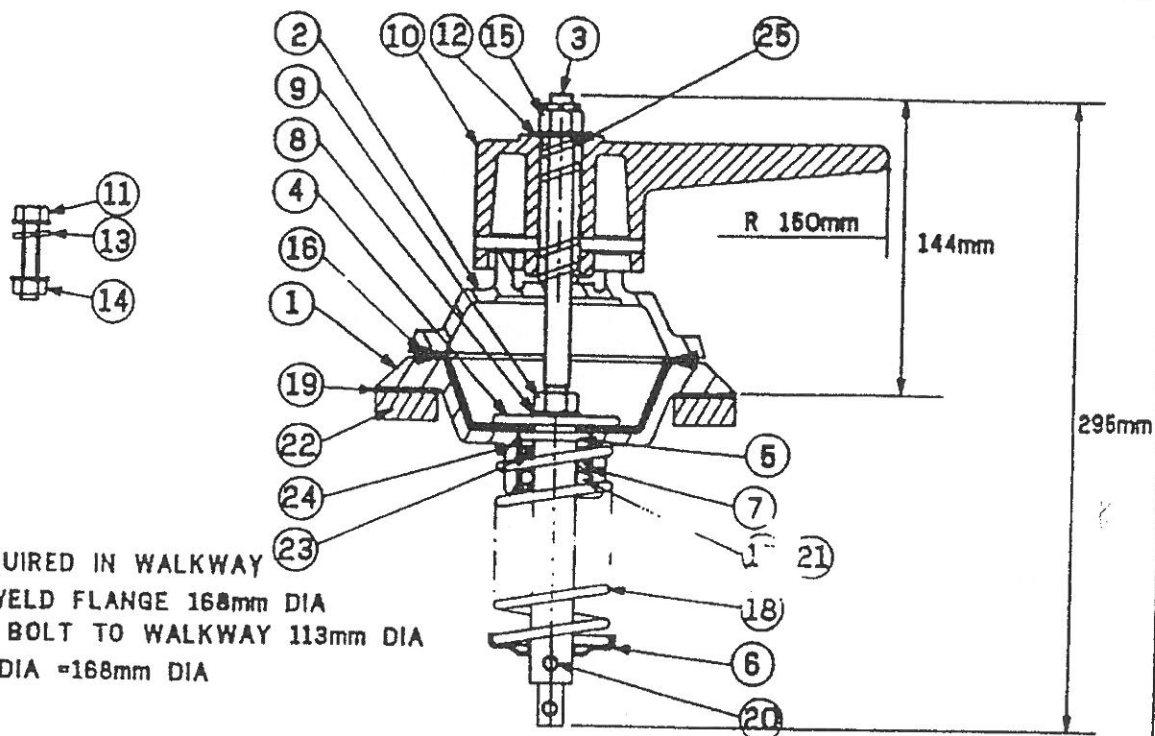
AIR OPERATION
FROM THE TOP
OF THE TANK,
FOR INTERNAL
VALVES.
INCLUDES QUICK-
ACTION MANUAL
OVER-RIDE.

NOTES



Equipment for liquid
handling, storage
and transport

LIQUIP



HOLE REQUIRED IN WALKWAY
 A/WITH WELD FLANGE 168mm DIA
 B/DIRECT BOLT TO WALKWAY 113mm DIA
 OVERALL DIA =168mm DIA

ITEM	DESC.	PART No: ACL405-R	MATERIAL ACL405-R	PART No: ACL405-RAT	MATERIAL ACL405-RAT	QTY
1.	Base	ACL405-1	Cast alum	ACL405-1	Cast alum	1
2.	Top	ACL405-2	Cast alum	ACL405-2	Cast alum	1
3.	Spindle	ACL404-3	st. steel	ACL404-3	St. steel	1
4.	Top plate	ACL404-4	z/p steel	ACL404-4	z/p steel	1
5.	Bottom plate	ACL404-5	z/p steel	ACL404-5	z/p steel	1
6.	Spring retainer	ACL404-6	z/p steel	ACL404-6S	st. steel	1
7.	Bush	ACL404-7	Delrin	ACL404-7T	Teflon	1
8.	Washer	ACL404-8	Brass	ACL404-8	Brass	1
9.	Nut	P4375	z/p steel	P4375	z/p steel	1
10.	Handle	CL401-1R	Cast alum	CL401-1R	Cast alum	1
11.	Bolt	P0062	z/p steel	P0062	z/p steel	4
12.	Washer	P0104	z/p steel	P0104	z/p steel	1
13.	Spring washer	P0109	z/p steel	P0109	z/p steel	4
14.	Nut	P0130	z/p steel	P0130	z/p steel	4
15.	Nut nyloc	P0152	z/p steel	P0152	z/p steel	1
16.	Diaphragm	P0246	Buna	P0246	Buna	1
17.	O'ring	P0278	Viton	P0278	Viton	1
18.	Spring	P0916	z/p steel	P0917	St. steel	1
19.	Gasket	P0657	Neo cork	P2472	Tef. Env.	1
20.	Pin	P0914	z/p steel	P0777	St. steel	1
21.	-----	-----	-----	P2484	Teflon	1
22.	Flange	ACL405-11	As reqd.	ACL405-11	As reqd.	1
23.	O'ring	P0294	Buna	P0294	Buna	1
24.	Circlip	P0092	z/p steel	P0092	z/p steel	1
25.	Spring	P0915	z/p steel	P0915	z/p steel	1

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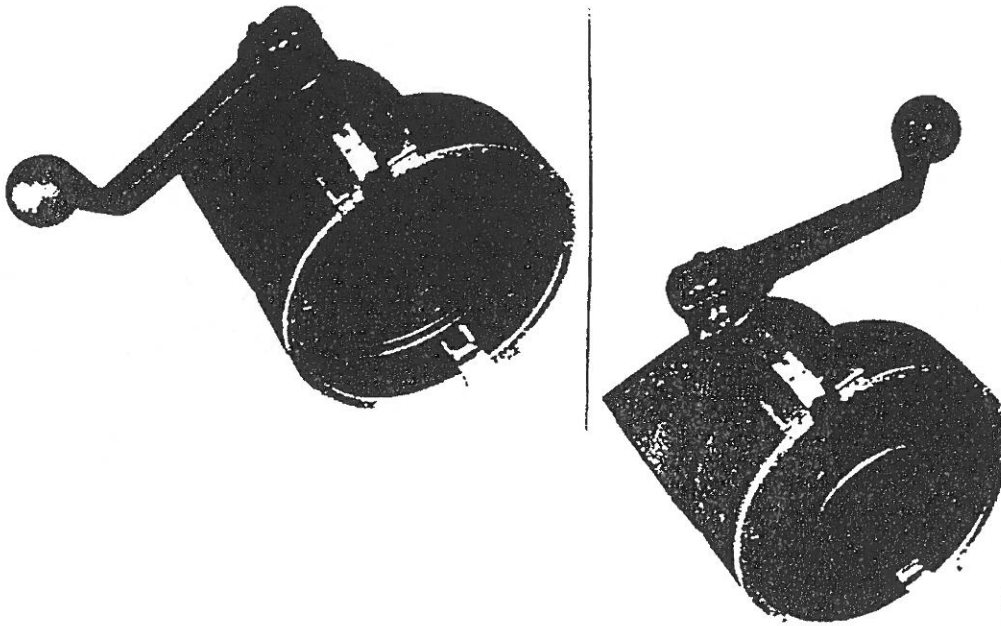
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LIQUIP

API DRY-BREAK COUPLER - GRAVITY



API NZ

TYPICAL APPLICATIONS

LIGHTWEIGHT API COUPLER WITH DRY-BREAK FOR DISCHARGING TANKERS AND RAIL CARS.

NOTES

A lightweight gravity discharge dry-break for use with API adaptors on tankers and railcars. Eighty (80)mm outlet has 3" BSP thread to provide for fitting of any size male camlock.

Operation of handle on coupler opens poppet on API adaptor. Handle has over-centre operation and also has locks in open and closed position.

Unique one-piece seal engages nose of API adaptor before poppet opens to ensure no product loss. Seal can be replaced without stripping coupler, but in any case strip requires removal of one R-clip only. Design of seal with multiple lips gives best-ever tolerance to damage from dirt or other problems.

Although designed for use in gravity drops, the coupler will operate at up to 350kPa to couple and will hold pressure up to 1000kPa. The S-springs which make this possible are the subject of a patent application.

To minimise weight and cost, this coupler does not have an interlock and can be opened while disconnected.

OPTIONS and RELATED EQUIPMENT

Order required end fitting to fit 75mm BSP socket.

Fits all API adaptors.

TECHNICAL DATA

Aluminium body with hard anodised bearing surfaces.

Viton seals.

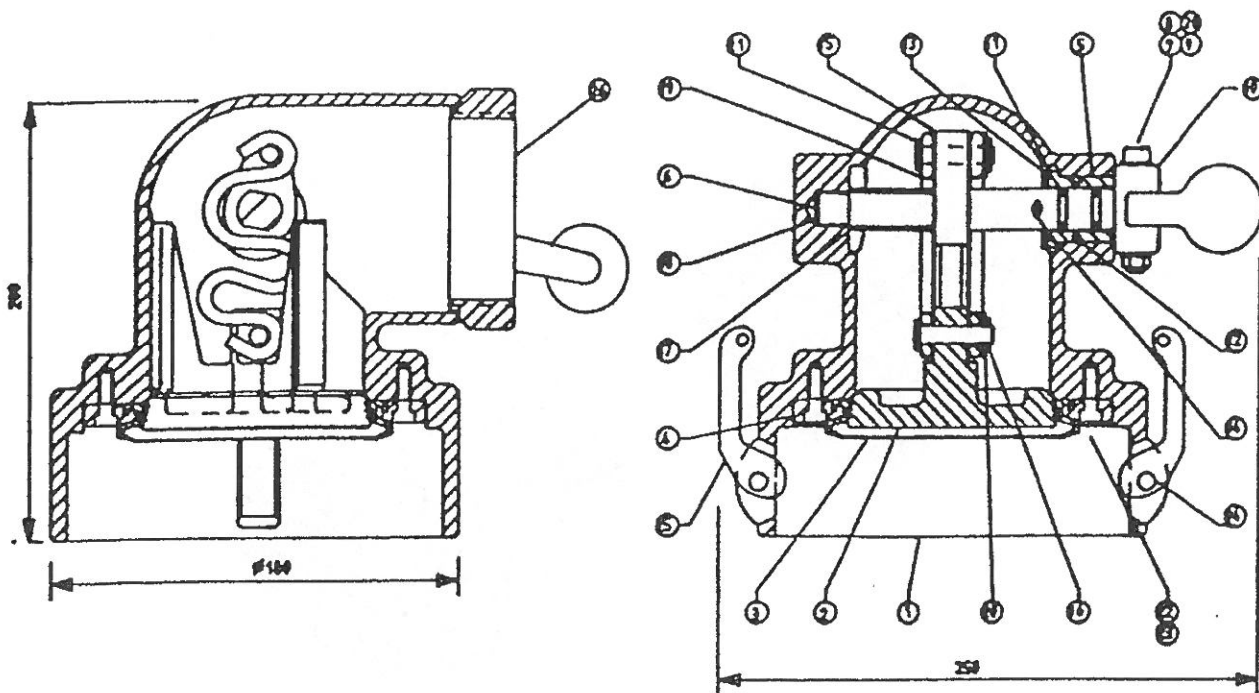
80mm diameter bore.

350 kPa maximum coupling pressure, 1000kPa product retention.



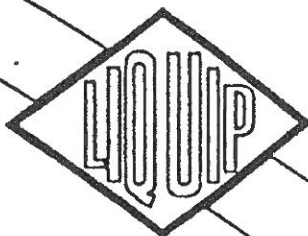
Equipment for liquid handling, storage and transport

LIQUIP ASSEMBLY-API NZ



26	SOCKET	APINZ-9	1	A1039	ALUMINIUM
25	CAM LOCK LEVERS	CLC3.0-2	2	-	ZP STEEL
24	CAM LOCK PIN	API-DC3	2	-	ZP STEEL
23	SPRING WASHER 1/4	P0107	4	-	ZP STEEL
22	SLHCS 1/4x3/4	P4831	4	-	ZP STEEL
21	CLEVIS PIN 5/16x1.3/8	P4830	2	-	ZP STEEL
20	WASHER 5/16x3/4	P0101	4	-	ZP STEEL
19	S-SPRING	P4425	2	-	ZP SP STEEL
18	TETRA BEARING	P5607	1	-	TEFLON
17	SPACER TUBE	API NZ-008	1	A1038	ALUMINIUM
16	SPLIT PIN	P0763	2	-	ZP STEEL
15	ECCENTRIC ARM	API 513-7	1	A1007	ST STEEL
14	R-CLIP	P0945	1	-	ST STEEL
13	WASHER 20x37x2.0	P4332	1	-	ST STEEL
12	O-RING BS213	P4501	1	-	BUNA-N
11	O-RING BS206	P0235	2	-	VITON
10	OPERATING HANDLE	API NZ-007	1	A1037	AP601 AL
9	ENGAGEMENT SPRING	P4415	1	-	ZP SP STEEL
8	NYLOC NUT 5/16	P0149	1	-	ZP STEEL
7	SHCS 5/16x2	P0717	1	-	ZP STEEL
6	OPERATING SHAFT	API NZ-006	1	A1036	ST STEEL
5	BUSH	API NZ-005	1	A1035	DELFIN
4	RETAINING RING	API NZ-004	1	A1034	ALUMINIUM
3	COMBINATION SEAL	P4534	1	A1033	VITON
2	LIGHTWEIGHT POPPET	API NZ-002	1	A1032	AP601 AL
1	BODY	API NZ-001	1	A1031	AP601 AL
ITEM	DESCRIPTION	PART NO.	QTY.	DRG.	MATERIAL

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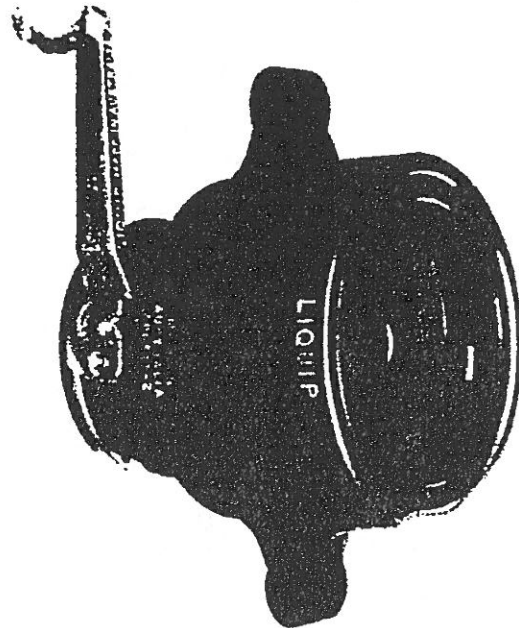
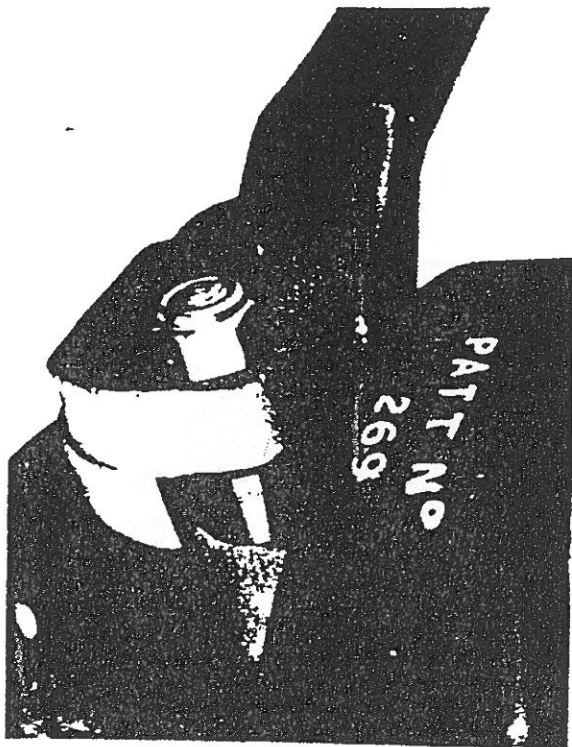
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LIQUIP

API513 FEMALE LOADING COUPLER

TYPICAL
APPLICATIONS



API513

The Liquip Female API Bottom Loading dry break coupler is all Australian made. Manufactured in light weight heat-treated aluminium, with all viton seals and o-rings. All sliding surfaces are hard anodised to give a smooth surface finish and prevent wear. Operation of the coupler is simple with the use of a specially designed operating handle to meet ergonomic requirements.

The coupler complies with American Petroleum Institutes (API) standards and ensures compatibility at all terminals. Naturally it is fully interlocked to prevent opening unless coupled to the adaptor.

Coupler features:

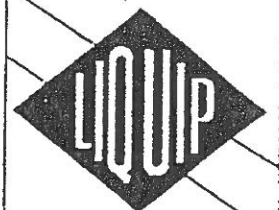
- *Ergonomic handle designed to international standards with detent roller which acts against the sliding collar face for one hand simple action
- *Extra-heavy connecting plates to prevent damage from pressure build-up
- *Large diameter camshaft with bushes both ends
- *Large diameter drive pin on handle to prevent shearing
- *Poppet seal damage virtually eliminated due to geometry of design
- *Simplest of all units to disassemble and reassemble

OPTION AND RELATED EQUIPMENT

- *Liquip loading arms
For dimensions and parts list see over.

TECHNICAL DATA

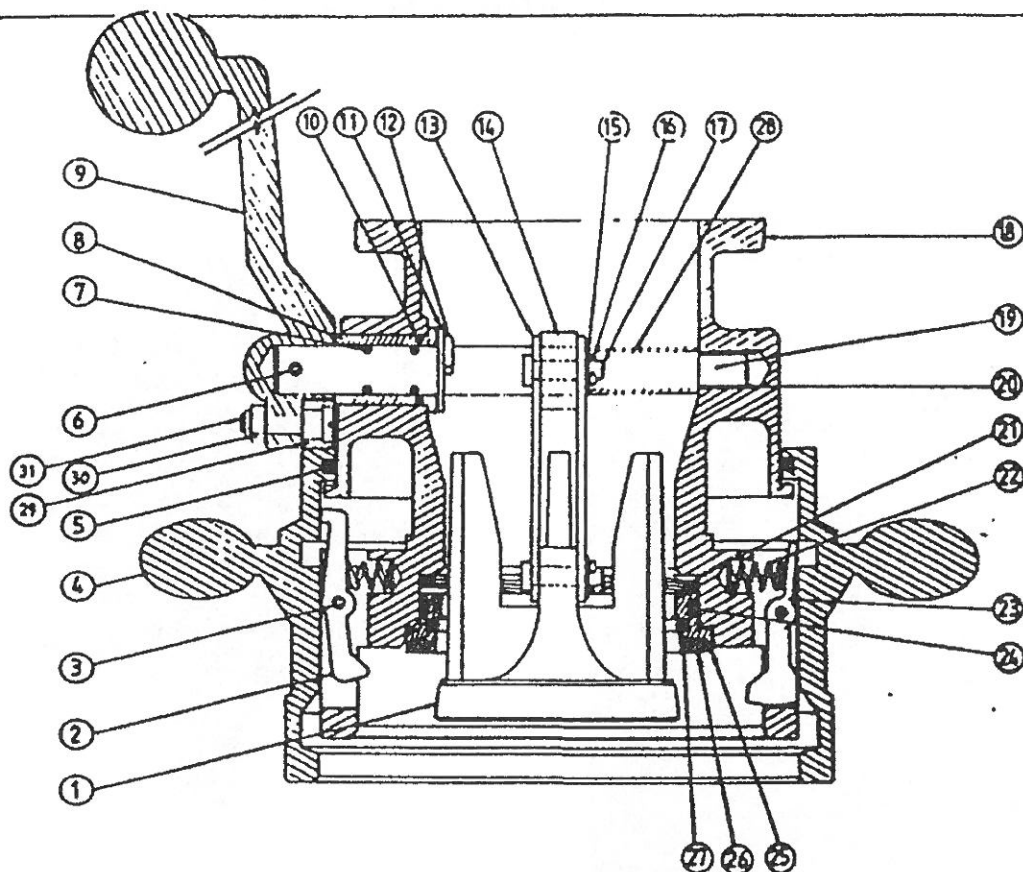
Flange 100mm TTMA
Weight=9.25kg



Equipment for liquid
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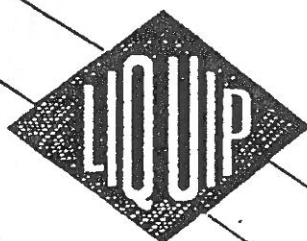
LIQUIP

API513 FEMALE LOADING COUPLER



ITEM	PART No	DESCRIPTION	QTY	MAT	ITEM	PART No	DESCRIPTION	QTY	MAT
1	AP513-3	POPPET PISTON	1	CAST ALUM	17	P0974	CLEVIS PIN	2	MS/ZP
2	AP513-9	OUTER BODY RING LATCH	1	CAST SS	18	AP513-1	BODY	1	CAST ALUM
3	P0926	SELOC PIN	3	MS/ZP	19	AP513-10	OPERATING SHAFT	1	SS/STEEL
4	AP513-2	OUTER BODY RING	1	CAST ALUM	20	P2698	TETRA BEARING	1	TEFLON
5	P3883	FELT WIPER SEAL	1	FELT	21	P3877	WAVE WASHER	2	SPGSTEEL
6	P0925	SELOC SPRING PIN	1	MS/ZP	22	P3881	PAWL SPRING	3	SPGSTEEL
7	P0235	O'RING	2	VITON	23	AP513-8	BODY LATCH	3	CAST SS
8	AP513-4	SHAFT BUSH	1	DELPH	24	P0279	O'RING	1	VITON
9	AP513-5	OPERATING HANDLE	1	CAST ALUM	25	AP513-4	POPPET ADAPTOR RING	1	CAST ALUM
10	P4501	O'RING	1	VITON	26	P0289	O'RING	1	VITON
11	P4332	FLAT WASHER	1	MS/ZP	27	P0203	O'RING	1	VITON
12	P0945	R'CLIP	1	SPGSTEEL	28	AP513-12	SPACER TUBE	1	ALUM
13	AP513-11	CAM PLATE	2	MS/ZP	29	AP513-14	ROLLER	1	DELPH
14	AP513-7	ECCENTRIC CAM	1	CAST SS	30	P0149	NUT	1	MS/ZP
15	P0101	FLAT WASHER	2	MS/ZP	31	AP513-13	PIN	1	MS/ZP
16	P0763	SPLIT PIN	2	MS/ZP	32				

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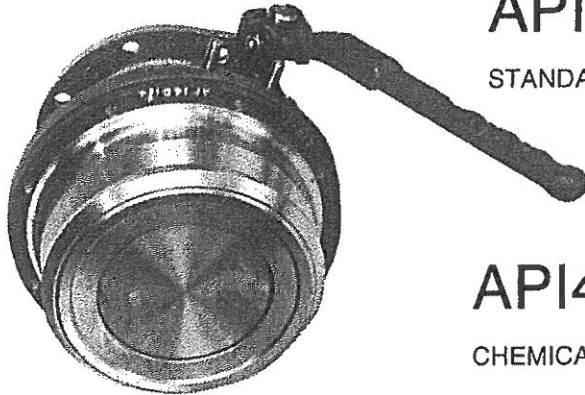
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LIQUIP

BOTTOM LOADING ADAPTOR



API403-B

STANDARD

API403-B-AT

CHEMICAL

TYPICAL APPLICATIONS

BOTTOM LOADING
OF ROAD
TANKERS FOR
PETROLEUM
PRODUCTS AND
CHEMICALS

100 mm DRY — BREAK ADAPTOR WITH HANDLE

Previous model API401 has given tremendous service for over a decade.

API403 is improved by mounting the operating shaft in dual bushes for greater support and smoother operation. Even more reliability.

API403-B bolts onto the tank truck outlet flange, using the same flange as the Liquip LBV4 butterfly valve.

Loading is by any female coupler conforming with the same API RP1004 standard. Handle is for gravity discharge.

Low pressure drop from full-flow area (equivalent to 100 mm bore throughout) and shaped interior.

Incorporates ratchet operation so handle does not move when bottom loading coupler is attached.

NOTES

TECHNICAL DATA

API403-B

Opens at 30 kPa external pressure.
Heat-treated aluminium body, poppet
and handle. St.st. shafts and spring.
Bronze cam, Delrin bushes; Viton
seals.

API403-B-AT

Opens at 40 kPa external pressure.
Aluminium body, poppet and handle.
St.st. shafts, spring and pins.
St.st. cam, Teflon bushes, Teflon
seals.

Weight 4.5 kg.

OPTIONS

Selectivity for Aviation products is
available to special order.

API403-SG incorporates sight glass in
nose cone. (Not for tankers which are
steamed out regularly.)

Should drain-lines be required, the body
of the API401 has a cast-in boss
drilled and tapped 1/2 BSP.

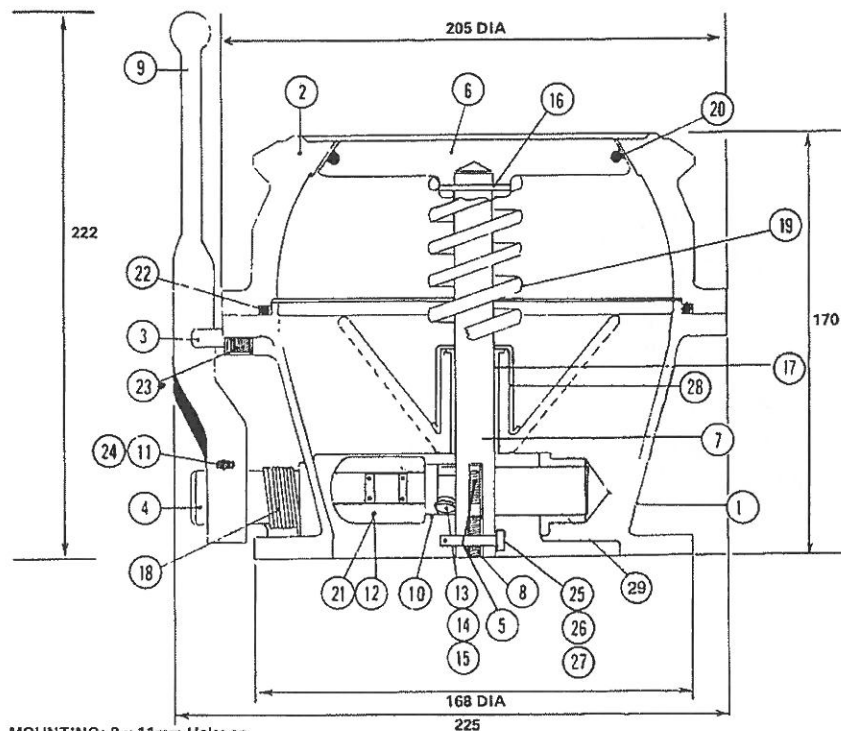
NOTE: P0663 1/2 BSP is fitted to drain
boss, when drain lines are not
required.



*Equipment for liquid
handling, storage
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LIQUIP

ASSY-API403

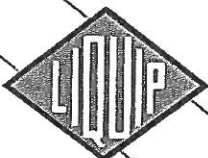


MOUNTING: 8 x 11mm Holes on
149 P.C.D. Hole Offset 12° From Vertical.

ITEM NO.	DESCRIPTION	QTY	PART NO.		ITEM NO.	DESCRIPTION	QTY	PART NO.	
			API403	API403-AT				API403	API403-AT
1	Body - Rear C/W Bush	1	API403/1	API403/1/AT	22	O-Ring - Body	1	P0290	P0155
2	Nose Cone	1	API401/2	API401/2	23	St. Hd. Screw	8	P0715	P0715
3	Retaining Pin - Handle	1	API401/3	API401/3	24	Nyloc Nut	1	P0148	P0148
4	Camshaft	1	API403/10	API403/10	25	Pin	1	API401/17	API401/17
5	Cam	1	API401/5	API401/5S	26	Washer	2	P0809	P0809
6	Poppet	1	API401/6	API401/6C	27	Cotter Pin	2	P0756	P0756
7	Spindle	1	API401/7	API401/7	28	Bush Retainer	1	P0509	P0509
8	Roller - Poppet	1	API401/8	API401/8	29	Bush - Inner	1	API403-13	API403-12
9	Handle	1	API401/9	API401/9		Dust Cap (not illustrated)			
10	Spacer Washer	1	API401/10	API401/10S	30	Dust Cap	1	API-DC	API-DC-AT
11	Skt. Hd. Screw	1	API401/11	API401/11	31	Pin - Lever	2	API-DC/1	API-DC/1
12	Bush - Outer	1	API401/12	API401/12	32	Lever	2	API-DC/2	API-DC/2
13	Clevis Pin	1	API401/13	API401/13	33	Seal	1	P0249	P0249 plus P2468
14	Fat Washer	1	API401/14	API401/14	34	Key - Ring	1	P0981	P0981
15	Cotter Pin	1	P0756	P0756	35	Chain Lug	1	P0532	P0532
16	Selox Pin	1	P0911	API401/16	36	Gasket (Flange)	1**	P0657	P2472
17	Bush - Poppet	1	API401/15H	API401/15TH					
18	Spring - Handle	1	P0331	P0331					
19	Spring - Poppet	1	P0330	P0325					
20	O-Ring - Poppet	1	P0289	P2480					
21	O-Ring - Camshaft								
	Viton	2*	P0288	P0288					
	Tellon	1	-	P2483					

* ONLY ONE REQUIRED FOR API401-AT
** SPECIFY

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OUTLET VALVE ACCESSORIES

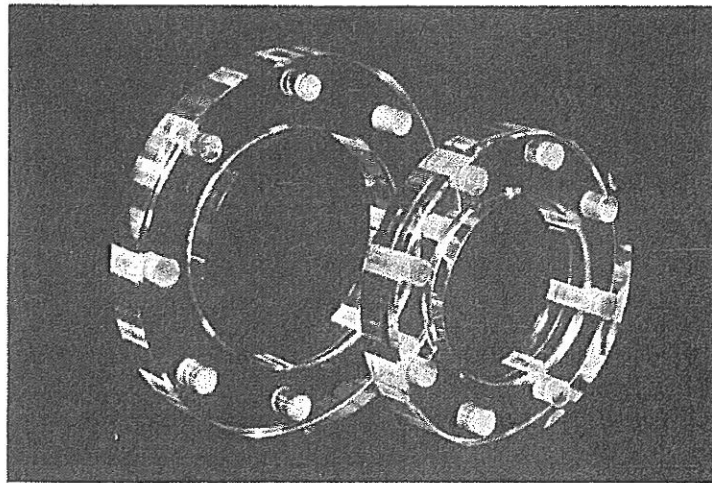


API-SG KIT

TYPICAL APPLICATIONS
INVALUABLE TO ANY OPERATOR SHOWS IF PRODUCT IS PRESENT AND ITS COLOUR.

Note:
TEMPERATURE AND CHEMICAL LIMITATIONS ..

The nose cone bolts directly to any Liquip API bottom load valve and incorporates a sight glass for safe and efficient operation. This gives the operator an insight to what's happening when the tanker is unloading. The operator can identify the fuel colour before opening the valve reducing the chance of cocktails. Note: do not steam!



BF3-SG

BF4-SG

NOTES

Liquip's looking good, these cast acrylic flanges sandwich between any TTMA flanges and offers clear view for operators for fuel colour and presence. Available in 25 mm and 40 mm thickness.

OPTIONS AND RELATED EQUIPMENT

BF Series pipe flanges.

API403-B valves.

TECHNICAL DATA

Max temp. 70°C.

Material Cast Acrylic.

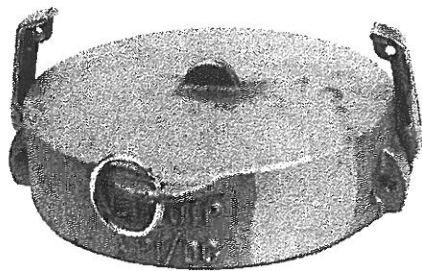
Pressure 3000 kPa.



Equipment for liquid handling, storage and transport

LIQUIP

API ADAPTOR FITTINGS



API-DC

- Cap for any API adaptor built to the RP1004 standard.
- Uses same closure principle as a camlock and has same cam arms.
- Aluminium body, sintered metal arms and pins. Buna seal is standard.

Full Teflon disc seal is available. Order as API-DC-AT.

- For gravity discharge from API adaptor having an operable poppet.
- Hose fits straight onto integral tail.

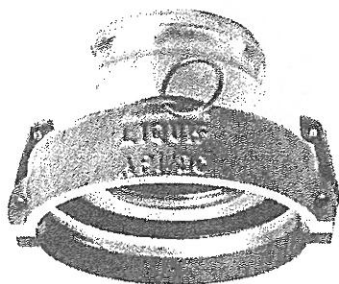
ADI-T3 suits 76 mm ID hose.

API-T4 suits 102 mm ID hose.



API-T3

API-T4



API-MC3

API-MC4

- For gravity discharge from an API adaptor where it is preferred to use existing hose fitted with standard camlocks.

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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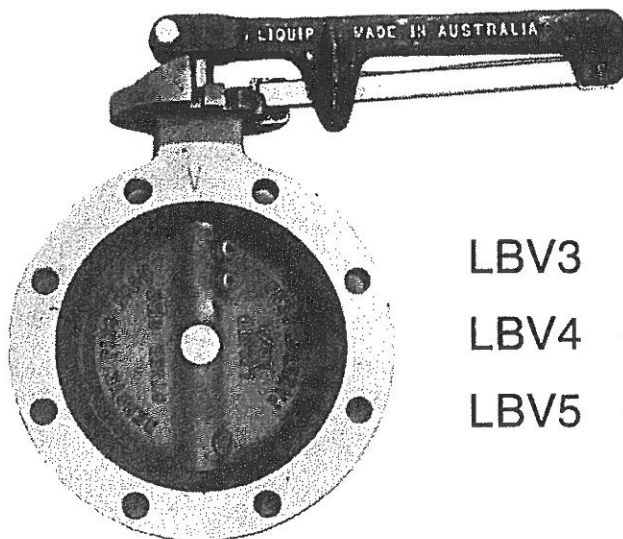
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LIQUIP

BUTTERFLY VALVES



LBV3 76 mm

LBV4 102 mm

LBV5 127 mm

Provides full flow-through area.

Thick elastomer seat provides outstanding resilience — will still seal after minor damage from foreign objects. Double o-ring seals and grease trap give long-lasting lubrication with effective sealing and dirt exclusion.

Locking handle supplied as standard.

Small size and light weight: drilled to TTMA standard. Simply remove drive bolts to disassemble. Full range of matching flanges and nose cone available.

MODEL	SIZE	THICK- NESS	BORE	PCD	No. HOLE	HOLE SIZE	OVERALL HEIGHT	WEIGHT kg
LBV3	76	28.6	86	124	8	11	203	1.8
LBV4	102	28.6	111	149	8	11	229	2.7
LBV5	127	28.6	137	178	12	11	264	2.9

OPTIONS AND RELATED EQUIPMENT

Air operation available to special order.

See over page for matching camlock adaptor and flanges.

TECHNICAL DATA

Aluminium body, handle and disc. Viton seat with stainless steel shaft and high tensile drive bolts.

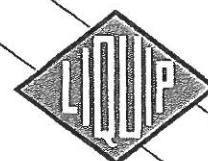
Max pres. 1200 kPa.

Max temp. 100°C.

TYPICAL APPLICATIONS

A QUICK ACTING VALVE FOR MEDIUM PRESSURES WHERE MINIMUM SIZE AND WEIGHT ARE IMPORTANT

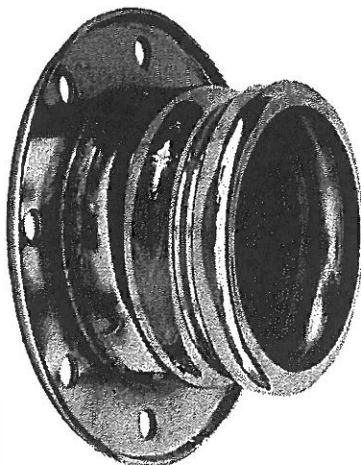
NOTES



Equipment for liquid handling, storage and transport

LIQUIP

NOSE CONES AND FLANGES



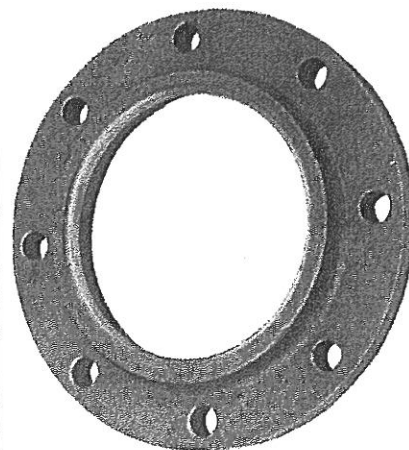
MC-V Series

Nose Cones bolt directly onto butterfly valve for simplest and most inexpensive method of providing an outlet adaptor. Steel or aluminium.

PART No.	DESCRIPTION
MC2 - V3 5°	50 mm NATO camlock to 76 mm valve, 5° angle
MC2.5 - V3 5°	63 mm NATO camlock to 76 mm valve, 5° angle
MC3 - V3 5°	76 mm NATO camlock to 76 mm valve, 5° angle
MC3 - V3 20°	76 mm NATO camlock to 76 mm valve, 20° angle
MC3 - V4 10°	76 mm NATO camlock to 102 mm valve, 10° angle
MC4 - V4 5°	102 mm NATO camlock to 102 mm valve, 5° angle
MC4 - V4 20°	102 mm NATO camlock to 102 mm valve, 20° angle

WELD FLANGES FOR PIPE AND TUBE

PART No.	DESCRIPTION
BF3	Alum. 80 mm tube x 75 TTMA
BF3-1	M.st. 80 mm pipe x 75 TTMA
BF3-2	M.st. 80 mm tube x 75 TTMA
BF3-3	M.st. 80 mm tube x 75 TTMA Pressing
BF3-4	M.st. 80 mm pipe x 75 TTMA Pressing
BF3-5	M.st. 50 mm pipe x 75 TTMA Pressing
BF3-6	M.st. Blank Plate x 75 mm TTMA
BF4	Alum. 100 mm tube x 100 mm TTMA
BF4-1	M.st. 100 mm pipe x 100 mm TTMA
BF4-1S	St.st. 100 mm tube x 100 mm TTMA
BF4-2	M.st. 100 mm tube x 100 mm TTMA
BF4-3	M.st. 100 mm tube x 100 mm TTMA Pressing
BF4-4	M.st. 100 mm pipe x 100 mm TTMA Pressing
BF4-6	M.st. Blank Plate x 100 mm TTMA
BF4-7	Alum. Blank Plate x 100 mm TTMA
BF5	Alum. 127 mm tube x 125 mm TTMA
BF5-1	M.st. 127 mm tube x 125 mm TTMA



BF Series

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



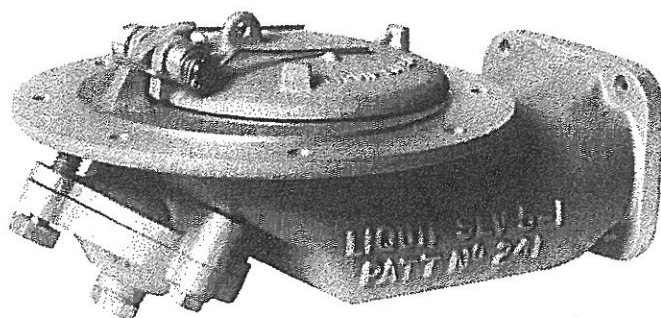
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"TOPLESS" INTERNAL VALVE & ELBOW



PATENT
PENDING

SLV5-AO

SLV5

SLV5-AT

SLV5-AO-L

TYPICAL APPLICATIONS

ROAD TANKERS
WHERE LIGHT
WEIGHT, LOW
COST, AND
MINIMUM
PRESSURE DROP
ARE IMPORTANT

An exciting new development that is not top heavy for bottom operation. Throwing away traditional concepts, the poppet is hinged to operate as a flap. Lower face is concave and rotation is deliberately restricted so that the poppet itself operates as a splash deflector.

Bore at the poppet is increased to a hefty 125 mm diameter — less pressure drop and reducing product velocity also helps to reduce splash and surge.

However overall size of the valve is still kept as small as any other.

An extra bonus is a complete lack of vortexing as the tank empties.

Air operation is by the same diaphragm as used on the AVV3.0 vapour vent and actuation is directly onto the poppet — no heavy linkages or bearings.

Exhaust port is filtered for extra weather protection.

An emergency manual override is included.

The whole air operator is removed by withdrawing only two screws and this also allows replacement of diaphragm.

May also be used with normal top operator and lifting wire.

See later section on mechanical vapour vent version with extended lever to operate cable.

NOTES

OPTIONS AND RELATED EQUIPMENT

Order as:—

SLV5-AO — Bottom air operation.

SLV5 — Less air operator for top operation.

SLV5-AT — All aluminium, st. steel and teflon for chemicals. Top operation only.

SLV5-13 — Alum. tank flange.

SLV5-11 — Alum. pipe adaptor.

SLV5-18 Blank plate, when air actuator not used.

SLV5-AO-L

Has extended lever to operate MVV-3.0 by a cable.

TECHNICAL DATA

Operating air pressure 200 kPa to 850 kPa.

Normal setting 500 kPa.

Consumption/stroke 1 litre free air.

St. st. trim with Viton seals is standard.

Max poppet opening angle 60°, poppet orifice 125 mm dia.

Pipe adaptor 100 mm dia.

Wt. SLV5-AO 3.6 kg.

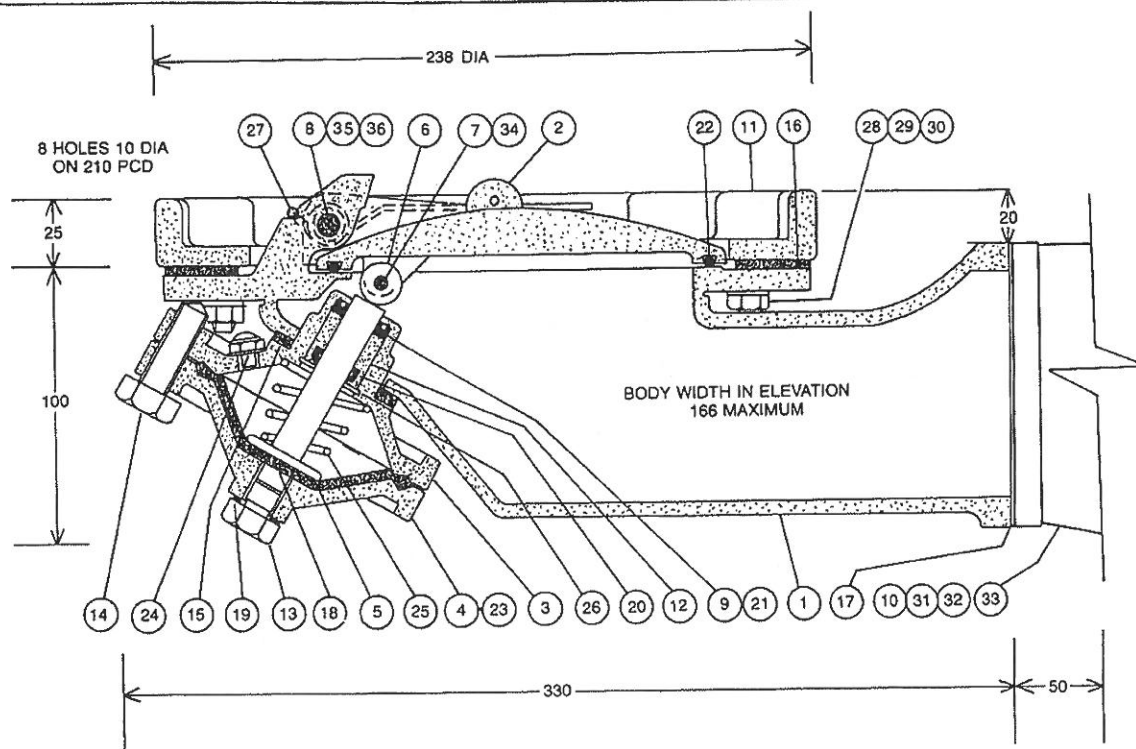
SLV5 2.9 kg.



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ASSY — SLV5-AO



ITEM NO.	DESCRIPTION	QTY	PART NO.	ITEM NO.	DESCRIPTION	QTY	PART NO.
1	ELBOW BODY	1	SLV 5-1	25	SPRING	1	P 0991
2	ELBOW POPPET	1	SLV 5-2	26	CIRCLIP	1	P 0988
3	DIAPHRAGM BODY	1	SLV 5-3	27	POPPET SPRING	1	<u>P 0323</u>
4	DIAPHRAGM COVER	1	SLV 5-4	28	STUD	8	SLV 5-21
5	PLUNGER	1	SLV 5-5	29	WASHER	8	P 1303
6	ROLLER	1	SLV 5-6	30	NUT	8	P 0129
7	ROLLER SUPPORT PIN	1	SLV 5-7	31	BOLT	4	P 0061
8	PIVOT PIN	1	SLV 5-8	32	WASHER	4	P 0102
9	CUP SEAL	1	P 0989	33	NUT	4	P 0130
10	PIPELINE ADAPTOR	1	SLV 5-11	34	SPLIT PIN	2	P 0756
11	TANK FLANGE	1	SLV 5-13	35	WASHER	2	P 0812
12	BRONZE BUSH	1	SLV 5-15	36	SPLIT PIN	2	P 0764
13	PLUG	1	SLV 5-16				
14	JACKING SCREW	1	SLV 5-17				
15	DIAPHRAGM GASKET	1	P 0273				
16	TANK FLANGE GASKET	1	P 0272				
17	PIPELINE ADAPTOR GASKET	1	P 0200				
18	DIAPHRAGM	1	P 3095				
19	FIBRE WASHER	1	P 0275				
20	ROD WIPER	1	P 0990				
21	SUPPORT WASHER	1	SLV 5-10				
22	POPPET 'O' RING	1	P 0408				
23	FIXING BOLTS	2	P 0025				
24	AIR SILENCER	1	P 2280				

NOTE

BLANKING PLATE FOR DIAPHRAGM ASSY WHEN BOTTOM OPERATION IS NOT USED — SLV 5-18 and P 0273 GASKET.

FOR CHEMICALS

SLV 5-AO NOT SUITABLE. USE PLAIN ELBOW
SLV 5-AT WITH AIR OPERATED CAMLIFT OR THE
ITV4-S TYPE FOR STAINLESS STEEL.
CONSULT LIQUIP.

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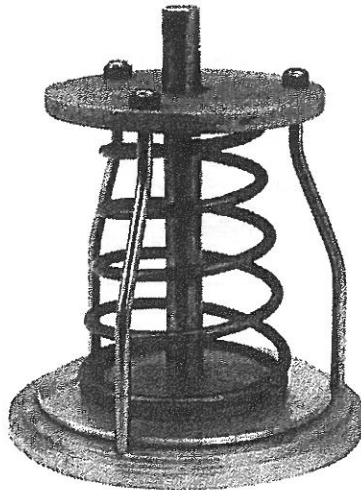
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LIQUIP

INTERNAL VALVE, POPPET TYPE



ITV Series

The SLV5 one-piece elbow and valve is standard for the majority of road tankers. The ITV series is employed for out-of-the-ordinary applications, as it covers 50 mm to 150 mm dia. is available in stainless steel, and is available in chemical trim and air bottom-operation.

The valve illustrated forms an assembly between the tank weld flange and the elbows illustrated on following pages.

OPTIONS

PART No.	DESCRIPTION
ITV2-B	50 mm m.steel and Viton, top op only
ITV2-B-S	50 mm st.steel and Viton, top op only
ITV2-B-ST	50 mm st.steel and Teflon, top op only
ITV4-B	100 mm m.steel and Viton, top op only
ITV4-E	100 mm m.steel and Viton, bottom op squat elbow
ITV4-O	100 mm m.steel and Viton, bottom op round elbow
ITV4-B-AT	100 mm alum. and Teflon, top op only
ITV4-B-S	100 mm st.steel and Viton, top op only
ITV4-B-ST	100 mm st.steel and Teflon, top op only
ITV4-O-ST	100 mm st.steel and Teflon, bottom op round elbow
ITV6-B	150 mm m.steel and Viton, top op only
ITV6-E	150 mm m.steel and Viton, bottom op squat elbow

TECHNICAL DATA

Open at 35 kPa from below.

Permissible lift 50 mm.

Chemical and Stainless steel units have tapered seats for improved sealing.

Weights:—

ITV2 — 0.75 kg

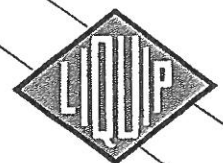
ITV4 — 1.6 kg

ITV6 — 3.0 kg

TYPICAL APPLICATIONS

FOR NON-STANDARD APPLICATIONS WHERE SLV5 IS NOT SUITABLE, e.g. ALL-STAINLESS STEEL TANKERS 50 mm PIPEWORK, etc.

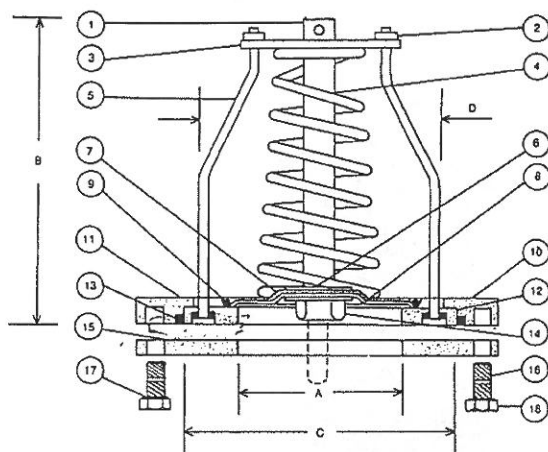
NOTES



Equipment for liquid handling, storage and transport

LIQUIP

ASSY — ITV SERIES

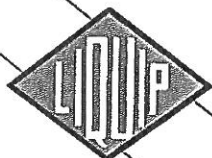


MODEL	A BORE	B HEIGHT	C SEAT DIA.	D SUPPORT DIA.
ITV2	51	110	88	76
ITV4	102	175	152	140
ITV6	152	175	216	194

ITEM NO.	DESCRIPTION	QTY.	ITV2	ITV4	ITV6	PART NO.	ITV4-AT	ITV4-S
1	Basic Spindle	1	ITV2/8	ITV4/8	ITV6/8		ITV4/8S	ITV4/8S
	Bott. Op. Spindle	1	ITV2/9	ITV4/9	—		ITV4/9S	ITV4/9S
	Squat Elbow Spindle	1	—	ITV4/10	ITV6/9		ITV4/10S	ITV4/10S
2	Nut	3	PO979	PO148	PO148 (4 off)		PO800	PO800
3	Spring Retainer	1	ITV2/6	ITV4/6	ITV6/6		ITV4/6S	ITV4/6S
4	Spring	1	PO312	PO280	PO281		PO283	PO283
5	Support Rod	3	ITV2/7	ITV4/7	ITV4/7 (4 off)		ITV4/7S	ITV4/7S
6	Flat Washer	2	PO102	PO104	PO104		PO814	PO814
7	O-Ring Ret. Outer	1	ITV2/10	ITV4/11	ITV6/10		ITV4/15AT	ITV4/15S
8	O-Ring Ret. Inner	1	ITV2/11	ITV4/12	ITV6/11		—	—
9	O-Ring Buna Inner	1*	PO217	PO229	PO196		PO2480 (TEF)	PO2480 (TEF)
	O-Ring Viton Inner	1*	PO218	PO230	PO197		PO203	PO203
10	O-Ring	3	PO214	PO214	PO214 (4 off)		PO216 (TEF)	PO216 (TEF)
11	Tank Flange							
	Alum.	1*	ITV2/3	ITV4/3	ITV6/3		ITV4/3AT	—
	M/St. or St. St.	1*	ITV2/1	ITV4/1	ITV6/1		ITV4/1S	ITV4/1S
12	Seat	1	ITV2/5	ITV4/5	ITV6/5		ITV4/5AT	ITV4/5S
13	O-Ring Buna Outer	1*	PO220	PO232	PO198		PO254 (TEF)	PO254 (TEF)
	O-Ring Viton Outer	1*	PO221	PO233	PO199		PO233	PO233
14	Nut — Basic Valve	1*	PO150	PO152	PO152		PO804	PO804
	Nut — Bottom							
	Operated Valve	1*	PO841	PO847	PO847		PO803	PO803
15	Outlet Elbow or							
	Weld Flange							
16	Stud	6	PO688	PO690	PO690		PO701	PO701
17	Shakeproof Washer	6	PO109	PO111	PO111		PO822	PO822
18	Hex Nut	6	PO130	PO132	PO132		PO804	PO804

* ORDER AS REQUIRED

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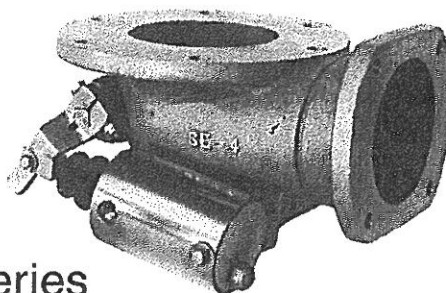
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LIQUIP

OUTLET ELBOWS



OLE Series



SE Series

TYPICAL APPLICATIONS

MATE WITH ITV
INTERNAL VALVE
TO PROVIDE TANK
OUTLET
ASSEMBLY.

USED INSTEAD OF
SLV5 FOR NON-
STANDARD
APPLICATIONS.

These elbows bolt onto the tank flanges over the page, and simultaneously locate and clamp the ITV internal valve.

Standard material is aluminium, but OLE4 is also available in st. steel.

Squat elbows are used when space is at a premium, at very little cost in flow rate.

Bottom operation may be manual, e.g. the lever is provided for an emergency over-ride, or air ram AR2.5 gives air operation.

This feature is frequently used on chemical and stainless steel tankers where an internal lifting cable may be a source of contamination.

NOTES

OPTIONS

PART No.	DESCRIPTION
OLE2	50 mm, Round, Plain
OLE4	100 mm, Round, Plain
OLE4-1	100 mm, Round, Manual Bott Op
OLE4-1-AO	100 mm, Round, Air-Ram Fitted
OLE4-1-AO-ST	100 mm, Round, Air-Ram Fitted, St. steel
OLE4-1AT	100 mm, Round, Manual Bott Op, Chemical (Teflon)
OLE4-1C	100 mm, Round, Manual Bott Op, No Brass or Steel
OLE4-C	100 mm, Round, Plain, No Brass or Steel
OLE4-S	100 mm, Round, Plain, St. steel
SE4	100 mm, Squat, Plain
SE4-1	100 mm, Squat, Manual Bott Op
SE4-1-AO	100 mm, Squat, Air Ram Fitted
SE4-1C	100 mm, Squat, Manual Bott Op, No Brass or Steel
SE6	150 mm, Squat, Plain
SE6-1	150 mm, Squat, Manual Bott Op

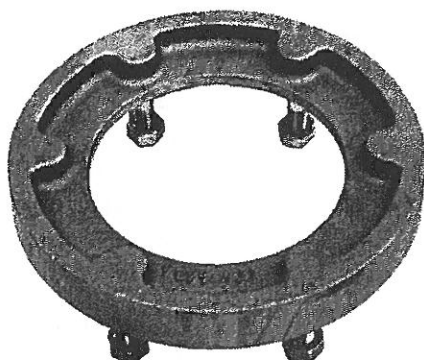
Weights:— OLE2 — 0.8 kg
OLE4 — 2.9 kg
SE 6 — 5.4 kg



Equipment for liquid
handling, storage
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LIQUIP

TANK FLANGES FOR INTERNAL VALVES



For SLV5
and ITV

APPLICATION

WELD OR BOLT INTO TANK FLOOR
TO PROVIDE MOUNT FOR
INTERNAL VALVE AND
ELBOW

Each flange has a specific application to suit the tank shell material, the valve model to be mounted and the material trim required.

Welding is the common attachment method, in which case care must be taken to avoid distortion, cracking or residual stress.

A range of bolt-on flanges is also available. These employ internal strong-backs to retain strength and ability to seal on a curved surface.

OPTIONS

PART No.	DESCRIPTION
BAF4 + BAP4	For ITV4, Alum. Bolt-on, 1390 mm Tank Rad
BAF4-2.6 + BAP4	For ITV4, Alum. Bolt-on, 2591 mm Tank Rad
BAF6 + BAP6	For ITV6, Alum. Bolt-on, 1390 mm Tank Rad
ITV2-1	For ITV2, Steel, Weld-on, Flat
ITV2-1S	For ITV2, St.steel, Weld-on, Flat
ITV2-3	For ITV2, Alum., Weld-on, Flat
ITV4-1	For ITV4, Steel, Weld-on, Flat
ITV4-1S	For ITV4, St.steel, Weld-on, Flat
ITV4-3	For ITV4, Alum., Weld-on, Flat
ITV4-3R	For ITV4, Alum., Weld-on, 1390 Rad
ITV6-1	For ITV6, Steel, Weld-on, Flat
ITV6-3	For ITV6, Alum., Weld-on, Flat
SLV5-13	For SLV5, Alum., Weld-on, Flat

Weights:— ITV2-3 — 1.2 kg
 ITV4-3 — 1.4 kg
 ITV6-3 — 2.8 kg

Standard fasteners are plated steel.
St.st. flanges supplied with st.steel fasteners.

All flanges supplied with necessary studs, nuts and gaskets

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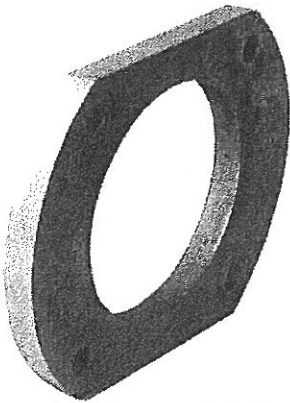
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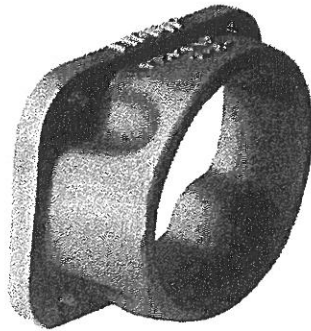
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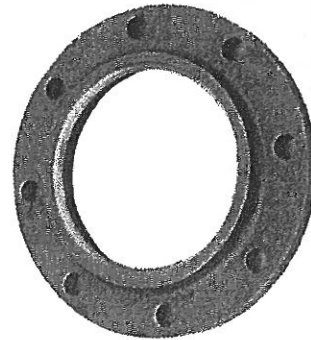
OUTLET ELBOW ADAPTOR FLANGES



OLA



SLV



OLE

TYPICAL APPLICATIONS

FLANGES TO BOLT DIRECTLY TO SQUAT AND ROUND ELBOWS.

PIPE LINES WELD DIRECTLY TO FLANGES.

These flanges are manufactured in Aluminium and mild steel, they bolt directly to Squat and Round elbows and allow pipework to weld directly to the flanges.

PART No.	DESCRIPTION	
OLA3	Pipe Flange for Squat Outlet SE4 Cast Aluminium	80 mm ϕ
OLA3-1	Pipe Flange for Squat Outlet SE4 Mild Steel	76 mm ϕ
OLA4	Pipe Flange for Squat Outlet SE4 Cast Aluminium	100 mm ϕ
OLA4-1	Pipe Flange for Squat Outlet SE4 Mild Steel	102 mm ϕ
OLA4-25	Pipe Flange for Squat Outlet SE4 Cast Aluminium	108 mm ϕ
OLA6	Pipe Flange for Squat Outlet SE6 Cast Aluminium	150 mm ϕ
OLA6-1	Pipe Flange for Squat Outlet SE6 Mild Steel	150 mm ϕ
OLE2-2	Pipe Flange for Round Outlet OLE2 Mild Steel	50 mm ϕ
OLE2-3	Pipe Flange for Round Outlet OLE2 Aluminium	50 mm ϕ
OLE3-2	Pipe Flange for Round Outlet OLE4 Mild Steel	76 mm ϕ
OLE3-3	Pipe Flange for Round Outlet OLE4 Aluminium	76 mm ϕ
OLE4-2 (Use BF4-1)	Pipe Flange for Round Outlet OLE4 Mild Steel	100 mm ϕ
OLE4-3 (Use BF4)	Pipe Flange for Round Outlet OLE4 Cast Aluminium	100 mm ϕ
SLV5-11	Pipe Flange for Topless Outlet SLV5 Aluminium	100 mm ϕ

NOTES

RELATED EQUIPMENT

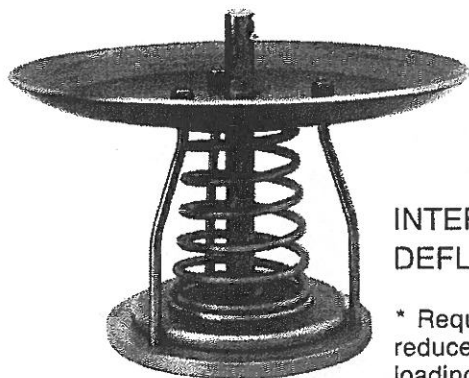
See internal valves and elbows.



Equipment for liquid handling, storage and transport

LIQUIP

INTERNAL VALVE ACCESSORIES



**ITV4-14
ITV6-14**

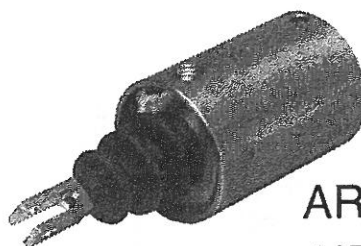
INTERNAL VALVE DEFLECTOR

- * Required by AS2809 to reduce splash when bottom loading.
- * All Aluminium bolt straight onto ITV Series internal valves as illustrated.

NOTE: Not required for SLV5 Series.

Part Numbers

- ITV4-14 For any of the ITV4 models.
ITV6-14 For any of the ITV6 models.



**AR2.5
AIR RAM**

A reverse operation air ram — air "on" pulls the rod inwards — which fits OLE and SE elbows.

Typical application is for chemical and stainless steel tankers which cannot use the SLV5-AO.

Fully weather-sealed with o-rings and bellows over rod.



**LW400
EW400**

LIFT AND EARTH WIRES

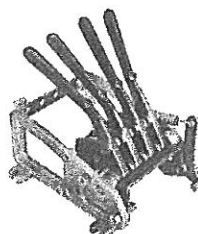
* Lifting Wire (illustrated) connects the top operator to internal valve, lifting the poppet to open.

* Earth Wire bolts to top and bottom of the compartment to ensure grounding of static electricity.

Standard units are stainless steel with moveable clamps.

Part Numbers

- LW400 Lifting Wire
LW400S All Stainless Steel
EW400 Earth Wire
EW400S All Stainless Steel



CO Series

* For use with bottom operation outlet elbows. Connects by cable to provide a remote control of internal valves.

* Fusible link closes valves if temperature exceeds 65°C.

* Aluminium construction for any number of compartments.

Part Numbers

- CO-1 One compartment.
CO-2 Two compartments.
CO-3 Three compartments.
CO-4 Four compartments.
CO-5 Five compartments.
CO-6 Six compartments.

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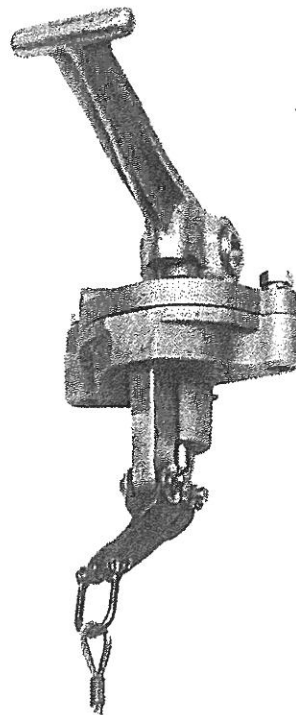
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TOP OPERATOR, PNEUMATIC



ACL303

TYPICAL APPLICATIONS

AIR OPERATION, FROM THE TOP OF THE TANK, FOR INTERNAL VALVES. INCLUDES QUICK-ACTION MANUAL OVER-RIDE.

NOTES

It is sometimes convenient to operate internal valves from the tank top, e.g. when doing split-compartment drops. Access for removal for overhaul is often easier compared with air operators built into the bottom elbow where suspensions and skid plate create obstructions.

The ACL303 replaces previous model ACL404. It is lighter, smaller and uses many components in common with the air operator off the SLV5-A0 internal valve/elbow.

Air actuation is by diaphragm, this component now being common to the ACL303, AVV3.0 vent and SLV5-A0. The diaphragm pushes the spindle downwards, and this in turn operates an integral lever to pull the internal valve open.

However the unit is constructed so that the operator may be removed from outside the tank without having to disconnect the lifting wire. Maintenance is a matter of minutes.

The throw-over manual operator is now more clearly visible if it is left in the open position: it also includes an important safety feature with automatic return to the rest position next time the air system is activated.

OPTIONS and RELATED EQUIPMENT

ACL303-AT for chemicals.

Bolt-on adaptor, suits aluminium or steel tanks.

Attach cable LW400 to operate any Liquip internal valve.

TECHNICAL DATA

Normal air pressure 500 kPa.

Operating range 200 to 800 kPa.

Consumption/stroke 1.0 litre free air.

Alum. body, stainless steel trim.

Maximum lift 40 mm.

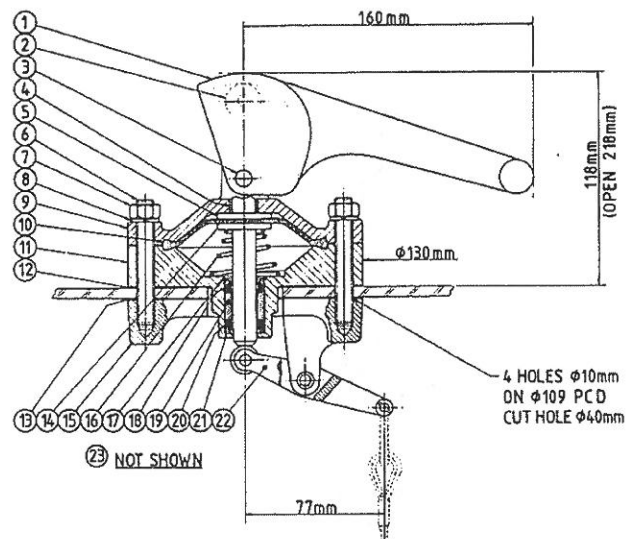
Weight 1.8 kg.



Equipment for liquid handling, storage and transport

LIQUIP

ASSEMBLY — ACL303



ITEM	DESCRIPTION	QTY.	PART No.
1	OPERATING LEVER	ACL303/1	1
2	SPINDLE ASSEMBLY	ACL303/2	1
3	PIVOT SPINDLE	ACL303/3	2
4	SEALING BUSH	ACL303/4	1
5	SPINDLE	ACL303/5	1
6	STUDS	ACL303/6	2
7	NUT	P0130	4
8	SPRING WASHER	P0109	4
9	DIAPHRAGM COVER	ACL303/7	1
10	DIAPHRAGM	P3095	1
11	DIAPHRAGM BODY	SLV5/3	1
12	GASKET	P0273	1
13	GASKET	ACL303/8	1
14	SPINDLE	SLV5/5	1
15	FLANGE	ACL303/9	1
16	SPRING	P0991	1
17	CIRCLIP	P0988	1
18	ROD WIPER	P0990	1
19	BUSH	SLV5/15	1
20	U CUP SEAL	P0989	1
21	SUPPORT WASHER	SLV5/10	1
22	PIVOT ARM ASSEMBLY	ACL303/10	1
23	STUDS	ACL303/11	2

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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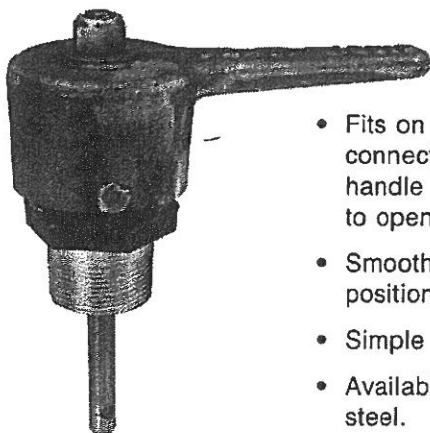
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LIQUIP

TOP OPERATORS



CAMLIFT TOP OPERATOR FOR 100 mm
AND 150 mm DIA. INTERNAL VALVES

- Fits on top of the tank with an internal cable or rod connecting the spindle to the internal valve. As the handle is rotated, cams lift the internal valve poppet to open.
- Smooth action through use of rollers on cam. "Rest" position at maximum lift (90° rotation).
- Simple external adjustment of slack in cable or rod.
- Available with lower body in aluminium or stainless steel.

CL401 STANDARD **CL401-ST** CHEMICAL

TECHNICAL DATA

Lower body 38 mm male BSP thread.
Aluminium handle, st.st. cam rollers
and spindle, elastomer seal (CL401) or
Teflon (CL401-ST).
Maximum lift 44 mm.
CL401 lower body — aluminium.
CL401-ST lower body — st.st.

RELATED EQUIPMENT

Matching weld sockets
CL401/11 (Aluminium)
P0554 (Mild Steel)
CL401/11S (St. steel).
Weight (CL401) 1.1 kg.

TYPICAL APPLICATIONS

FOR MANUAL
OPERATION OF
INTERNAL VALVES
ON ROAD
TANKERS AND
STORAGE TANKS

NOTES

FLANGED TOP OPERATOR FOR 100 mm and 150 mm DIA.
INTERNAL VALVES.



CL402

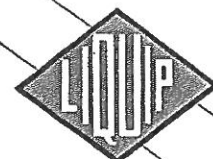
- Alternate mounting style to the CL401 screwed model.
- Flange mounting spreads the load.
- Bolt direct to a flat tank top or use weld-on flange with studs.
- Smooth action through use of rollers on cam. "Rest" position at maximum lift (90° rotation).
- Simple external adjustment in lifting cable or rod.

TECHNICAL DATA

Maximum lift 44 mm.
Aluminium handle and body,
st.st. rollers and spindle,
elastomer seal.
Matching weld flanges
CL402-1 (aluminium)
CL402-2 (mild steel).
Weight 1.1 kg.

RELATED EQUIPMENT

CL401 Screwed top operator.
ACL404 Pneumatic top operator.
LW400 Lifting wire.



*Equipment for liquid
handling, storage
and transport*

LIQUIP

SMALL TOP OPERATOR



CL200

- Fits on top of the tank with an internal cable or rod connecting the spindle to the internal valve. As the handle is rotated, cams lift the internal valve poppet to open.
- Light weight and inexpensive, designed for 50 mm dia. internal valves only.
- Serrated handle for good grip and leverage.
- Sealed spindle to prevent leakage. Body screws into socket welded in tank top.
- Smooth action with "rest" position at full lift. (90° rotation).

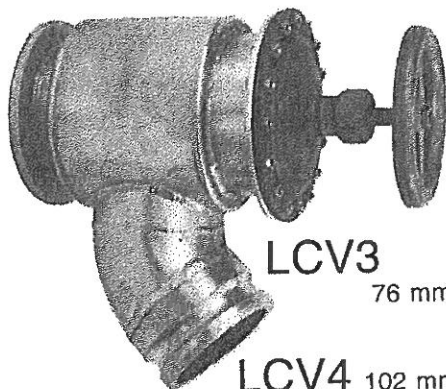
TECHNICAL DATA

Lower body 25 mm male BSP thread.
Maximum lift 28 mm.
Bronze handle and body.
Plated steel spindle.
Elastomer lip seal.
Matching weld sockets
CL200-1 (Aluminium)
P0552 (Mild Steel)
Weight 0.5 kg.

RELATED EQUIPMENT

ITV-2 series internal valves.
LW 400 lifting wire.

CHEMICAL OUTLET VALVE



LCV3

76 mm

LCV4 102 mm

- Teflon, the seal material commonly used for chemicals, is relatively hard and susceptible to scratching with resultant leaks. The LCV valve uses a flat, floating seal face to minimise this occurrence.
- Sealing washer easily removed and face of seal can be skimmed to restore surface.
- Simply remove top cover to take out complete poppet assembly for cleaning.
- Fabricated body is light weight, no crevices or blind spots to hide contamination.
- Flange is TTMA standard, identical to LBV4 and API401.
- Available to special order in stainless steel with quick-release clamp.

TECHNICAL DATA

Full 100 mm dia. flow area through body.
LCV4 has 102 mm camlock outlet.
LCV3 has 76 mm camlock outlet
(NATO or Australian standard).
Aluminium body, cover and handle.
St.st. poppet and shaft.
Teflon seals.
Weight 4.0 kg.

RELATED EQUIPMENT

A full range of chemical tanker equipment to match — refer to:
Swing-back hatches
Internal valves
Vents and vapour vents
Dip and fill tubes and adaptors.

Order as LCV3-S or LCV4-S if stainless steel version with quick release clamp is required.

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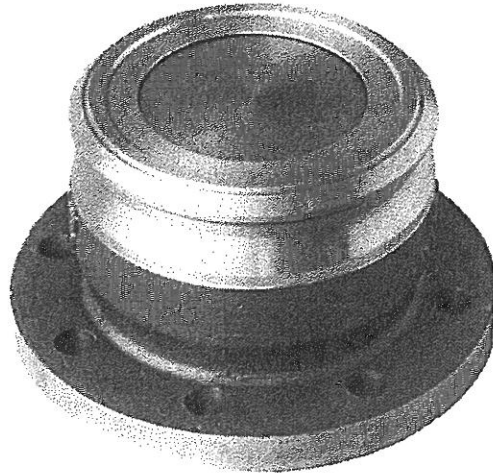
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LIQUIP

RAIL CAR API ADAPTOR



API400-M

TYPICAL APPLICATIONS

AN API ADAPTOR
WITHOUT
OPERATOR IN SG
IRON.

MEETS RAILWAYS
REQUIREMENTS.

Many rail authorities discourage the use of aluminium fittings in rail cars, and require outlets to have security fittings to discourage pilferage.

The API400-M is manufactured in heat-treated SG iron for strength equal to steel. It does not have an operating handle, being intended for loading and discharge only with the use of special couplers. Body is one-piece for maximum strength and integrity.

Shaft, spring, cap and seal are interchangeable with truck valve API403.

Poppet, shaft and seal easily maintained as whole assembly withdraws through the rear of the body.

NOTES

OPTIONS and RELATED EQUIPMENT

Cap is API-DC.

Loading coupler API513.

See API403 for shaft spring and seal detail.

TECHNICAL DATA

Body and poppet in SG iron.

Shaft st. steel.

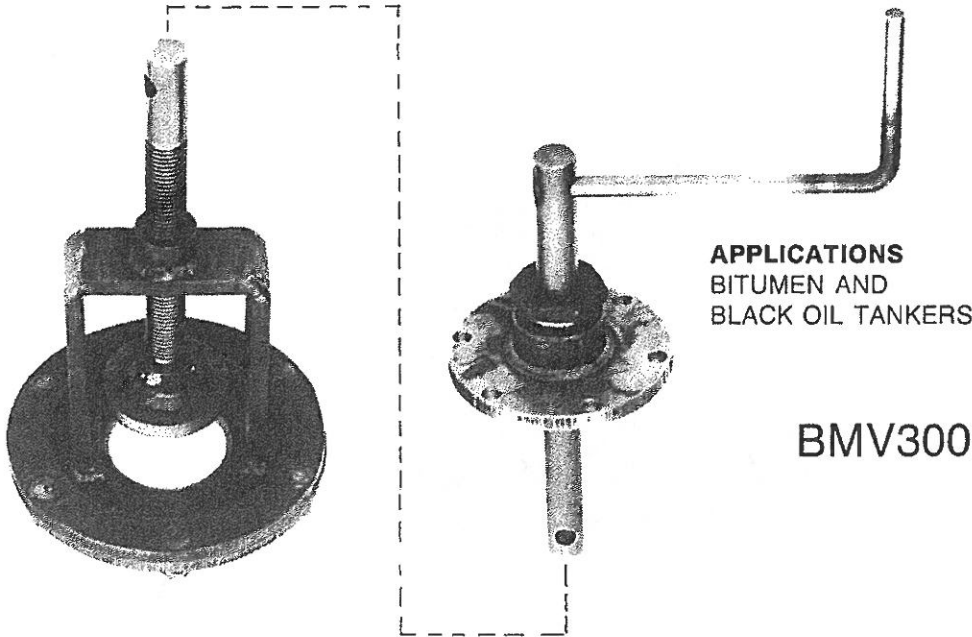
Seal Viton.

Flange to ASA150.



*Equipment for liquid
handling, storage
and transport*

LIQUIP MITRE VALVE



APPLICATIONS
BITUMEN AND
BLACK OIL TANKERS

BMV300

SCREW-DOWN INTERNAL VALVE FOR HIGH VISCOSITY PRODUCTS

- The mitre valve is specially designed for high viscosity products where spring return would not ensure positive sealing.
- Valve operation is by coarse thread with rising spindle.
- Sealing poppet is metal to metal with tapered seat to cut through thick products and provide high sealing pressure.
- Drive is by tube and bolts connecting handle and valve — supplied by tank manufacturer. Outlet pipe welds to valve housing assembly and then to a flange for ease of servicing.
- Handle assembly bolts direct to tank top or on to mounting flange.

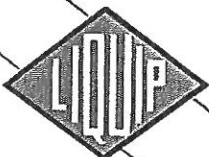
SPECIFICATIONS

Provides 75 mm flow diameter.
Allows up to 100 mm poppet lift for unrestricted flow.
All steel, plated construction.
Graphite gland packing in handle stem.
Drive-tube to be 25 mm minimum bore.
Drive-bolts to be 12.7 mm dia.

RELATED EQUIPMENT

BV300-Y } Bitumen vents
BV300 }

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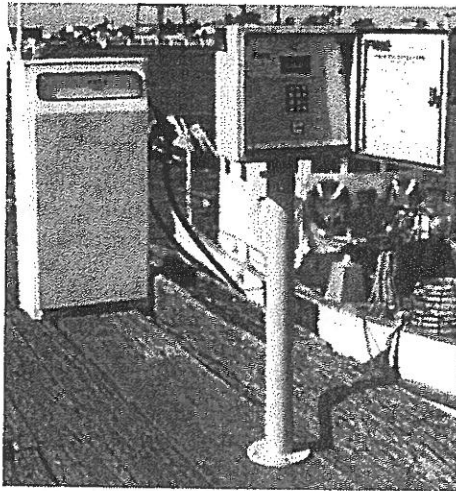
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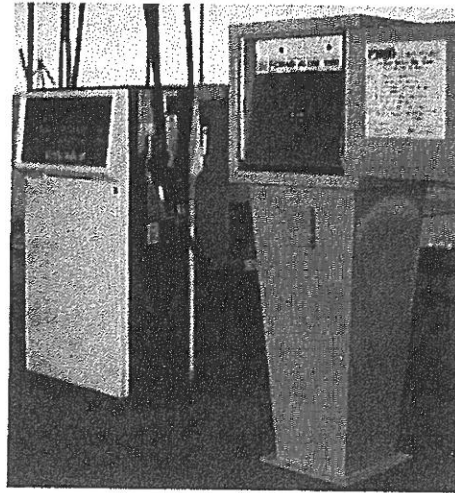
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LIQUIP

FUEL MANAGEMENT SYSTEM



1100 System



1200 System

TYPICAL APPLICATIONS

SYSTEM FOR FUEL MANAGEMENT FOR FLEETS e.g. transport companies, councils, taxis, local authorities.

Control systems to plug into your existing wholesale or internal company fuel dispensers, of any type and any mix.

1100 series is the basic building block which can be used in conjunction with on-site or remote peripheral devices and can communicate with the majority of computers.

1200 series is the same basic building block housed in a stand-alone cabinet for use when a building is not available. The cabinet can house peripherals such as printer and modem.

Both units are sturdy weatherproof metal enclosures with oil-resistant synthetic rubber key-pads.

For large fleets, system FMS1048 consists of specially programmed 1100 series units connected to a central control processor. The central computer controls access to each 1100 unit besides carrying out all data storage and processing.

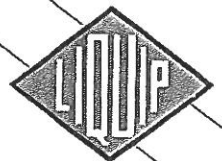
KEY FEATURES

- Each unit can control up to 6 pumps.
- Each unit can handle 500 users.
- Keys can be either local use only or networked.
- Record on-site only or by multiple unit central computer control.
- Magnetic keys, virtually indestructible.
- PIN code as option for even greater security.
- Australian-made for proper back-up and low cost.

BENEFITS

Stock control.
Vehicle fuel use information to isolate inefficient vehicles or pilferage.
All transactions recorded.
Data on fuel use within Cost Centres.

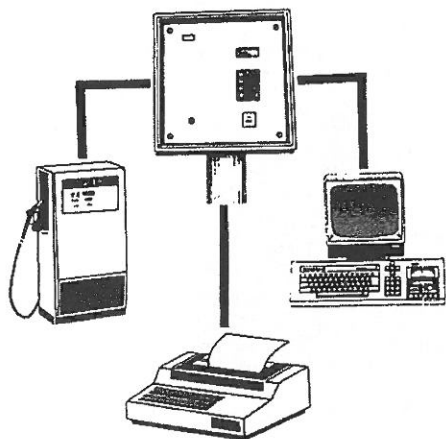
NOTES



Equipment for liquid handling, storage and transport

LIQUIP FUEL MANAGEMENT SYSTEM

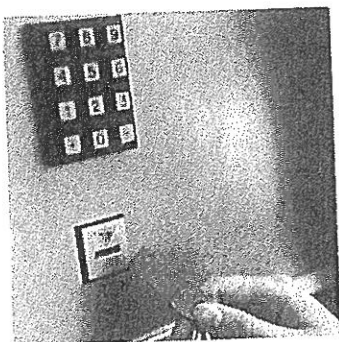
Pumps can be of any type and when the system is configured to communicate with a remote P.C. the only qualification is that the P.C. is capable of accepting a version of F.M.S. communications software, therefore *eliminating the need for costly replacement of existing equipment.*



SYSTEMS OPERATION

The user activates the system by selecting the required pump at the access station, and by inserting his individually coded Mil key into the reader.

The system then completes a routine security check and activates the pump; providing the check is OK, fuel can then be dispensed. Whilst dispensing, the system monitors the entire operation and allows other pumps to be used simultaneously. When dispensing is completed, the system stores the transaction in memory and prints the transaction on the journal roll.



1200 System Access Station.

The stored data for each individual user, vehicle and pump are automatically totalled and can be generated at any time by management. Management access is by way of a Master Key and simple commands entered on the keyboard.

SECURITY

User security is obtained by *specially coded Mil Keys*. The key can be used in conjunction with a personal identification, a driver or vehicle number, to obtain whatever level of security necessary.

System security is obtained by ensuring that each transaction is put away to the non-volatile memory as they happen. If the transaction is prevented from being printed on the journal roll, by the lack of paper, printer being forced off line, etc., then the system locks up until the transaction can be printed. Also if mains power is removed, apart from displaying a message on the LCD, it shuts down the processor in an orderly manner and locks up all pumps until power is restored.

HARDWARE DESCRIPTION

The driver access station is a *rugged weatherproof unit, designed for wall or pedestal mounting*. The unit contains the micro processor, electronic modules and backup power supply. The front panel is a weatherproof unit housing the Key Pad, Key Reader and an easy to read LCD Module which provides 2 lines of alpha-numeric characters.

SPECIFICATIONS

Keys	Magnetically encoded Mil 4.
Key Reader	Insert to Read Type.
Key Pad	0-9, enter, clear soft rubber type.
Lighting	Fluorescent over front Panel (1200). Light emitting diode internal to LCD (1100).
Display	32 character alpha numeric LCD for prompts and messages.
Power Supply	240 Volts 50 Hertz AC only. Internal backup battery.
Printer	Dual platen, 80 character alpha numeric with integral failure and protect sensors.
Housing	All steel, dustproof, weatherproof cabinet. Stainless steel front panel. Wall or pedestal mount. Dimensions 380 x 380 x 210 mm. Any operating environment.
Accuracy	.01 litre.
Dispensers	All common types and bulk meters. Maximum of 6.

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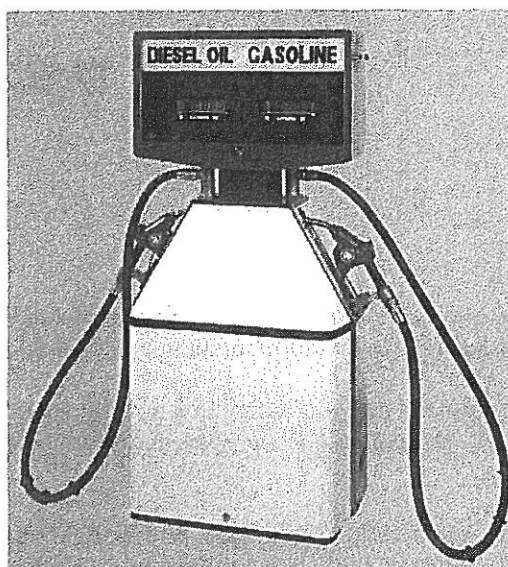
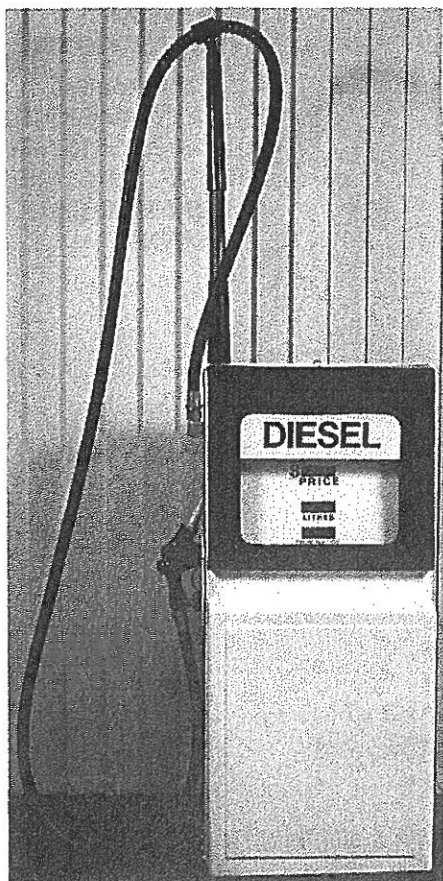
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LIQUIP

FUEL DISPENSING PUMPS



TYPICAL APPLICATIONS
FUEL DISPENSERS FOR SERVICE STATIONS.

NOTES

Liquip can supply, install and maintain bowsters for your service station or in-house fleet refuelling.

We can do the whole package, so talk to us about your requirements as we cannot put all the information in this general catalogue.

Our range includes the latest in electronic displays with litre and price display and communication to the service station control. Alternatively you can have a robust high flow (90 litres/min.) litres-only mechanical read-out for fleets, with single or dual pumps.

All units employ rotary vane pumps with suction strainer, pressure relief valve, suction check valve and air eliminator. Meter is 4-piston type. Service station pumps have all the normal features such as totaliser, price change, automatic nozzle and for electronic pumps, record retention during power failure.

OPTIONS and RELATED EQUIPMENT

Single or dual bodies.

Standard or high flow.

Display in litres only or litres and pricing.

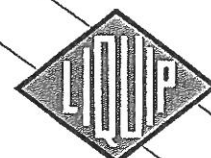
See also Fuel Management system on previous page.

TECHNICAL DATA

NSC and SAA approved.

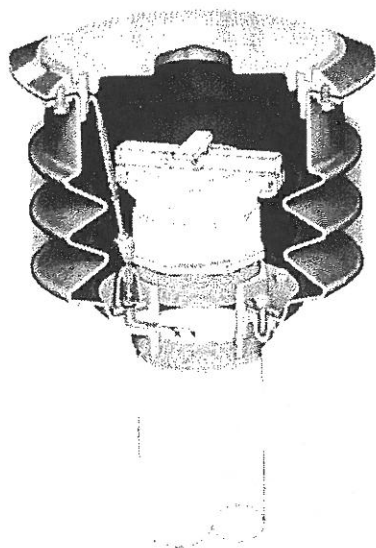
50 l/min. (service station) or 90 l/min (industrial).

240V motor and electrical system.



Equipment for liquid handling, storage and transport

LIQUIP SPILL CONTAINER



MSC20

TYPICAL APPLICATIONS

TO MINIMISE
CONTAMINATION
OF GROUND FROM
FUEL SPILLAGE AT
UNDERGROUND
TANKS.

Contamination of the ground and water table from petroleum products can be minimised at service stations by fitting manholes with spill containers.

Faulty equipment or careless operators can spill several litres of product into a service station fill point, for example if the hose is disconnected before it is drained.

THE MSC20 manhole attaches to the fill pipe, and also incorporates a standard Tight-fill adaptor. The manhole body is a fully-sealed container which retains any spilt product up to 20 litres capacity. Draining of the product into the tank is achieved by lifting a small valve in the base of the body which then pipes the spill into the collar between the fill pipe and the Tight-fill adaptor.

The body is bellows-shaped to take up any movement of the underground tank relative to the service station concrete.

NOTES

OPTIONS and RELATED EQUIPMENT

See following pages for
Tight-fill equipment.

TECHNICAL DATA

Plated steel body.
Viton seal.

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SERVICE STATION EQUIPMENT

VTA-3 VAPOUR RECOVERY ADAPTOR



- Collection point at the Service Station for vapour return, connecting with vapour elbow VTE-3.
- 80 mm dia. poppeted top complies with A.I.P. code CP6.
- 75 mm dia. BSP female thread with gasket screws directly on to pipework.
- Dual external tightening lugs, one-piece body.
- Materials — Anodised aluminium poppet.
— Bronze body.
— Viton seal.

TYPICAL APPLICATIONS

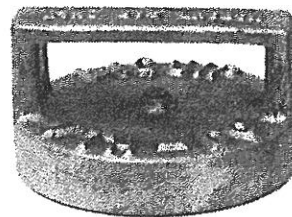
TO COMPLY WITH VAPOUR RECOVERY REGULATIONS AT SERVICE STATIONS.

DUST CAP FOR V-R ADAPTOR

VTA-DC is cheap and simple, being aluminium with a Viton o-ring seal.

VTA-CC has a Viton lip seal and twin stainless steel clips for greater security.

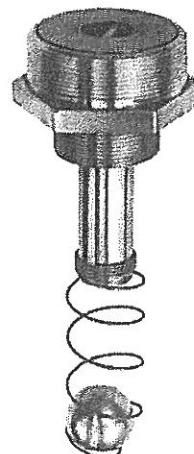
Both units incorporate a water-proof one-way valve for vacuum release.



VTA-DC



VBV3x3



VBV3x2

VBV SERIES FLOAT VALVE

HOW LONG WILL YOURS LAST?

LIQUIP ARE PROUD TO INTRODUCE A ROLLS-ROYCE MODEL AT HOLDEN PRICES TO LAST A TANK LIFE-TIME.

- STAINLESS STEEL OUTLET TUBE.
- STAINLESS STEEL SPRING CAGE CANNOT BE BENT.
- BRASS BALL AND BODY.
- Plus bleed hole, extractor pin for easy removal, weight in ball to keep horizontal.

ORDERING INFORMATION

ASSEMBLY No.	OUTLET BSP THREAD	TANK SOCKET BSP THREAD	OUTLET TUBE DIA.
VBV3x3	75 mm	75 mm	50 mm
VBV3x2	75 mm	50 mm	25 mm

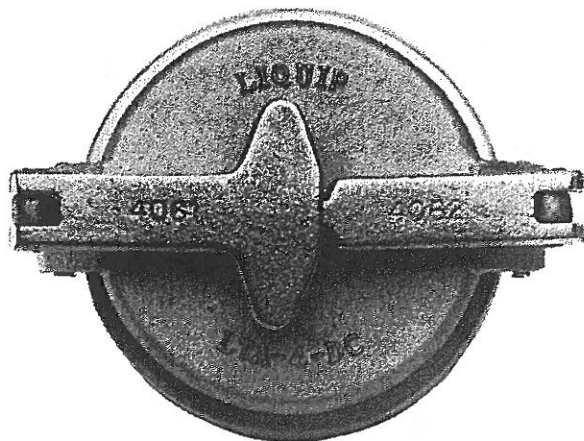
NOTES



Equipment for liquid handling, storage and transport

LIQUIP

DUST CAPS FOR TIGHT FILL ADAPTORS

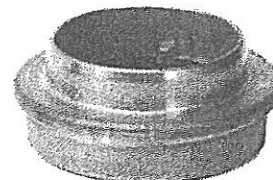
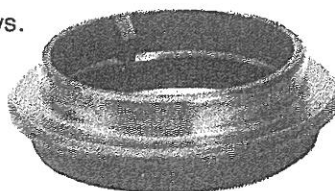


- Fits all tight fill adaptors as shown below for product discharge into underground Service Station tanks.
- Washer type Buna seal.
- Over-centre toggle action for one hand operation — quick, easy, reliable.
- Padlock hole provided.
- Aluminium body, bronze clips.

ORDERING INFORMATION — LTA4-DC for 100 mm tight fill adaptors.
— LTA3-DC for 75 mm tight fill adaptors.

LTA SERIES TIGHT FILL ADAPTORS

- Screw on to Service Station underground tank fill pipes to provide connection for tight fill elbows.
- Wide range of adaptor and BSP thread size combinations.
- Dust caps shown above.
- Materials bronze with Buna seal.



ORDERING INFORMATION

ASSEMBLY No.	TIGHT FILL SIZE	BSP THREAD SIZE
LTA 4x4	100 mm	100 mm
LTA 4x3	100 mm	75 mm
LTA 3x4	75 mm	100 mm
LTA 3x3	75 mm	75 mm
LTA 3x2	75 mm	50 mm

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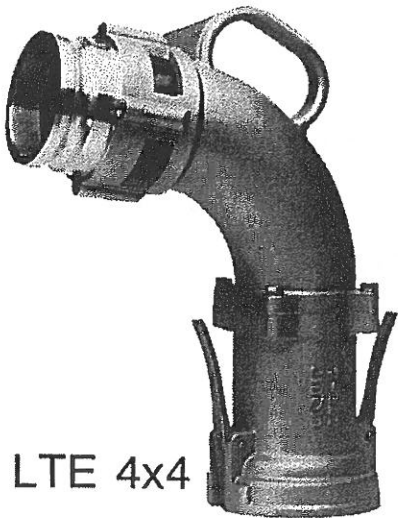
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LIQUIP

TIGHT FILL ELBOWS



LTE 4x4

- Damage to the body no longer means you scrap the whole assembly.
- Liquip's unique 2-part design allows for cheap easy repairs. (100 mm size only).
- The elbow is also available with safety ring to prevent accidental release or incomplete clipping to the tank top adaptor.

The Liquip ring-pull cable lifter operates from upstairs where it is clean and dry.

- Standard specification includes visi-glass, detachable and interchangeable camlock fitting, lip seal for dependable long life.
- Materials — Heat treated aluminium body.
— Bronze clips.
— Stainless steel hinge-pins.
— Viton lip seal.

TYPICAL APPLICATIONS

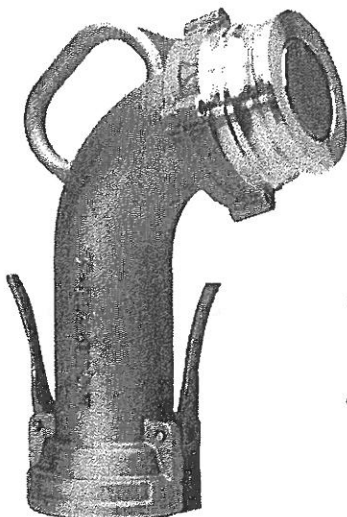
STANDARD CLIP FITTING ELBOW FOR CONNECTION OF LIQUID AND VAPOUR HOSES AT SERVICE STATIONS.

ORDERING INFORMATION

ASSEMBLY No.	DESCRIPTION	CAMLOCK SIZE	TIGHT FILL SIZE
LTE 4x4	Elbow	100	100
LTE 3x4	Elbow	75	100
LTE 3x3	Elbow	75	75
LTE 2x3	Elbow	50	75
LTR 4	Safety Ring and Cable	—	100
LTR 3	Safety Ring and Cable	—	75

NOTES

VTE-3 VAPOUR RETURN ELBOW

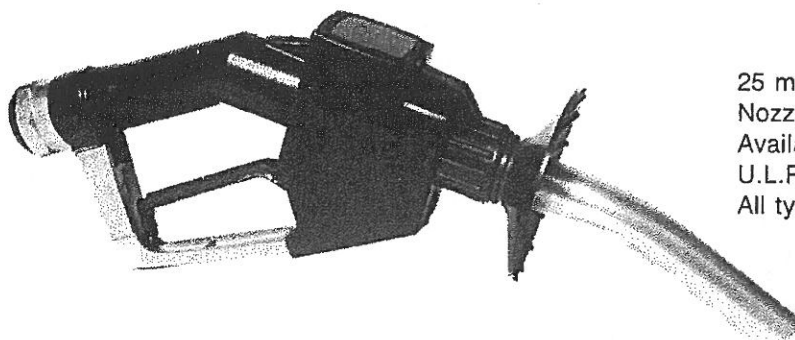


- Similar clip action to liquid tight fill elbows.
- Clips on to tank top poppeted vapour return adaptor VTA-3 shown on previous page. A probe in the bottom of the elbow automatically opens the poppet in the tank top adaptor.
- Tanker vapour hose coupling on page 6/4 fits to the top of the vapour elbow. On coupling, both poppets automatically open to provide flow passage for vapour return to tanker.
- Meets AIP Specification CP-6, with selective shoulder on upper poppet and special 80 mm dia. tight fill size.
- Materials — Heat treated aluminium body.
— Anodised aluminium poppet.
— Viton o-ring in poppet.
— Viton lip seal in tight fill.
— Bronze clips.



Equipment for liquid handling, storage and transport

LIQUIP SERVICE STATION EQUIPMENT



25 mm ϕ Automatic
Nozzle for Bowsers.
Available in Super or
U.L.P. configurations.
All types are held in stock.

DIP AND FILL MARKERS

Fed up with your drive-way markers wearing out every few months?

Want to avoid costly mistakes in stock control or "cocktails".

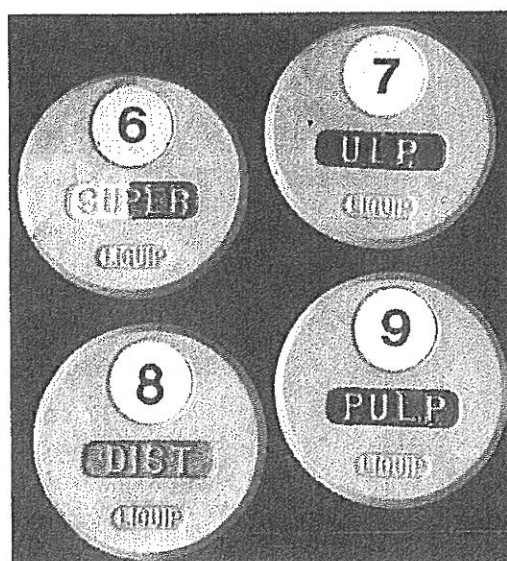
These dip and fill markers are in thick cast aluminium, epoxy filled colour-coded product names.

Traffic will actually polish the aluminium and epoxy to keep the colour bright and visible.

Fit with anchor-lock screws and/or perma-bond.

Tank number discs fit into a cast-in recess to protect against damage.

Sizes and shapes meet AIP codes.



METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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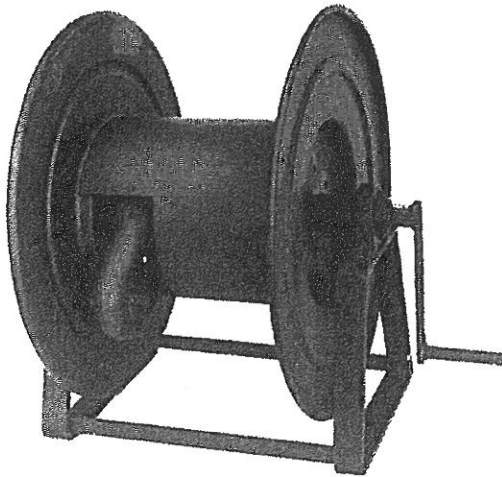
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LIQUIP

LPG EQUIPMENT



Liquip manufacture hose reels to suit LPG applications.

Size and shape to your specifications. See standard hose reel section for details of length and diameter.

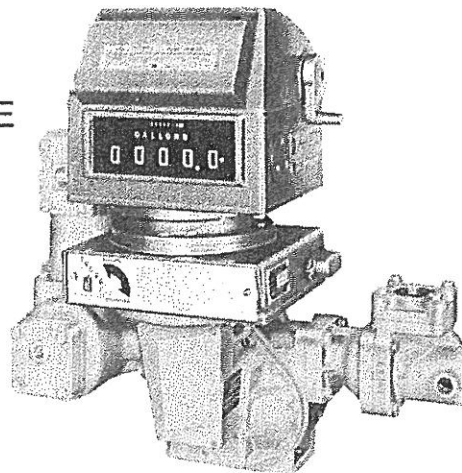
Approved hose and dispensing nozzles are available to suit your requirements.

Reels may be hand or power rewind.

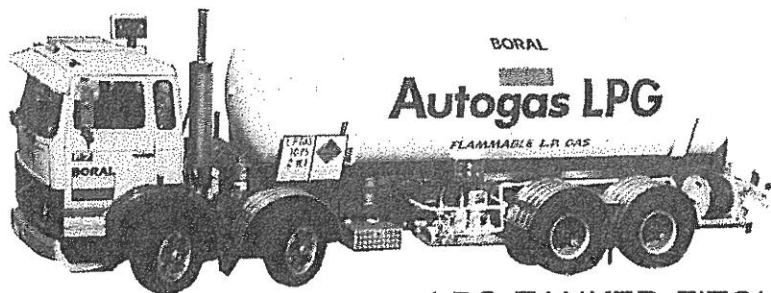
TYPICAL APPLICATIONS
BULK HANDLING OF LPG.

LPG METERS, TEMPERATURE COMPENSATORS

Liquip service and repair all types of LPG meters and temperature compensators. A large stock of most parts are readily available. Liquip's instant service can get you back to work quickly with the minimum amount of down time.



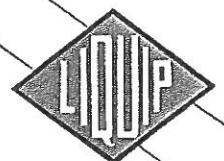
NOTES



LPG TANKER FITOUT

Liquip's workshops offer full LPG tanker fitout, ranging from pumping and dispensing systems through to X-ray weld testing and repairs to vessels.

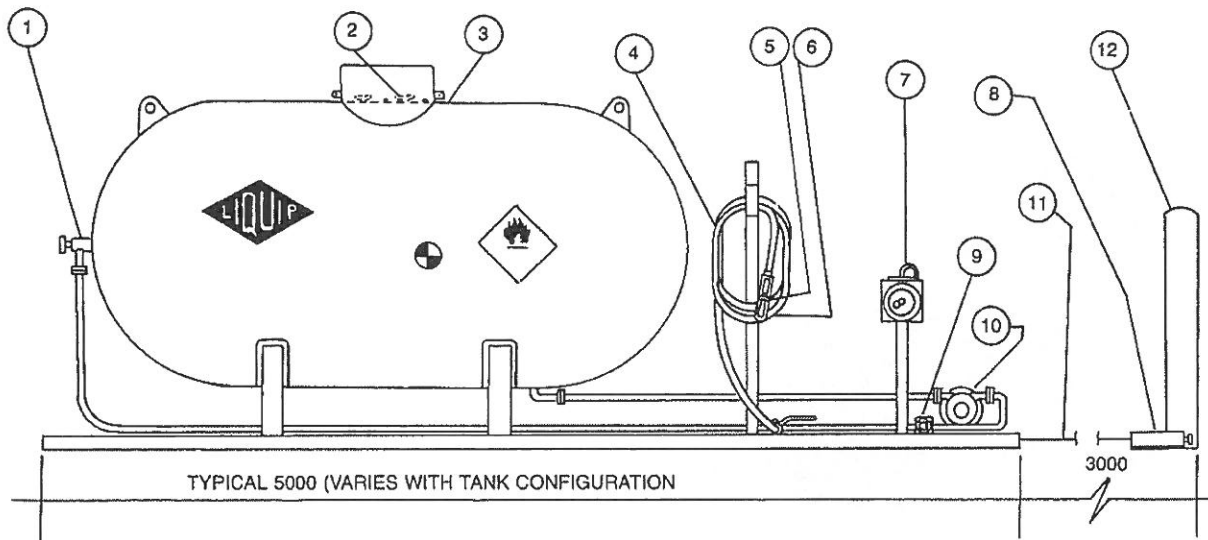
Contact Liquip in your state for free expert advice.



Equipment for liquid handling, storage and transport

LIQUIP

LIQUIP LPG DISPENSER



ITEM No.	DESCRIPTION	ITEM No.	DESCRIPTION
1	BY PASS RETURN	9	PRESSURE RELIEF VALVE
2	FILL AND VENT VALVES	10	LPG PUMP
3	LPG TANK	11	CABLE FOR IC VALVE
4	HOSE AND STORAGE	12	BOLLARDS (CUSTOMER SUPPLY)
5	FLOW METER		
6	LPG NOZZLE		
7	ON-OFF SWITCH		
8	EMERGENCY SHUT DOWN VALVE		

* Liquip's self contained portable LPG storage and dispensing system. It offers versatility, being ideal for taxi depots, bus depots or factories and warehouses when LPG is commonly used for fuelling forklifts and plant, etc. Tank capacity is your choice.

It is mounted on a steel frame which safely houses the pipelines and pumping equipment. LPG meters are available as a option.

- * Standard hose length is 4 metres. Other lengths available on request.
- * Standard LPG nozzle is included.
- * Power supply is standard 240 AC, 415 V optional.
- * Various tank capacities are available from 1-5 tonne.

Be completely self contained. Install your own storage system. Save money and save time!

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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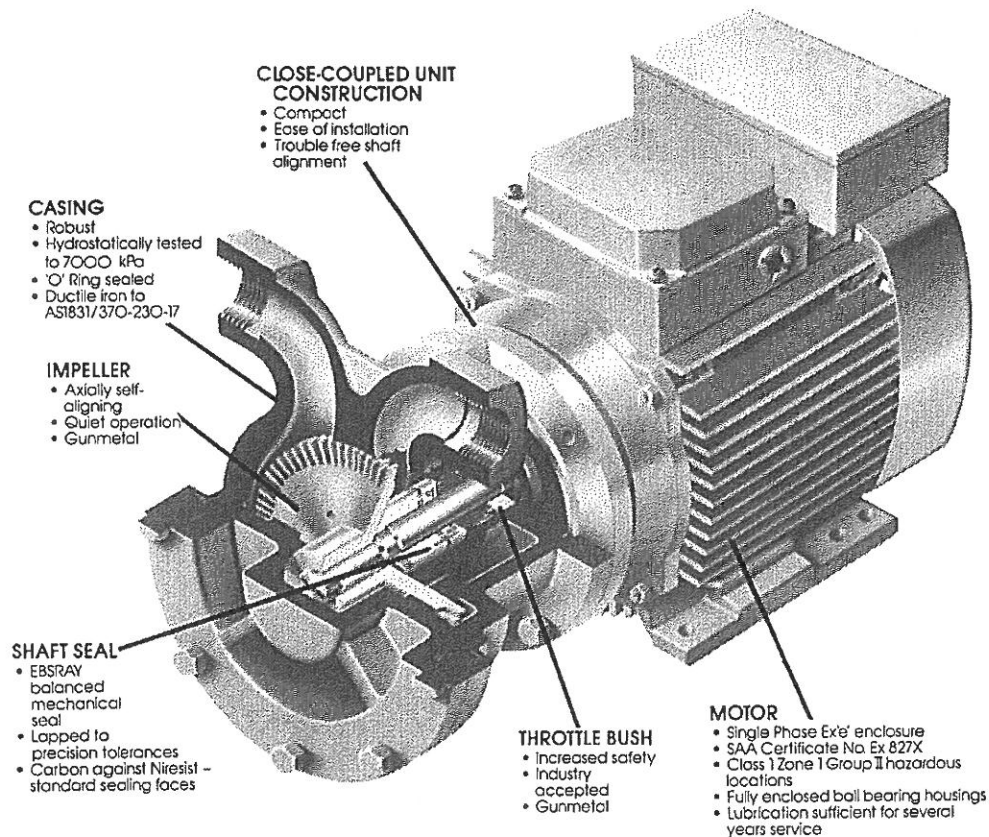
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Telex: AA70058

DISTRIBUTORS

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LIQUIP

LPG TURBINE PUMP — R SERIES



TYPICAL APPLICATIONS

- * Portable tanks
- * Cylinder filling
- * Forklift Refuelling
- * Aerosol Industries
- * Industrial Dispensers
- * Transport Vehicle Filling
- * Agricultural Dispensing

Where 415 V 3-phase power is not available.

NOTES

OPTIONS and RELATED EQUIPMENT

Larger pumps, type V20 and V30, are also available but require 415 V 3-phase power supply.

TECHNICAL DATA

See over page for dimensions and specifications.



Equipment for liquid handling, storage and transport

LIQUIP

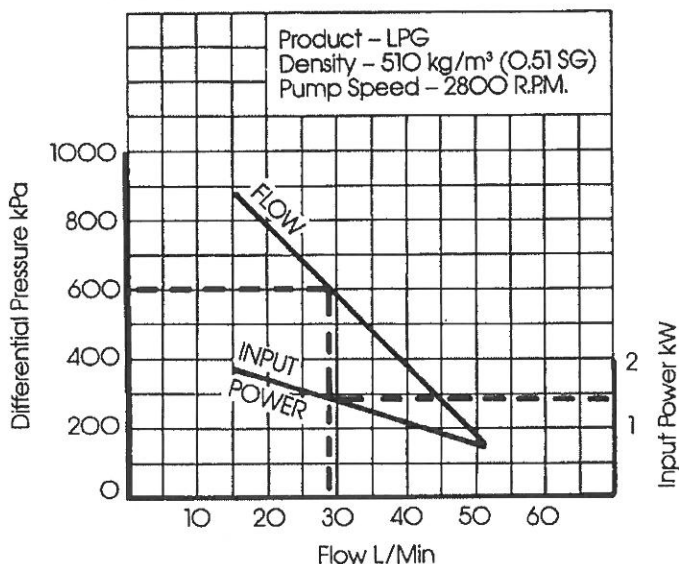
SPECIFICATIONS — LPG TURBINE PUMP

SPECIFICATIONS

Max Flow 55 L/min
 Max Differential Pressure 800 kPa at 2800 R.P.M.
 Pump Speed 2800 R.P.M. (50 Hz)
 Power Range to 1.7 kW
 Inlet & Outlet 1" N.P.T.
 Motor - 1.7 kW, 2800 R.P.M., Single Phase, 240V, 50 Hz, IP56,
 Ex 'e' designed to meet the requirements of
 Australian Standard AS1593-1982 & AS1939-1986
 for Class 1 Zone 1 Group II hazardous locations.

Example:

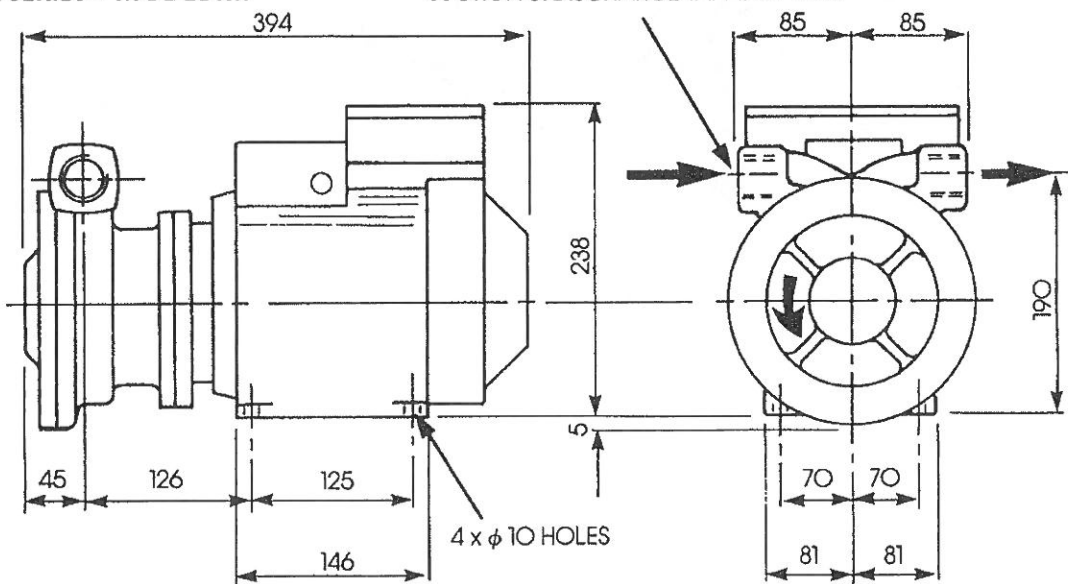
Differential Pressure = 600 kPa
 Flow = 29 L/min
 Input Power = 1.4 kW



DIMENSIONS

R SERIES - MODEL R11

SUCTION & DISCHARGE TAPPED 1" N.P.T.



Standard Packed Unit Weight 33 kg
 Shipping Dimensions 430 x 360 x 310 mm
 Shipping Volume 0.05 m³

NOTE: All specifications and illustrations are typical only and subject to revision without notice. Certified data available upon request.

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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LIQUIP

THE APC BREAKAWAY COUPLING



APC series

TYPICAL APPLICATIONS

TO PROTECT AGAINST MOTION, e.g. TRUCK OR SHIP MOVING WHILE A HOSE IS CONNECTED. SUITABLE FOR LPG, CHEMICALS AND CRYOGENICS.

With growing traffic loads and a variety of hazardous gases and chemicals carried, driveway incidents at loading and discharge gantries are of greater significance and pose increasing threats of environment pollution and toxic hazards.

The APC breakaway coupling is a designed weakest point in the connecting system such that if a drive-away occurs the coupling parts first and poppets in both sides of the coupling snap shut to prevent product loss.

FEATURES

- * Very low product loss during actual separation.
- * Positive shut off.
- * Fail safe operation.
- * Coupling has flat gas tight valve seals.
- * Cleverly designed break spades.
- * Low installation costs.
- * Suitable for most fluids including LPG and cryogenics.

OPTIONS and RELATED EQUIPMENT

Screwed male BSP or flanged.
ASA150 or ASA300.
Sizes 38 mm, 63 mm, 100 mm.
150 mm to special order.

NOTE

The breakaway spades are sized by calculation.
Inform Liquip of maximum line pressure and type and size of hose used for us to specify correctly.

TECHNICAL DATA

Materials: 316 st.st.
Bronze, Aluminium, and other materials available to special order.

Seals: Are Viton, Buna or Teflon.

Approved for dangerous goods, NSW No. N46750.

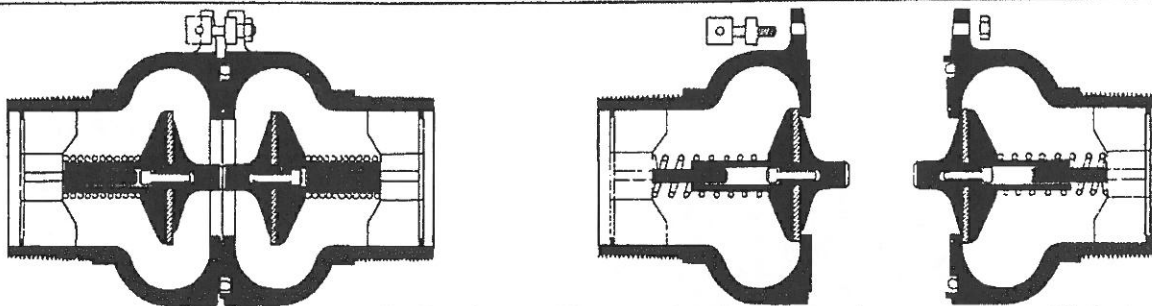
NOTES



Equipment for liquid handling, storage and transport

LIQUIP

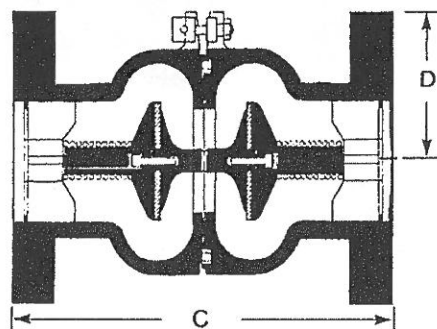
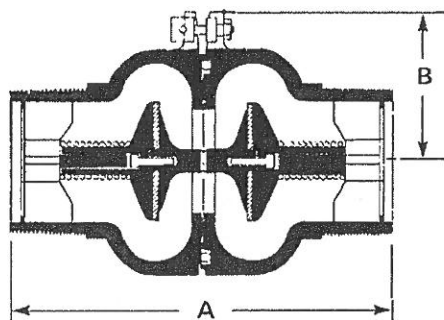
APC BREAKAWAY COUPLING



Sectional diagram showing the APC Breakaway Diagram showing the Breakaway coupling with the two coupling in the normal operating position. halves separated. Both ends are sealed.

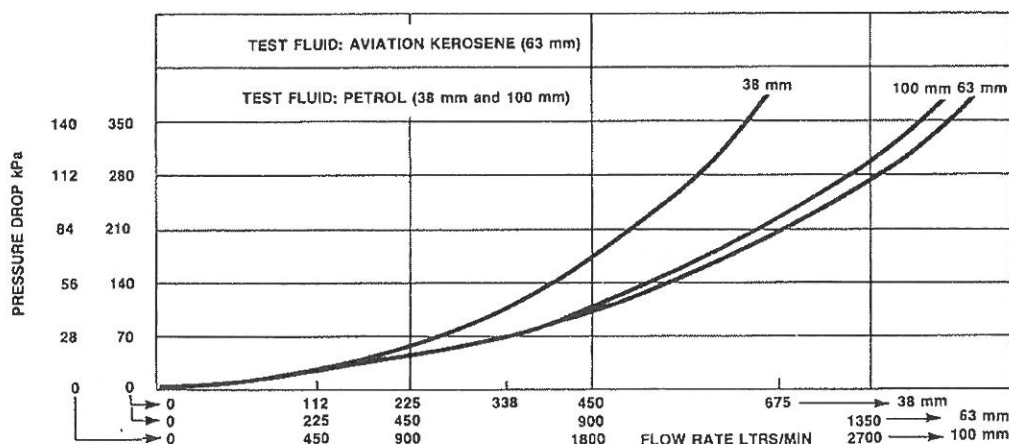
Overall Sizes and Weights

Note: Dim "D" is dependent on flange used.



SIZE	A	B	WEIGHT	C	D	WEIGHT
38 mm	165 mm	45 mm	2.5 kg	190 mm	*	4 kg appx
63 mm	203 mm	75 mm	5.5 kg	320 mm	*	10 kg appx
100 mm	340 mm	110 mm	20 kg	350 mm	*	31 kg appx
150 mm	DIMENSIONS ON REQUEST			DIMENSIONS ON REQUEST		

Flow Characteristics PRESSURE DROP AND FLOW RATE



METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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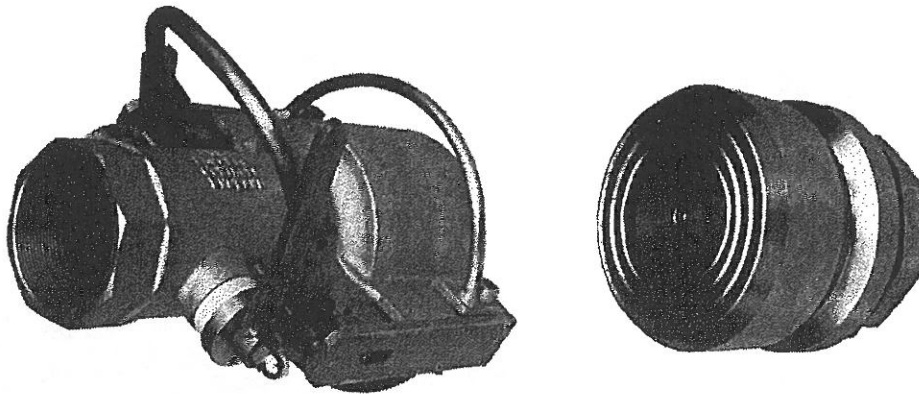
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LIQUIP

APC "FLUISEAL" DRYBREAK LOADING COUPLING



APC FLUISEAL COUPLING

75 mm dia.

Designed for trouble free long life, only three flat compression seals, eliminates problems associated with swollen 'o' rings. Any swelling of seal material actually improves compression sealing. If the main seal ever needs replacing it can be done, without draining coupling or hose line, in less than one minute.

No drips or spills during operation keeps loading area free from downtime and contamination.

- * Typical separation loss less than 1 ml.
- * Operable up to 2100 kPa line pressure.
- * Interlocked so that coupling cannot be activated unless properly attached to adaptor.

OPTIONS and RELATED EQUIPMENT

APC-F-M Male.
APC-F-F Female.

TECHNICAL DATA

Coupled pressure is rated at
500 psi.
Standard materials are all
stainless steel with Viton trim.

TYPICAL APPLICATIONS
EASY TO OPERATE
AT HIGH
PRESSURE BUT
WITHOUT THE
MAINTENANCE
PROBLEMS OF
SIMILAR UNITS.

IDEAL FOR LPG
AND CORROSIVE
CHEMICALS.

NOTES

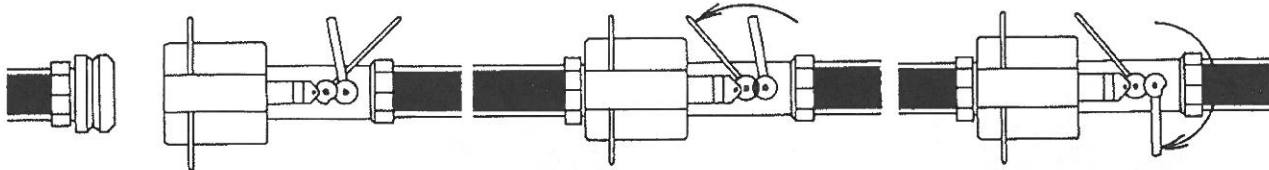


*Equipment for liquid
handling, storage
and transport*

LIQUIP

QUICK RELEASE SELF SEALING DRYBREAK

SAFETY Simple rugged interlocks ensure operation without spills

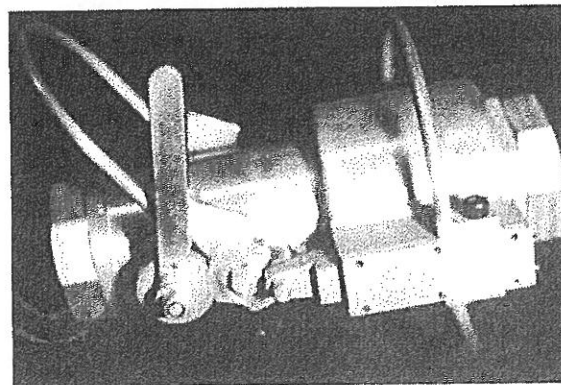
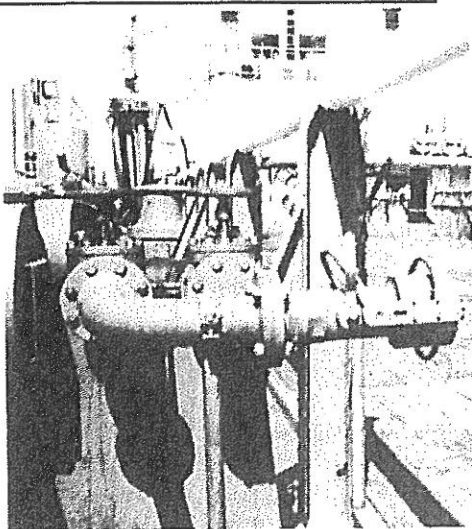


1. Both ends free — no flow.
Neither male nor female can
be operated.

2. Both halves mated and
coupling lever operated.
Still no flow until fully
engaged.

3. Valve lever opened for
full flow.
Separation of halves
now impossible.

The FLUISEAL



**ROAD AND RAIL TANKERS
SHIP AND RIG
INSTALLATIONS**

PROVEN IN USE

ON CHEMICALS AND HAZARDOUS PRODUCTS

Now in use for several years by major international chemical companies, the FLUISEAL DRYBREAK VALVED COUPLING has proved conclusively to be a world leader in coupling technology.

- * Ergonomic design for ease of handling.
- * Flat seals used for consistent performance and long life, with minimal maintenance.
- * Safety interlocks ensure correct opening/closing sequence.
- * Design engineered for foolproof operation.

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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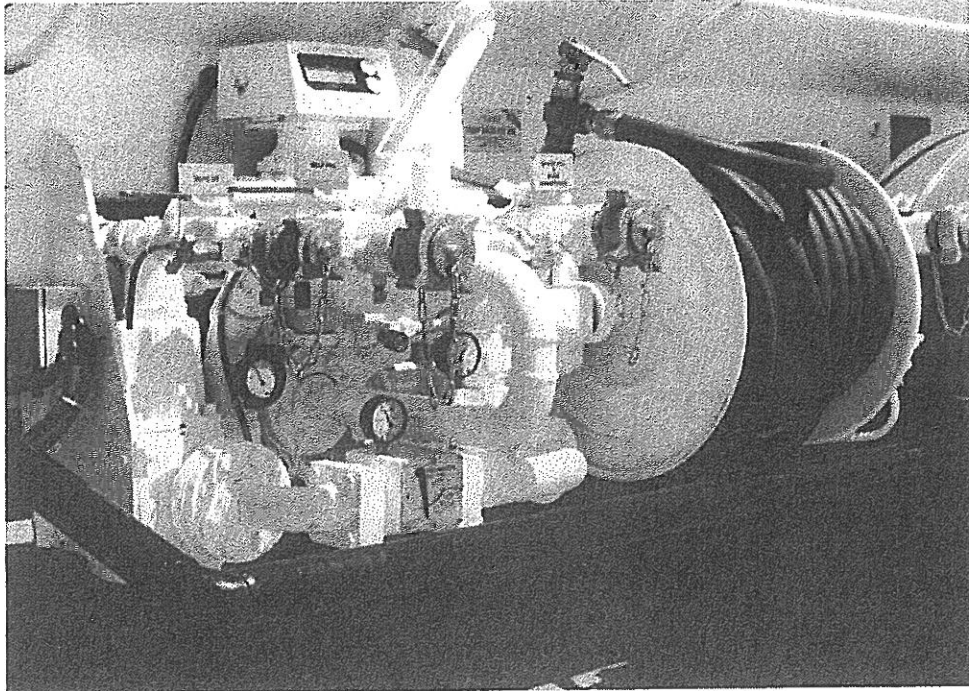
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LIQUIP

LPG HIGH-FLOW DISPENSER



TYPICAL APPLICATIONS

Specially designed for LPG tanker dispensing through either bulk hose or hose reel deliveries.

NOTES

HFD-18-LPG

Liquip modular dispensing units incorporate all the functions needed to efficiently dispense your products. The unit needs to be connected to hydraulic power to operate, providing you with higher flow rates and lighter weight than conventional custom built systems.

Changing the module to a new chassis requires very little work compared with the old custom-built systems with all components individually mounted.

STANDARD SPECIFICATIONS:

Ebsray V20 pump with V19 by-pass valve.

Neptune 50mm meter with vapour eliminator and pressure differential valve.

Liquip electronic register incorporating temperature compensation and optional ticket printer.

Liquip HR18-HP hose reel, hydraulic rewind, holding up to 30 metres of 32mm hose.

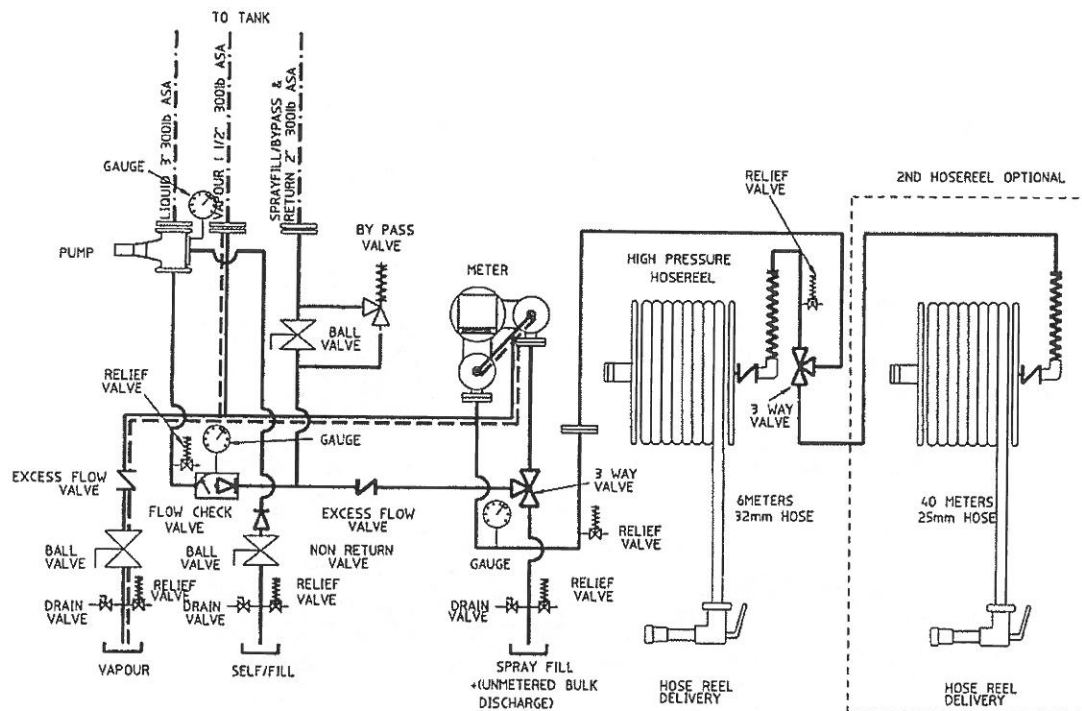
Fully equipped ready for use with all necessary gauges, valves and thermal relief.



*Equipment for liquid
handling, storage
and transport*

LIQUIP

SCHEMATIC: HFD-18-LPG



LIQUIP DRWG L1355

Size: 120mm long x 650mm wide x 650mm high.

Add approximately 300mm to length and 200mm to width for a safety bar which will protect the unit in the event of a side impact.

Weight: 480kg approximately (without safety bar).

Flowrate: 280 litres per minute (32mm hosed on hosereel).
360 litres per minute through bulk hose.

Facilities: Spray filling, self loading, vapour return, bulk unmetered discharge, bulk metered discharge, hose reel metered discharge.

Options: Additional rear mounted hosereel fitted with 25mm hose and nozzle for small tank deliveries.

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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LIQUIP

LPG STANDARD FLOW DISPENSER



TYPICAL APPLICATIONS

Purpose built for LPG tanker dispensing.

SFD-18-LPG

NOTES

Liquip's SFD-18-LPG is a low cost alternative to the high performance HFD-18-LPG. Modular in design the unit can easily be changed from one chassis to another requiring very little work compared with the old custom built systems.

An added advantage is the fact that, in some cases, your existing equipment can be used in the manufacture of your modular system adding to your cost savings.

Also if your future needs require our high performance HFD-18-LPG system it is simply a bolt off, bolt on operation as the SFD-18-LPG has the same mountings as the superior system.

OPTIONS & RELATED EQUIPMENT

Blackmere LGL2E 2" Pump.

1½ Neptune Meter.

Liquip electronic register (optional ticket printer).

Liquip hose reel HR-18HP with hydraulic rewind.

TECHNICAL DATA

Size: 1200mm x 650mm x 650mm.

Weight: 400kg (approx.)

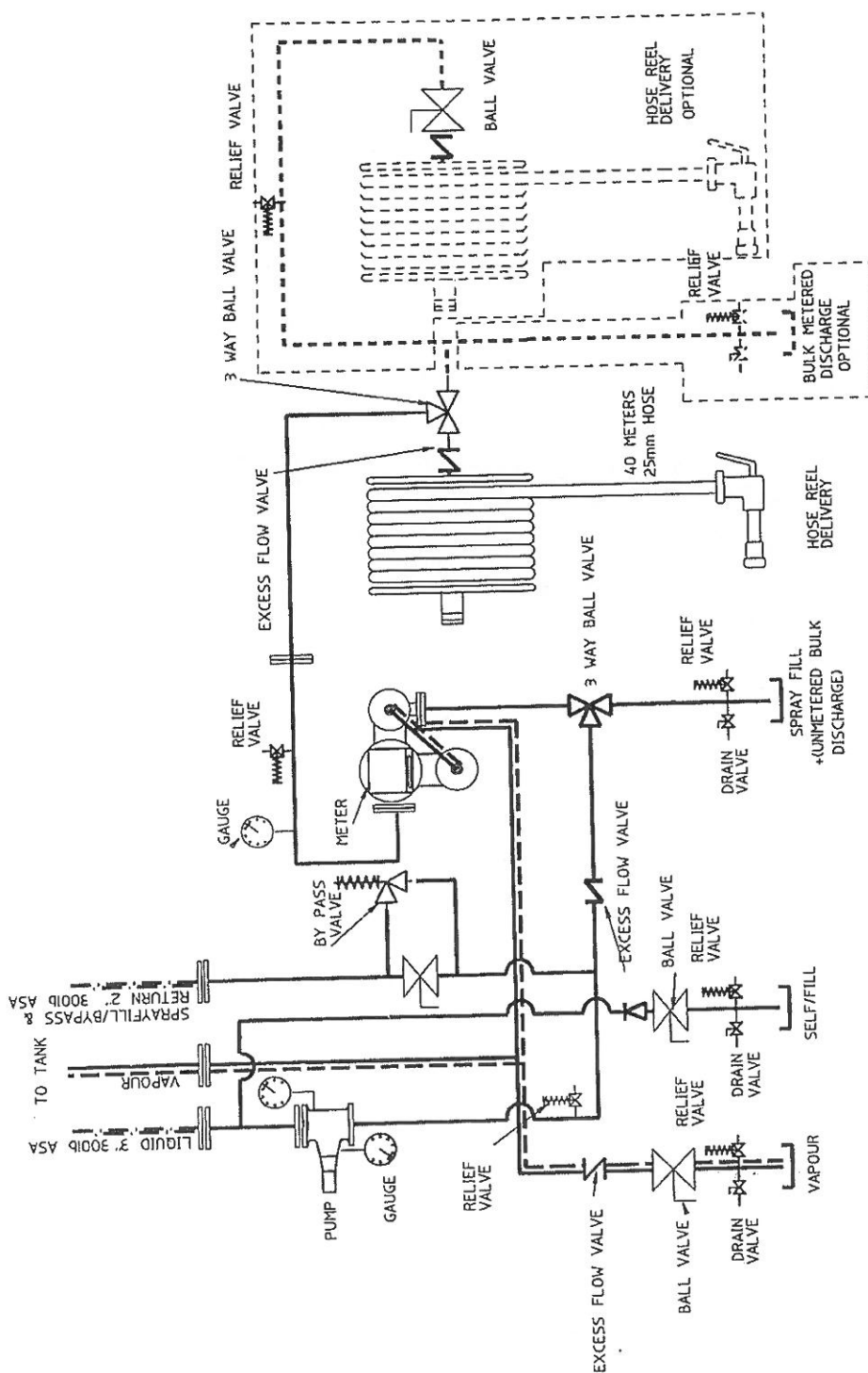
Flowrate: 100 LPM
(25mm hose).



Equipment for liquid handling, storage and transport

LIQUIP

SCHEMATIC: SFD-18-LPG



METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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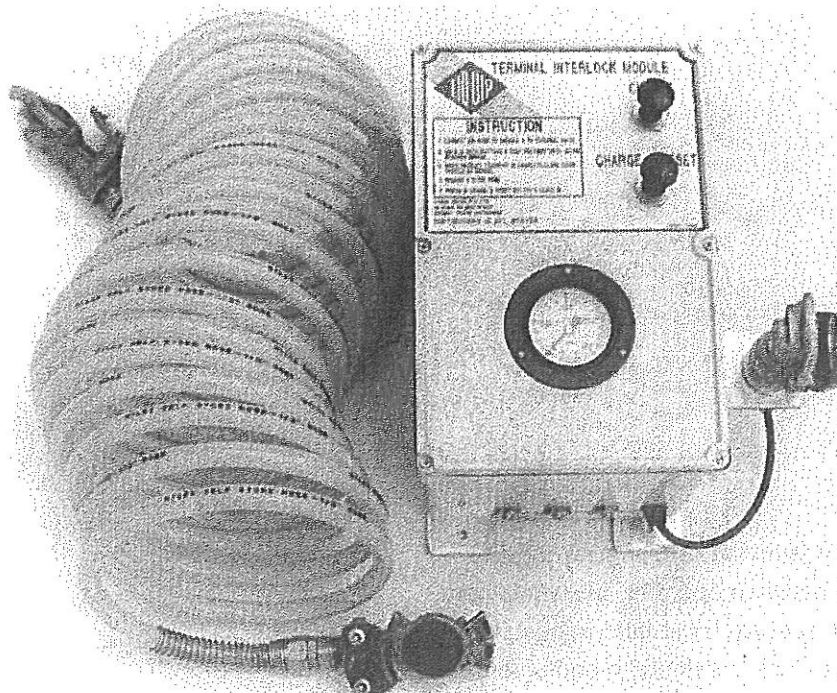
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LIQUIP

LPG TERMINAL INTERLOCK MODULE



TIM 100

AS1596-1989 Section 3.8 details requirements for emergency shut-off systems, where these are required. In particular, clause 3.8.4 requires a tanker interlock such that a liquid's transfer system incorporates a provision "to ensure that flow is shut off at the tanker side and the static side of the transfer hose at the same time".

This is achieved as follows:

- (1) The static liquid pipeline terminating valve is converted to air open/spring close power activation.
- (2) A coiled air hose is charged from the vehicle auxiliary air tank.

When connected to the static pipeline valve activator, the valve opens.

With the system the static valve closes if air is lost from the coiled air hose due to either a drive away, fire, or accidental disconnection. The vehicle cannot, with other normal interlocks drive away unless the vehicle tank valves are closed. Fire will also melt the air line and close the vehicle tank valves. Under these circumstances both vehicle and static valves are automatically closed.

Additionally the coiled air hose is interconnected with the Normal emergency stop systems on the tanker so that operation of the emergency system not only closes the tanker valves but exhausts air from the coiled air line therefore closing the static valve as well.

This system can be easily retrofitted to any vehicle which has emergency stops operating from the vehicle air system.

OPTIONS & RELATED EQUIPMENT

Consult Liquip for air circuits to link in with the main tanker system.

Unit is supplied complete with brackets and hose.

TECHNICAL DATA

Size: 300mm high x 200mm wide x 200mm deep.

Weight: 3kg.

TYPICAL APPLICATIONS

To close off both LPG tanker valves and terminal valve in the event of an emergency.

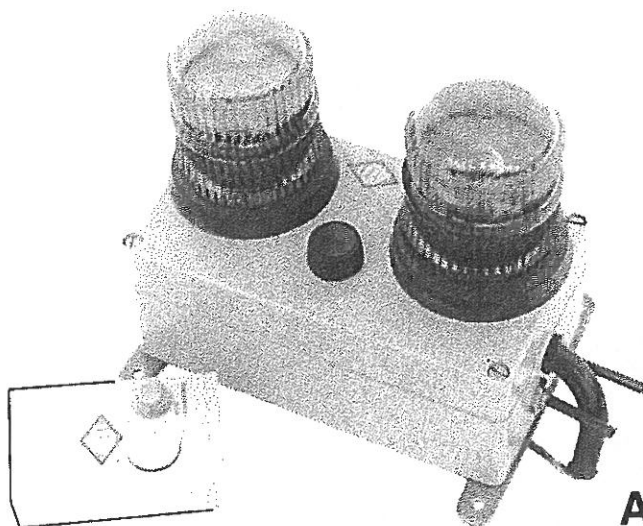
NOTES



Equipment for liquid handling, storage and transport

LIQUIP

"ACTIVE" DEADMAN CONTROL



ADC 100

TYPICAL APPLICATIONS

Loading LPG tankers.

Fuelling aircraft.

- ★ Cannot be overridden by jamming or clamping trigger.
- ★ No physical connection between operator and equipment.
- ★ Intrinsically safe (SAA approved) hand held transmitter.
- ★ Operator must remain in close proximity to equipment (< 20 metres).
- ★ Requires regular action by the operator.
- ★ Does not require line of sight to operate.
- ★ Ergonomic design ensures long periods of holding trigger is a thing of the past.
- ★ Reliable solid state hardware.

NOTES

Operations commence by pressing the "go" button on the transmitter. This activates a timer in the receiver. After typically, 25 seconds the green lamp starts to flash indicating the operator must re-activate the "go" button within 5 seconds. (Both these times are factory adjustable).

Should the operator allow the system to shutdown he can restart simply by pressing the "go" button.

On activating the "Emergency Stop" button the equipment stops, the green light extinguishes, the red lamp lights up and the "reset" switch is activated and also lights.

In this mode the "go" button is de-activated therefore the operator must go to the equipment, rectify the fault, then press the "reset" button and finally press the "go" button on the transmitter to recommence operations.

The "go" button is configured so that if it is permanently pressed (e.g. G-Clamp) the receiver recognises the continuous transmission and shuts down the system after 30 seconds.

Each unit is coded by dip-switches to ensure only one vehicle/transmitter pair will work with each other without affecting neighbouring vehicles. Standard operation is by pneumatic control, which is built into the control box.

OPTIONS & RELATED EQUIPMENT

12V or 24V d.c.

Pneumatic control is standard, electrical switching also available.

Box has built-in aerial.

Comes complete with mounting brackets.

TECHNICAL DATA

27 MHz transmission.

Current consumption
2A max. at 24V.

Pneumatic connectors
push-in $\frac{1}{4}$ inch.

Electrical connection
by conduit.



*Equipment for liquid
handling, storage
and transport*

LIQUIP

LIQUIP AVIATION



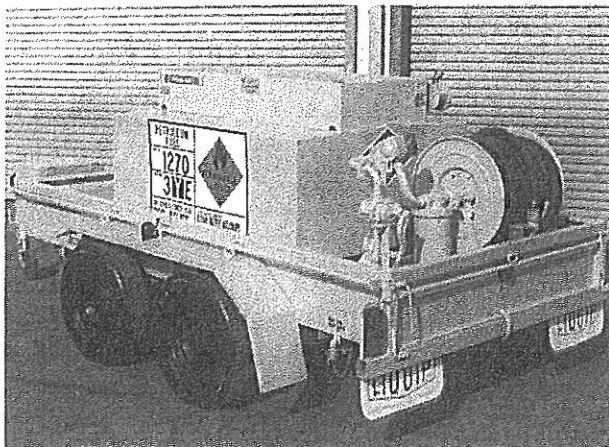
TYPICAL APPLICATIONS
SPECIALISED EQUIPMENT FOR REFUELLING SMALL AIRCRAFT AND HELICOPTERS.

ON-SITE CALIBRATION and METER SERVICE can be carried out by our trained staff besides hose pressure and continuity testing.

Liquip's mobile workshop can bring you 200 l, 500 l or 2500 l calibration tanks or master meters.

The workshop carries sufficient equipment for minor equipment repairs and all normal service requirements.

SMALL REFUELLING EQUIPMENT

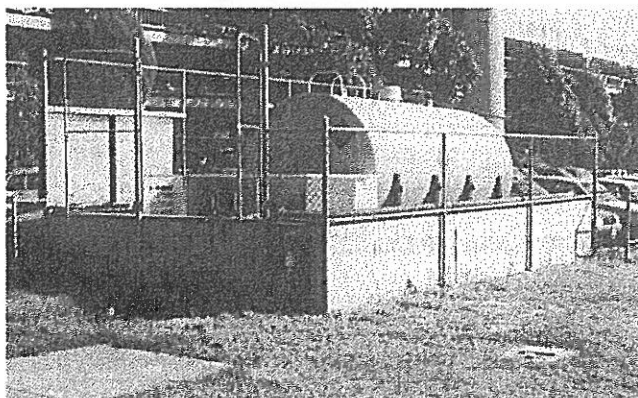


SWAN AIRSHIP REFUELLER

Liquip design and manufacture trailer refuellers to comply with all standards. We offer from hand operated pumping systems mounted on a box trailer through to a large on ground tank with electric driven pump and hose reel and with preset or plain metering equipment.

Also see later page on pump and filter-coalescer unit for fuelling helicopters and light aircraft from 200 l drums.

NOTES



HELICOPTER REFUELLER



Equipment for liquid handling, storage and transport

LIQUIP AVIATION REFUELLERS



HYDRANT CART
4000 LPM

HYDRANT CARTS AND TANKER FUELLERS/DEFUELLERS

A specialised field requiring the highest standard of workmanship and complex control systems.

We offer:—

- Design and manufacture of *trailer or vehicle-mounted hydrant units* with metering, pressure control, interlocks and delivery systems to your specifications.
- *Repair, rebuild or modifications to existing equipment* to help you in adapting to changing market circumstances, e.g. variations in domestic and international refuelling requirements.
- *A wide range of equipment sales and service:*
Pumps, Strainers, Filter-Coalescers, Hose Reels, Meters, Over-wing and Under-wing Nozzles, Water Detectors, Deadman Control Systems, Static Reels, Hose and Fittings.
- Design and manufacture of *tanker fueller/defuellers* as trailers or self-propelled vehicles with built-in pumping and valving systems, including overfill protection.
- *On-site service work* by experienced fitters in a mobile workshop. Hose pressure testing, meter proving and calibration, earth checking and equipment fault-finding and repair.



**FUELLER
DEFUELLER**

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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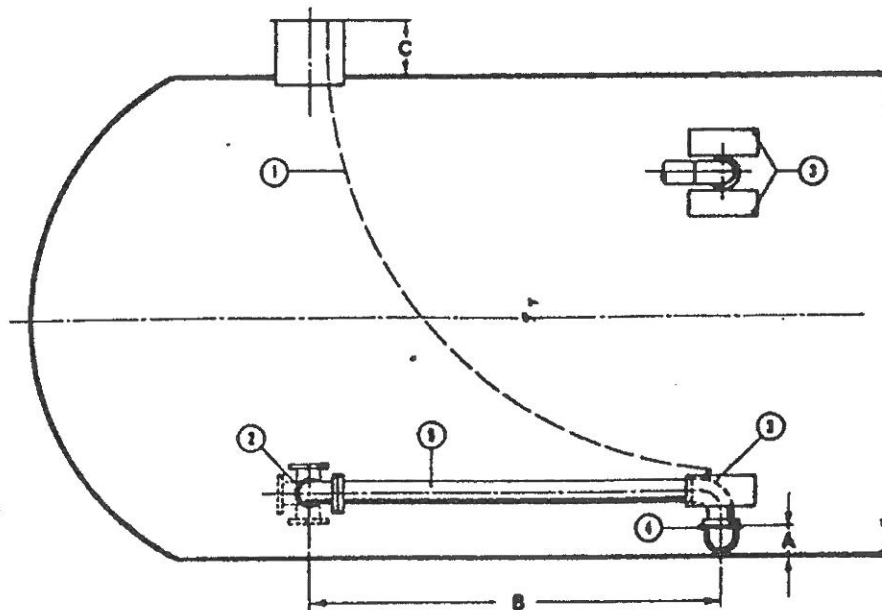
DISTRIBUTORS

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LIQUIP

FLOATING SUCTIONS

**TYPICAL
APPLICATIONS
AVIATION
STORAGE
TANKS**



NOTES

FLOATING SUCTIONS are designed to ensure that product is taken from just below the surface of the liquid where it will be cleaned out. It also prevents the suction point being on the tank floor where dirt and water will settle out.

Every floating suction is built to order to suit tank diameter, tank height and manhole position. One, two or three or more floats are used according to the length and diameter of the pipe required to be lifted.

- 1) Lifting cable for test purposes.
- 2) Swivel, 50mm dia to 150mm dia.
- 3) Floats.
- 4) Spaces.
- 5) Suction pipe.

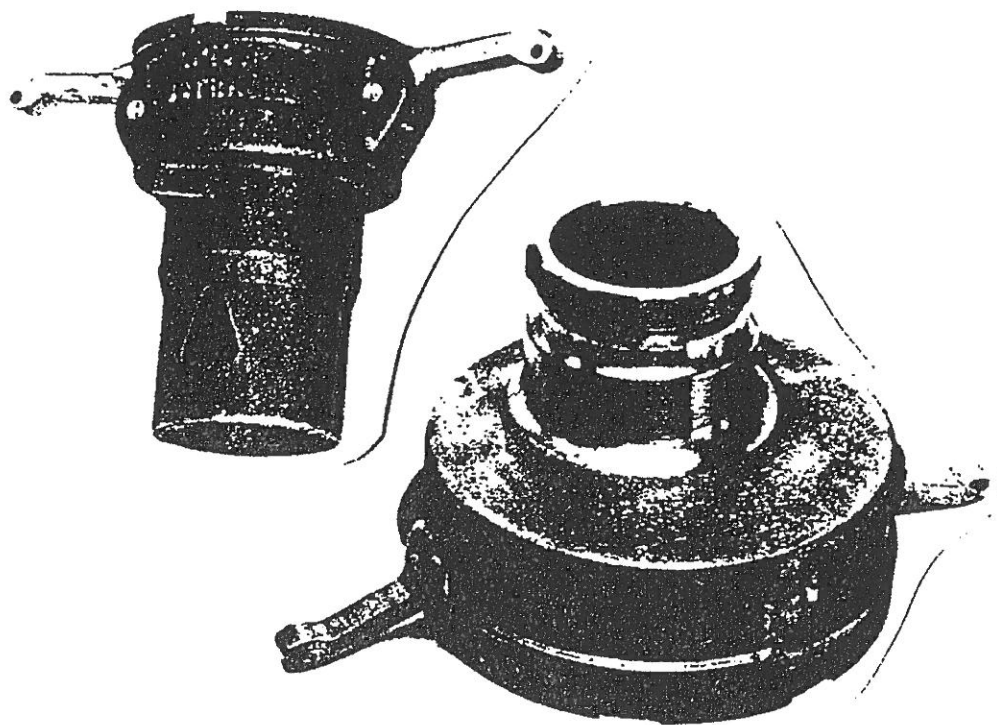
All floating suction are made in aluminium with stainless steel fasteners.



Equipment for liquid
handling, storage
and transport

LIQUIP

AVIATION SELECTIVE CAMLOCKS



TYPICAL APPLICATIONS

SELECTIVITY OF HOSES AND FITTINGS FOR USE IN AVIATION REFUELLING.

This range of camlock fittings has been designed and manufactured for the purpose of aviation selectivity.

Notches and pins are used to dedicate these couplings for use with Aviation Gasoline (AV-GAS) or Aviation Turbine Fuel (JET-A1) they are not interchangeable, thus stopping the wrong product being loaded into the wrong tank.

This range of camlocks are manufactured to NATO standards in heat treated aluminium in the following configurations:-

- * Female camlock to hose tail (NA-9).
(Camlock hose tails are all complete with static safe connectoins).
- * Male camlock to square flange (NA-18).
- * Dust cap (NA-2).
- * Dust plug (NA-8).
- * API 100mm female to male camlock (API-MC).
- * Male camlock to ASA150 flange.
- * Male camlock to TTMA flange.

ORDERING INFORMATION

Use suffix "G" when ordering for AV-GAS

Use suffix "J" when ordering for JET-A1

eg. NA80-9J = 80mm camlock hose tail c/w selectivity for JET-A1

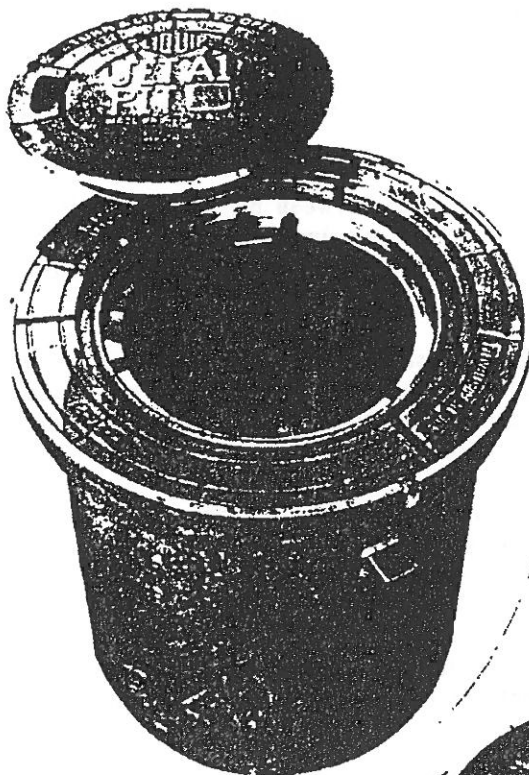
NOTES



Equipment for liquid handling, storage and transport

LIQUIP

HYDRANT PIT



TYPICAL APPLICATIONS

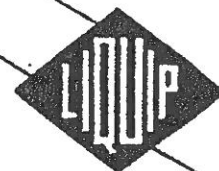
SPECIALISED EQUIPMENT FOR AIRPORTS.

NOTES

OPTIONS AND RELATED EQUIPMENT

HP18M Hydrant pit manual lift 450mm diameter.
HP18P Hydrant pit power assisted lid 450mm diameter.
HP18x24M Hydrant pit manual lift 600mm diameter.
HP18x24P Hydrant pit power assisted lid 600mm diameter.

HP18M-19 Bonding kit.
HP18M-18 Installation kit.
HP18M-17 Riser pipe weld neck flange 150mm ASA300.
HP18-14 Gasket Klingerite 150mm ASA300.
HP24-19 Chain anchor assembly.



Equipment for liquid handling, storage and transport

LIQUIP

THIS ALL AUSTRALIAN DESIGNED AND MANUFACTURED UNIT FEATURES:-

- * The **HP18** has a cast s.g. heat treated iron collar for retaining of the pit lid which is bolted to the pit body. This allows future re-surfacing of the airport, as a spacer can be inserted without disturbing the lower body assembly.
 - * The base seal is an aromatic resistant bellows clamped between pit collar and riser pipe flange, this bellows will fit over the pit valve and butterfly valve (if fitted) for ease of removal if ever required. It is also far less critical of dimensional tolerances and allows ample movement for ground disturbance after installation.
 - * The 460mm lid is heat treated aluminium. Rubber seals have been eliminated by the lids 'umbrella' extension over a water shed rim in the pit collar, with drainage slots to ground level. The upper surface of the pit is designed to be 38mm above true ground level, to provide water run-off without too high an obstruction for airport traffic
 - * The **HP18x24** has a split top cover, with inner 450mm lid being the normal refuelling access and the outer 600mm lid being removable (without tools) to provide access to a 600mm diameter body, allowing greater access around the hydrant valve, for spanners and tools etc. during maintenance and repairs.
 - * The cast s.g. heat treated iron rim incorporates a flange to retain the pins of the outer rim. This cast rim forms the top collar only and features the same bolt on flange design as the 450mm, which will allow future re-surfacing.
 - * The outer lid rotates on the pits rim and is removable by releasing three spring loaded pins. material is heat-treated aluminium to minimise weight but provide adequate strength. Removal of this rim is required only for maintenance work or changing the valves.
 - * The inner lid is retained by the normal 3 pins and rotation into bayonet locks. Both the inner and outer lids use the same 'umbrella' rain sealing method instead of rubber seals. Drainage is again provided by the 38mm rise from true ground level.
 - * The pit body is hot-dipped galvanised after fabrication, the base is angled for ease of cleaning and drying and the same bellows style seal is used between the pit body and riser pipe flange. Body depth is approximately 600mm, for good access and yet still allows fitment of various pit valves with butterfly valves. The body may also be fitted with a drain point if required.
- (POWER ASSIST OPTION)**
- * Contains all the features of the manual lift, with the addition of a power lift mechanism for the lid. The pit lid weighs 21 kg. The power-assist option reduces the lift to a few kilo's to minimise injuries and at the same time ensure the lid is captive to the pit. A spring provides the force and the cantilever arm runs on a bearing allowing the lid to twist and lock.
 - * Removal of the lid requires extraction of one pin only.

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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and Distributors

AVIATION REFUELLING EQUIPMENT



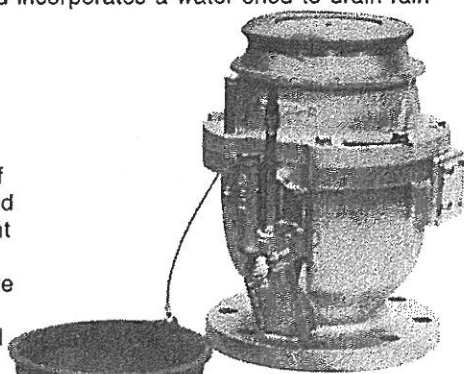
460 mm (18") **HP18** (PLAIN)
HYDRANT PIT **HP18-S** (POWER-ASSIST)

Accepts all common hydrant valves.
Floating base collar flange isolates pipeline from surface movement and stress.
Incorporates drain point and earth strap if required.
Heat-treated aluminium lid for strength with light weight.
Liquip's unique design HP18-S gives power assisted lifting to the pit lid by use of a spring loaded swing arm.
This also retains the pit lid to the pit.
An important feature of the hydrant pit is that it does not rely on rubber seals to keep out water. The lid incorporates a water shed to drain rain away.

TYPICAL APPLICATIONS
SPECIALISED EQUIPMENT FOR AIRPORTS.

LANYARD-OPERATED HYDRANT VALVES

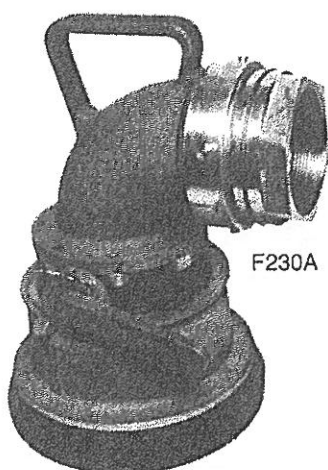
Thiem lanyard-operated hydrant valves provide a simple means of starting and stopping the flow of fuel in an airport hydrant system. They are utilized where pressure control is achieved on the hydrant servicer and deadman operation is not desired. One modification of this type of valve does feature a simple form of deadman operation. Flow in the system is initiated by depressing a button located on the top of the servo. The fuelling operation is stopped by pulling a lanyard attached to a lever on the servo. In the case of the deadman version the lanyard lever is deleted. The valve will remain open only while the button is depressed hence a form of deadman control is accomplished.



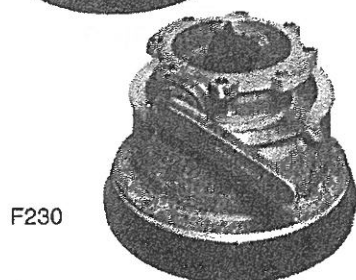
F373
100 mm flange
x 100 mm
API standard

F374
100 mm flange
x 63 mm
3 lug standard

NOTES



F230A



F230

THE 230 HYDRANT COUPLER

Is designed to connect to 4-inch hydrants and adaptors manufactured in accordance to API RP1004. Optional outlet configurations allow the use of various types of threads and hose sizes. (Supersedes F203 Series Hydrant Couplers.)

Features

- Full size 100 mm flow path.
- Optional outlets for use with 2½, 3 or 4-inch NPT or BSP and 4-inch ASSPT threaded hose.
- Optional 6-position product selection.
- Floating nose seal design that can be replaced with pressure in hose.
- Operating handle with full interlock feature — will not open unless locked onto the hydrant or adaptor, may not be disconnected unless closed.
- 3-piece coupler elbow-swivel design for ease of maintenance.
- 4-inch disconnect type swivel with safety lock rings for ease of removal from base.
- Mates Thiem Hydrants F368 and F373, Thiem Adaptor F414 and competitor's hydrant and adaptors designed in accordance with API RP1004.
- Rubber bumper reduces coupler wear.
- Available with F229 pressure control/deadman input controller to limit fuel flow and pressure.



Equipment for liquid handling, storage and transport

LIQUIP

AVIATION REFUELLING EQUIPMENT

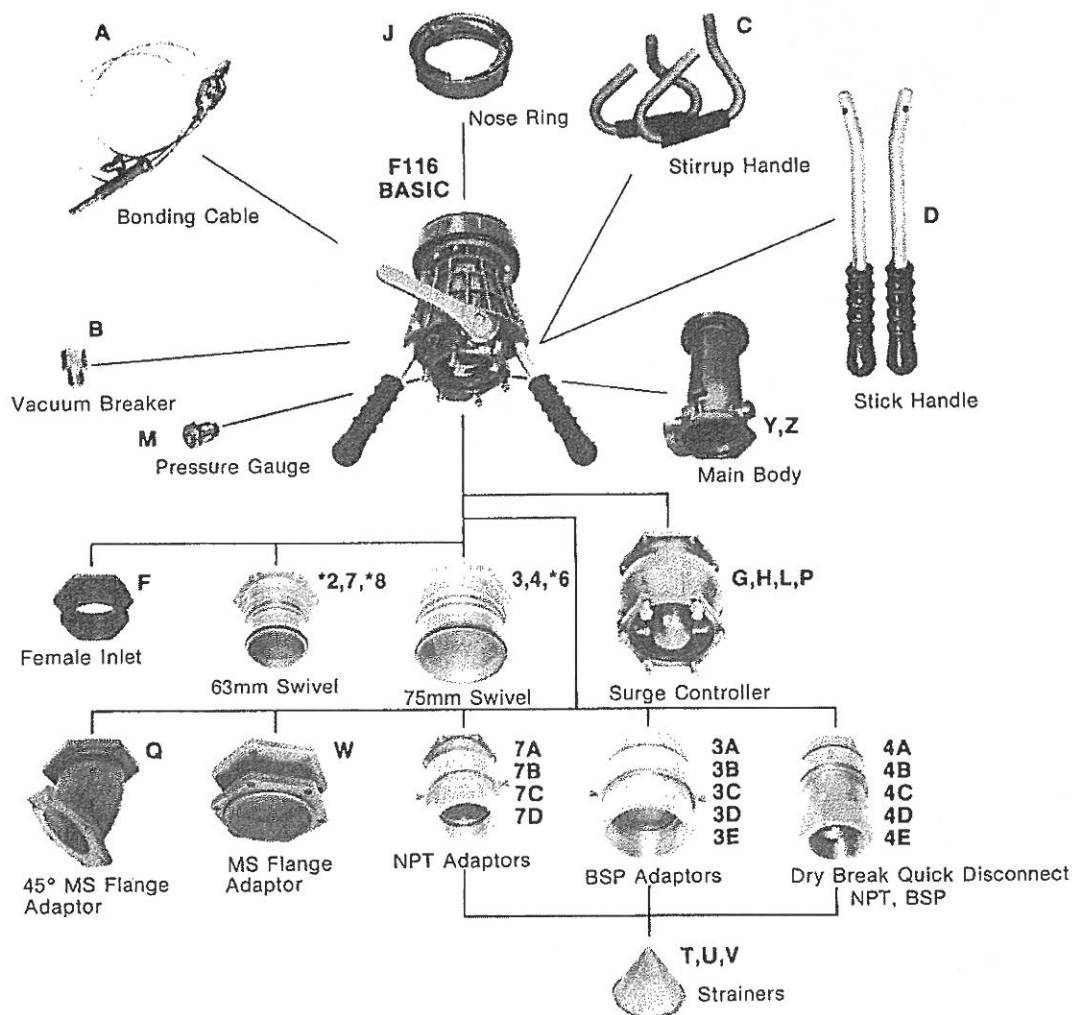
F116 UNDERWING NOZZLES

The F116 Nozzle is the lightest weight Thiem standard size nozzle designed for regular duty at commercial airports worldwide. The F116 provides positive leaktight connection to the aircraft adaptor during fuelling operations. In the basic configuration it is furnished standard with a 6-bolt mounting flanged inlet compatible with any one of several Thiem swivels and HECV's. It has full length, high strength, solid bicycle-type handles, a man-sized flow control handle that is fully interlocked to prevent inadvertent spills, and a dust cap; all as standard equipment. When combined

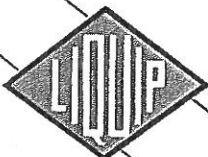
with a swivel and/or an HECV it becomes a complete unit. The F116 is therefore a family of nozzles out of which can be obtained the correct nozzle for the application.

The Thiem F116 is available with two different inlet coupling-strainer sizes (diameter) and various inlet threads. Choose the nozzle for the applicable pressure drop requirements from the table below.

For all practical systems the 75 mm (type 3) coupling-strainer is recommended whether it be for an Executive or Jumbo Jet.



METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



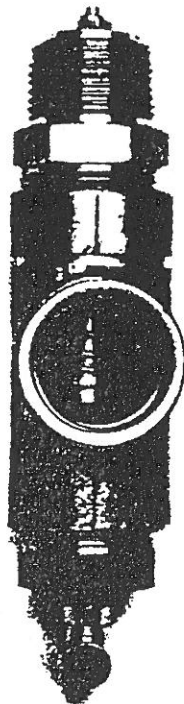
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INTERNAL VALVE/ELBOW



ITV1-AO

- The ITV1-AO 25mm Internal valve with integral elbow, has been designed for use on aircraft tanker refuellers which have small sample or drain lines.
- The normal fitting in the sump is a 25mm BSP socket.
- Flow is outwards only.
- The elbow incorporates a shear groove above the pipe attachment aperture, to ensure a break-away (in the event of damage) at that point.
- The valve poppet, spring and shaft are all attached above the shear point to ensure the continued containment of product in the tank.
- In the event of fire the air line will soften at 80°C and release any air in the system and close the poppet.

OPTIONS

Air operated only.

TECHNICAL DATA

Nickel plated body

Aluminium poppet

Viton seals

TYPICAL APPLICATIONS

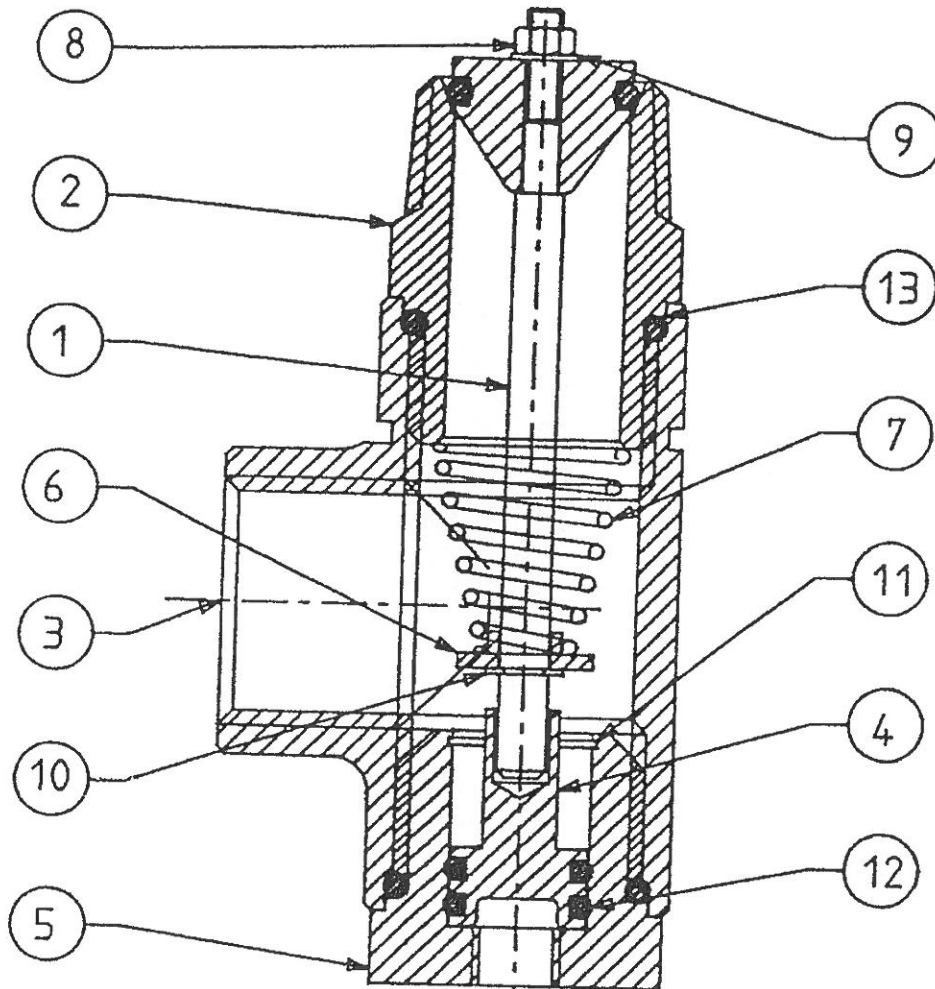
SUMP DRAIN AND
SAMPLE VALVE
FOR USE ON
AIRCRAFT
TANKER
REFUELLERS.

NOTES



Equipment for liquid
handling, storage
and transport

LIQUIP ASSY-ITV1A0



ITEM	PART NO	DESCRIPTION	MATERIAL	QTY
1	ITVI-1	POPPET ASSY	ALUMINIUM	1
2	ITVI-2	VALVE SEAT	N/P STEEL	1
3	ITVI-3	BODY	N/P STEEL	1
4	ITVI-4	PISTON	DELFIN	1
5	ITVI-5	CYLINDER	N/P STEEL	1
6	ITVI-6	STEP WASHER	ST STEEL	1
7	P4411	SPRING	ST STEEL	1
8	P4380	LOCKNUT	ST STEEL	1
9	P0809	WASHER	ST STEEL	1
10	P4517	E-CLIP	N/P STEEL	1
11	PII43	CIRCLIP-INTERNAL	N/P STEEL	1
12	P0288	O-RING	VITON	2
13	P0171	O-RING	BUNA	2

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION

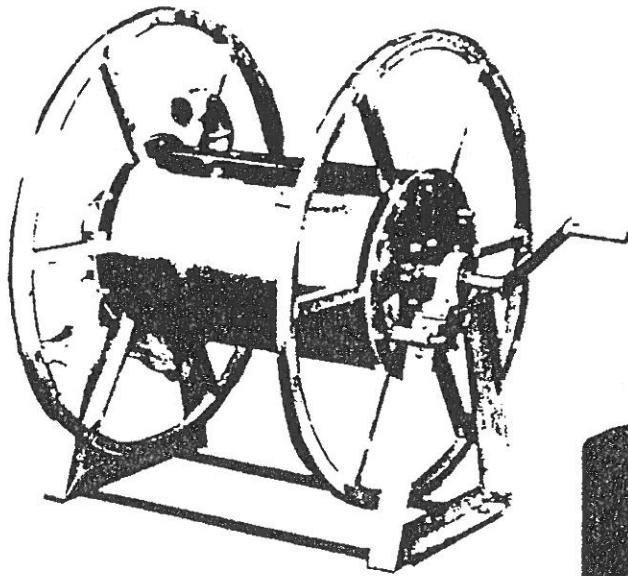


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LIQUIP

AVIATION HOSEREEL



ENCLOSED DRUM

OR

SPOKED DRUM

OR

CARTWHEEL



TYPICAL APPLICATIONS

Large-bore reels with materials suitable for JET A-1

NOTES

Full 63mm bore through aluminium manifold. Runs on ball-bearings with dual o-ring seals, pressure rating to 2100kPa.

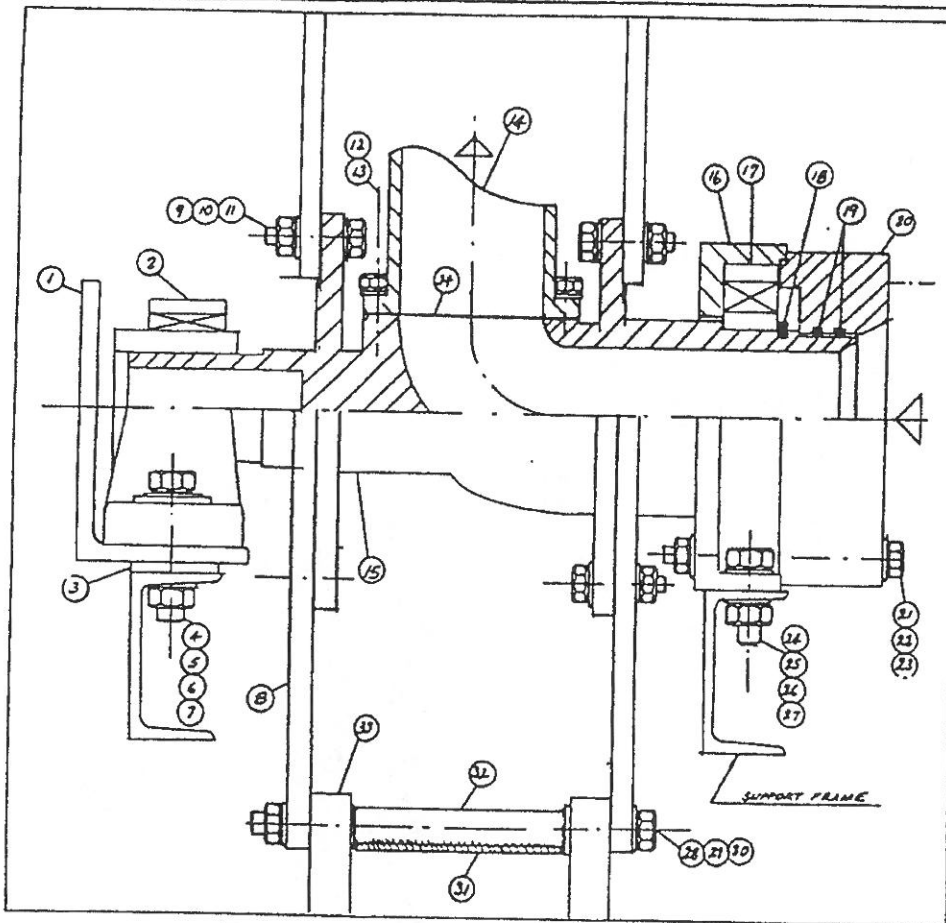
Order as drum type or cartwheel (specify type and length and diameter of hose to be used.)

Available in hand rewind, hydraulic rewind or electric (12v or 24v) rewind.



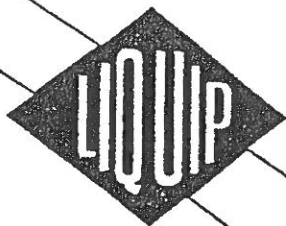
Equipment for liquid handling, storage and transport

LIQUIP AVIATION HOSEREEL



	Qty.		Qty.		Qty.
1 HYDRAULIC MOUNT BRKT	1	13 WASHER	4	25 NUT	2
2 BEARING & HOUSING	1	14 GOOSE NECK AHR-250-2GN	1	26 WASHER	2
3 PACKING PLATE	1	15 MANIFOLD AHR-250-1	1	27 TAPPER WASHER	2
4 BOLT	2	16 BEARING HOUSING AHR-250-2	1	28 BOLT 3/8" BSW	6
5 NUT	2	17 BEARING P8134	1	29 NUT	6
6 WASHER	2	18 SNAP RING P8135	1	30 WASHER	24
7 TAPPER WASHER	2	19 O-RING SEAL P8136	2	31 SPIRAL PLATE	1
8 CHEEK PLATE	2	20 SEAL HOUSING AHR250-3	1	32 SPIRAL SPACER TUBE	6
9 BOLT 3/8" BSW	12	21 BOLT 3/8" BSW	4	33 SPOKE	12
10 NUT 3/8" BSW	12	22 NUT	4	34 GASKET	1
11 WASHERS	24	23 WASHER	8		
12 BOLT 1/4" BSW	4	24 BOLT 1/2" BSW	2		

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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AVIATION REFUELLING EQUIPMENT

GOSSLER AVIATION HOSE

The BDV-C is a lightweight, soft-wall hose for all aircraft fuelling operations when only middle defuelling rates are required. Easy to handle, low weight, high-bursting pressure, highly resistant to abrasion, kinking and over-wheeling, recommended for reel, top-deck and platform refuelling, and for hydrants inlets and deliveries.

Color: black, with 2 yellow rhombuses.

BDV-C in full accordance with BS 3158: 1977, type C, grade 2.

BDV-B (with copper wires) meets BS 3158: 1977, type B, grade 2, available same dimensions.

SIZE I.D. In.	mm	approx. O.D. mm	maximum working- pressure	maximum vacuum mm Hg.	minimum bending- radius mm	approx. weight kgs./m	GOSSLER TYPE Number	standard length •
1"	25	37	25 bar	425	250	0,9	BDV 25C	30 metres (100 ft.)
1 1/4"	32	44	25 bar	375	275	1,0	BDV 32C	
1 1/2"	38	51	25 bar	300	300	1,2	BDV 38C	40 metres (130 ft.)
2"	50	66	25 bar	275	400	1,8	BDV 50C	
2 1/2"	63	79	20 bar	200	450	2,3	BDV 63C	
3"	75	91	20 bar	150	700	2,7	BDV 75C	
4"	100	117	20 bar	—	900	3,7	BDV 100C	

BIBONAN SPECIAL V
Refuelling and Hydrant
Intake Hose tested to 25
bar \approx 350 psi bursting-
pressure $>$ 85 bar \approx
1200 psi with antistatic
outer cover = type
BDV-C.

Type BDV-C

Production possible up to 2" = 80 metres (260 ft.), 2 1/2"-4" = 40 metres (130 ft.)

HOSETAILS AND SWIVELS

Quick Clamp Type to International Standards.

Supplied separately or part of complete tested hose assembly.

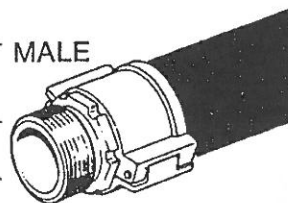
NOMINAL HOSE I/DIA	ACTUAL HOSE I/DIA	B.S.P. MALE	HOSE WALL THICKNESS	PART No.
1 1/4	32	1 1/4	6-6 1/2	VA 32125
	32	1 1/2	6-6 1/2	VA 32150
1 1/2	38	1 1/2	6 1/2	VA 38150
	38	2	6 1/2-7	VA 38200
	40	1 1/2	7	VA 40150
	40	2	7	VA 40200
2	50	2	7-8	VA 50200
	50	2 1/2	7-8	VA 50250
2 1/2	63	2 1/2	7-8	VA 63250
	65	2 1/2	7-8	VA 65250
	65	3	7-8	VA 65300
3	75	3	7-8	VA 75300
	80	3	7-8	VA 80300
4	100	4	8-9	VA 100400

NOMINAL HOSE I/DIA	ACTUAL HOSE I/DIA	B.S.P. FEMALE	HOSE WALL THICKNESS	PART No.
1 1/4	32	1 1/4	6	MF 32125
	32	1 1/2	6	MF 32150
	32	2	6	MF 32200
1 1/2	38	1 1/2	6-7	MF 38150
	38	2	6-7	MF 38200
	40	2	7	MF 40200
2	50	2	7-8	MF 50200
	50	2 1/2	7-8	MF 50250
2 1/2	63	2 1/2	7-8	MF 63250
	63	2 1/2	7-8	MF 65250
	65	3	7-8	MF 65300
3	75	3	7-8	MF 75300
	80	3	7-8	MF 80300
4	100	4	8-9	MF 100400

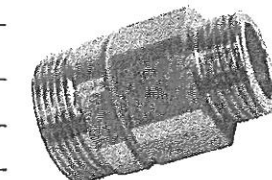
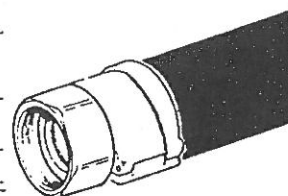
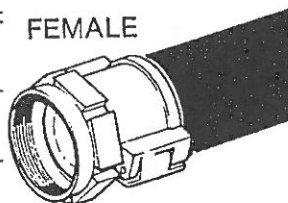
SIZE, B.S.P.	PART No.
25mm MALE x 32mm FEMALE	SJ 25 x 32
32mm MALE x 32mm FEMALE	SJ 32 x 32
38mm MALE x 38mm FEMALE	SJ 38 x 38

OTHER SIZES AND TYPES AVAILABLE ON REQUEST

MALE



FEMALE



Brass, Nickel Plated

TYPICAL APPLICATIONS

SPECIALISED
HOSE AND
FITTINGS FOR
AVIATION.

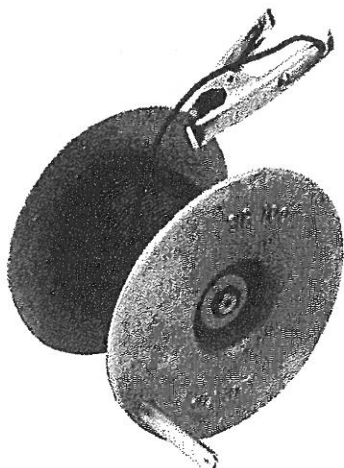
NOTES



Equipment for liquid
handling, storage
and transport

LIQUIP

AVIATION REFUELLING EQUIPMENT

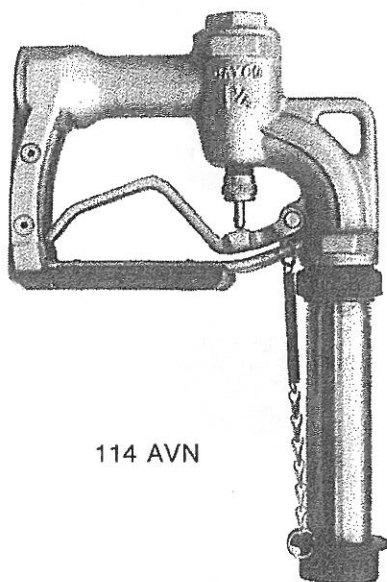
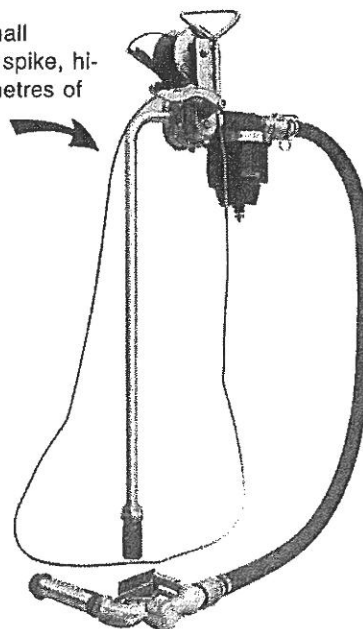


STATIC EARTHING REEL FOR ELECTRICAL BONDING — SR100

- Electrostatic charges can be generated by a variety of circumstances including product flow and vehicle or aircraft movement. Ignition of flammable vapours is possible by discharge of static at a gap, e.g. as a hose or nozzle is connected or parted.
- The Liquip SR100 provides a ready means of bonding two components with a maximum assurance of continuity. Primary continuity is by a carbon brush bearing on the stainless steel shaft. Secondary paths are through the solid aluminium body to the shaft and also by spring-loaded stainless steel washers to the end face.
- Dust seals (o-rings) protect the assembly internals and graphite grease ensures easy rotation without electrical resistance, and long life.
- Manufactured to your specifications of wire, clamp and crimp fittings.
- Normally supplied with threaded shaft and inner nut locked on. Outer nut and spring washer fit outside your mounting bracket.

PORTABLE AIRCRAFT REFUELLING DISPENSER

An ideal portable dispensing system for helicopters and small aircraft. Unit comes complete with static cable and ground spike, hi-flow rotary pump with drum spear, filter-coalescer, and 4 metres of aviation hose with a 114 AVN aviation nozzle.



114 AVN

LIQUIP OVERWING REFUELLING NOZZLE

A modern, lightweight overwing manual nozzle that is suited for flow rates up to 250 lpm. This unit features a bonding clip, metal dust cap and screw-in strainer of 100 mesh stainless steel.

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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LIQUIP

ROAD TANKER FIT-OUT



AN AGENTS TANKER WITH DISPENSING EQUIPMENT

The following pages depict vehicles assembled in our workshops and tanker equipment which we hold in stock.

In addition to your own company policies, a number of bodies control the manufacture and operation of petrochemical delivery vehicles including:

- AIP codes of practice.
- State Government regulations on dangerous goods.
- Standards Association of Australia.
- National Standards Commission and Departments of Consumer Affairs.
- Departments of Motor Transport.

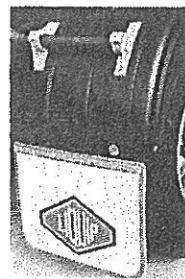
A Liquip tanker Fit-out is your guarantee of conforming to regulations.

- FLAME-PROOFING** We supply and fit all equipment including muffler, isolation switch, battery cover, wiring conduit and engine strangler.
- TANK MOUNTS:** Approved under AS2809 for 2g loading, and tank positioned to ensure correct axle loading.
- BUMPER BAR:** Supplied and fitted to meet AS2809 requirements.
- PLACARDING:** Our own registered design for easy changing.
- FIRE EXTINGUISHERS:** Mounted in correct positions with quick release brackets.
- CALIBRATION:** Both dip-sticks and dispensing equipment calibrated to N.S.C. standards.



FULL LENGTH TRAY, 8 DRUM OR 4 DRUM

- Drum trays provide that extra space for carrying small quantities of packaged products.
- Full length to carry demountable tanks or short units to fit behind or in front of a chassis mounted tank.
- Built to your specification and to suit your chassis width.
- Heavy duty with steel frame and timber flooring.



PVC OR ALUM. MUDGUARDS AND MUDFLAPS

- PVC mudguards are available in dual tyre width for a single axle. For tandem or tri-axle vehicles. 2 or 3 guards are fitted each side. Please specify colour. Width 610 mm.
- Aluminium mudguards are available in dual tyre width for single or tandem axles.
- Sets of mudguard brackets are available for single and tandem mudguards, in cast aluminium with closed-end outers and backing strips.

TYPICAL APPLICATIONS

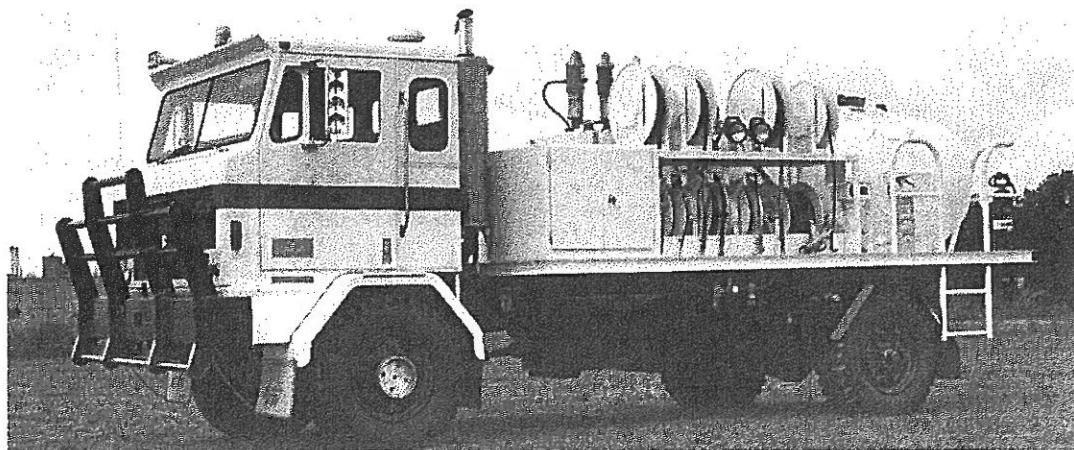
LIQUIP PROVIDE A ONE-STOP SHOP FROM CHASSIS OFF SHOW-ROOM FLOOR THROUGH TO READY FOR WORK.

NOTES



Equipment for liquid handling, storage and transport

LIQUIP SPECIALISED VEHICLES



SITE SERVICE VEHICLE

SPECIAL PURPOSE VEHICLES AND EQUIPMENT

Workshop facilities for tanker repair and fit-out are sited in head office Sydney and also at our distributors workshops around Australia.

The staff have many years experience on tankers, not only in the standard type of vehicle but also in slightly off-beat applications.

- **SITE SERVICE VEHICLE**

Illustrated is a service vehicle used on construction and mining sites. Typically designed to carry fuel, oils and grease with associated pumps, meters and delivery systems for maintenance of other vehicles on site.

- **PRIME MOVER FIT-OUT**

Flame-proofing, pumping equipment, turn-table and mudguards supplied and mounted to your specification.

- **BULK LUBE OIL DELIVERY**

The vehicle has a multi-compartment tank, each compartment having its own dispensing pump, meter and electric rewind hose reel. The pumps are gang-driven by a single p.t.o. for maximum simplicity.

A 75 mm pump can also be mounted for quick discharge of a complete tanker load of a single product.



METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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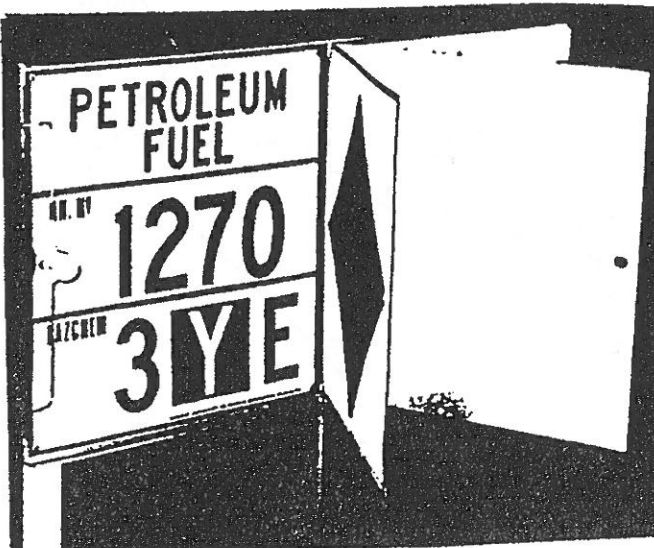
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LIQUIP

HAZCHEM LIBRARY SYSTEM



**TYPICAL
APPLICATIONS**

**HAZCHEM SIGNS
FOR TANKERS**



HLS 100

Address panel not included.

HLS 200

Supplied with address panel.

MULTI-PRODUCT LIGHT WEIGHT NON-CORRODING VERSATILE

A convenient flip-over page system to hold up to six (6) product information panels. Just change the sign to suit your product.

If you take over delivery of a new product, it is the work of a few minutes to insert a new "page" for that product.

Frame is in aluminium.

Option and Related Equipment

Standard system is;

- 1270 (Petroleum Fuel)
- 1203 (Petrol)
- Blank for non-flammables.
- Any other product to order.

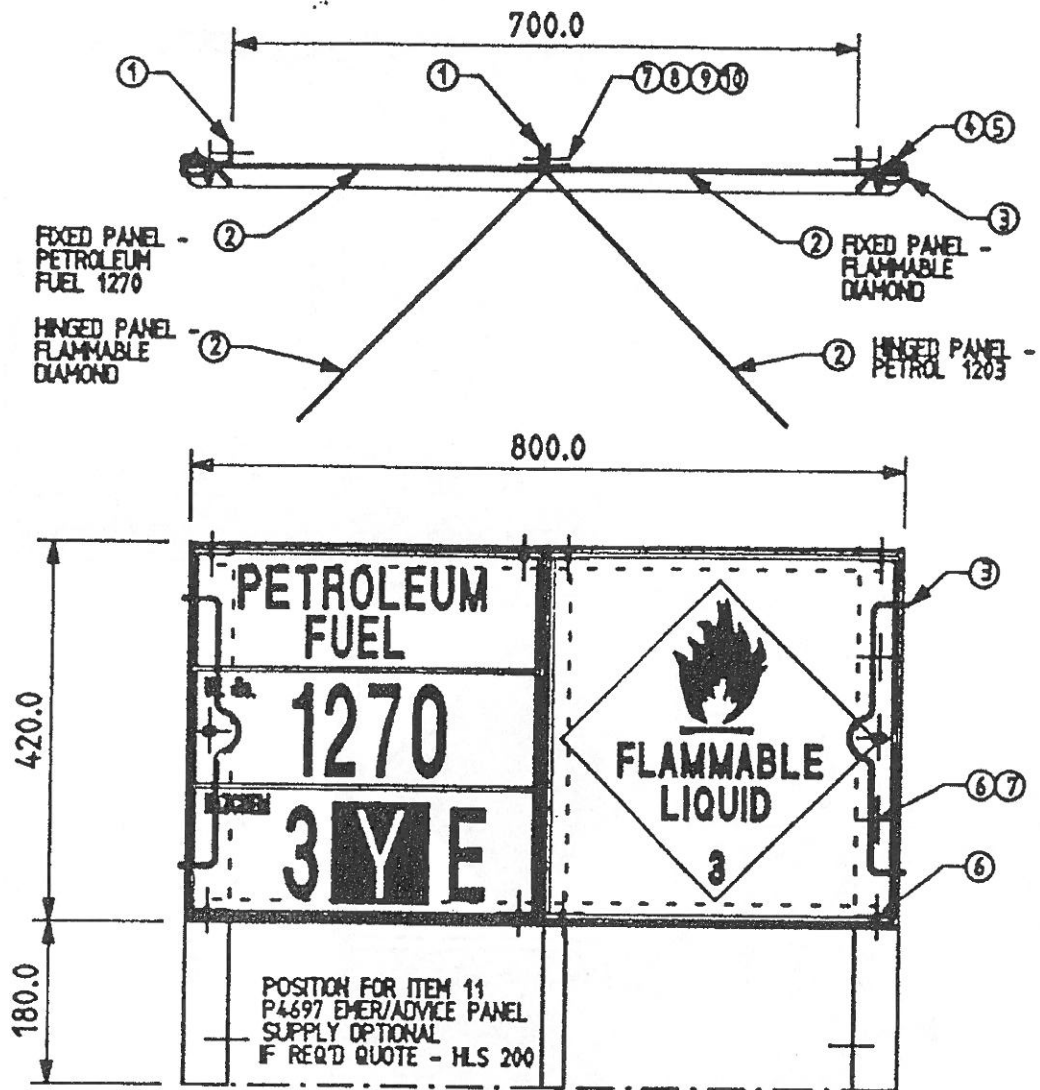
Technical Data.

- Aluminium frame.
- Polypropylene pages.
- Fuel resistant inks.
- Same bolting as Liquip's earlier model frame.
- Wt.2.7 kg (100 type)



*Equipment for liquid
handling, storage
and transport*

HLS100



ITEM	QTY.	PART NO.	DESCRIPTION	MATERIAL
11	1	P4697	EMERGENCY/ADVICE PANEL	EXT POLYPROP
10	3	P0503	NUT - 3/16 BSW	Z/P STEEL
9	3	P0037	SCREW - 3/16 PAN HEAD	Z/P STEEL
8	3	P0326	WASHER - 3/16MED SPRING	Z/P STEEL
7	7	P0099	WASHER - 3/16x1/2 FLAT	Z/P STEEL
6	12	P1178	POP RIVET - 3/16x12.7mm	ALUMINIUM
5	2	P4431	TORSION SPRINGS - RIGHT	Z/P SP STEEL
4	2	P4430	TORSION SPRINGS - LEFT	Z/P SP STEEL
3	2	P4429	WIRE HANDLES	Z/P SP STEEL
2	1	P4696	PLACARD SET (4 ITEMS)	EXT. POLYPROP.
1	1	P4695	FABR. FRAME ASSY (2 ITEMS)	ALUMINIUM

HAZCHEM LIBRARY SYSTEM TYPE 100

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION

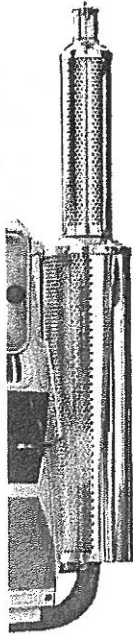


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DISTRIBUTORS
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LIQUIP

TRUCK EQUIPMENT

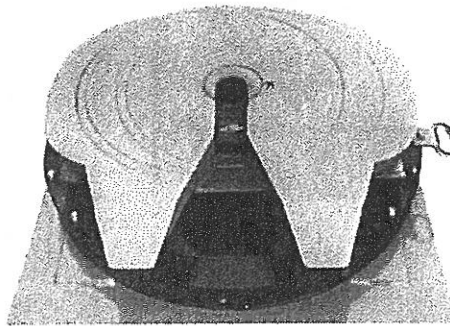


75 mm
100 mm
125 mm

FLAME PROOF EXHAUST

Kits manufactured to comply with AS2809, can be supplied with muffler and mounting bracket for chassis. Shroud is polished stainless steel. Specify exhaust size.

P2933

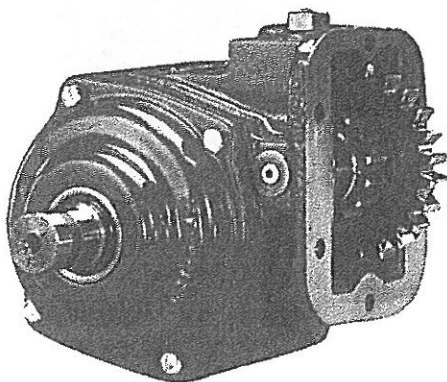


KLEIN FIFTH WHEEL COUPLING

Can be supplied with a ballrace and mounted on 12 mm m.steel plate, or with weld on or bolt on rocker feet. The Klein is constructed from welded steel plates for long life and dependable service. Liquip can fit to your chassis to your requirements.

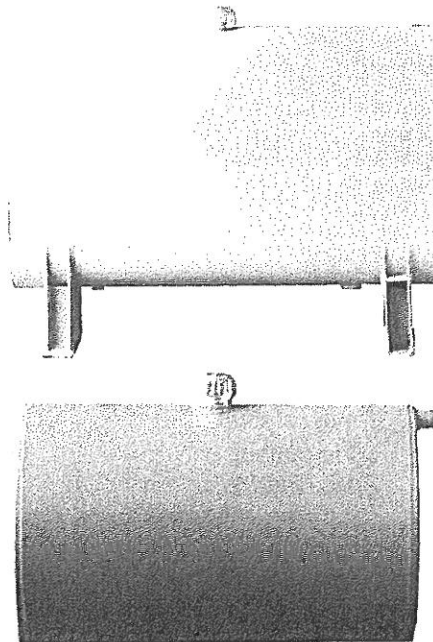
TYPICAL APPLICATIONS

NOTES



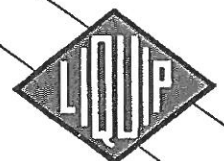
POWER TAKE OFFS

Liquip can supply and fit your choice of P.T.O. either mechanical, air shift, hot shift, cable, or combination P.T.O. pump for hydraulic applications. Consult Liquip.



HYDRAULIC RESERVOIR TANKS

Various capacities supplied with mounting brackets, filter and breather cap. Consult Liquip for your requirements.
Part No. for round tank P2935.

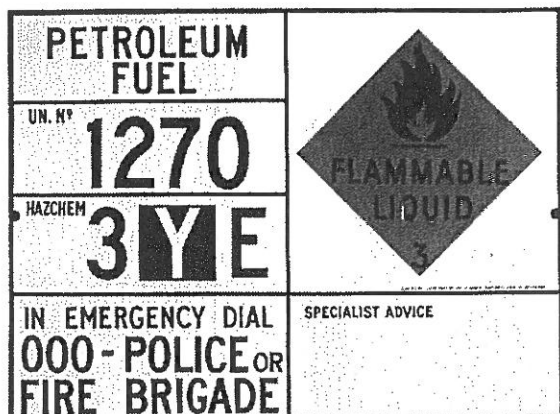


Equipment for liquid handling, storage and transport

LIQUIP

HAZ-CHEM SIGNS AND PLACARDS

HAZ-CHEM SIGNS

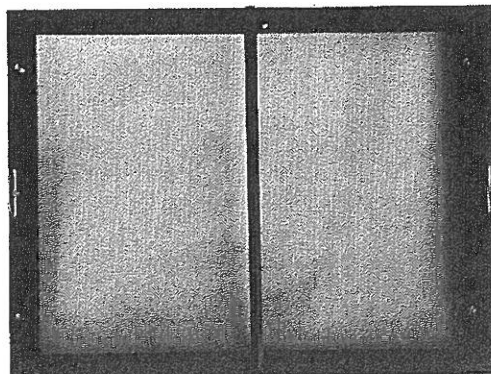


Available in Vinyl Stick on, plastic coated steel (Marvi-Plate) or aluminium.

Product titles and specialist advice can be printed to suit your needs.

Oil company standards kept in stock.
P2889 (plain spec. advise).

HAZ-CHEM HOLDERS



Holder for HAZ-CHEM signs are pressed steel come complete with locking clips.

Part No. P2451 is side entry for road tankers.
P2457 is top entry for rail cars.
Supplied complete with holding clips.

CLASS SIGNS

Type 1 to 9.
Aluminium backed signs.
Class 3 Sign illustrated P/No. P2270.

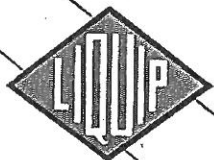


Holders for Class Signs.
Pressed steel.
(Zinc plated).
P/No. P2272.



REAR VEHICLE MARKING
PLATES, MANDATORY FOR
Vehicles over 7.5 metres long or over 15 tonne
G.V.M. P/No. P3106 LHS and P3103 RHS.

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



LIQUIP SALES PTY. LTD.

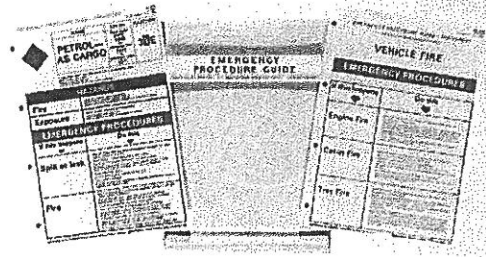
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HAZ-CHEM SIGNS AND PLACARDS

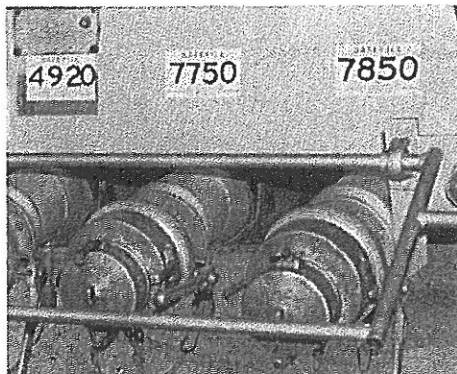
EMERGENCY PROCEDURE HOLDER



MANDATORY IN-CAB EQUIPMENT
Part No. Holder P2896.

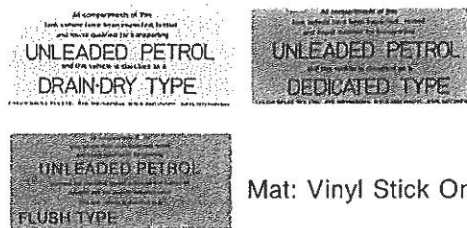
Part No. for Cards P2966 (vehicle fire)
and P2967 (petrol as cargo).

SAFEFILL LEVELS



Stick-On label with applicable numbers
to suit compartment.

COMPARTMENT IDENTIFICATION SIGNS



Mat: Vinyl Stick On

(For use with unleaded fuel.)

BATTERY ISOLATION SWITCH

MANDATORY SIGN AT ISOLATION SWITCH.

Available in Vinyl Stick On and Marvy-Plate, rivet or screw on.

Part No. P2898 Vinyl.
P2895 Marvy-Plate.

SERVICE STATION, GANTRY AND STORAGE AREA SIGNS



Part No. P2962. Mat: Alum. Plate.



Part No. P2964. Mat: Alum. Plate or Vinyl Stick On.



Part No. P2961. Mat: Alum. Plate.
(RETROREFLECTIVE)

THESE ARE SOME OF THE SIGNS
THAT ARE AVAILABLE.
CONSULT LIQUIP FOR MORE
INFORMATION

TYPICAL APPLICATIONS SAFETY SIGNS.

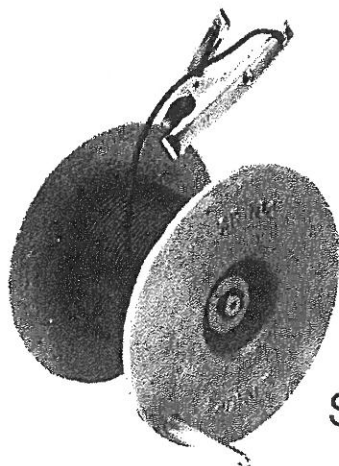
NOTES



Equipment for liquid
handling, storage
and transport

LIQUIP

TRUCK AND CAB EQUIPMENT



SR100

STATIC EARTHING REEL FOR ELECTRICAL BONDING

ELECTROSTATIC CHARGES can be generated by product flow, or vehicle or aircraft movement. Ignition of flammable vapours is possible by discharge of static, when a hose or a nozzle is connected or parted.

The Liquip SR100 provides assurance of continuity through the carbon brush bearing on the stainless steel shaft.

FIRE EXTINGUISHERS

A tanker exceeding 10,000 litres capacity, for flammable cargo, requires (AS2809-1) two 60B dry chemical type extinguishers, OR one 80B dry chemical type, and one 20B foam OR halon type extinguishers. These are to be fitted at nearside rear and off side towards front of tankers.

In every tanker cabin AS2809-1 requires ONE 10B halon or dry chemical extinguisher.



20B
FOAM

P2710



60B
DRY

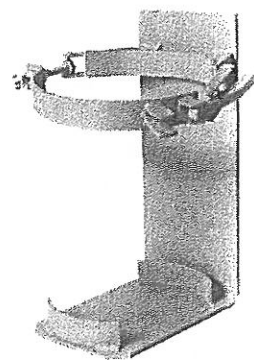
P2709



10B
DRY

P2708

IN-CAB, COMES
COMPLETE WITH
BRACKET



P2269

HEAVY DUTY
EXTINGUISHER
BRACKET

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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TRUCK AND CAB EQUIPMENT



EYE-WASH AND BRACKET

Required in all cabs by Commonwealth regulation. Bottle, P/No. P0371 has built-in eye cup for efficient washing. Bracket, P/No. EW-5 is lightweight steel ready to bolt or rivet inside cab for ready availability.

TYPICAL APPLICATIONS

EQUIPMENT REQUIRED WHEN CARRYING DANGEROUS GOODS.

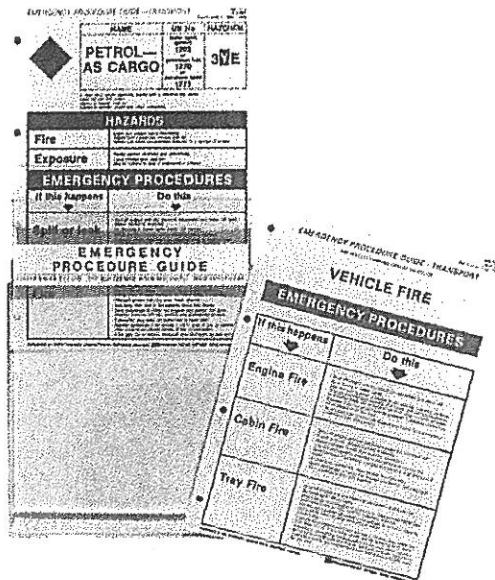
EMERGENCY PROCEDURE GUIDES

Required in all cabs by Commonwealth regulation. Holder, P2896, is clear plastic ready to rivet to door.

Card P2966 is guide for "FIRE". Card P2967 is "PETROL AS CARGO".

Both are required.

We also stock cards for all other products.



NOTES



IN-CAB FIRE EXTINGUISHER

Required in all cabs by Commonwealth regulation.

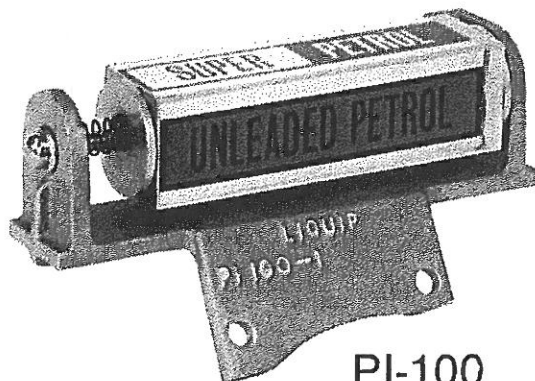
Part No. P2708 is 2.5 kg BCF fire extinguisher complete with quick-release bracket ready to mount in cab. (10B rating).



Equipment for liquid handling, storage and transport

LIQUIP

TRUCK AND CAB EQUIPMENT



PI-100

PRODUCT INDICATOR

Helps prevent Cocktails!
Brackets on to API or butterfly
outlet valve — set product when
loading each compartment.

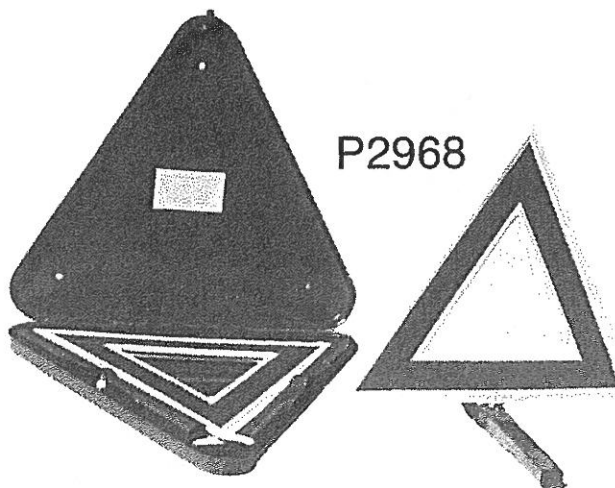
Standard decals are "Super
petrol", "Distillate", "ULP",
"Check Product", all colour
coded.

Other decals are available on
request.

WARNING TRIANGLES

Required in all cabs by
Commonwealth regulation.

A boxed set of three heavy-base
warning triangles for traffic
warning in event of breakdown.



P2968



P2977

FLAMEPROOF TORCH

Required in all cabs by
Commonwealth regulation.

Has special sealing and globe for
safety around NON-GAS FREE
tankers.

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



LIQUIP SALES PTY. LTD.

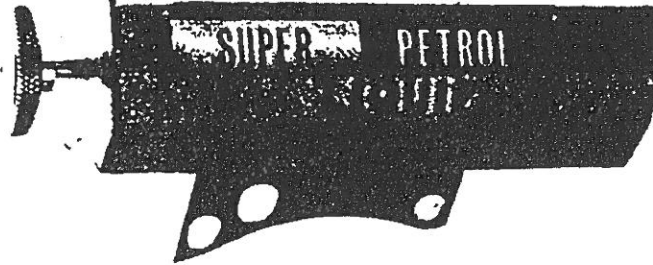
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LIQUIP

PRODUCT INDICATOR



**TYPICAL
APPLICATIONS**

**PRODUCT
IDENTIFICATION.**

PI600

- * The new **LIQUIP** six sided Product Indicator bolts directly onto the API. or butterfly outlet valve.
- * It allows six (6) different decals to be displayed.
- * The product indicator window outlines one particular decals and hence avoids misreading.
- * The handle, which is located outside the product indicator body allows simple operation - just push and turn.
- * The spring locating the hexagonal bar on which the decals are affixed, acts in the same direction as the braking action of the vehicle (thus accidental change is impossible).

NOTES

OPTIONS

SIX POSSIBLE DECALS

"SUPER PETROL"

"CHECK PRODUCT"

"P.U.L.P"

"ULP"

"DIESOLINE"

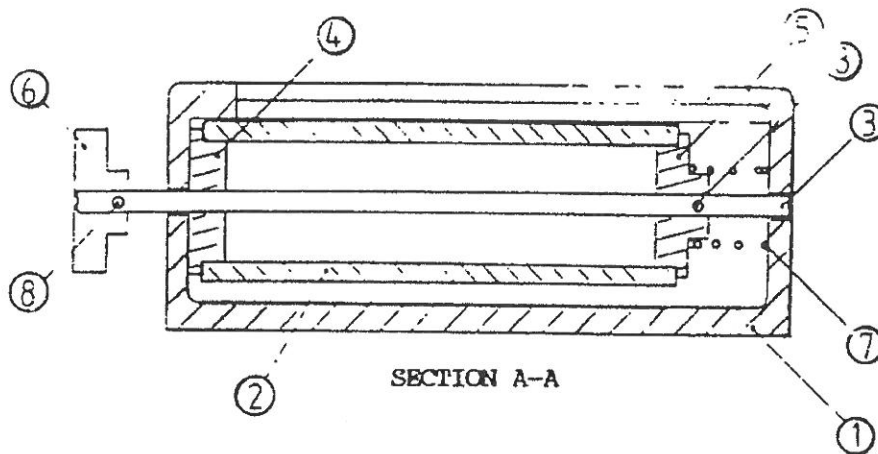
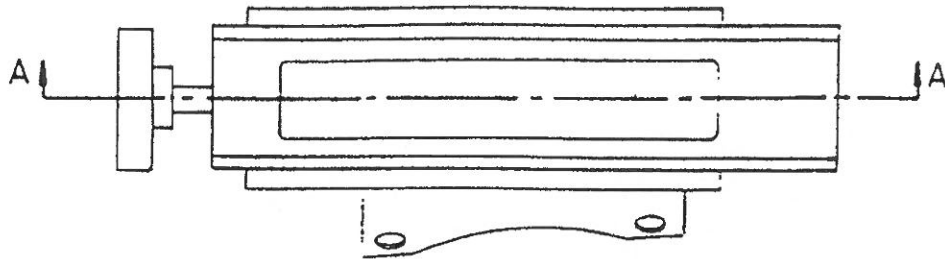
"RETURNS"

Other decals available on request.



*Equipment for liquid
handling, storage
and transport*

LIQUIP



ITEM	PART No:	DESCRIPTION	QTY	MATERIAL
1	PI600-1	Indicator body	1	Cast alum
2	PI600-2	Hexagonal section	1	Aluminium
3	PI600-3	Shaft	1	St. steel
4	PI100-3	End washer	1	Aluminium
5	PI600-4	End washer	1	Aluminium
6	PI600-5	Handle	1	Aluminium
7	P4405	Spring	1	Steel
8	P0895	Selox pin (1/8" x 5/8")	1	Z/P steel

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



LIQUIP SALES PTY. LTD.

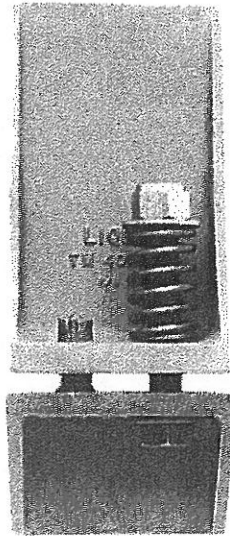
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LIQUIP

TANK MOUNTS



TM4002

**TYPICAL
APPLICATIONS**
MOUNTING
TANKS TO
VEHICLES

A SOFT-RIDE MOUNT KIT FOR A WIDE RANGE OF TANK SIZES

- Tanks are rigid structures, truck chassis are flexible. If aluminium tanks are fastened too rigidly to a chassis fatigue cracking may occur. However the tank mounts must withstand a force of 2g times the mass of the laden tank, in all directions, to meet AS2809.
- Liquip tank mounts provide security with flexibility, comply with AS2809, may be used in multiples as tank size increased, and are inexpensive and light.
- A heat treated ductile iron bracket incorporates a stem for location and shear and is bolted on to the truck chassis. A heat-treated cast aluminium bracket with a matching hole for Shear Pin is welded to the tank runner.
- The Shear Pin locates the tank in all directions except vertically. A bolt, nut and spring are fitted adjacent to the Shear Pin to allow limited vertical movement (set to different lengths according to the longitudinal position of the particular mount along the truck) to minimise "fighting" between tank and chassis and allowing the chassis to flex under the tank.
- NOTE: If tank is supplied from new with built-in mounting feet or brackets, consult Liquip or tank manufacturers.

NOTES

TECHNICAL DATA

Heat-treated ductile iron chassis bracket.

Heat-treated aluminium tank bracket.

High-tensile bolt with Nyloc nut.

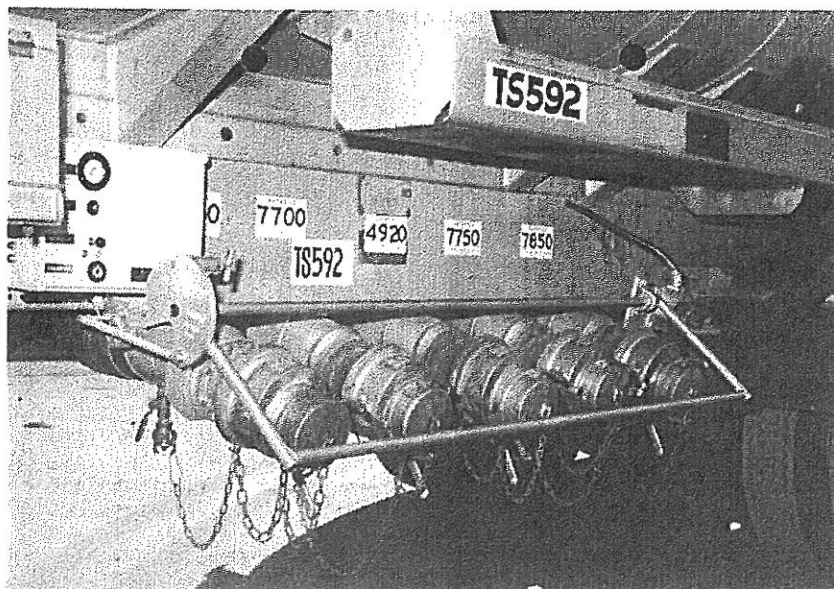
Detailed fitting instructions
are included in each kit.



*Equipment for liquid
handling, storage
and transport*

LIQUIP

VAPOUR INTER-LOCK GATE



GC100

A STANDARD GATE FOR ALL TANKERS

- A bar across the outlet valves has become the standard method of inter-locking functions on a road tanker.
- The GC100 is a do-it-yourself Universal Kit, fitting virtually any tanker with no welding required.
- Bolts onto standard 100 mm API flange.
- Supplied at full length — simply cut back for shorter systems.
- Built-in cam to operate your choice of air valve, and over-centre spring for safety with positive lock.
- Rides on ball-bearings.

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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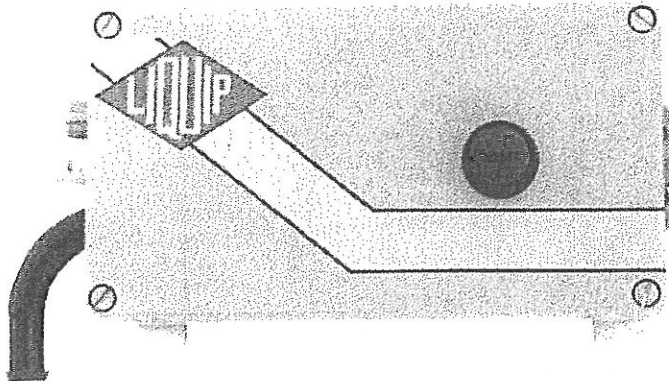
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LIQUIP

REMOTE CONTROL SHUTDOWN



TYPICAL APPLICATIONS

Radio control equipment shut-down e.g. close valves, stop engine, stop pump.

Vehicle mount or in-depot use.

SRS 12 SRS 24

In an emergency the operator can initiate a shutdown immediately without the need to return to the control point.

An intrinsically safe (SAA approved) hand held transmitter with a range of approximately 100 metres sends a signal to the solid state receiver which incorporates a switching relay for normally open or normally closed output. This can be utilised to shutdown either the pump, hydraulic system, engine, close the internal valves or a combination of any of these functions.

After shutdown a reset button on the receiving unit must be operated to re-activate the system to avoid accidental re-start.

Housing is weather-proof, and the standard model incorporates a solenoid air valve to convert the electrical signal to pneumatic to link in with vehicle pneumatic controls.

Each transmitter and receiver is Code-able, so a fleet owner has the choice of individually coding each vehicle or using a single code for the whole fleet and also the depot.

OPTIONS & RELATED EQUIPMENT

SRS 12 — 12 volt.

SRS 24 — 24 volt.

Use C.B. aerial for vehicles or special ground-base aerial for depots.

Transmitter available with 1, 2 or 4 buttons to separate controls if required.

Supplied complete with mounting brackets.

TECHNICAL DATA

Transmission on 27MHz on public band.

Non-directional.

Typical range 100 metres but over 200 metres possible in open areas.

Battery life dependent on useage but typically several months.

Relay output capacity is 5 Amp.

Air solenoid valve rated up to 1,000 kPa.

Weight: 3 kg.

Size: 220x120x100.

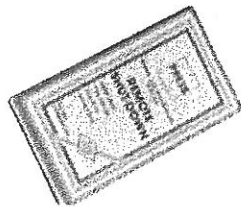
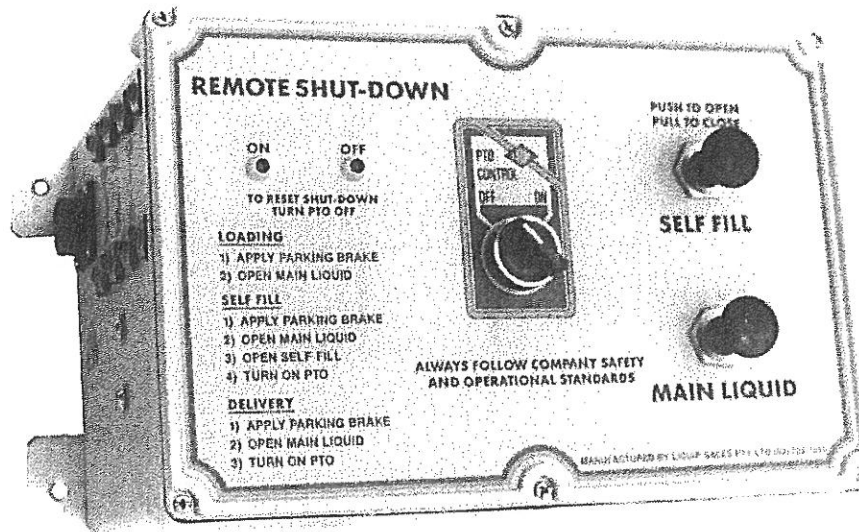
NOTES



Equipment for liquid handling, storage and transport

LIQUIP

CBRS 100 CONTROL SYSTEM



CBRS 100

TYPICAL APPLICATIONS

Pre-packaged control system for LPG tankers.

NOTES

A cab-mounted box contains all the pneumatic and electrical controls except for the mandatory emergency stop controls.

The clearly labelled air line ports and pre-wired electrical plug make installation quick and easy.

Vehicle hand brake needs to be applied to supply air to the control system. If the hand brake is not applied no air is provided and the system cannot be operated.

Opening the "Main Liquid" control knob opens liquid and vapour I.C.S. valves and supplies air to "Self Fill" control and P.T.O. Control. Operation of the P.T.O. control disconnects the alternator field circuit, a second brake interlock is operated and the P.T.O. hydraulic pump engages.

Operating any emergency stop closes all tank I.C.S. valves and disengages P.T.O. by positive air activation.

The box incorporates the same radio control emergency stop system as is used in the "SRS" described over leaf.

OPTIONS & RELATED EQUIPMENT

CBRS 100-12 is 12 volt.

CBRS 100-24 is 24 volt.

Use C.B. aerial for vehicle mounting.

See TIM 100 terminal interlock module for complete protection.

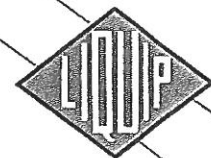
TECHNICAL DATA

Transmission is on 27MHz and is Telecom approved.

P.T.O. switch also disengages alternator field circuit.

All air connections are push-in 1/4 inch.

Cab-mount only.



Equipment for liquid handling, storage and transport

LIQUIP

ELECTRONIC VEHICLE MONITORING



TYPICAL APPLICATIONS

Fleet Management data.

Fleetcom™ is a fully Electronic Vehicle Monitoring System (E.V.M.S.) designed to put the profit back into road haulage.

By utilising a series of electronic sensors and an on-board micro processor, **Fleetcom™** monitors and records detailed trip information for later analysis by management. **Fleetcom™** E.V.M.S. provides the owner of the vehicle with a comprehensive history of the truck's operational performance over a short or extended period of time. **Fleetcom™** E.V.M.S. will instantly provide the vehicle owner with easy to read printouts which include facts on:

- Departure and Arrival Times
- Trip Distance
- Trip Time
- Vehicle Speed
- Engine RPM
- Extended Idling
- Brake Applications
- Fuel Loaded and Consumption
- Trip Delays
- Customers Visited
- Stop Times
- Driver I.D.
- Accident Data
- Warm Up and Cool Down Time
- Water Temperatures
- Oil Pressures
- Load Picked Up/Delivered
- Trailer I.D.
- Vehicle Utilisation

Benefits particularly for fuel haulage fleets:

- P.T.O. engage and disengage time stamp.
- Delivery pump start and stopping time stamp.
- Interface with electronic meter to record litres dispensed.
- Flowrate data.

NOTES



Equipment for liquid handling, storage and transport

LIQUIP

THE FLEETCOM™ ELECTRONIC VEHICLE MONITORING SYSTEM WILL MAKE YOUR COMPANY MORE PROFITABLE, LESS COSTLY AND SAFER

Fleetcom™ is easy to install and easy to operate. It is extremely effective in combating the traditionally high cost factors experienced by vehicle owners. Operating expenses can be significantly reduced and improvements made in other vital areas such as:

FUEL SAVINGS:

Comprehensive research has shown that the greatest increases in fuel savings are obtained by improving driving techniques and reducing speed.

REDUCED MAINTENANCE COSTS:

Experience has shown that for every fuel dollar saved there is another dollar saved in maintenance costs. Reduced speed and a better driving technique means increased tyre life, less engine drive train and brake wear.

INCREASED PRODUCTIVITY:

Productivity increases are directly attributable to more effective utilisation of the vehicle and driver time. Cost savings in this area alone can be substantial. Using the **Fleetsum™** software less economic routes and contracts can be identified.

INCREASED SAFETY FACTOR:

By accurately monitoring both the performance of the driver and the vehicle, it is possible to enhance existing safety procedures. Slower speeds and less likelihood of equipment malfunction due to effective monitoring creates a much safer operation which can result in lower insurance costs, less downtime and fewer accidents.

DELIVERY MONITORING:

By accurately monitoring the P.T.O. on time and pump start time and monitoring the pump off time and P.T.O. off time it can calculate the time the P.T.O. is running without the delivery pump operating.

Interfaced with the electric meter, actual litres delivered are logged against actual pumping time giving you an accurate flowrate per delivery.

FLEETCOM™ E.V.M.S. WILL PAY FOR ITSELF WHILE IT IMPROVES YOUR BUSINESS

Fleetcom™ E.V.M.S. will become second only to your vehicles in order of importance to your profitability. It is a self amortising, unerring record of total performance, available instantly on demand. Never before has it been so simple to maximise profitability by simply better utilising existing capital. The **Fleetcom™** system provides a real opportunity to provide a driver incentive scheme which actually works and doesn't rely on hard to decipher charts.

* *The Fleetsum software is designed to run on the IBM XT or AT computer or compatible systems. It provides management with summary and exception reporting by vehicle, driver and depot. Data is transmitted in ASCII format allowing it to be merged with other programs.*

★ ★ ★ ★ ★ ★ ★

The Fleetcom™ System

ON-BOARD EQUIPMENT

The on-board equipment consists of an acquisition unit and a driver input unit.

• THE DRIVER INPUT UNIT:

The driver input unit is mounted on the dash in a convenient location making data entry a simple, one hand operation.

features:

- 16 character LC display (back lit for night operation).
- Continuous display of vehicle's speed.
- Other functions selectable by the driver include: simultaneous speed and RPM; oil pressure (KPA); water temperature (°C); Eight function keys prompt the driver for required input, including: Driver ID/Equipment No./Customer No./Pick Up: Delivery/Delay Code/Fuel Amount.

• THE ACQUISITION UNIT:

The on-board recorder (acquisition unit) is a micro-processor that records data from the system's various sensors located throughout the truck.

features:

- Crystal controlled clock/calendar circuitry to accurately record date and time for trip and operations reports.
- Expandable memory to allow for ongoing development and the addition of further sensors.
- CMOS state-of-the-art technology — providing high reliability in extremes of temperatures and voltage fluctuations.
- Battery backup which retains the recorded data for up to 12 months with the trucks battery disconnected.
- Storage of vehicle operating parameters including 3-speed set points, optimum RPM, maximum idle time, operating ranges for oil pressure and water temperature.

OFF-BOARD EQUIPMENT

Fleetcom™ provides a variety of off-board debriefing equipment designed to meet the needs of fleets of all sizes.

• INTERFACE BOX: (IB)

(Small fleets or remote depots.)

• MINI DATA TRANSFER STATION: (MDTS)

(Small to medium sized fleets/depots.)

• DATA TRANSFER UNIT: (DTU)

(Portable.)

• DATA TRANSFER STATION: (DTS)

(Medium to large fleets.)

Fleetcom™ does NOT use cartridges or tapes for data storage. **Fleetcom™** stores all information electronically which ensures data integrity even in Australia's hot dusty environment.

THE BOTTOM LINE:

Fleetcom™ will put you on the road to increased profitability and decreased costs. If your livelihood rests on the chassis of your vehicles you simply cannot afford not to talk to a **Fleetcom™** representative today.

METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



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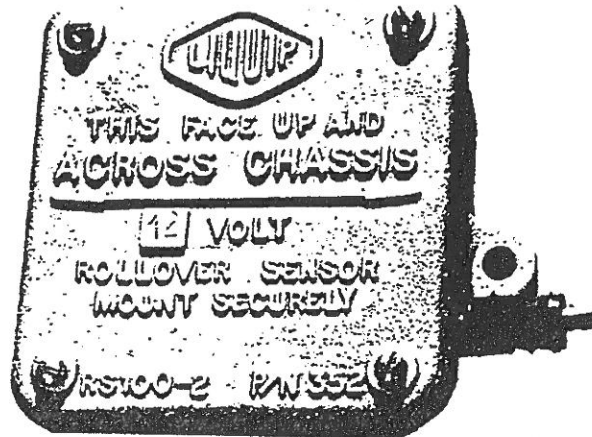
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LIQUIP

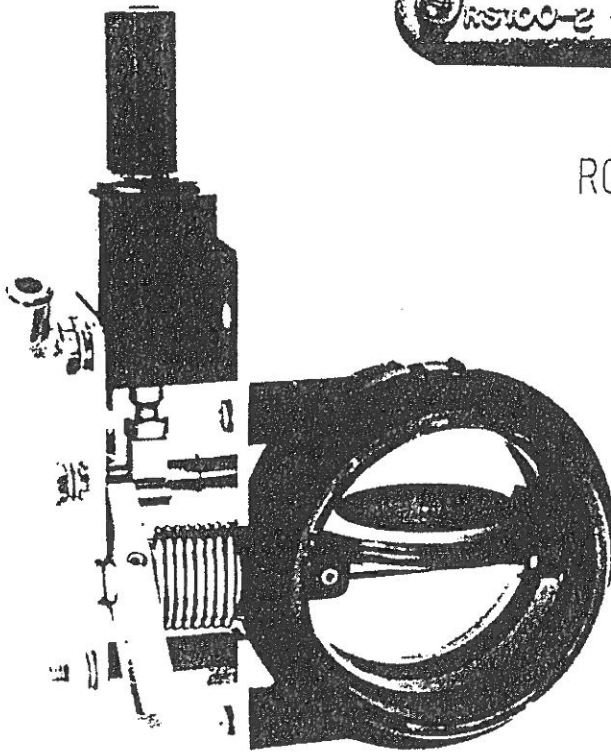
VEHICLE SAFETY EQUIPMENT

TYPICAL APPLICATIONS

EMERGENCY SHUTDOWN OF VEHICLE POWER SYSTEMS



ROLLOVER SENSOR
RS100 (24V)
RS101 (12V)



MECHANICAL ENGINE STRANGLER (MES3) or (MES5)

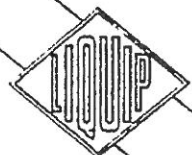
The Roll-over Sensor minimises the risk of electrically ignited fires occurring in tanker accidents involving roll-over.

Output from the Roll-over Sensor shuts off the vehicles battery isolation switch and therefore isolates electrical power to the batteries.

On its own, the Mechanical Engine Strangler is an emergency engine shutdown device. It can be pneumatically or manually actuated to stop the engine in case of diesel runaway.

The Mechanical Engine Strangler can also be actuated by the Roll-over Sensor via a solenoid valve. This provides a complete system of engine protection and electrical isolation for maximum vehicle safety.

NOTES

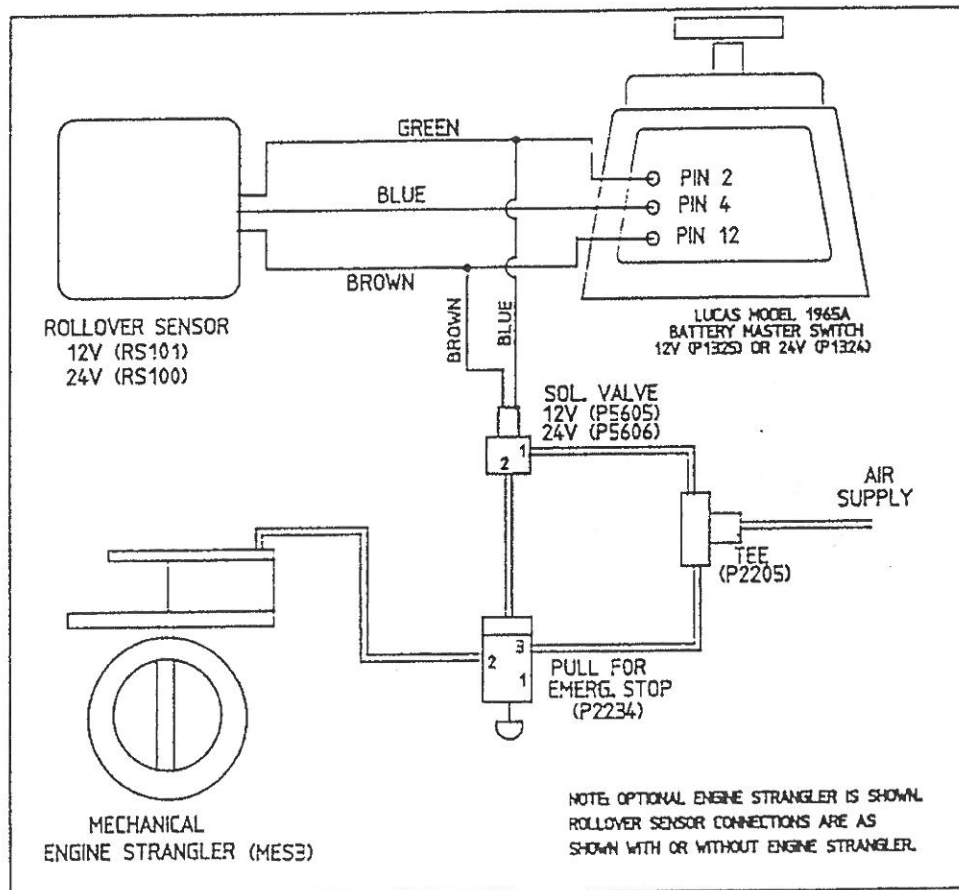


Equipment for liquid handling, storage

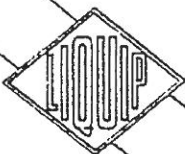
LIQUIP

ROLLOVER SENSOR INSTALLATION

1. Check your vehicle voltage against the Roll-over Sensor voltage
Model RS100 24 volt
Model RS101 12 volt
2. Select a secure mounting position for the Roll-over Sensor as close to the battery isolation switch as practical. Roll-over Sensor must be mounted flat with the writing on the lid facing up. The arrow must be pointing across the vehicle chassis (from side to side).
Drill mounting holes to suit but do not tighten mounting bolts yet.
3. Connect the three(3) wires to the battery isolation switch as shown.
4. Test the Roll-over sensor by turning the battery isolation switch ON and tipping the Roll-over Sensor past 50° from horizontal. The battery isolation switch will trip to OFF. Reset isolation switch and repeat test in opposite direction.
5. Tighten mounting bolts securely.
6. Repeat test 4 at six(6) monthly intervals as part of normal vehicle maintenance programme.



METERS VALVES VENTS MANHOLES PUMPS HOSEREELS OVERFILL PROTECTION



LIQUIP SALES PTY. LTD
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Sydney
Australia 2164
Phone: (02) 725 1055
Fax: (02) 725 1252

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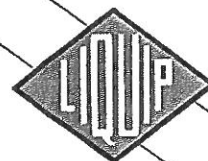
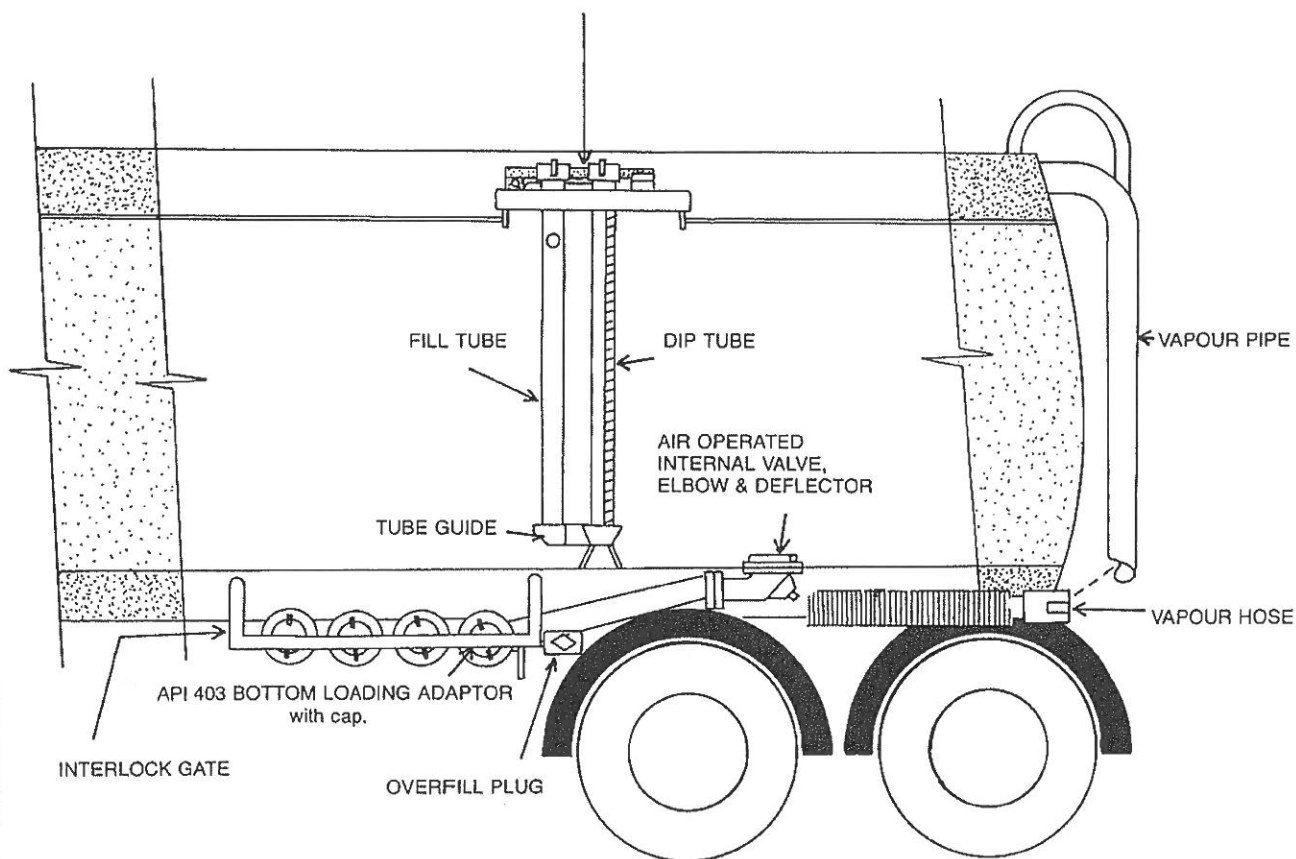
LIQUIP

ROAD TANKER SCHEMATIC

TYPICAL LIQUIP TANK LAYOUT

PETROLEUM TANKER WITH VAPOUR RECOVERY SYSTEM

VOH300 HATCH ASSEMBLY including coaming, dip hatch, fill hatch, emergency vent, breather vent, air-operated vapour vent, overfill sensor.



Equipment for liquid
handling, storage
and transport

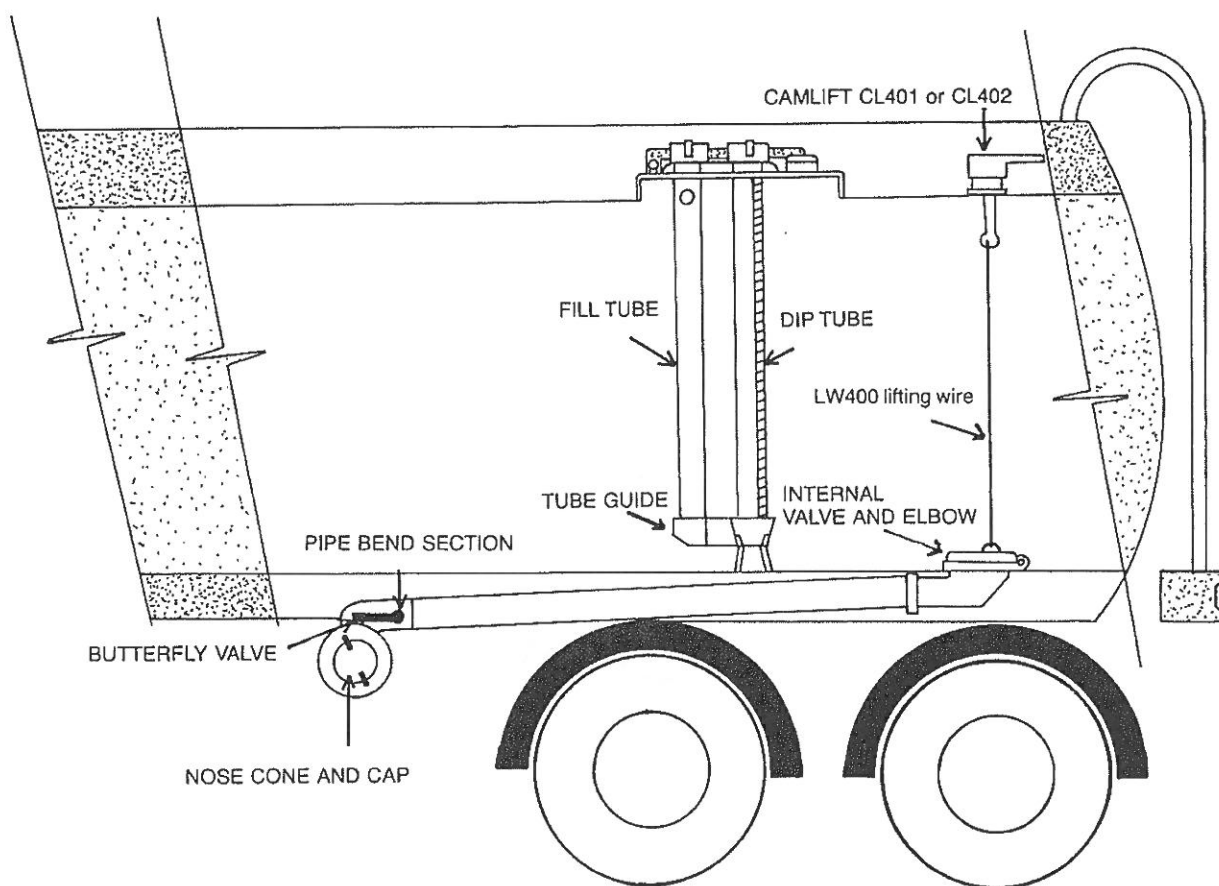
LIQUIP

ROAD TANKER SCHEMATIC

TYPICAL LIQUIP TANK LAYOUT

STANDARD PETROLEUM TANKER

VOH300 HATCH ASSEMBLY including coaming, dip hatch, fill hatch, emergency vent, P/V vent, & optional air-operated vent.



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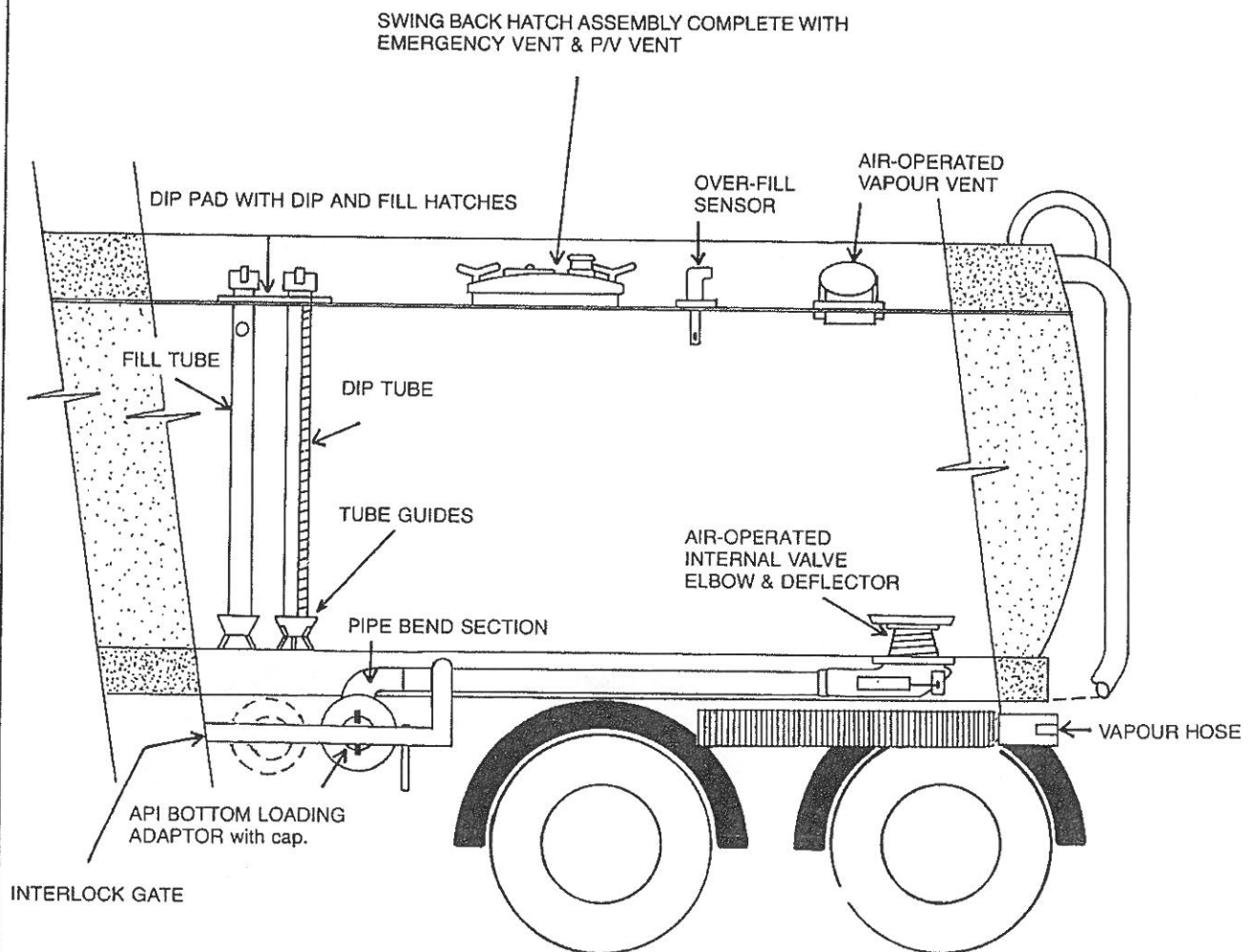
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ROAD TANKER SCHEMATIC

TYPICAL **LIQUIP** TANK LAYOUT
CHEMICAL TANKER WITH VAPOUR RECOVERY



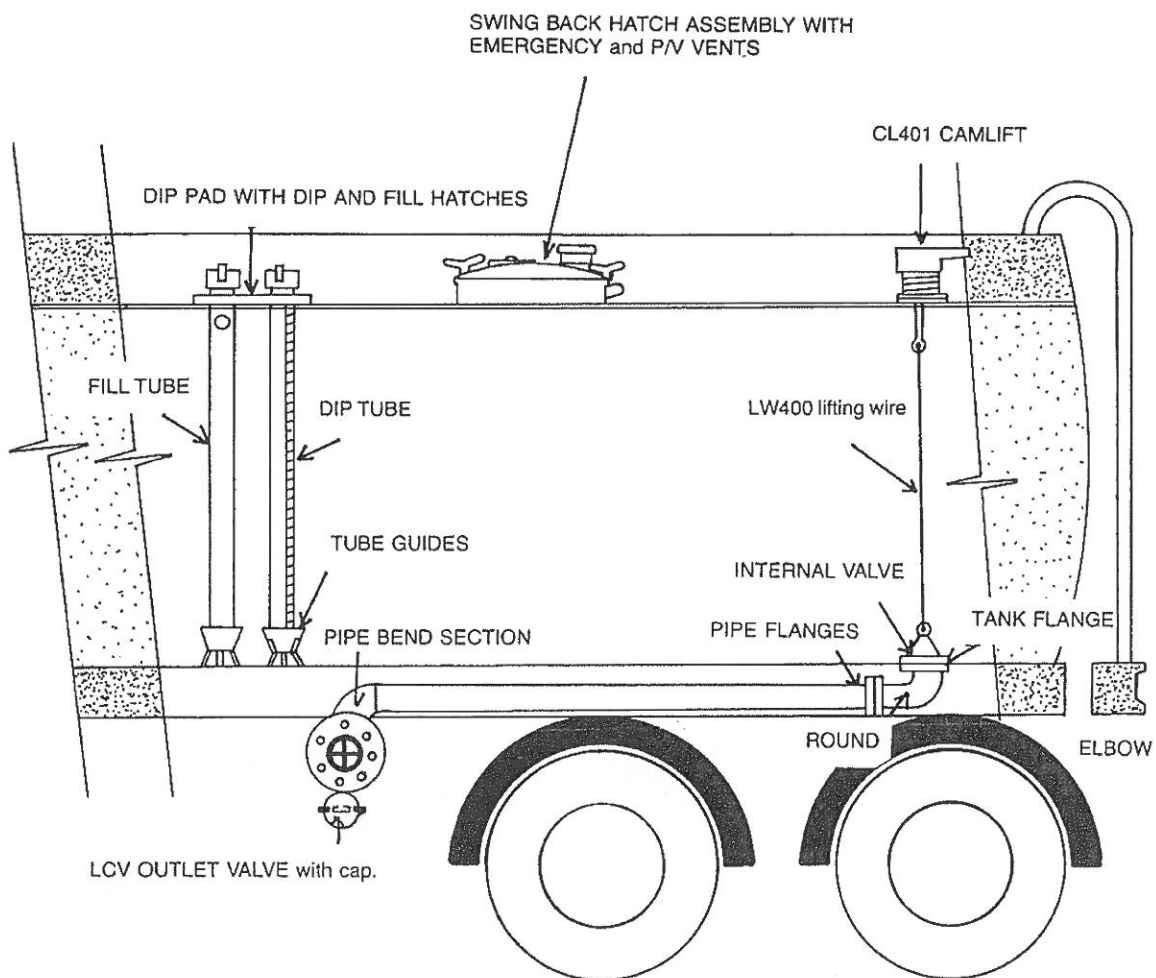
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and transport

LIQUIP

ROAD TANKER SCHEMATIC

TYPICAL LIQUIP TANK LAYOUT

STAINLESS STEEL TANKER



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