



## TERMINAL EQUIPMENT





## WELCOME TO ISSUE 6 OF LIQUIP'S TERMINAL EQUIPMENT CATALOGUE

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This catalogue is by no means the full range of Liquip Terminal Equipment, it is intended as a guide to the range we have available.

Created using Indicium Content Management System, our catalogues are now seamlessly linked to information on Liquip's website, [www.liquip.com](http://www.liquip.com)

## HOW TO USE OUR CATALOGUE SYSTEM

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- Read the various catalogues for an overview of the product range
- Email [webmaster@liquip.com](mailto:webmaster@liquip.com) to request a login password
- Login and download the very latest data sheets, product manuals, installation and maintenance manuals as well as other technical information from the website
- Subscribe to our newsletter for the latest industry information

## CALL OUR CUSTOMER SERVICE TEAM

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Please call +61 2 9725 9000 or email [sales@liquip-nsw.com.au](mailto:sales@liquip-nsw.com.au) and ask for our Customer Service Bulletin which introduces our people and helps to understand who to call at Liquip for sales and technical advice.

Ask for our Terminal Survey sheet. Liquip's tool used to establish your requirements.

Experience the Liquip Advantage

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# PRODUCT OVERVIEW

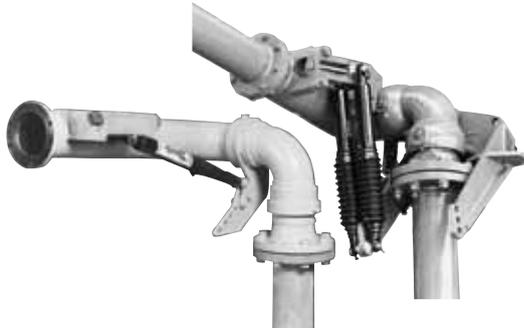
## LOADING ARMS

- Bottom Loading Arms
- Top Loading Arms
- Vapour Recovery Arms
- Other Applications



## BALANCE MECHANISMS

- Velvet Touch MK2
- Velvet Touch MK3



## LOADING EQUIPMENT

- APIDP100 API Drain Plug
- ILS400 Strainer
- Sightglasses



## SPOOLS AND HOSES

- Pipe Spools
- Coupler Spools
- Drop Hoses
- Drop Hose Covers



## ISOLATING VALVES

- CVS110 Holdback Valve
- LBV450VGL Butterfly Valve



## LIQUID COUPLERS

- APIRC Drybreak Couplers
- Bayonet Couplers



## PARKING ADAPTORS

- PA200 API Parking Adaptor
- APIPA API Parking Adaptor
- PA100 API Parking Adaptor
- SPS100 Top Loading Arm Parking Adaptor
- VCFPA Vapour Coupler Parking Adaptor



## LOADING COUPLERS

- API710 Automatic Couplers
- LA560 Top Loading Valve
- VCF500 Vapour Coupler
- VCF075W Vapour Coupler
- VCM450 Vapour Collection Adaptors



## OVERFILL PROTECTION MONITORS

- RM140 Series Multi Channel Overfill Monitor
- PD500 Series Single Channel Overfill Monitor



## MONITOR ACCESSORIES

- GP100 Series Gantry Plug Assemblies
- JB100 Junction Box
- TPA4 Gantry Plug Parking Adaptor
- HTA Series Portable Testers



## STORAGE TANK SYSTEMS

- Bottom Loading System
- Liquid Monitors



## OVERFILL PROTECTION ACCESSORIES

- SMS102 Top Load Overfill
- SVR Vapour Cone
- Overfill Protection Sensors



## SWIVELS

- VNS-A4 Straight Swivel
- VNC-A4 Coupler Swivel
- VNI-A4 Intermediate Swivel
- LCB4-1 Split Flange Base Swivel
- SJW Swivels



## OTHER ACCESSORIES

- VB100 Vacuum Breaker
- SD100 T-Deflector
- DB100 Drip Bucket
- SLF-PROX Proximity Sensor Holder



## ELECTRONIC REGISTERS

- EMH500 Preset Register
- EMH600 Register



# LOADING ARMS

## GENERAL INFORMATION

LOADING ARMS SWIVELS ACCESSORIES SPOOLS HOSES & ADAPTORS EQUIPMENT SUCTIONS FLOATING OVERFILL PROTECTION REGISTERED SYSTEMS TANK STORAGE

For over 35 years Liquip loading arms have been the benchmark for innovation to those who have used them. Their reduced weight and advanced balance mechanism technology make Liquip loading arms the most maneuverable loading arms available and the loading arms of choice for customers around the world.

“Smooth as velvet, slick as silk”

Velvet Touch arms can be customised to suit individual requirements, all with one thing in common...the “VELVET TOUCH”. The name Velvet Touch is a reference to the ease of operation and is the culmination of extensive research into different balancing systems after 35 years in the petroleum equipment manufacturing industry. It utilises the properties of perhaps one of the best support mechanisms available today and one which is used and well proven in many different applications around the world, the gas strut.

With the gas strut of the Velvet Touch as the backbone of our loading arm range, we manufacture arms for top and bottom loading of petroleum products and chemical applications in a range of sizes and materials. Specialist arms include low profile gravity unloading arms, LPG loading arms, bitumen arms and vapour recovery arms. In line with Liquip’s dedication to quality, Liquip loading arms and components are made to world standards in accordance with ISO9001 Quality Assurance System.

Liquip use the latest in available design and manufacturing techniques to ensure that our arm designs work to their full potential, giving our customers the best possible solution for their investment, and consistent product quality. Repeat sales with existing satisfied customers across 27 countries proves that our loading arms continue to provide significant benefits and value for money.

### CHEMICAL COMPATIBILITY

Liquip loading arms are available in a range of materials and seals to suit various chemicals and liquids. Liquip reference industry standard chemical compatibility charts when deciding compatibility of materials and physically

test product compatibility with seal and gasket material. If in doubt, consult Liquip and if available provide your recommendations and material safety data sheet for specific products.

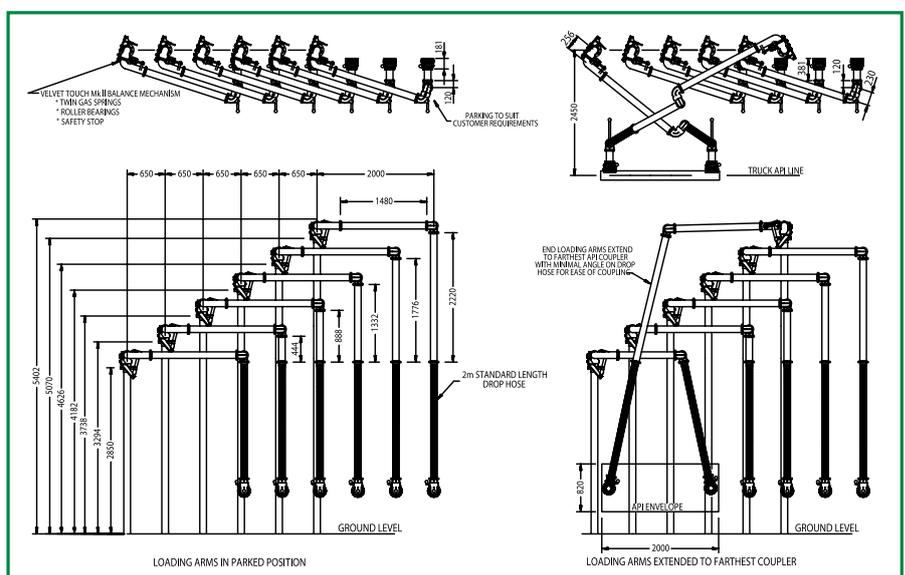
### THERMAL RELIEF

Over pressuring of the loading arm can be caused by thermal expansion of the product contained in the loading arm pipe work, i.e. the temperature of the static product within the loading arm is higher than the ambient temperature. This is caused as a result of the sun heating the pipe and product; as the temperature rises so too does the pressure within the loading arm. This increase in pressure, if severe enough can cause seals and gaskets to rupture and can damage the API coupler. Recommended operating static pressure for loading arms is 1,000 kPa, refer to Liquip Tech Talk T011.

Liquip recommend that you consult your company policy on thermal pressure relief and put in place a system to prevent over-pressurisation through thermal pressure buildup.

### FUEL VELOCITY

Loading rates differ between installations. It is always advantageous to maximise loading flow rates in order to minimise loading time. However ensure that the fuel velocity at any flow rate, does not exceed maximum safe rates. Excessive velocity increases the generation of dangerous static electricity and should be considered. It may be wiser to increase the size of the loading arm to achieve the same flow rate, thereby minimising static generation.



### ORDERING INFORMATION

To ensure each loading arm that leaves our factory operates to its maximum potential, Liquip requests that the dimensional details and designs of each installation be checked by our design department. If your requirements are beyond the scope of this catalogue, contact us. Design survey sheets are available from Liquip and Liquip distributors.

The following is the information needed to recommend an arm to suit your requirements:

1. Top loading or bottom loading  
Top - long reach or pantograph  
Bottom - overhead or low profile
2. Top feed or bottom feed (liquid is supplied from above or below)
3. Left hand or right hand mechanism
4. Product to be conveyed
5. Temperature of the product to be conveyed
6. Flow rate required
7. Preferred diameter
8. Material of construction
9. Operating pressure
10. Operating temperature
11. Maximum temperature
12. Mounting connection
13. Coupler or other connection

To help maximise the productivity of your loading arms and thus provide the best value for money, it is important that Liquip be consulted early in the planning stage of the bulk liquid terminal or loading rack. The loading arm is the last component of an expensive supply chain so it is important not to compromise this important asset.

**DESIGN DATA FORM - FIG 2a**

13 HUME ROAD SMITHFIELD SYDNEY NSW AUSTRALIA 2164  
Ph: +61 2 9725 9000 Fax: +61 2 9725 1252 INTERNET: www.liquip.com

**MK3 BOTTOM LOADING ARM NEW & RETROFITS**

---

**JOB DETAILS**

CUSTOMER ..... DEL. ADDRESS ..... DEL. DATE .....

SITE MEASURED Y / N BY .....

ASSY DWG. No. ....

ASSY DWG CHKD BY .....

No. OF ARMS REQUIRED .....

MATERIAL & SIZE .....

PRODUCTS TO BE LOADED .....

PAINT COLOUR .....

---

**DESIGN INFORMATION**

**RISER PIPE FLANGE HEIGHTS**  
(In millimetres or inches)

1ST ARM 2850mm 112.2"

2ND ARM .....

3RD ARM .....

4TH ARM .....

5TH ARM .....

6TH ARM .....

(100mm / 4" ANSI 150 RF FLANGE)

**LOADING ARM ORIENTATION**

ASSEMBLY INFORMATION FOR BALANCE  
(AS SHOWN)

RIGHT HAND  LEFT HAND

STANDARD INLET  INVERTED INLET

**WORKING SPACE/ADDITIONAL INFORMATION**

.....

.....

.....

**CHECKLIST**

PART No.	DRAWING No.	DESCRIPTION	1	2	3	4	5	6
4235	P4235	GASKET ANSI 150						
L217	L1373-1	RISER SPOOL						
VBB100MMV	V26998	BALANCE ASSEMBLY						
L219	L1373-1	HORIZONTAL SPOOL "L"=						
VNC-A4	V85096	COUPLER SWIVEL ASSY						
API710	A99406	DRYBREAK COUPLER						
5639P	P5639	DROP HOSE ST STEEL						
VNI-A4	V856	INTERMEDIATE SWIVEL						
---	---	TTMA GASKET KIT						
---	---	ANSI 150 GASKET KIT						
OPTIONAL								
L220A	L1373-1	DROP SPOOL						
VSA4	V1101	15" ANGLED COUPLER SPOOL						
VSS4	V1102	STRAIGHT COUPLER SPOOL						

TTMA GASKET KIT

1 x 4248 GASKET KLINGERITE  
8 x 6745 BOLT M10  
8 x 6744 NUT M10  
8 x 5261 SPRING WASHER M10  
16x 5288 FLAT WASHER M10

ANSI 150 GASKET KIT

1 x 4235 GASKET KLINGERITE  
8 x 4892 STUD 5/8" UNC x 3-1/2" B7  
C/W 2 OFF NUTS 5/8" UNC 2H

OPTIONAL EXTRAS

PARKING ADAPTORS PA100  
HOSE COVERS

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STORE - ASSEMBLIES TO BE CHECKED BY ENGINEERING BEFORE DESPATCH APPROVAL SIGNATURE ..... Issue: D

# LOADING ARMS

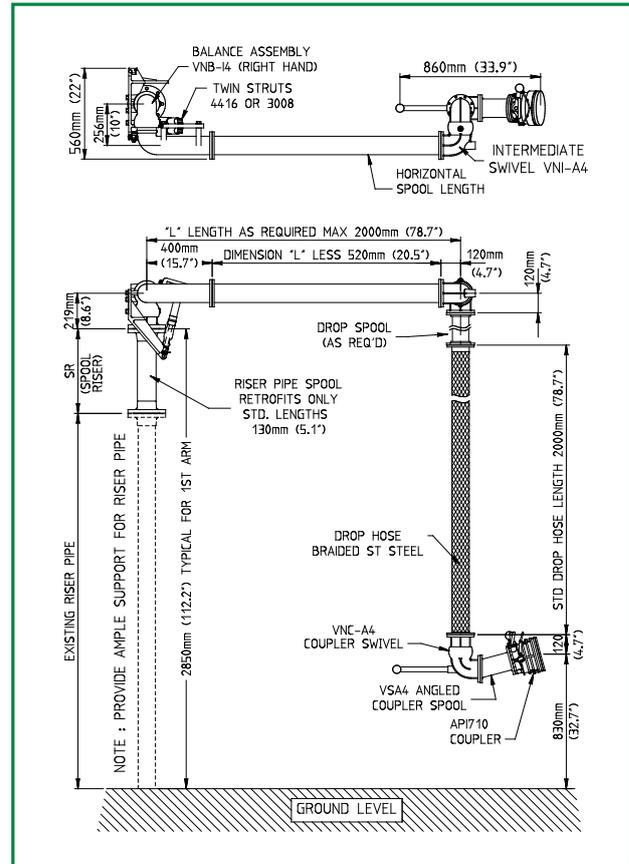
## BOTTOM LOADING ARMS

LOADING ARMS  
SWIVELS  
SPOOLS, HOSES & ACCESSORIES  
PARKING ADAPTORS  
LOADING EQUIPMENT  
FLOATING SUCTIONS  
OVERFILL PROTECTION  
ELECTRONIC REGISTERS

### OVERHEAD

Liquip 4" bottom loading arms are capable of loading at flow rates up to 2500lpm and are designed to enable complete crossover within the API envelope of up to 6 arms in a single bay. In those regions where regulations permit, it is common to load using 3 or 4 arms at one time.

Liquip Velvet Touch bottom loading arms are fitted with a 2 metre standard length drop hose and varying heights are accommodated with aluminium or steel drop spools. Standard length drop hoses enable easier changeover and reduced spare parts inventory for the operating company. Couplers supplied are compliant with API RP1004.



### LOW PROFILE

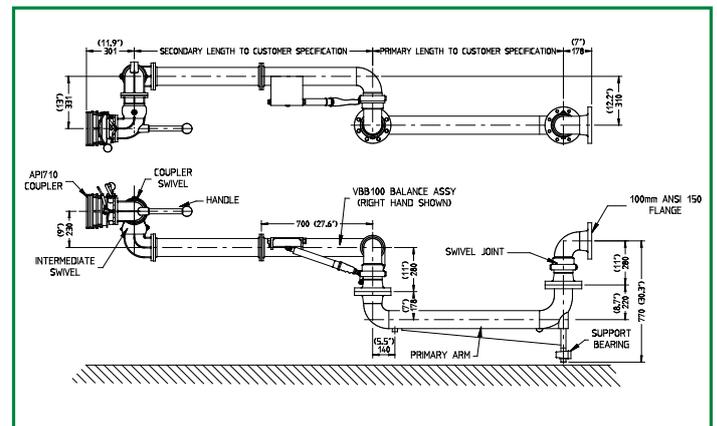
Another popular bottom loading design is the MK3 low profile loading and/or unloading arm. The low profile arm can be used for gravity or pumped discharge of road and rail tankers, as well as for bottom loading. Also commonly used where there are space limitations overhead.

This makes the low profile arm popular for large single compartment tanker loading and unloading, such as railcars and aviation bridging tankers.

The low profile arm is also available in a self draining design.

This arm loads at flow rates up to 2500lpm.

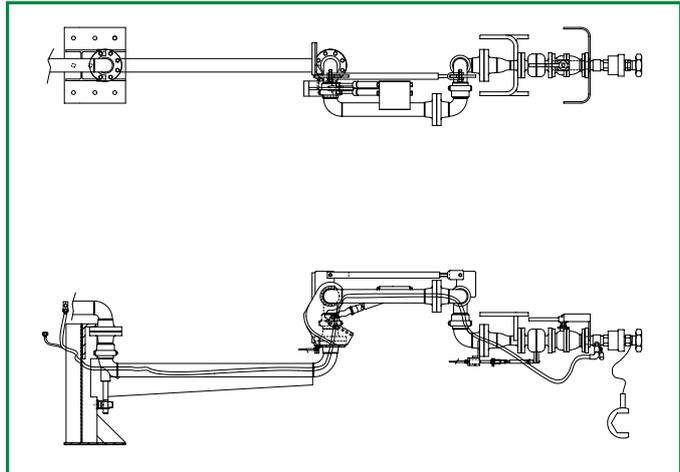
Couplers supplied are compliant with API RP1004.



### LPG

The highly advanced 3" Liquip LPG loading arm is designed to provide efficient loading with an emphasis on occupational health and safety. The balance mechanism has a cantilever action to ensure the loading coupler remains horizontal in any position to accommodate different adaptor heights.

The arm folds away for safe compact storage and electronic interlocks ensure the arm is disconnected and stowed. A 50mm double acting stainless steel 'emergency release' valve provides secondary drive-away protection. High pressure swivels enable loading up to 120m<sup>3</sup>/hr.

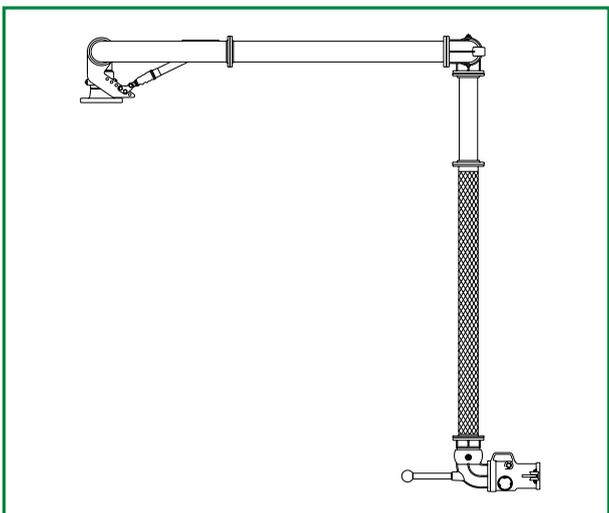


### VAPOUR RECOVERY

Available in all bottom loading configurations, the Liquip vapour recovery arms provide a safe and efficient method of vapour collection.

The Liquip vapour recovery arm removes the potential safety risk of vapour hoses in load bays and also eliminates the need for costly hose replacement.

The vapour coupler used is the low pressure drop VCF500 vapour coupler which allows for multiple compartment loading.



LOADING ARMS  
SWIVELS  
ACCESSORIES  
HOSES  
SPOOLS  
EQUIPMENT  
ADAPTORS  
SUCTIONS  
PROTECTION  
REGISTERS  
SYSTEMS

# LOADING ARMS

## TOP LOADING ARMS

LOADING ARMS  
SWIVELS  
ACCESSORIES  
HOSES  
SPOOLS  
EQUIPMENT  
LOADING  
ADAPTORS  
PARKING  
SUCTIONS  
FLOATING  
OVERFILL  
PROTECTION  
REGISTERS  
SYSTEMS

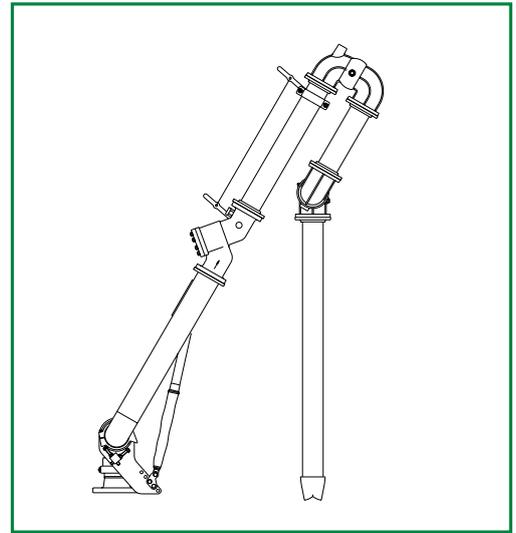
### PANTOGRAPH

Top loading is still a popular method of loading road and rail tankers.

The “Pantograph” top loading arm is a very common style used around the world. It is a simple and inexpensive design for medium duty applications with a horizontal reach of up to 2600mm (longer horizontal reach is possible but dependent on design. Please consult Liquip for assistance).

Typical flow rates for top loading are up to 1500 lpm. Loading with pantograph style arms is generally limited to loading a single sided loading bay.

Options for the pantograph arm include top loading valves with or without remote operating handle, overfill protection, spear diffuser, drip buckets and parking adaptors. Vacuum breakers are also available to assist drainage of the loading arm.



### LONGREACH

The “Longreach” top loading arm has some distinct advantages over Pantograph style arms. With full crossover ability and a horizontal reach of up to 5500mm, the Longreach arms can load both sides of the gantry and reach all compartments on a typical road tanker without the need to move the tanker. Considering the operational and commercial advantages of this, the Long Reach arm becomes a very economical alternative. Typical flow rates for top loading are up to 1500 lpm.

Options for the Long Reach arm include loading valves with or without remote operating handle, overfill protection, vapour recovery, spear diffuser and parking adaptors. Vacuum breakers are also available to assist drainage of the arm.

A special high load base swivel may be required for longer or “wet” arms. See LCB4-1.

Liquip’s gas strut technology enables finger tip control of up to 4 arms per bay. (5 or 6 arm bays are possible but consult Liquip for details)



## OTHER LOADING ARMS & APPLICATIONS

Liquip manufactures loading arms for a wide range of liquid transfer applications. Nearly any application currently using a hose is a potential loading arm application.

Aside from standard loading applications listed, some of the applications using Liquip loading arms include:

- Liquid sugar syrup loading of rail cars
- Waste water unloading of railcars
- Railcar locomotive refuelling
- Mine service vehicle loading
- Aviation refueller loading
- Fuel barge loading and unloading
- LPG condensate loading
- Bitumen top loading

Liquip can design a loading arm to your specification. With an already extensive range, we are able to respond rapidly to specific and specialised requests. Using the Velvet Touch as the “backbone” of the arm, Liquip can tailor-design an arm to suit your operational requirements. Check with Liquip regarding your application if you are unsure.



# LOADING ARMS

## VELVET TOUCH MK2 AND MK3 BALANCE MECHANISMS

LOADING ARMS

SWIVELS

ACCESSORIES

SPOOLS, HOSES & ACCESSORIES

LOADING EQUIPMENT

PARKING ADAPTORS

FLOATING SUCTIONS

OVERFILL PROTECTION

ELECTRONIC REGISTERS

STORAGE TANK SYSTEMS

### MK2 BALANCE MECHANISMS

The MK2 Loading arm balance assembly is the premier balance mechanism offered with a host of features not found in any other loading arm.

#### FEATURES

- Cast steel for durability and compatibility with aviation fuel
- Simple and safe balance mechanism
- Ball and roller bearings for smooth effortless operation
- No hazardous coil springs
- Twin gas struts for improved safety
- Adjustable up and down travel limitation stops to prevent arms clashing with pipe work etc above the arms and a passive safety feature.
- Left and right hand orientation, changeable if necessary in the field

Note that all Liquip balance assemblies are mounted on ANSI150RF base flanges.

#### INSTALLATION

The Velvet Touch balance mechanism is compact and light, making it easy and safe to install. The compact design and large range of adjustment allows for up to 6 arms per bay with complete crossover capability.

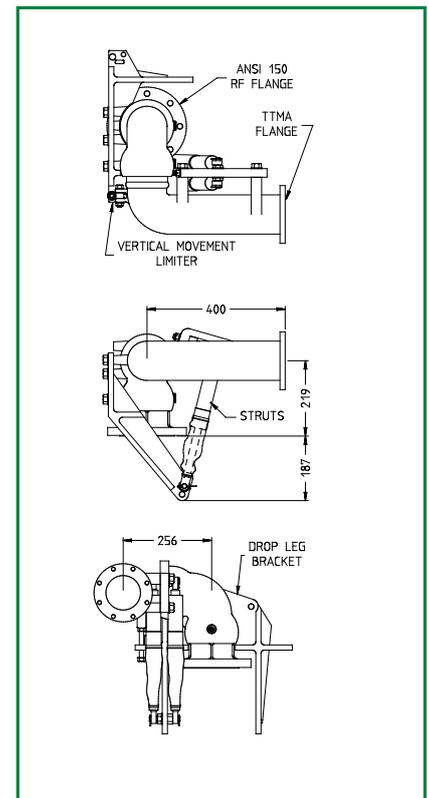
#### ADJUSTMENT

Gas struts are used whatever the combination of pipe material, pipe length and product density. Different weights are compensated for by adjusting the leverage exerted by the strut on the loading arm. Setting the balance of the loading arm is a very quick and simple operation and is achieved by simply adjusting two bolts.

Refer to the Liquip MK2 Loading Arm Manual for detailed instructions.

#### REPLACEMENT

The gas struts are maintenance free. However should replacement be necessary, simply lift and support the horizontal pipe to allow the full extension of the gas-struts, remove the R-clips from the upper and lower spindles, remove the strut and replace with a new one. A five minute job.



## MK3 BALANCE MECHANISMS

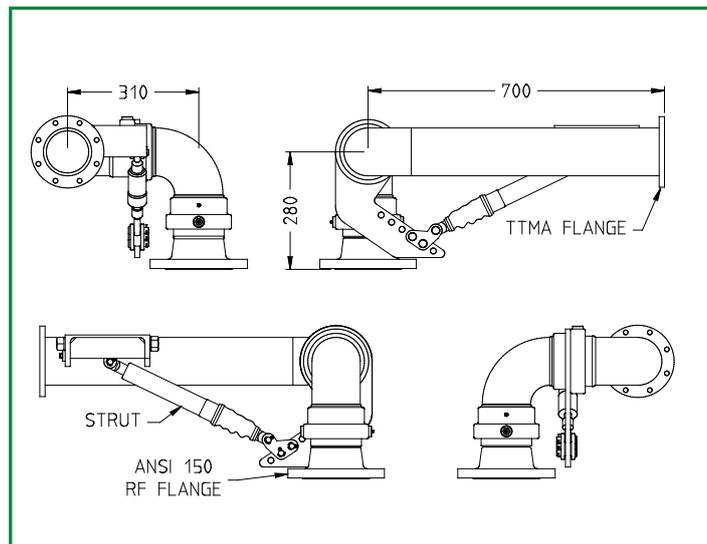
The MK3 Loading Arm Balance assembly provides all the benefits of gas strut technology such as ease of replacement and maintenance, with a range of features not found in conventional loading arm mechanisms.

### FEATURES

- Single gas strut for ease of operation
- Simple and safe balance adjustment
- No hazardous coil or torsion spring adjustment
- 3" and 4" designs
- Welded steel construction
- Extremely versatile and cost effective

Note that all Liquip balance assemblies are mounted on ANSI150RF base flanges.

Balance assembly is double swivel incorporating Liquip's ball and needle roller bearing design for lowest possible friction and ease of rotation. In a further design advance, the primary seal is a vee-lip seal with two separate 'O' rings, protecting the bearings. A telltale weep indicating hole ensures any product leaks will become visible but the integrity of the bearing will not be affected.



Liquip's exclusive swivel design results in a loading arm that is both user friendly and highly efficient.

Made from only high quality castings and raw material, Liquip swivel bodies are precision machined to exacting designs, ensuring consistent quality and smoothness of operation.

Several design features are included to ensure that our customers continue to be completely satisfied with the loading arms throughout their lifespan.

### **TWO OF THE MOST IMPORTANT DESIGN FEATURES ARE:**

#### **BEARINGS**

Liquip swivels use a combination of ball and needle roller bearings for minimum friction and extended life. Using one row of needle roller bearing (for radial load) and one row of ball bearings (for axial load) eliminates the possibility of binding, as can occur with double rows of ball bearings. The end result is a loading arm which is easier to operate and more efficient.

#### **LUBRICATION**

Liquip swivels have a grease relief system which enables the expulsion of old grease, as new grease is added. This prevents over-pressurisation of the swivels with grease which will result in the swivel becoming difficult to rotate, product contamination with grease being forced past the main product seal and in extreme cases splitting of the swivel body when pneumatic grease guns are used.

Liquip's grease relief system prevents these problems by expelling old and contaminated grease as fresh grease is injected during regular maintenance, this results in extended swivel life and reduced maintenance expenditure.

### **VNS-A4 STRAIGHT SWIVEL**

The VNS-A4 is a 100mm (4") straight single-plane cast aluminium swivel with cast TTMA flanged ends allowing 360° rotation. It may be used on any application where a single plane of rotation is required, for example it may be used instead of the VSS cast coupler spool to enable rotation of the API coupler.

A ball and needle bearing system provides optimum axial and radial load bearing with minimum friction. Liquip's grease relief system extends the life of the swivel by removing old grease and wear particles. Dual O-Rings for product sealing and dust sealing respectively.

#### **PRESSURE RATING**

1,000 kPa working pressure.

1,500 kPa test pressure.

#### **WEIGHT**

4.5 kg

#### **MOUNTING**

Flanges are 100mm (4") TTMA pattern.

#### **MATERIAL OF CONSTRUCTION**

Aluminium housings heat treated for hardness.

Hardened and chromed ball and needle bearings.

Viton o-rings (teflon seals available on request).

Brass ball retainer.



## VNC-A4 COUPLER SWIVEL

The VNC-A4 is a single-plane 100 mm (4") cast aluminium swivel allowing 360° rotation in the horizontal plane, with cast TTMA flanged ends and a maneuvering bar for use on the coupler end of bottom-loading arm. Standard on Liquip overhead bottom loading arms the swivel bolts on the bottom of the loading arm drop hose with the coupler (and spool-piece if required) on the outlet flange. The swivel provides the necessary movement and the bar with ball handle gives the operator necessary leverage to maneuver the arm into position.

A ball and needle bearing system provides optimum axial and radial load bearing with minimum friction. Liquip's grease relief system extends the life of the swivel by removing old grease and wear particles. Dual o-rings for product and dust seal respectively. The handle comes standard with a ball-type grip or a D-handle may be supplied upon request. The handle is welded-on for maximum strength and rigidity.

### PRESSURE RATING

1,000 kPa working pressure.

1,500 kPa test pressure.

### WEIGHT

6.0 kg

### MOUNTING

Flanges are 100mm (4") TTMA pattern.

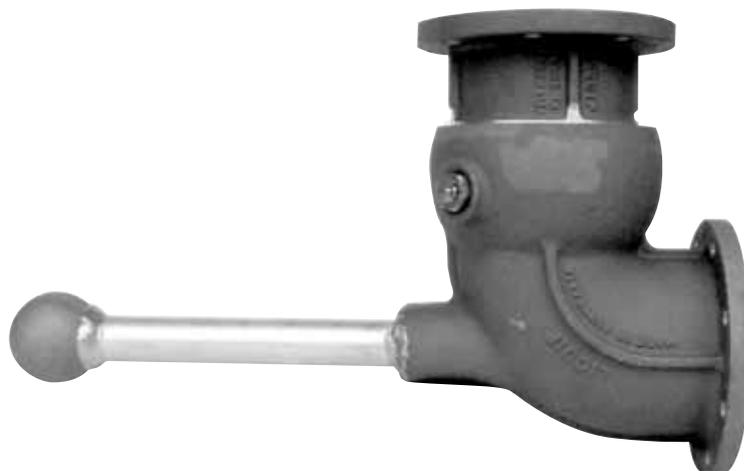
### MATERIAL

Aluminium housings heat-treated for hardness.

Hardened and chromed ball and needle bearings.

Viton o-rings (teflon seal available on request).

Brass ball retainer.



### VNI-A4 INTERMEDIATE SWIVEL

The VNI-A4 is a single plane cast aluminium swivel commonly mounted on outboard end of bottom loading arm, allowing movement of the drop hose and loading coupler relative to the tanker API adaptor. It has flanged 100 mm (4") TTMA ends.

The swivel bolts on to the outboard end of the horizontal pipe, above the drop hose, to provide a swing action to enhance the maneuverability of the loading coupler beyond what the hose can do on its own.

A ball and needle bearing system provides optimum axial and radial load bearing with minimum friction. Liquip's grease relief system (grease nipple one side with relief valve mounted opposite for efficient removal of old grease and debris) extends the life of the swivel by removing old grease and wear particles. Dual o-rings for product seal and dust seal respectively.

#### PRESSURE RATING

1,000 kPa working pressure.

1,500 kPa test pressure.

#### WEIGHT

5.6 kg

#### MOUNTING

Flanges are 100mm (4") TTMA pattern.

#### MATERIAL

Aluminium housings heat-treated for hardness.

Hardened and chromed ball and needle bearings.

Viton o-rings (teflon available on request).

Brass ball retainer.

Note: A 80mm cast Aluminium intermediate swivel with butt weld ends is also available using the SJW swivel arrangement.



## LCB4-1 BASE SWIVEL

The LCB4-1 is a heavy duty swivel with 100mm (4") ANSI150 raised face bottom flange and three bearings for high-load applications. Mainly used as the base swivel for extreme loads in Long Reach top loading arms where forces are too high for standard swivels, the LCB4-1 has a split-flange construction that provides an easily accessible fully sealed bearing pack. The main liquid seal may be replaced without stripping the bearings

As a straight swivel, vertical loads are absorbed by a double-row ball bearing with radial loading capability reinforced by a third row of needle roller bearings. Split-flange construction ensures that a product seal failure does not wash out any grease from the bearing pack, so preserving its integrity. Adjustment free, the LCB4-1 has a telltale weep indication hole between the product seal and bearing seal to show if the main seal is leaking and to relieve pressure build-up. The bearing pack incorporates Liquip's grease relief valve system to ensure proper re-greasing and debris removal.

### PRESSURE RATING

1,000 kPa working pressure

1,500 kPa test pressure.

### WEIGHT

25.0 kg

### MOUNTING

100mm ANSI 150 raised face bottom flange.

Liquip supply nominated top flange which is 100mm ANSI 150 pattern with flat face machined for sealing.

### MATERIAL

Hardened steel housings.

Hardened and chromed steel balls and needles.

Viton o-ring seals. Brass retainer plugs.



### SJW SWIVELS

SJW swivel joints are designed for fabrication of loading arms and pipe work requiring up to 360° rotational joint.

They are available machined from steel or aluminium with pre-prepared ends 100mm (4") or 75 mm (3") for welding directly to pipe or tube. A cost-effective way of achieving a rotating joint, for loading arms or other machinery requiring swivelling joints.

This swivel incorporates the well-known high load, low wear Liquip principle of ball with needle bearing combination used exclusively throughout Liquip loading arms. Sealing is provided by a Viton or nitrile primary face V-seal, and two viton 'O'-Rings which isolate the bearing pack from the product.

Any ingress past a worn primary seal is contained by the secondary o-ring, before the product contacts the bearings. Any leak is also immediately visible from a telltale weep indicator hole (initially supplied with a plug fitted). The greasing system is the Liquip trademark grease relief system to ensure correct lubrication, by ejecting old grease and particles that can cause wear.

Liquip recommend re-grease at maximum six-month intervals depending on service environment.

#### VARIANTS

Hardened Steel or Aluminium body with Viton seals

#### WORKING PRESSURE

1,100 kPa, test 1,650 kPa.

#### DIAMETER

80mm or 100mm diameter bore throughout.

#### WEIGHT

4.3kg for Aluminium or 5.5kg for Steel versions

#### MOUNTING

If vertical, mount with female half above male half for water and dirt run-off.

#### MATERIALS

Steel bodies with hardened running faces

Aluminium body

Bearing quality balls and needle rollers

Viton seals



## SJF SWIVEL JOINTS

SJF Swivel Joints provide 360° rotational movement of loading arm components.

Stainless Steel construction and available in 75 mm (3") and 100 mm (4") sizes with 100mm TTMA flanges on each end.

This swivel incorporates the well known high load, low wear Liquip principle of ball and needle bearing combination used in Liquip's extensive range of loading arms. Sealing is enhanced by the purpose designed, Viton primary face seal, and two Viton o-rings which isolate the bearing pack from product leaks. If the primary seal is compromised any contamination will be contained by an o-ring before damage to the bearings can occur. Any leak is also immediately visible from a telltale weep indicator hole, supplied with plug fitted. The greasing system also includes the Liquip trade-mark of a pressure relief outlet to ensure correct lubrication, by ejecting old grease and particles that can cause wear.

### ADJUSTMENT OR SERVICE

Re-grease at maximum six-month intervals dependent on service conditions.

### MATERIALS OF CONSTRUCTION

Bodies - Cast Stainless steel

Seals - Viton or Teflon

### MOUNTING

Using M10 diameter bolts or studs. For high load applications high tensile bolts or studs must be used. If the unit is mounted vertically, the female component must be fitted on top to prevent water and dust ingress.

### WEIGHT

SJF076L – 8.3 Kg.

SJF101L – 8.99 Kg.

### TECHNICAL DATA

Working pressure – 900 kPa

Test pressure – 1500 kPa

### PART NUMBERS

- SJF076L - 316L Grade Stainless Steel, Viton Seals, 75mm
- SJF101L - 316L Grade Stainless Steel, Viton Seals, 100mm



### KANON BRAND SWIVELS

Liquip specify Kanon brand swivel joints in critical areas where extraordinarily high bending and axial load combinations may exist due to factors such as extended reach of the loading arm or wind forces.

Kanon swivel joints are developed to withstand all such loads without leaking. In fact regular maintenance is reduced to inspection only and seal replacement in extreme circumstances.

Contact Liquip Equipment Division for application advice, pricing and availability.

#### SPECIFIC FEATURES

- Swivel joints can withstand much higher loads than conventional designs due to the special shape of the ball races in combination with relatively large diameter ball bearings
- The ball race chamber is completely separated from the sealing part
- The product seal can be replaced without removing the ball bearings
- Swivel joints are provided with long life lubrication, so there is no need for regular maintenance
- Double or single ball race depending on application
- Jacketing and trace heating option
- Full size bore
- Tell tale leakage indicator

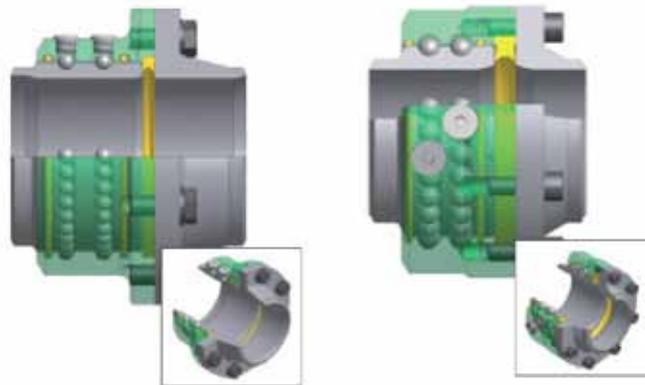
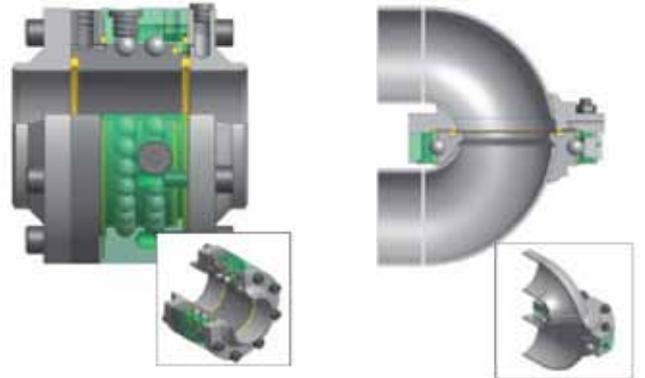
By using Kanon swivel joints it is possible to make all kinds of flexible connections using rigid pipes instead of using hoses. Kanon swivel joints are available in various materials, including:

- Carbon Steel
- Low Temperature Carbon Steel
- Stainless Steel
- Carbon Steel with PTFE, rubber and other linings
- Hastelloy
- Titanium
- Plastics

Temperature range of -200° C to +300°C

Pressure range up to 120 bar

Sizes from 1" up to 24"



## SPOOL PIECES

Loading arm spool pieces made to length with either 75 mm (3") or 100 mm (4") TTMA flanges are available in mild steel, stainless steel or aluminium configuration to suit individual customer requirements.



## COUPLER SPOOLS

A loading arm coupler spool acts as an intermediate spool piece between the loading arm coupler swivel & the API coupler on bottom loading arms.

They are available either in horizontal configuration (VSS4) or with one flange angled at 15° (VSA4) for tankers with angled API outlets.

Both are fully cast aluminium with 100mm (4") TTMA flange on each end.

Approx 1.8kg each

Pressure tested to 1500kPa

Working pressure 1000kPa



## DROP HOSES

Liquip bottom load arms are equipped with a standard 2 meter flexible drop hose with 100mm (4") TTMA flanged ends.

This provides a saving in spare parts inventory for the customer as generally only one spare hose need be purchased for emergency use.

Generally supplied in flexible corrugated stainless steel for longevity.

### DROP HOSE COVERS

To provide easy product identification, hard wearing canvas drop hose covers are available. They easily attach to the drop hose. As a side benefit they also protect the tanker side from being damaged by the drop hose, and provide some protection for the operator of the arm from the steel braiding should it get damaged and fray.



### VB100 VACUUM BREAKER

The VB100 vacuum breaker is used in top loading arms, fitted downstream of the dead man valve to ensure that a vacuum can not form in the drop tube which would result in retained product and possible environmental contamination, particularly with heavy or viscous products.

A spring loaded poppet opens at a set pressure to allow air into the top of the drop tube to stop vacuum forming and prevent a product hang-up.

No in-field adjustment is necessary with pre-set vacuum settings according to type.

#### FEATURES

Depressing the cap opens the poppet and allows flushing of the seat without removing from service.

#### TECHNICAL DATA

VB100 opens at 1-2 kPa vacuum. (Gravity systems)

VB100U opens at 35 kPa vacuum (Pump systems)

Orifice equal to 6mm dia hole

#### WEIGHT

0.14 kg

#### MOUNTING

In to 12mm BSP female socket. Ensure poppet head is level with the inner end of the socket thread inside the pipe when fitted in order to maximise flow area.

#### MATERIAL

Brass body, polyurethane cap, stainless steel spring.

Poppet is Delrin

Seal is Viton



### SVR VAPOUR CONE

The SVRxxx is a drop spear mounted Vapour Recovery Cone for Long Reach top loading arms.

The cone comes complete with 3" male camlock connection for the vapour hose and height adjustable overfill protection probe (Optional).

A lockdown device is fitted to ensure the cone remains securely on the hatch opening during loading and a non-return valve prevents vapours from escaping from the hose after removal from the tank.

Construction is in Aluminium with Nitrile outer cover.

SVR101 suits a 4" drop spear

SVR080 suits a 3" drop spear



### SD100 T-DEFLECTOR

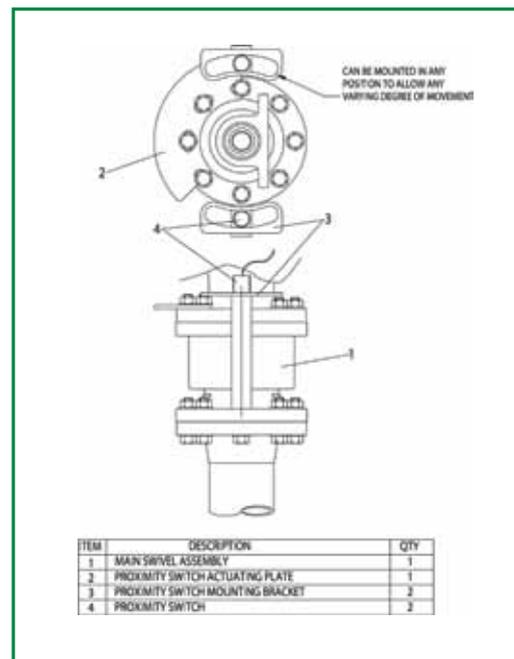
A cast aluminium T-deflector or sometimes called a loading spear deflector, the SD100 is welded to the bottom of a top loading arm drop spear. It is designed so that the product flow forces the loading arm downwards while loading at higher flow rates and also reduces product splashing while top loading.



### VBS100-32 LEFT/RIGHT INDICATOR ASSEMBLY

Consists of a bracket which mounts to the base swivel (LCB4-1 split flange riser pipe swivel or SJW style base swivel) of a long reach top loading arm. The bracket has provision for the mounting of two proximity sensors (supplied separately) which indicate the respective position of the loading arm while in operation to either side of the loading gantry.

Also available is a parked position sensor which is mounted within a drip bucket or on the parked position of the loading arm.



### DB100 DRIP BUCKET

The drip bucket is used to catch product drips from top loading arms after compartment loading has been completed. Available in aluminium, the Liquip DB100 locates onto the bottom of the drop tube as it is removed from the tanker to catch drips as the arm is moved to either the next compartment or arm parking position.



### CVS110 HOLDBACK CHECK VALVE

The CVS110 is a non return holdback valve for bottom loading arms. It is designed to hold back the product in the loading arm until the loading arm supply pump is activated. This prevents product contamination within the tanker in the event that the wrong API is connected and opened and as an added bonus it also prevents the loading arm from being drained preventing theft of product from the loading arm. The CVS holdback valve also allows the removal of the API coupler for service without draining the entire loading arm.

The internal poppet opens at a pump pressure of 40 kPa, and a thermal relief valve ensures little or no pressure can build up between the API Coupler and the poppet. Flange type sight glasses can also be fitted to one side of the CVS110 for product verification during the loading procedure.

Construction is of aluminium and the CVS110 has 100 mm (4") TTMA flanges either end.



### LBV450VGL ISOLATING VALVE

The LBV450VGL is a 100mm (4") TTMA flanged butterfly style isolation valve, fitted to the loading arm adjacent to the API coupler to provide an isolating point in event of coupler failure or for conducting coupler maintenance.

By closing the valve and isolating the coupler from the rest of the loading arm contents, the coupler may be opened or removed for maintenance purposes without draining the arm.

Available with bonded Viton GFLT seal as standard.

Slim and unobtrusive, the shaft can be mounted on the underside of the arm to remain practically invisible. The LBV450VGL isolation style valve is recommended by API RP1004.



## API710 DRYBREAK COUPLERS

The API710 automatic latching bottom loading coupler provides effortless automatic connection for a safe, and drip free product transfer from the loading rack to the tanker.

One touch connect and disconnect operation makes it ideal for high volume terminals.

This latest coupler in the Liquip range addresses inherent weaknesses in standard coupler designs with innovative and solid design features.

API710 series couplers are a major advance on previous designs, addressing well-known issues:

- Advanced latching mechanism geometry for security and minimal wear.
- Cast stainless steel collar and latches for longer operating life and easy operation.
- Latch spindles are now precision machined and centred, not cast integrally.
- Optional handle sizes, 150mm (6") or 200mm (7.9") swing, incorporates a ball-end for improved ergonomics and a carry-loop to ease the handling during parking.
- Easiest coupler to maintain in today's market. Once the coupler is removed from the load arm, all seals can be replaced in less than 5 minutes.

Liquip couplers include interlocks to prevent opening until coupled, and prevent uncoupling until closed, they are interchangeable with other industry standard API couplers and adaptors which comply with API RP1004.

Various seal materials available to suit a broad range of fluid applications.



## LA560 TOP LOAD VALVE

Normally used as a control valve for Top Loading arms. The model 560 top load valve is available in 75 (3") mm and 100mm (4") sizes. They feature double-acting closing and have a needle valve enabling adjustment of the opening and closing time. A dash-pot arrangement provides controlled closing.

Normally configured for dead man operation they are available as stay-open as well.

A remote handle kit is available for these valves.

### MOUNTING

3" (75mm) TTMA Flange

4" (100mm) TTMA Flange



## ILS400 STRAINER

Liquip manufacture a 4" in-line strainer in cast aluminium with TTMA flanged ends. The ILS400 incorporates an easily removable basket strainer in a variety of mesh sizes and materials to suit various applications.



## SIGHTGLASSES

A sightglass is commonly mounted in the loading arm to indicate the presence and colour of the fuel in the arm. Liquip make a 4" TTMA flanged wafer style sightglass for mounting adjacent to the API coupler. Useful for product identification and when draining the arm to show when the arm is empty, the Liquip sightglass is inexpensive and effective.

### PART NUMBERS

BF3-SG - 3" (75mm) TTMA Flange x 25mm

BF4-SG-40 - 4" (100mm) TTMA Flange x 40mm

BF4-SG-25 - 4" (100mm) TTMA Flange x 25mm

API-SG-150 - 4" (100mm) ANSI 150 Flange x 40mm



### VCF500 VAPOUR COUPLER

The VCF500 vapour coupler incorporates the patented Liquip SLV100 hinged poppet design to provide lower pressure drops than standard poppets at higher flow rates.

The spring loaded hinged poppet retains vapours until coupled to the male vapour adaptor. Conforming to GEN regulations for pressure drop, flow area, and vapour retention, the VCF500 will operate at flow rates up to 10,000 litres per minute at 20 degrees Celsius (4 compartments loading each at 2500lpm).

A sightglass in the body shows vapour condensation if present, and enables visual checking of function.

#### FEATURES

- High flow rates and low pressure drop
- Patented hinged poppet design
- Aluminium, stainless steel and Viton construction, with brass cams
- Weight 4.3kg
- Poppet is automatically opened when connected to male adaptor
- Flange mount is universal 4" TTMA with threaded M10 mount holes
- Universal camlock connection



### VCF075W VAPOUR COUPLING

The VCF075W is a spring loaded vapour coupler designed to automatically open when coupled to a compatible vapour adaptor.

It incorporates a 100mm hosetail and 4" standard NATO Camlock.



### VCM450 VAPOUR ADAPTOR

For terminals with no dedicated vapour recovery hose or arm i.e. a vapour recovery hose is attached to the tank truck. Liquip manufacture a series of poppeted vapour collection adaptors. All are of aluminium construction with 4" TTMA flanged mounts.

The VCM450 (and VCM450AIZ which includes an air interlock) comes with a full 100mm flow area and minimal pressure drop characteristics. Designed for loading at up to 10,000 litres per minute it includes a sight glass and drain plug for visual checking and draining of condensation in the vapour recovery system it also incorporates a standard mil spec camlock connection.

Commonly used in Australia and New Zealand the VCM3 series have a smaller flow area than the VCM450, and the connection is designed so that a standard camlock will not connect to the coupler. With only an approved vapour coupler being able to connect.



### APIRC DRYBREAK COUPLERS

The APIRC is a dry break coupler intended only for gravity discharge. It is designed to fit API standard bottom loading adaptors and is suitable for unloading rail cars or for connection from API adaptors to pumping systems. A lightweight, simple & inexpensive option to standard API bottom loading coupler.

Cam levers securely clamp the coupler onto the API adaptor. Opening the operating handle will open the poppet on the coupler and adaptor. There are no interlocks on the operating handle but an over-centre cam style operation and a detent retains the handle in the open or closed positions.

An extended front face seal engages the nose cone of the API coupler before the poppet opens to ensure no product loss, while a multiple lip seal design gives great tolerance to damage from dirt and other contaminants.

The APIRC has a straight through 4" female BSP threaded mount.



### BAYONET COUPLERS

For industrial applications in chemicals, mining and petroleum transfer where API couplers are not suitable, 3 point bayonet style dry disconnect couplers may be ideal. Available in a range of metals and seal types to suit a wide range of chemicals and aggressive fluids, the coupling unit consists of male and female components which are coupled by a push-and-twist action. This simultaneously locks the two together and opens both poppets to permit flow. The female coupler comes with an integral swivel and both units may be threaded or flange mounted.

Available in a range of sizes from 38mm to 100mm NB.



Parking adaptors are used in the terminal to store loading arms and other bottom load equipment while not in use. Liquip advocate the use of parking adaptors for safety and cleanliness.

Using parking adaptors reduces the risk of the vehicle leaving the bay with one or more gantry connections still attached. Parking adaptors fitted with electronic proximity sensor interlocks and air interlocks can help to prevent this dangerous accident by interlocking the loading arms and other connections with the Terminal Automation System, thereby reducing the risk of accidental damage.

An additional benefit of parking adaptors is that drips from the API coupler can be contained and returned to a central collection point, keeping the loading area clean and safe.

### PA200

The PA200 is a simple parking adaptor for API couplers complying with API RP1004. It prevents the arms from swinging across the loading bay while not in use.



### APIPA

The APIPA complies with API RP1004 and is used to park API bottom loading couplers. The coupler is connected to the parking adaptor when not in use and if fitted with an integral proximity sensor holder. The sensor is actuated to enable electronic system interlocks. The adaptor can also collect drips for draining off to a central drain collection point.

Note: proximity sensors not included. Order separately to ensure compatibility with existing Terminal Automation System.



### PA100 SERIES PARKING STANDS

These API parking stands are available with either straight or angled adaptors. They provide the ability to park bottom loading arms, and if fitted with an integral proximity sensor will actuate electronic system interlocks.

The stand is designed to conform with API bottom load envelope dimensions.



# LOADING ARM

## PARKING ADAPTORS

STORAGE TANK SYSTEMS ELECTRONIC REGISTERS OVERFILL PROTECTION FLOATING SUCTIONS PARKING ADAPTORS LOADING EQUIPMENT SPOOLS, HOSES & ACCESSORIES SWIVELS LOADING ARMS

### SPS100

The SPS100 provides a no-mess parking position for top load spear type loading arms complete with a provision for a proximity sensor.

Integrated into the existing terminal automation system, the proximity sensor signal can provide an effective system interlock to prevent the vehicle leaving the loading bay if the loading arm is not properly parked at the completion of loading.

The aluminium construction incorporates a mounting bracket and provides a solution for drip collection. Accumulated product may be piped away to a central collection point.

#### MATERIALS

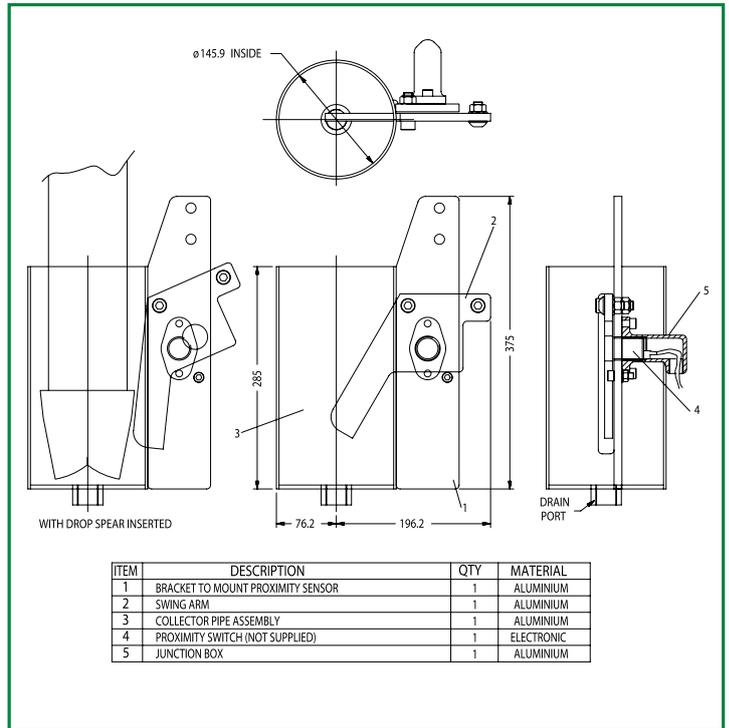
All aluminium except for zinc plated steel fasteners

#### MOUNTING

Mounts onto gantry framework using 12mm (1/2") bolts and should be mounted where drop spear can come to rest inside container and remain unobtrusive.

#### WEIGHT

2.16kg



### VCFPA

The VCFPA accommodates the VCF075W and VCF500 vapour collection couplers, and others complying with industry regulations.

It comes with provision for a proximity sensor to provide an electrical position interlock, and incorporates a drain port to drain off any condensed vapour that may have accumulated within the coupler.



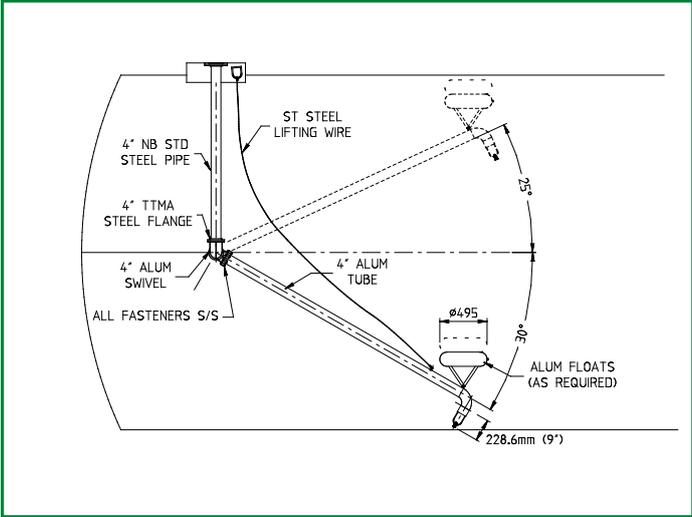
## FLOATING SUCTION

Designed to ensure that product in a storage tank is taken from just below the surface of the liquid where it is cleanest, floating suction also prevent the suction point being on the tank floor where dirt and water will settle out.

Most commonly used in aviation fuel tanks, floating suction are made from aluminium swivels with stainless steel fasteners to ensure compatibility with the fuel.

Each floating suction is built to order to suit the tank diameter, height and manhole position, with floatation system designed to suit the arm weight.

Liquip swivels used have combination ball and needle roller bearings that provide a smooth pivot point for the arm to work freely at the designed height.



# OVERFILL PROTECTION

## GENERAL INFORMATION

### OVERFILL PROTECTION

Liquip overfill protection systems are safe, reliable and manufactured to world recognised codes and regulations.

With Factory Mutual, IECEX and ATEX approvals, Liquip's terminal and depot based overfill protection equipment is compatible with industry recognised electronic optic and thermistor overfill probes on tanker fleets and compliant with other applicable codes such as EN 13922 and American Petroleum Institute Recommended Practice 1004 (API RP1004).

The Liquip electronic overfill protection monitors, probes and accessories are available in a range of configurations and compatible and interchangeable with other industry standard brands.

Liquip manufacture three base models for different applications with variations such as voltages, earthing methods, probe type and numbers of probes easily accommodated in each model.

### KEY CONCEPTS COMMON TO OUR RANGE INCLUDE:

- Reliable fail-safe operation
- Detection and shutdown response of less than 0.5 seconds
- Self checking circuitry
- System diagnostics
- Integral grounding functions on all monitors is provided at no extra cost (no need for separate grounding monitor)
- Automatic detection and switching between 2 wire and 5 wire modes
- Compatibility with 2 wire, 5 wire and thermistor probe types
- Maintenance free with solid state circuitry requiring no adjustment

### GROUNDING

Have you really been grounded? Much has been claimed about the specific features and functions of various grounding systems. What is actually important is a basic understanding of the properties of static electricity and it's need to escape to ground by jumping to objects with a lower electrical potential.

Following a large static spark at a terminal equipped with a dedicated earthing monitor, Liquip surveyed available earth assurance systems and 'unearthed' shortcomings in their operation. Many of these criticisms were due to incorrect installation methods, though the equipment itself was sound. Liquip therefore added simple features to our tanker and terminal mounted equipment to improve the effectiveness of the grounding systems.

On the tanker, it is essential that the common earth wire be grounded through the tank structure. Many tankers only have the bumper bar or truck plug earthed, not the tanker.

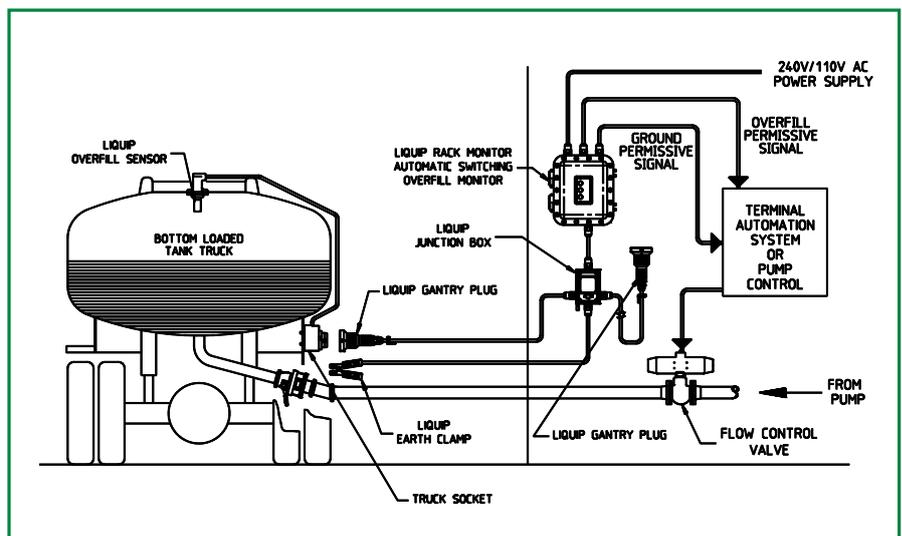
### TRUCK PLUGS, PROBES AND ACCESSORIES

A comprehensive range of tanker mounted overfill equipment is available from Liquip. Please refer to our Tanker Equipment catalogue for more details.



### LIGHTNING AND OTHER ELECTRICAL SURGES

Recent upgrades to Liquip's range have made them even more resistant to fluctuating electrical power supplies and lightning strikes. However, please ensure adequate electrical protection for your installed electrical equipment.



Indicative Schematic

## RM100 SERIES RACK MONITOR

The RM100 Series Overfill Protection & Grounding Monitor is used for loading road, rail, petro-chemical and food applications.

It provides a fail-safe, state-of-the-art Overfill Protection & Grounding monitoring system that is compatible with all Industry Standard Overfill Protection & Grounding systems.

### FEATURES

- Automatic sensing of two-wire / thermistor & five-wire overfill systems.
- Supports up to 8 two-wire / thermistor probes & up to 12 five-wire probes.
- High Output display visible in direct sunlight.
- Coded wireless By-Pass key for secure & reliable operation.
- Self test at start-up / Continuous self-monitoring.
- Separate Grounding & Overfill control outputs.
- Compact & functional design is easy to install.
- One model of electronics for the whole world, all applications.
- RM100 is directly compatible with previous PD100 Probe Doctor as a "plug in replacement"
- Explosion proof housing
- 240V or 110V power supply through internal setting
- Intrinsically safe output to sensors
- Suitable for 6 or 8 channel systems through internal settings

### MODELS

RM140 Electronics in a 100mm (4") deep enclosure.

RM160 Electronics in a 150mm (6") deep enclosure to allow room for future expansion.



# OVERFILL PROTECTION

## RACK MONITORS

STORAGE TANK SYSTEMS ELECTRONIC REGISTERS OVERFILL PROTECTION FLOATING SUCTIONS PARKING ADAPTORS LOADING EQUIPMENT SPOOLS, HOSES & ACCESSORIES SWIVELS LOADING ARMS

### PD500 SERIES PROBE DOCTOR

The single channel PD501 is an economical optic monitor with 3 modes of operation. It can be configured as a 5-wire probe monitor for loading gantries or storage tank farm with up to 15 sensors and may also be used for single compartment tanks with a two-wire system. It can also be used as a stand alone grounding monitor with capability of providing overfill protection if required at a later stage. As with the RM100 series monitors, the PD501 includes ground assurance with the overfill protection functions

#### FEATURES

- Unit is encased in a explosion-proof housing for Class 1-Zone 1
- Power supply may be 24OVAC or 110VAC
- Output switching is triple-ganged relay for greater reliability
- Lockable by-pass switch to enable loading of tankers in emergency
- Bypass mode illuminates both red and green indicator lamps
- Set for 5-wire or 2-wire (single channel only)
- Compatible with all Industry Standard Overfill Probes
- Triple LED style indicator lamps for extended life
- Intrinsically safe output to truck sensors
- Shutdown response time < 0.5 seconds
- No adjustment required (solid state board)

#### PD501 CONFIGURATIONS

Liquip's overfill protection monitors can be configured to suit the overfill, grounding, voltage and probe requirements of individual applications. This flexibility enables standardisation, versatility and exceptional value for money.



## GP100 SERIES GANTRY PLUG ASSEMBLIES

Liquip GP100 series plug and cable assemblies are designed for use with all industry standard monitors and vehicles. They connect the gantry systems to the tanker via industry standard 3 or 4 bayonet plugs.

Connect pattern can either be 6 pin or 10 pin to universal Industry Standard and Code of Practice, however standard configuration has 10 pins on all models for standardisation.

### FEATURES

- All materials non static producing
- Plugs are colour coded and heavily ribbed for improved grip
- Bayonet positions are clearly visible from the outside of the plug
- Compliant with industry codes and regulations
- Socket is heavily ribbed for better grip and bayonet positions clearly visible by being mounted on bosses

### PART NUMBERS

GP103 3 bayonet connection with 8 metre of blue coiled cable

GP104 4 bayonet connection with 8 metre of blue coiled cable

GP204 - 4 bayonet connection with 8 metre of blue straight cable

GP204U - 4 bayonet connection with 8 metre of blue straight cable to EN standard



# OVERFILL PROTECTION

## MONITOR ACCESSORIES

STORAGE TANK SYSTEMS ELECTRONIC REGISTERS OVERFILL PROTECTION FLOATING SUCTIONS PARKING ADAPTORS LOADING EQUIPMENT SPOOLS, HOSES & ACCESSORIES SWIVELS LOADING ARMS

### JB100 JUNCTION BOX

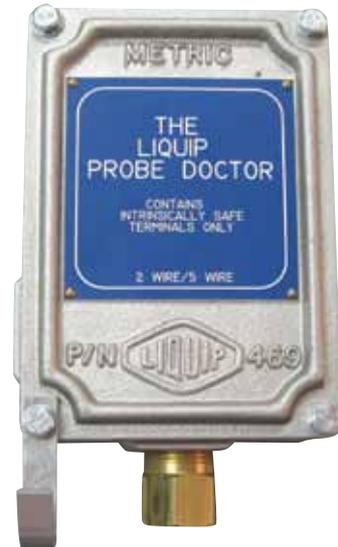
The JB100 cast aluminium junction box is recommended for use with all RM100 and PD500 gantry rack monitors. It provides a non-Exd rated easy access point to intrinsically safe cable terminal connections for replacement of the gantry cable assembly without entering the main monitor. Being intrinsically safe any replacement can be carried out without a certified electrician and without isolating the bay. In event of a drive away, the main monitor will not be damaged as the cable will sever at the JB100 terminal block.

The JB100 comes with a stowage hook for gantry plug.

#### PART NUMBERS

JB100 single port straight through junction box

JB103 dual port junction box, with extra port for earth clamp connection



### TPA4 GANTRY PLUG PARKING ADAPTOR

Gantry plug parking adaptor with the provision to mount an adjustable proximity switch. The unit provides a positive safe electronic interlock that can be utilised with the terminal automation system to ensure the gantry plug has been disconnected from the loading vehicle and stored before permission to leave the gantry is granted.

#### FEATURES

- 3 or 4 bayonet fixing available to industry standard
- Proximity Switch size M30 x1.5 thread-specification to customer requirements
- Nose-cone is hard anodised aluminium
- Aluminium body and cover plate
- Polyurethane cap ordered separately (5069)

TPA3 3 pin parking adaptor

TPA4 4 pin parking adaptor

Note: proximity sensor not included. It must be specified to integrate with the existing terminal automation system.



## EAC201 EARTH CLAMP

Where a separate earthing connection is desired, Liquip's cast aluminium EAC201 earth clamp may be used in conjunction with industry standard overfill and grounding monitors. A simple and robust design includes offset replaceable hardened 'teeth' which when clamped to that tank structure completes an earth checking circuit and allows loading to commence. Includes an 8m straight cable.

### OPTION

EAC202 with 8m of self coil cable



## HTA204/503 PORTABLE TESTING UNITS

Liquip's portable overfill protection testing units have been designed for the convenience of the tank manufacturer, maintenance engineer, fleet manager and terminal manager. The simple to operate unit provides decisive on-the-spot fault diagnosis of tanker and terminal overfill equipment problems.

Solid state electronic controls and indicators have been housed in a light weight aluminium case. Inside the case are all the components normally found in an overfill protection system ie. gantry plug and self store cable, truck socket and individual cable connections for single probe tests.

The long life battery is only engaged when one of the 'test' buttons is depressed, providing extra long life with no chance of the unit being left on, thereby draining the battery.

The overfill protection testing instrument can be supplied for either 2-wire or 5-wire systems. The gantry connectors are available in a variety of pin numbers and orientations to suit all known standards.

### VARIANTS

HTA204 = 2 wire, four bayonet slots

HTA503 = 5 wire, three bayonet slots.

Others are supplied to order

### FEATURES

- Battery powered
- Light-weight
- For use with all optical, thermistor and capacitive probes and monitors
- Easy to use
- Packaged in lockable case



# OVERFILL PROTECTION

## MONITOR ACCESSORIES

STORAGE TANK SYSTEMS ELECTRONIC REGISTERS OVERFILL PROTECTION FLOATING SUCTIONS PARKING ADAPTORS LOADING EQUIPMENT SPOOLS, HOSES & ACCESSORIES SWIVELS LOADING ARMS

### SMS102 TOP LOAD OVERFILL

An overfill sensor which is mounted on the loading spear of top loading arms to allow product level sensing in top loaded tankers without additional tanker mounted hardware.

The sensor is inserted into the inspection hatch until the stop bar rests on hatch opening. This puts the overfill sensing probe at the correct (initially adjusted) depth into tank compartment. When product reaches the sensor, a signal is sent to the overfill monitor and product pumping ceases

Standard model is suitable for 100mm drop spear.

#### WEIGHT

4.6kgs

#### MOUNTING

Sensor holder is attached with two adjusting straps around drop spear.

#### ADJUSTMENT

Loosen the nuts and bolts on the adjusting straps. Position the end of the sensor holder approx. 1470mm from outlet of drop pipe and tighten nuts.

#### MATERIALS

Stop bar and outer tube – aluminium

Centre pipe, spring & locknut – stainless steel



### OVERFILL SENSORS

Liquip manufacture a range of optic and fibre optic sensors for liquid detection. Commonly referred to as 'cane probes' extended probes are available for storage tank and depot mounted applications.

Liquip's range of cane probes use both the LDP Series industry standard optical overfill sensors, and the patented all glass probe (the G-probe). The G-probe is compatible with a huge range of aggressive chemicals and this makes it ideal for chemical storage tanks and top loading arms.

Chemical cane probes are made from stainless steel, teflon and glass for aggressive fluids. The same probes may be used for refined fuels, or the more economical LDP series probes may be used.

#### TEMPERATURE

-40 °C - +65 °C

#### PRESSURE

up to 400 kPa (specially designed Liquip LPG sensors withstand up to 1750 kPa)

#### MOUNTING

Flanged, threaded or camlock style to suit various applications

#### MATERIALS

Made to suit the application

#### VARIANTS

Liquip truck sensor holders may also be used. For further information on Liquip's overfill sensors see Liquip's Road Tanker Equipment catalogue.



## EMH500 ELECTRONIC REGISTER WITH PRE-SET CONTROL

The EMH500 includes a pre-set batch control and up to 50 other programmable functions, making it ideal for small quantity deliveries.

The EMH500 is always used in conjunction with the EJB101 (or EJB200 for EMH500IS) which provides filtered power supply and houses input and output facilities. Power supply from EJB101 is 9 VDC, polarity protected.

### OTHER FEATURES

- Programmable 2 stage solenoid outputs providing slow start and stop of batched delivery
- Dual displays for "Batch" and "Delivery"

### SIZE

150 x 200 x 200mm

### WEIGHT

2.4kgs

### APPROVALS

NSC Australia

UK Weights and Measures

USA Weights and Measures

Canada Weights and Measures

### MODEL NUMBERS

EMH500H Standard version with heated display

EMH500IS Intrinsically Safe certified version

Optional sun visor EMH500-25Z



## EMH600 ELECTRONIC REGISTER

The EMH600 has the features of the EMH500 minus the preset control functions

The EMH600 is ready for service upon mounting and connecting 12 or 24 VDC power.

### SIZE

131 x 200 x 200mm

### WEIGHT

2.6kgs

### APPROVALS

NSC Australia

USA Weights and Measures

Canada Weights and Measures pending

### MODEL NUMBERS

EMH600 Standard version

EMH600H version with heated display

Optional sun visor EMH600-25Z

### MOUNTING

Mounts to all popular meters with separately supplied adaptor flanges.



### ERP200 ELECTRONIC REMOTE PULSE TRANSMITTER

A remote mounted pulse transmitter for use with electronic registers where the register is located other than with the meter or the register has no in-built drive to fix the pulse-generating pick up to.

The pulse transmitter has three opto sensors, each sensor producing 25 Pulses per revolution; the combination of three sensors produces 150 Pulses per revolution. This allows the detection of flow direction, faulty opto sensor(s) and/or loss of power.



### EJB101 JUNCTION POWER BOX

The housing is cast aluminium with weather-proof seal. Six connection ports are provided.

One for the power supply (11v to 30v), one output to supply power and communication to the Register, and the remaining ports are for the auxiliary devices such as communication ports temperature probe, remote pulser and solenoids. These ports may require approved glands and conduit to comply with local regulations.

The EJB200 is built for intrinsically safe barriers and also provides circuit protection and power conditioning for protection against ripples and surges.

#### MODELS

EJB101 Electronic Junction Box

EJB200 Electronic Junction Box intrinsically Safe



**STORAGE**

Liquip has a growing range of products that address the needs of operators of storage tanks. From floating suction devices that ensure the release of clean product to overfill, level detection and loading systems we can modify and develop any of our range of products to suit your particular application.

**STORAGE TANK MONITORS**

Liquip gantry monitors are ideal for storage tank overfill protection monitoring.

The PPM3XX and MPP102 monitors are also suitable for storage tank monitoring.

Powered by 11-30 VDC, both are ideal for monitoring interstitial space for leakage in double walled non-bunded smaller tanks or for overfill protection.

They operate with optic sensors and feature all the other major requisites of any optical sensing system (fail safe, I.S. outputs, <0.5 sec shutdown etc).





## OUR COMPANY



Liquip International specialise in the design, development and manufacture of premium quality equipment for the bulk handling of fuels and related chemicals. If you require safe, smart and efficient systems for dispensing, monitoring and managing hydrocarbons Liquip International will work with you to design the best value for money solution.

Our original range of products includes Manhole Covers, Quality Valves for Road Tankers and Overfill Equipment. From this we have further invented and developed some of the industry's most prestigious and well-regarded products including:

- Diptronic weights and measures approved radar gauge for road tankers
- AGP glass overfill probes for use with caustic substances
- EMH range of electronic meter registers
- Velvet Touch Loading Arms for easy truck to gantry connection



To complement our manufactured product we also distribute other globally recognised brands such as LC and Sampi meters and Manntek couplers. Liquip jointly develops solutions with partners like Camozzi Pneumatics and Chubb Fire providing customers with unmatched expertise.

Besides our traditional work in Terminals and on Road Tankers, Liquip International offers highly specialist equipment and advice on:

- Aviation re-fuelling dispensers and hydrant systems
- Filtration of fuels for aviation and industrial installations using Velcon products
- Commercial Fuel Solutions using the Hectronic and Nivelco fuel management systems
- Workshop Services including new builds and refurbishment of existing equipment



We provide superior designs, and strive to incorporate more efficient and effective methods using Lean Manufacturing techniques.

## LIQUIP PRODUCTS ARE AVAILABLE WORLD-WIDE

Our distributors are industry professionals - knowledgeable in Liquip products and offer add-on value. Responsive, pro-active and innovative in providing timely service and equipment when needed throughout the world.



## SAFE AND EFFICIENT FUEL HANDLING PRODUCTS

At Liquip we aim to provide quality products at a reasonable price in minimum delivery time. We consider the whole-of-life cost to our customers when designing, manufacturing or selling our equipment and give customers no reason to question the quality of the design, materials or functionality of any of our products. Where necessary we vigorously protect the satisfaction of our customers and distributors.

Above all we give our personal best in our working capacity, to advance the above principles.



[www.liquip.com](http://www.liquip.com)

## EXPERIENCE, INNOVATION, EXCELLENCE THAT'S THE LIQUIP ADVANTAGE

Liquip International provide an acclaimed range of hydro-carbon loading and discharge equipment for use in Terminals and Depots:

- Loading arms and swivels
- Overfill protection systems
- API Couplers
- Dry break couplers and adaptors
- Parking solutions
- Floating suctions
- Electronic registers
- Storage tank monitoring
- Wide range of accessories

You need simple and effective solutions to a wide variety of loading considerations.

- Survey and design
- Product selection advice
- Ongoing support

That's the Liquip Advantage!



For more information please visit our website or contact your Liquip Distributor

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