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Revolution Not Evolution

7331

DIPTRONIC™

GENERAL INFORMATION



Issue E January 2010



P7403 Electrical equipment service and installation guide for road tankers

Liquip supplies the following document as a guide for installing and operating electrical equipment on road tankers. It should be used in conjunction with local legislation and standards, owner's requirements and tank manufacturer procedures.

INFORMATION PERTAINING TO WORKING ON A TANK VEHICLE

1. Prior to working on a tank vehicle it must be degassed or certified to work on. Before working in a tank compartment an appropriate device must be used to check for the presence of volatile gases.
2. Any work carried out on a tank vehicle must be done so in a non-hazardous area.
3. Before working on any electrical equipment on a tank vehicle power must be isolated either via the battery isolation switch (BIS), by disconnecting the truck battery or by disconnecting the positive of the electrical equipment.
4. Never weld on a tank vehicle unless all electronic equipment is completely disconnected electrically from both the tanker and other equipment.
5. Hazardous conditions may be present when working with high voltage devices (such as gantry monitors). Qualified technicians only should be servicing these devices.
6. Do not connect a battery charger or other pulsed power supply to the truck battery without first isolating all electrical equipment as permanent damage may result.
7. Long sleeve and pants protective clothing should be worn at all times. Clothing must be non-static generating. Any petroleum contact with skin should be washed off immediately.
8. Always follow manufacturer guidelines when working on electrical equipment. Failure to do so may void warranty or cause damage.

INFORMATION PERTAINING TO INSTALLING EQUIPMENT ON A TANK VEHICLE

1. All electrical equipment and fittings must be suitable for use on a tanker and meet all local regulations for operation.
2. Use high quality waterproof conduit and fittings to IP66 minimum for all wiring and junction boxes.
3. Use waterproof flexible compound such as Silastic in all glands and joints not available as waterproof by design.
4. Mount all equipment away from direct spray areas such as behind the tyres and out of direct sunlight. Always select the most sheltered aspect.
5. Ensure all installations adhere to appropriate guidelines.
6. Coat all terminals, cable end and joints with non-conducting grease or Vaseline after final testing. This will prevent corrosion.



7. Prior to crimping, check wiring connections are electrically correct. When crimping make sure there is good electrical contact between the wire strands and metal section of the crimp terminal. Pull on the crimp to ensure a good connection has been made.
8. Cable ends may be crimped with ferrules for better connection. Do not solder the cable ends (fatigues and corrodes). Pre-coat with non-conductive grease for corrosion protection.
9. At any point a cable is extended or joined to a standard cable assembly, all cable screens must be connected to the chassis, refer to relevant wiring diagram. Insulate exposed screen wire using heat shrink, terminate with an eye terminal and attach to the junction box mounting screw. If the junction box is mounted to a panel not electrically connected to the chassis, the screens must still be joined together and connected to the chassis at one point, as per wiring diagram.
10. Common grounding of a system is most important. Do not rely on common chassis grounding at various points, run a full-length dedicated ground cable. Max resistance, battery ground to any ground point to be 1Ω. Refer Liquip Tech Talk #48: Electrical Bonding on Tankers. The electrical resistance between the tank and tanker chassis, prime mover chassis, or trailer undercarriage, and between the tank and the connection of the tanker pipework to the delivery hose, shall not exceed 10Ω (refer to AS2809.2).
11. Always fit as much loose cable length into junction boxes and housings as practicable to allow for future servicing.
12. Always segregate power and intrinsically safe wires in accordance with I.S wiring rules.
13. Carry out a complete wiring check for accuracy and continuity before connecting power to any device.
14. Observe international and local legal requirements. In the event of conflicting instructions seek qualified advice before proceeding.
15. Do not route communication cables past 'noisy' electrical apparatus such as solenoids and alternators.
16. Check instruction manual for recommended cable type and torque settings.
17. Use specialised, genuine tools for all electrical work.
18. Mount equipment to clean, dry, bare surfaces on a metal bracket mounted to the chassis/sub-frame. It is recommended the bracket be welded to the chassis/sub-frame to facilitate good electrical contact.
19. Ensure adequate clearance around equipment being installed. This will provide for ease in future maintenance.
20. When bolting equipment into place, the use of Teflon tape or anti-seize compound on threads is advised.
21. Fuses located in hazardous areas must be suited to that location.
22. Always allow suitable separation between intrinsically safe wiring and power from line power source.



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1.0 General Information

1.1 Functions

The simplest Diptronic System consists of a CPU (Central Processing Unit) and a sensor that houses the radar electronics. The sensor is mounted to the walkway or manhole cover on the top of the tank. It has a shaft and tube that extends into the tank. In most cases it extends to the bottom of the tank and into a steady guide.

The sensor monitors the level of product and sends this information back to the CPU where it can be shown as actual level (mm) or converted into volume (L). A ticket printer (24V) is optional for the Diptronic Measuring System, however, it is a requirement for the Load Integrity Protection System (LIPS).

Up to nine compartments can be monitored by a single CPU.

1.2 The 'DIPTRONIC' System

The Diptronic System eliminates the need for manual dipsticks. This means there is no longer a need for personnel to climb to the top of the tank, eliminating associated injury risk. Also, the escape of VOC's is prevented, as dip hatches do not require opening.

The Diptronic System has an accuracy of $\pm 1\text{mm}$ over a temperature range from -20°C to $+60^{\circ}\text{C}$.

The Diptronic is a top datum dipstick and like all dipsticks can not compensate for extremities, e.g. pipeline. The Diptronic accurately measures from approximately 50mm above the bottom of the compartment up to the top datum point level. Those areas where the Diptronic does not measure are commonly referred to as "dead zones" and are used in calibration sequences.

Sensors will operate with up to 40mm of water in the bottom of the compartment containing product. Above this level the sensor may behave erratically.



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For all Diptronic installations it is mandatory to disconnect the mil spec connectors from the CPU and isolate the power lead in the first junction box from the truck battery before welding on a tanker.

Sensors and CPU's are sent out of Liquip to be installed as part of a family on a tanker. Sensors allocated for specific CPU's by Liquip must stay with those CPU's and not be mixed with others.

All sensors must be mounted in the volumetric centre of the compartment.

It is official Liquip company policy that with A/B-Double combinations & dog trailers, a CPU be fitted to each trailer. For all Diptronic installations it is a requirement that power be taken directly from the battery isolation switch. This is to ensure there is a 'clean' power source to each CPU. The battery isolation switch should be turned off with A/B-Double combinations and dog trailers when disconnecting any power harnesses. This is important in preventing electrostatic discharges passing through to a rear CPU.

A battery backup (BBC101) is available from Liquip that provides power to the CPU for periods when the prime mover is removed for service or power is disconnected for any other reason. Typically it will provide power for up to 36 hours. The BBC101 is charged by the vehicle battery during normal operation at up to 28 volts for many hours per day, keeping the system fully charged. However, when calibrating each sensor it is recommended the BBC101 not be relied upon, to prevent the possibility of loss of power to the CPU.

Sensors will operate in lube oil 50 & 150 grade. However, with the 150 grade the level displayed by the CPU will be slow to change when the oil level changes.

If mixing water with oil such as waste oil removed from a garage for example, on average for more than 7.5% water contamination the sensor may behave erratically. It takes a significant amount of metal shaving contamination to affect the sensors.



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Whenever degassing a compartment, it is permissible to do so with Diptronic still mounted so long as it is in accordance with the AIP code of practice CP13, ... "temperature of tank must not exceed 75°C..."

To achieve the desired accuracy of Diptronic, it is a Liquip requirement that all calibrations be carried out in 50L increments. This applies to both manual and automatic calibration.

DipRecall is a software package that allows remote communication with the CPU via a laptop. Using this software allows the entire setup of a CPU to be uploaded or downloaded as necessary. This is not only useful for keeping records of each Diptronic installation but also enables any data lost from a CPU through damage or negligence to be recovered. Contact Liquip for more information.

It is a legal requirement that calibration data be sent to Liquip for records. This can be achieved by either sending calibration report tickets or using DipRecall to generate the necessary files to send via e-mail.

A checklist must be completed for all Diptronic installations to ensure all wiring and installation meets Liquip requirements. Refer Diptronic Electrical Installation and Commissioning Checklist. Upon completion of Diptronic installation this checklist should be returned to Liquip.



1.3 Load Integrity Protection System (LIPS)

Diptronic can be linked with other equipment to provide a sophisticated 'Sealed Parcel' system that also monitors any product in the pipelines. The compartment can be confirmed as 'empty' at the end of discharge. It also allows for legal measurement in the event of a frustrated delivery.

Series 2 LIPS allows for product temperature compensation. In this case, sensors are mounted in each compartment that monitor product temperature. The CPU uses this temperature to convert the measured volume to 15deg. Refer X352402.

1.4 Diptronic Measuring (MK1) Electrical Characteristics

Operational voltage ranges from 11.5 to 30 volts DC. A maximum current of 0.5 amps at 11.5 volts is drawn when the CPU is connected to 9 sensors (connection of a ticket or blaster printer increases these values).

1.5 Diptronic LIPS Electrical Characteristics

DIP240 with PPM340 and 8 compartments	- Total of 0.8 Amps at any voltage from 11.5V to 30V dc
EPSON ticket printer & blaster on stand-by	- 0.1 Amps at 24V dc
EPSON ticket printer & blaster normal printing	- 0.6 Amps at 24V dc
EPSON ticket printer & blaster max (interm.)	- 3.0 Amps at 24V dc

1.6 Diptronic GPS

Diptronic GPS is a system that allows remote monitoring of a truck for truck location and volume in each compartment. The GPS system increases theft protection and transport safety.

Refer P7330 Diptronic LIPS & GPS installation manual.



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1.7 Diptronic Maintenance

As there are no moving parts in the Diptronic system there is little maintenance required. The installation should be inspected every 12 months for any sort of damage or degradation that may effect safety of the system. Check the CPU, sensor and j/box gaskets have not perished. Check no CPU, sensor or j/box screws and connectors have come loose over time.

1.8 Diptronic Sensor Variations

DIP100 sensors have been replaced by the high resolution DIP130 sensors.

DIP120 sensors are used in storage tank and sump truck applications.

Note, references to DIP100 sensors throughout this manual are for the DIP100 series which encompasses the DIP130 and DIP120 sensors.



2.0 Determining Length of Diptronic sensor

Before installing the Diptronic sensor, the depth of the compartment or “Tank Height” must be measured. The sensor is then made to suit the compartment. Determining the required length of the Diptronic sensor is critical; if incorrect it will not fit or function correctly.

Check that the pad and guide will meet your regulations for positioning & construction. Liquip recommends welded-on pads and guides, mounted direct to the tanker shell, which provides metal-to-metal mounting faces. (See installation manual for detail on selection and fit of dip pad & guide.)

To measure required length:

1. Using a firm, straight rod (an old dipstick would be sufficient not a tape measure), pass the rod through the mounting pad and into the dipstick guide on the floor of the tank.
2. When the rod is sitting on the bottom of the guide and is within 2° of vertical, mark the rod to indicate the top of the mounting pad.
3. Remove the rod and measure the marked length & note in table under ‘H (mm)’ below
4. Repeat for all compartments.

Note: Refer drawing X351302 for measuring information.



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Determining Length of 'Diptronic' Electronic Dipstick

CUSTOMER CONTACT DETAILS:

TRUCK NUMBER:

Compartment Number	H (mm) (to within 1mm)
1 (prime mover end)	
2	
3	
4	
5	
6	
7	
8	
9 (rear bumper end)	

Customer signature:

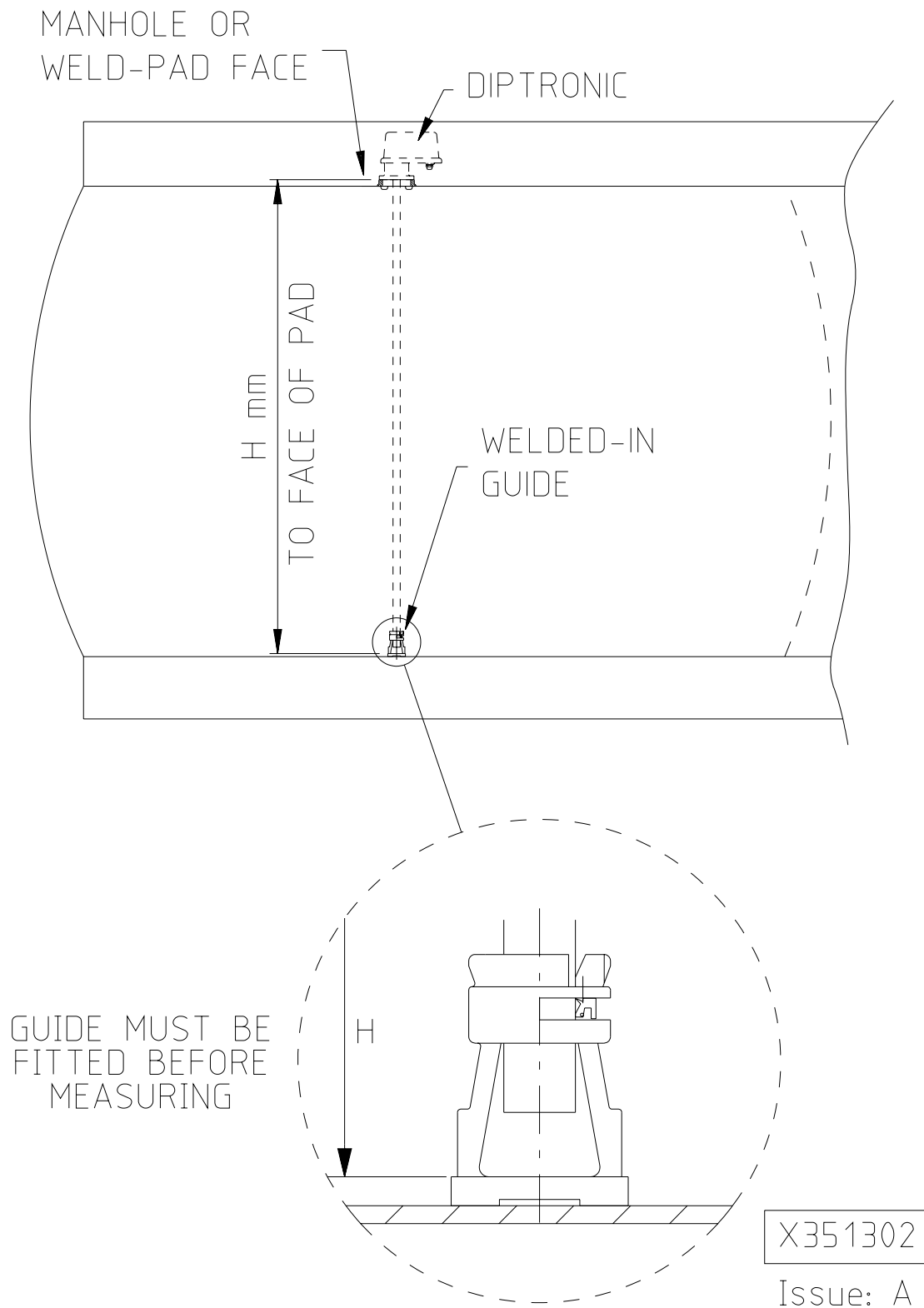
Name and position:

NOTE: H MUST BE DETERMINED FOR ALL COMPARTMENTS

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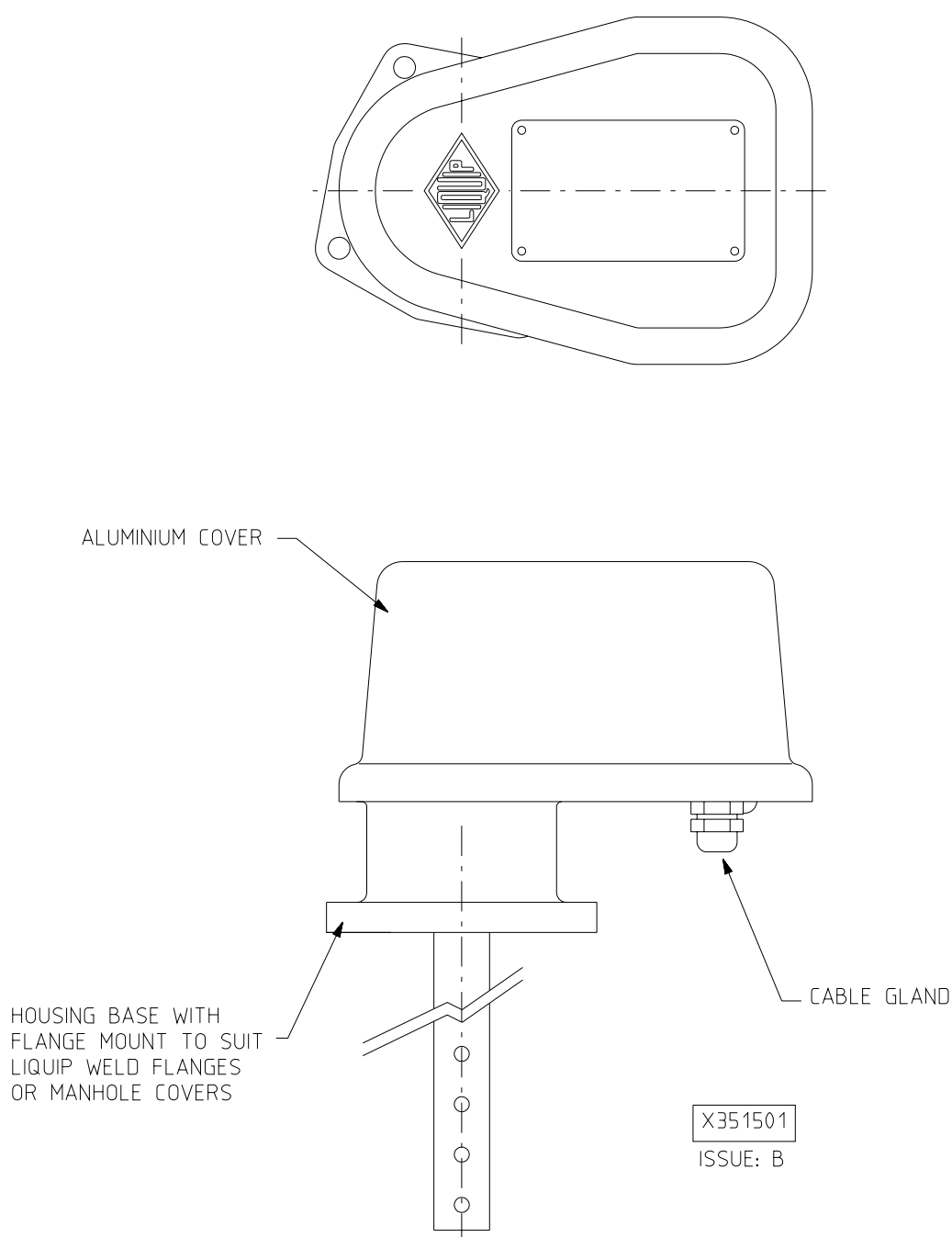


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3.0 Diptronic Components

3.1 Sensor – DIP100 series

The sensor is constructed of a cast aluminium cover and base with a stainless steel tube and internal rod. The electronics are fully potted in epoxy contained in an aluminium cup. The cup is mounted on the base and wires connect the terminals protruding from the epoxy surface through a waterproof gland. A squat sensor housing is also available (DIP110) that allows for mounting on manhole covers (refer appendix 1).





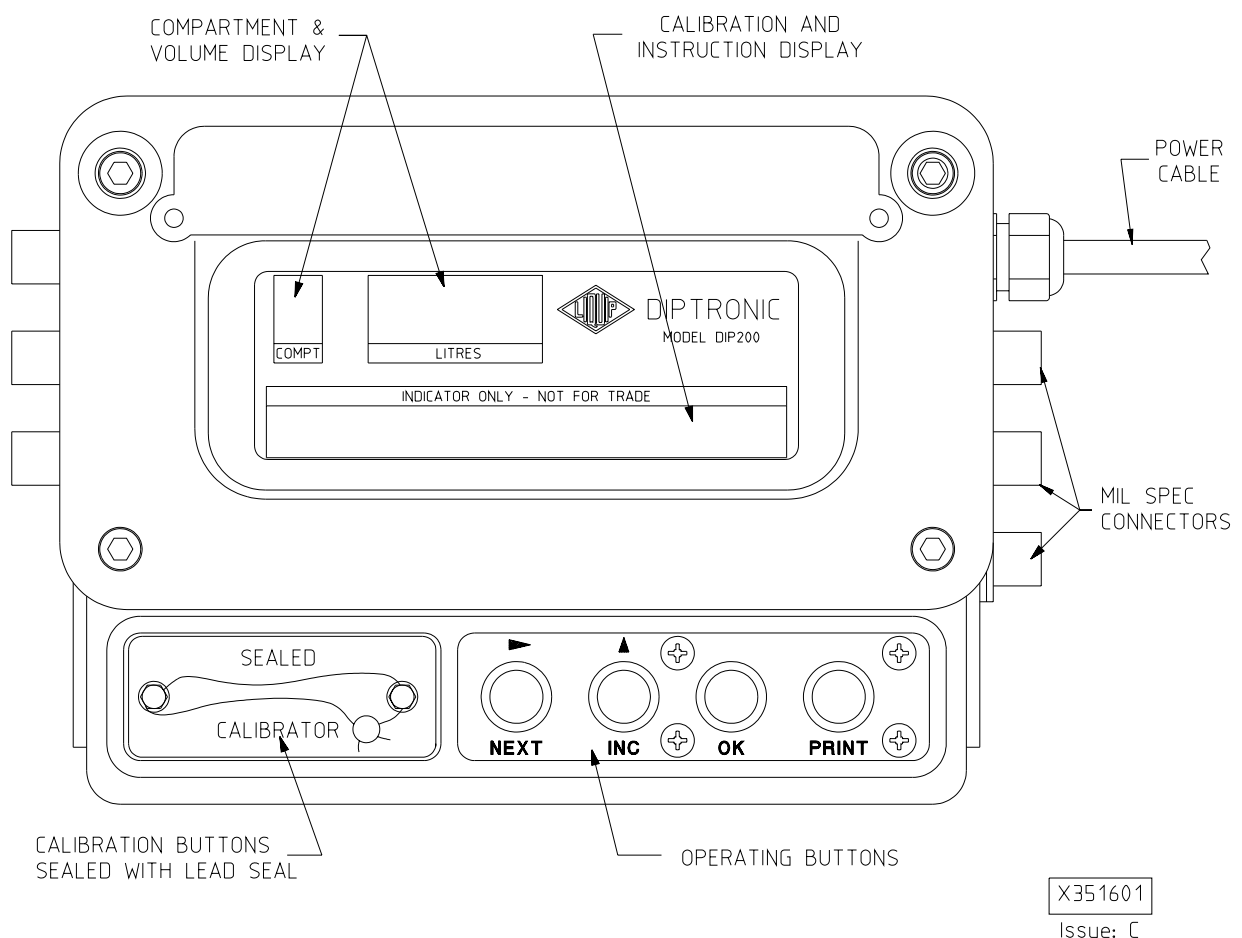
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3.2 Central Processing Unit (CPU) – DIP200/DIP240

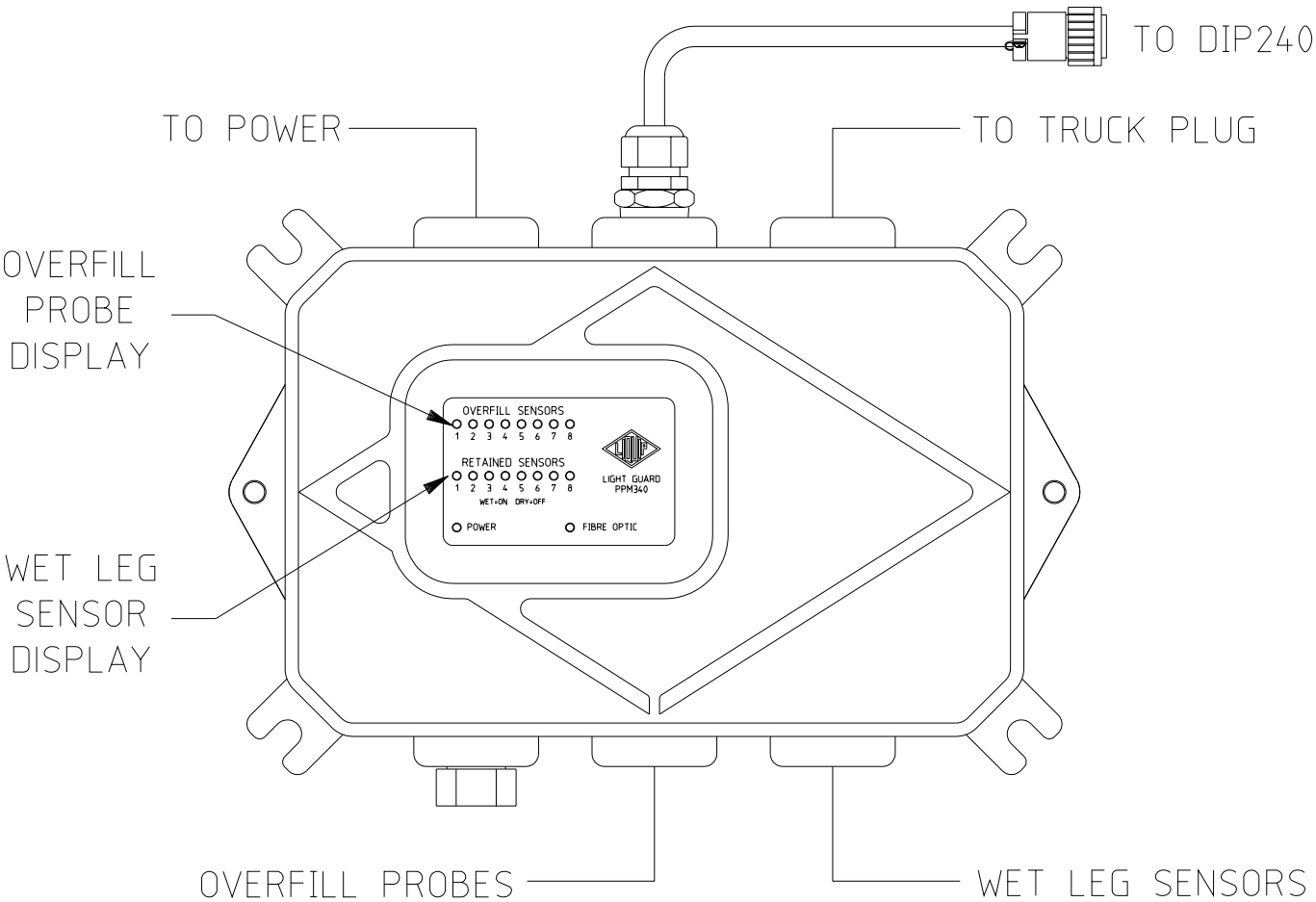
The CPU housing is constructed of cast aluminium with an EPDM seal. The display is at a 15-degree angle to improve viewing.

The CPU has up to six military specification connectors that can be connected to the HART sensors, printer and sealed parcel sub-system (where applicable). **Note:** For LIPS, the CPU will be linked with a PPM340 (refer drawing X352402).

The power cable is hard wired into the CPU via a water proof gland.



3.3 PPM340 sealed parcel housing



X352402

Fig 3

Note: Refer P7330 Diptronic Load Integrity Protection System Installation Manual for instructions on installation.



3.4 Printer

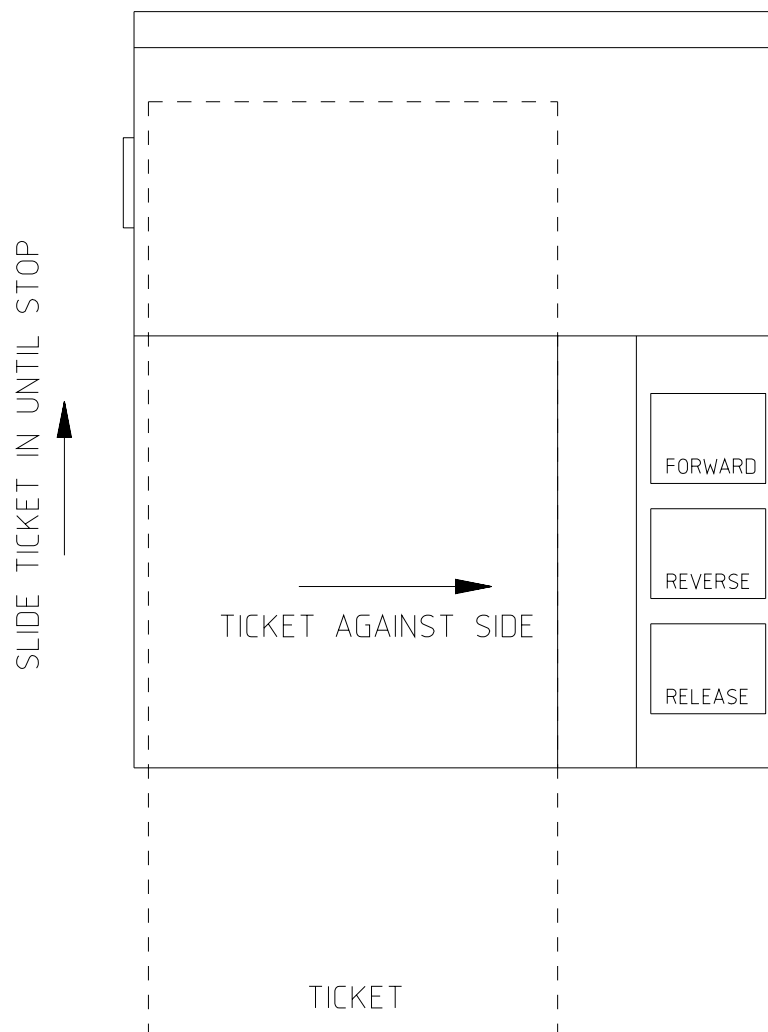
A printer can be used to print out the volume of product in the compartment. The printer most commonly used is the EPSON TM295 slip printer. Connect to a +24Vdc supply (+ve to red and -ve to green). Note, a voltage doubler will have to be used in the case of 12V supply.

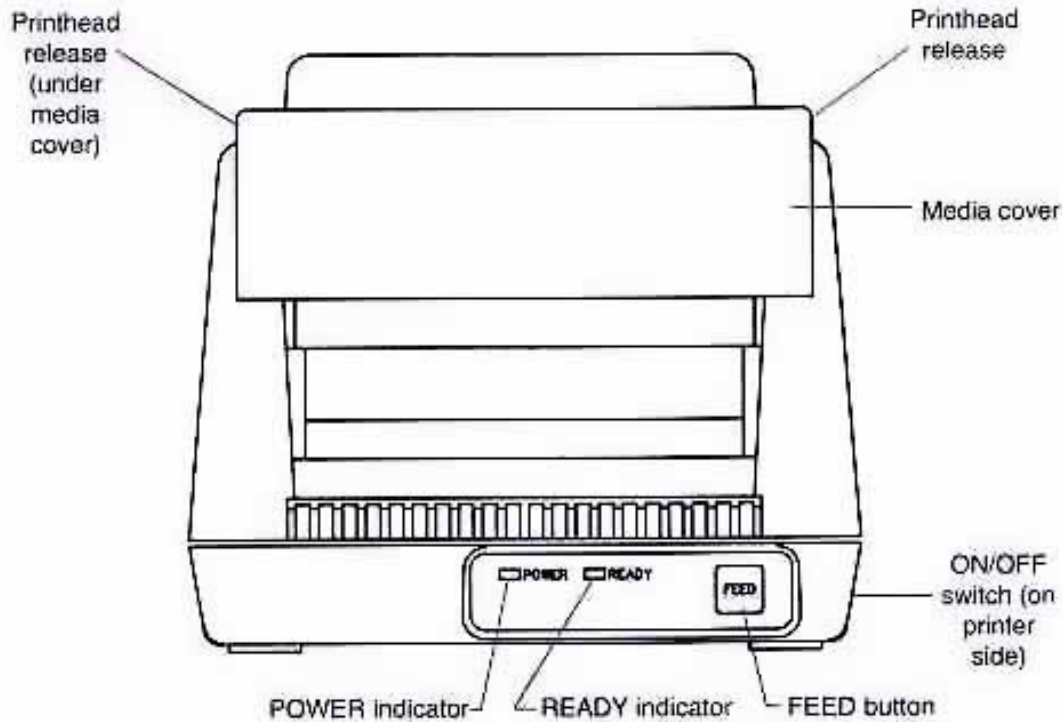
A standard ticket is 260mm by 114mm. The ticket is slid into the printer as shown. Press the forward button for the printer to hold onto the paper.

The release button on the printer may have to be pressed if the *paper out* light is on.

Note: Dip switch settings:

1. Power off printer
2. Toggle dip switches #1 & #3 to ON position. Remaining switches to be in the OFF position.
3. Power printer on.





Note:
These figures show the 4.25" TT printer. Other models are similar.

Figure 1. Printer front view

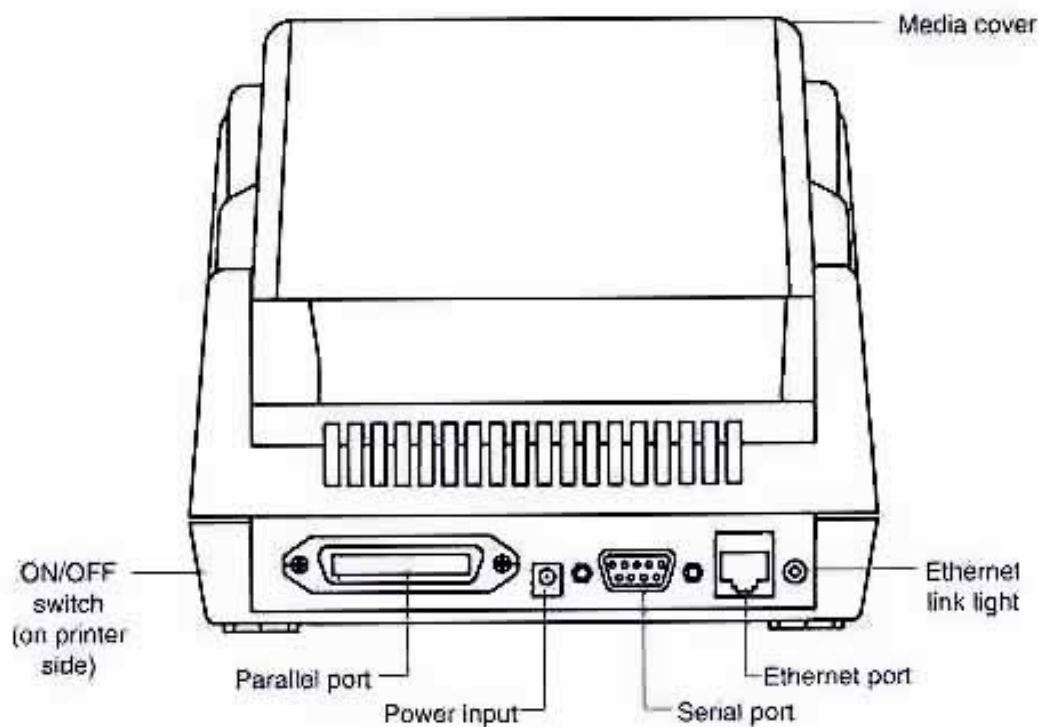
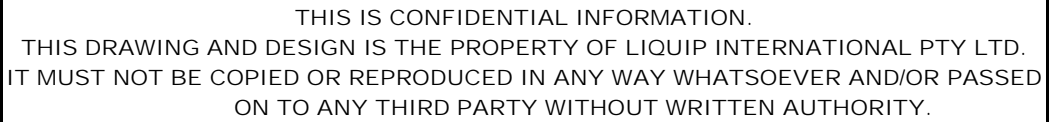


Figure 2. Printer rear view

The Blaster Printer is another printer that may be found on some installations, generally LIPS. Refer LIPS Driver Instructions P7328.

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PARTS REQUIRED FOR THE BASIC DIPTRONIC SYSTEM

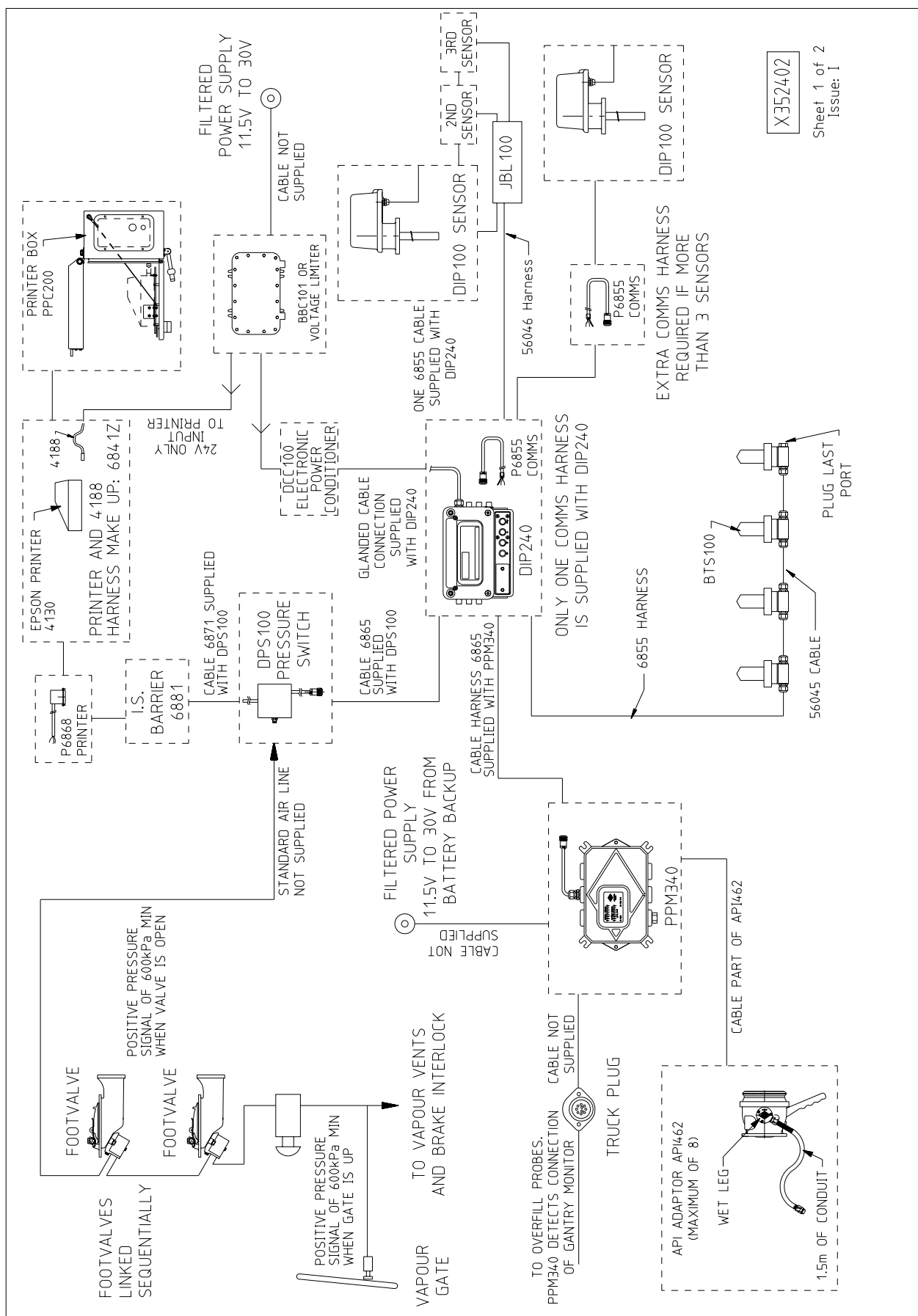
ITEM	PART NO	DESCRIPTION	QTY REQUIRED PER ASSY	STANDARD PARTS		QTY REQUIRED	OPTIONAL PARTS		QTY REQUIRED
				DIP200	DIP100				
1	DIP200	DIPTRONIC DISPLAY UNIT	1 PER TANKER	▲				6855	
2	DIP100	DIPTRONIC SENSOR	1 PER COMPARTMENT		▲			BBC101	
3	6855	HARNESS FOR EXTRA SENSORS	1 PER 3 SENSORS					6841Z	
4	BBC101	BATTERY BACK-UP CHARGER	1 PER TANKER					PPC200	
5	6841	PRINTER EPSON (24V) & POWER HARNESS	1 PER TANKER					5104	
6	PPC200	PRINTER BOX	1 PER TANKER					5060	
7	5104	JUNCTION BOX	AS REQUIRED					DIP310	
8	5060	GLAND INTO JUNCTION BOX	AS REQUIRED					DIP320	
9	DIP310	DIP PAD - SINGLE ALUMINIUM	1 PER COMPARTMENT					DIP300	
10	DIP320	DIP PAD - TWIN ALUMINIUM	1 PER COMPARTMENT					6774	
11	DIP300	SENSOR STEADY	1 PER COMPARTMENT					6881	
12	6774	TERMINAL STRIP FOR JUNCTION BOX	AS REQUIRED					-	
13	6881	I.S. BARRIER	1 PER TANKER					6880	
14	-	PLUG FOR DIP100 PORT	AS REQUIRED					-	
15	6880	MIL SPEC CAP FOR UN-USED CONNECTORS	1 PER CONNECTOR					DCC100	
16	-	PRINTER - BLASTER	1 PER TANKER					MANUAL	
17	DCC100	ELECTRONIC POWER CONDITIONER	1 PER TANKER						

NOTE: MOUNTING HARDWARE IS NOT SUPPLIED.

NOTE: PRINTER HARNESSES ARE NOT IN TABLE AND NEED TO BE ORDERED SEPARATELY.

X350302

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PARTS REQUIRED FOR DIPTRONIC LOAD INTEGRITY PROTECTION SYSTEM (DIPTRONIC L.I.P.S.)

ITEM	PART NO	DESCRIPTION	QTY REQUIRED PER ASSY	STANDARD PARTS	QTY REQUIRED
1	DIP240	DIPTRONIC DISPLAY UNIT	1 PER TANKER	DIP240	
2	DIP100	DIPTRONIC SENSOR	1 PER COMPARTMENT	DIP100	
3	DPS100	PRESSURE SWITCH ASSEMBLY	1 PER TANKER	DPS100	
4	6841Z	PRINTER EPSON & POWER HARNESS	1 PER TANKER	6841Z	
5	PPM340	SEALED PARCEL SYSTEM	1 PER TANKER	PPM340	
6	API462	API ADAPTOR WITH LET LEG SENSOR	1 PER COMPARTMENT	API462	
7	6868	PRINTER HARNESS	1 PER TANKER	6868	
8	TP104	TRUCK PLUG	1 PER TANKER	TP104	
9	6855	HARNESS FOR EXTRA SENSORS	SUPPLIED UPON REQUEST		
10	SLV5-AR0	SEQUENTIAL FOOT VALVE	1 PER COMPARTMENT		
11	-	VAPOUR GATE (GUARD BAR)	1 PER TANKER		
12	BBC101	BATTERY BACK-UP CHARGER	1 PER TANKER		
13	PPC200	PRINTER BOX	1 PER TANKER		
14	5104	JUNCTION BOX	AS REQUIRED		
15	5060	GLAND INTO JUNCTION BOX	AS REQUIRED		
16	DIP310	DIP PAD - SINGLE ALUMINIUM	1 PER COMPARTMENT		
17	DIP320	DIP PAD - TWIN ALUMINIUM	1 PER COMPARTMENT		
18	DIP300	SENSOR STEADY	1 PER COMPARTMENT		
19	6880	MIL SPEC CAP FOR UN-USED CONNECTORS	1 PER CONNECTOR		
20	6881	I.S. BARRIER	1 PER TANKER		
21	6871	CABLE BETWEEN SENSORS	SUPPLIED UPON REQUEST		
22	DCC100	ELECTRONIC POWER CONDITIONER	1 PER TANKER		
23	BTS100	BOTTOM TEMPERATURE SENSOR	SUPPLIED UPON REQUEST		
				OPTIONAL PARTS	QTY REQUIRED
				6855	
				SLV5-AR0	
				GC300	
				BBC101	
				PPC200	
				5104	
				5060	
				DIP310	
				DIP320	
				DIP300	
				6880	
				6881	
				6871	
				DCC100	
				BTS100	

X352402

SHEET 2 OF 2
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NOTES:

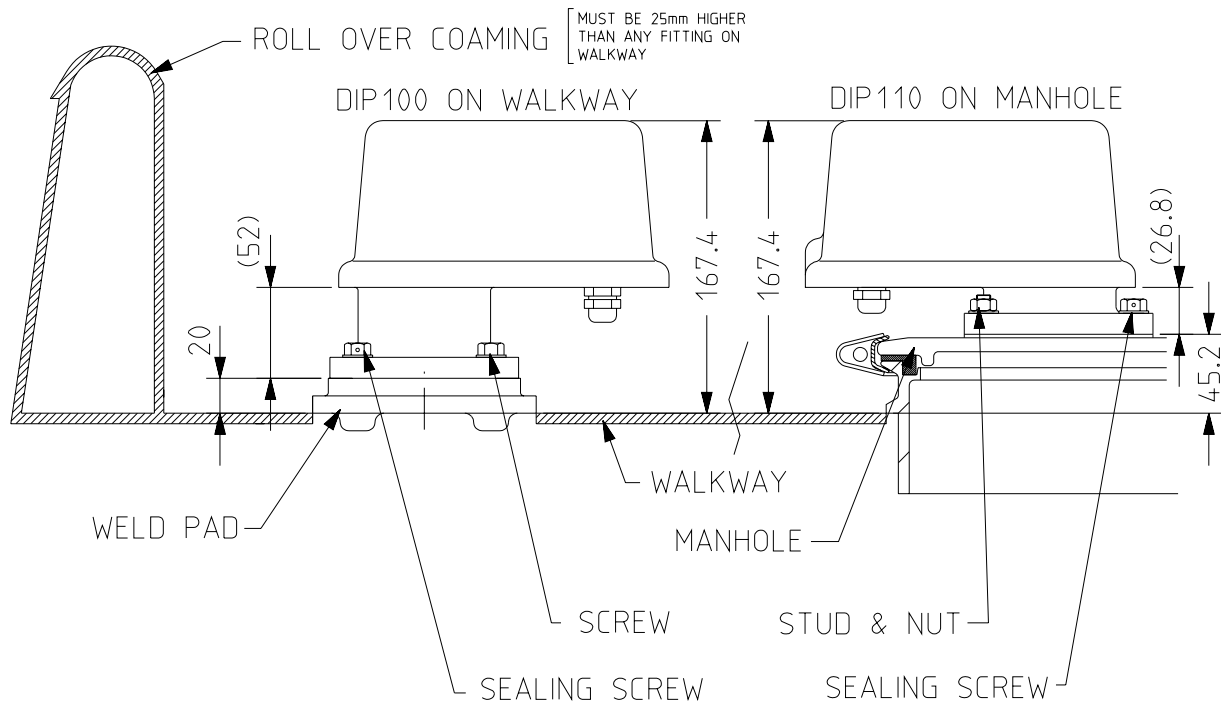
1. MOUNTING HARDWARE IS NOT SUPPLIED AS STANDARD.
2. MANUAL CAN ALSO BE SUPPLIED UPON REQUEST.
3. IF THERE IS TRUCK PLUG ALREADY ON THE TRUCK, IT CAN BE USED IN PLACE OF TP104.
4. ALSO AVAILABLE ARE POWER CONNECTORS TO GO FROM VEHICLE BATTERY TO DIPTRONIC CPU FOR LIQUIP PART NUMBERS REFER TO DRAWING X352203.

LIQUIP

DIPTRONIC ACCESSORIES

THERE ARE 2 SENSOR BODY MOUNTS AVAILABLE.

- DIP100 IS TYPICALLY USED FOR WALKWAY MOUNTING.
- DIP110 IS TYPICALLY USED FOR MANHOLE COVER MOUNTING.



WHEN MOUNTING TO WALKWAYS, 4 SCREWS ARE USED TO MOUNT THE SENSOR ASSEMBLY ONTO THE WELD PAD. 2 OF THE 4 SCREWS HAVE HOLES THROUGH THEIR HEADS WHERE SEALING WIRE AND LEAD SEALS ARE USED TO SEAL THE SENSOR.

GENERALLY THE WELD PADS HAVE DRILLED AND TAPPED BLIND BOSSES.

WHEN MOUNTING ONTO MANHOLES, 2 SCREWS ARE USED WITH HOLES FOR SEALING WIRE AND 2 STUDS WITH NUTS ARE USED. THIS IS TO ALLOW FOR THE LOW PROFILE BASE OF THE DIP110.

SOME MANHOLES HAVE DRILLED AND TAPPED BLIND HOLES SUCH AS THE VOH400. BUT SOME HAVE THROUGH HOLES SUCH AS THE VOH200 & VOH700.

THE COVERS WITH THROUGH HOLES REQUIRE AN EXTRA NUT FROM THE UNDERSIDE AS WELL AS SEALING WASHERS.

NOTE: TOP LOADING BY SPEARS WILL POTENTIALLY DAMAGE THE DIPTRONIC SENSOR UNLESS ADEQUATELY SHIELDED.

X354102

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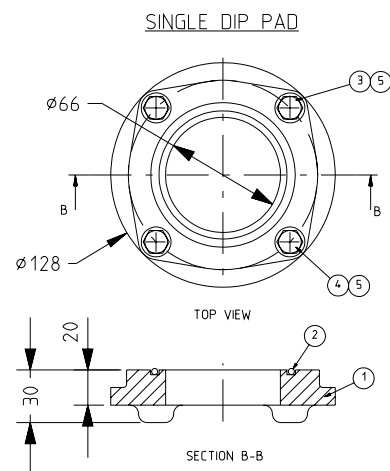
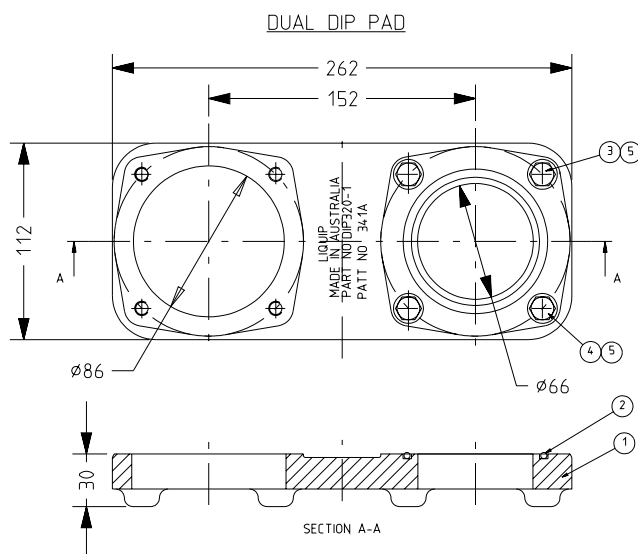
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DIPTRONIC ACCESSORIES

WALKWAY WELD PADS

ITEM	PART NO	DESCRIPTION	DIP310 CAST AL	DIP311 WROUGHT S/S	DIP314 WROUGHT AL	DIP320 CAST AL	MATERIAL
1	DIP310-1	DIP PAD - SINGLE MOUNT	1	-	-	-	CAST AL
	DIP311-1	DIP PAD - SINGLE MOUNT	-	1	-	-	ST STEEL
	DIP313-1	DIP PAD - SINGLE MOUNT	-	-	-	-	CAST S/S
	DIP310-2	DIP PAD - SINGLE MOUNT	-	-	1	-	WROUGHT AL
	DIP320-1	DIP PAD - TWIN MOUNT	-	-	-	1	ALUMINIUM
2	4618	O-RING	1	1	1	1	VITON
3	DIP320-2	SCREW HEX HEAD WITH HOLE	2	2	2	2	ST STEEL
4	6585	SCREW HEX HEAD	2	2	2	2	ST STEEL
5	6586	WASHER SPRING M8	4	4	4	4	ST STEEL



DIP300-3: BLANKING PLATE KIT COMES WITH
GASKET, SETSCREWS AND SPRING WASHERS.

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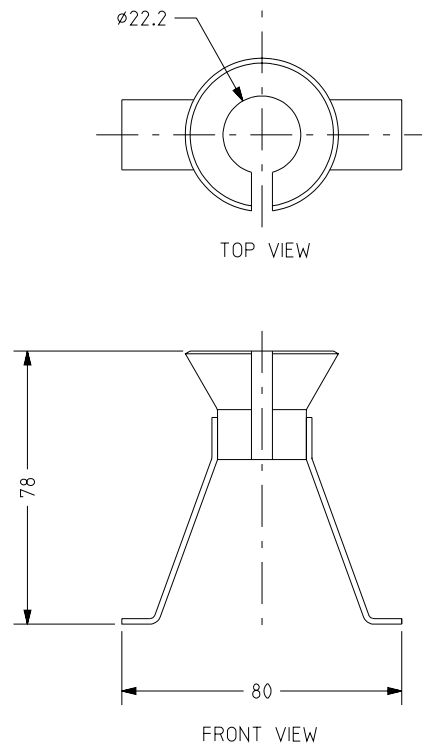
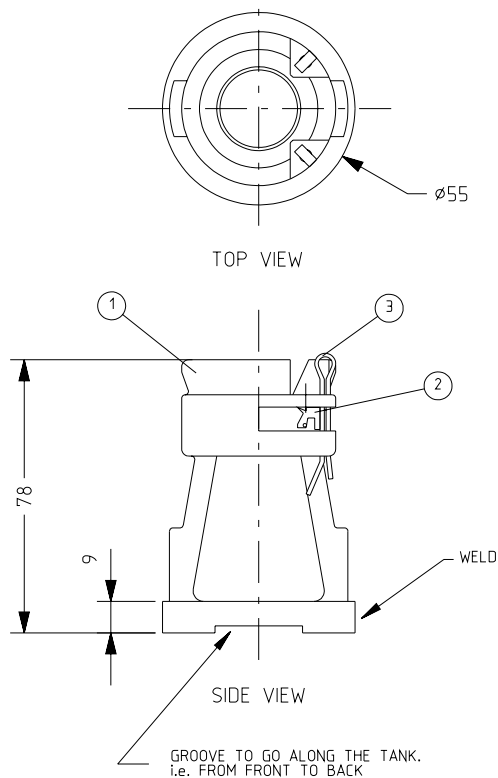
LIQUIP

DIPTRONIC ACCESSORIES

ALUMINIUM SENSOR STEADIES

ITEM	PART NO	DESCRIPTION	DIP300	DIP302	MATERIAL
1	DIP300-1	BODY	1	1	ALUMINIUM
2	6095	SEAL	1	-	NITRILE
	7505	SEAL	-	1	TEFLON
3	4871	SPLIT PIN	1	2	ST STEEL

DIP304 STEADY - TYPE 316 S/S



X354102

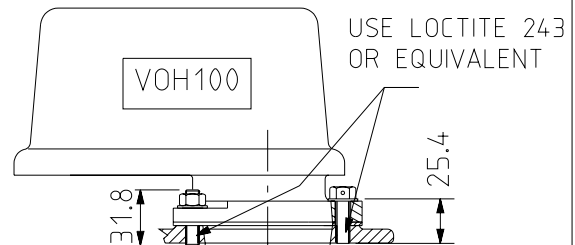
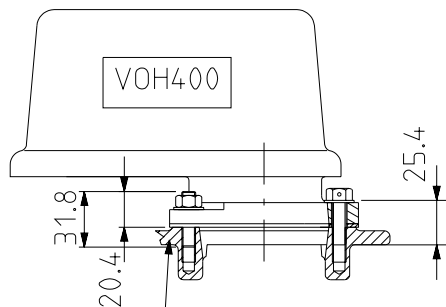
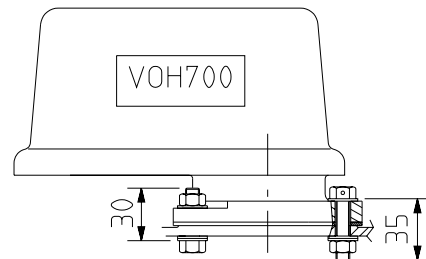
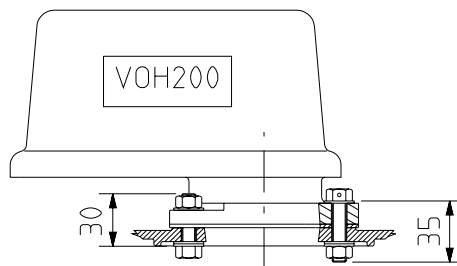
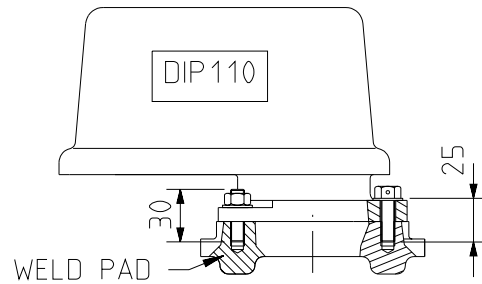
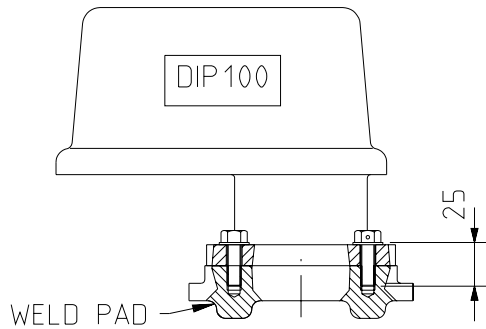
PAGE 3 OF 4
ISSUE: C



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LIQUIP

DIPTRONIC ACCESSORIES



USE LOCTITE 243
OR EQUIVALENT
TO POSITION THE
STUDS AT THE
CORRECT HEIGHT

X354102

PAGE 4 OF 4
ISSUE: C

PART NO	DESCRIPTION	DIP110 ON DIP PAD	DIP110 ON VOH200	DIP110 ON VOH400	DIP110 ON VOH700	DIP100 ON DIP PAD	DIP100 ON VOH100
DIP320-2	SCREW C/W HOLE	2	-	-	-	2	-
6622	STUD	2	-	-	-	-	-
6618	NUT	2	4	-	4	-	-
6586	SPRING WASHER	4	4	-	4	4	-
6598	FIBRE WASHER	-	4	-	4	-	-
6620	FLAT WASHER	-	4	-	4	-	-
DIP110-3	SCREW C/W HOLE	-	2	-	2	-	-
6584	SCREW	-	2	-	2	-	-
DIP110-4	SCREW C/W HOLE	-	-	2	-	-	2
0801	NUT	-	-	2	-	-	2
6623	STUD	-	-	2	-	-	2
0824	SPRING WASHER	-	-	4	-	-	4
6585	SCREW	-	-	-	-	2	-
4618	O-RING	1	-	-	-	1	-
0661	GASKET	-	1	1	1	-	1



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A blanking kit for mounting point of DIP100 sensor is also available (part number DIP300-3). Included in the kit is a blanking plate, gasket, screws and spring washers.

If the tank already has an existing DTG3 dip tube guide, a simple nitrile insert (Liquip part number 7506), can be inserted into the existing casting.



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APPENDIX 2 - Test Harness

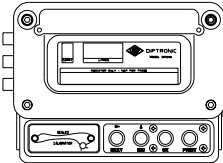
LIQUIP

6888 TEST HARNESS FOR DIPTRONIC

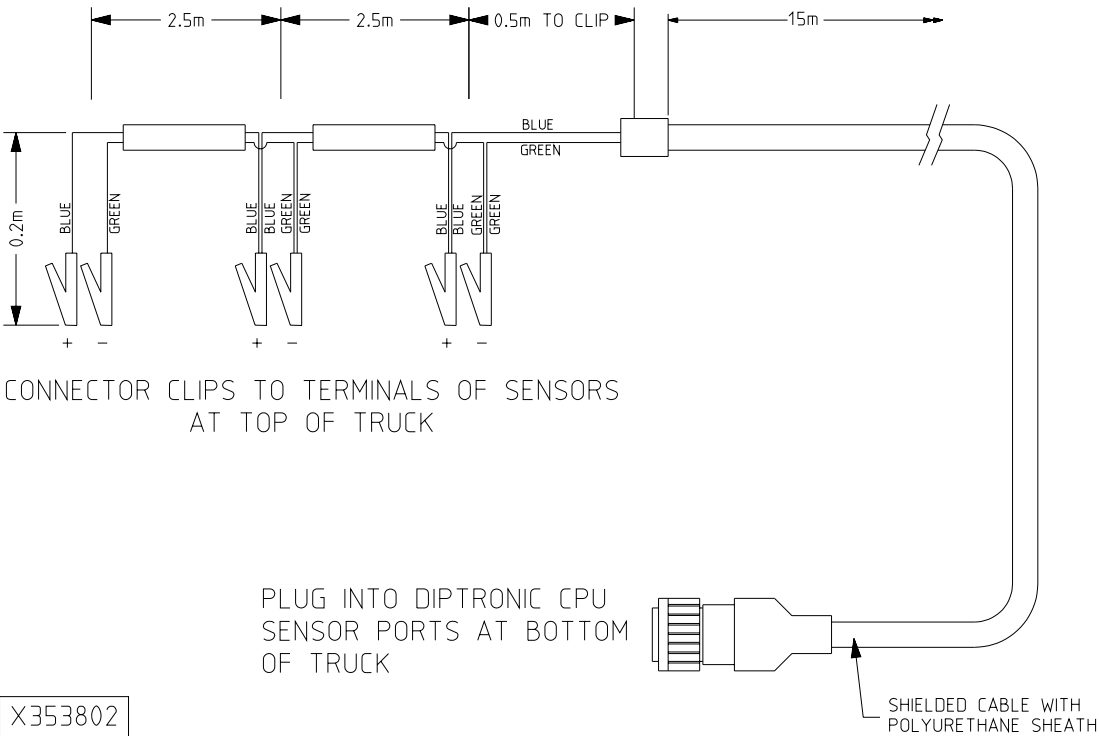
HARNESS 6888 CAN BE USED TO CHECK SENSORS WHEN IT IS BELIEVED THAT THERE IS A POSSIBLE FAULT WITH THE WIRING OF THE SENSORS TO THE CPU.

CHECKING SENSOR WIRING:

1. TURN POWER OFF TO CPU AND SENSORS.
2. DISCONNECT THE SENSOR HARNESS FROM CPU. (ON RIGHT HAND SIDE OF CPU)
3. REMOVE THE LID OF THE SENSORS THAT NEED CHECKING.
NOTE: 3 SENSORS CAN BE CHECKED WITH 1 OFF 6888 HARNESS.
4. CONNECT CLIPS TO THE SENSOR.
RED CLIP (BLUE WIRE) TO SIGNAL (+). BLACK CLIP (GREEN WIRE) TO GROUND (-).
5. TURN POWER ON TO THE CPU AND SENSORS AND CHECK THAT SENSORS ARE OPERATING PROPERLY.



SENSOR 1, 2, 3
SENSOR 4, 5, 6
SENSOR 7, 8, 9



2.5m 2.5m 0.5m TO CLIP 15m

0.2m

BLUE GREEN

BLUE GREEN GREEN

BLUE GREEN GREEN

+

-

+

-

+

-

CONNECTOR CLIPS TO TERMINALS OF SENSORS AT TOP OF TRUCK


PLUG INTO DIPTRONIC CPU SENSOR PORTS AT BOTTOM OF TRUCK

SHIELDED CABLE WITH POLYURETHANE SHEATH

X353802

Issue: A

METERS - VALVES - VENTS - MANHOLES - PUMPS - HOSEREELS - OVERFILL PROTECTION - LOADING ARMS - ELECTRONIC DIPSTICKS



LIQUIP INTERNATIONAL PTY LTD

13 Hume Road
Smithfield, Sydney
NSW Australia 2164
Phone: +61 2 9725 9000
Fax: +61 2 9725 1252

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APPENDIX 3 - Diptronic Reference Booklets

PART #	DOCUMENT	FILENAME
7310	DIPTRONIC MEASURING SYSTEM MK1 DRIVERS MANUAL	DIP200_INST_DIPTRONIC_MEASURING_DRIVER_INSTRUCTIONS_P7310.pub
7326	DIPTRONIC MEASURING SYSTEM MK1 & L.I.P.S. (WITH GPS) CALIBRATION MANUAL	DIP200_INST_DIPTRONIC_CALIBRATION_P7326.pub
7327	DIPTRONIC MEASURING SYSTEM MK1 & LIPS AUTOMATIC CALIBRATION RIG MANUAL	DIP200_INST_DIPTRONIC_CALIBRATION_RIG_P7327.pub
7328	DIPTRONIC L.I.P.S DRIVERS MANUAL	DIP200_INST_DIPTRONIC_LIPS_DRIVER_INSTRUCTIONS_P7328.pub
7329	DIPTRONIC MEASURING SYSTEM MK1 INSTALLATION MANUAL	DIP200_INST_DIPTRONIC_MEASURING_INSTALLATION_INSTRUCTIONS_P7329.pub
7330	DIPTRONIC L.I.P.S. & GPS INSTALLATION MANUAL	DIP200_INST_DIPTRONIC_LIPS_INSTALLATION_INSTRUCTIONS_P7330.pub
7331	DIPTRONIC GENERAL INFORMATION	DIP200_INST_DIPTRONIC_GENERAL_INFORMATION_P7331.pub
7333	DIPTRONIC CPU (DIP200 & DIP240) SOFTWARE UPGRADE INSTRUCTIONS	DIP200_INST_DIPTRONIC_SOFTWARE_UPGRADE_INSTRUCTIONS_P7333.pub
7334	DIPTRONIC MEASURING SYSTEM MK1 & L.I.P.S. CPU REPLACEMENT INSTRUCTIONS	DIP200_INST_DIPTRONIC_CPU_REPLACEMENT_INSTRUCTIONS_P7334.pub
7335	DIPTRONIC MEASURING SYSTEM MK1 & L.I.P.S. SENSOR (ANTENNAE & DIP100-12, DIP120-12 & DIP130-12) REPLACEMENT INSTRUCTIONS	DIP200_INST_DIPTRONIC_SENSOR_REPLACEMENT_INSTRUCTIONS_P7335.pub
7400	DIPTRONIC MEASURING SYSTEM MK1 & L.I.P.S. DipRecall MANUAL	DIP200_INST_DIPTRONIC_DIPRECALL_INSTRUCTIONS_P7400.pub



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NOTICE FOR USE IN CEN

Instructions specific to hazardous area installations (reference European ATEX Directive 94/9/EC, Annex²², 1.0.6.)

The following instructions apply to equipment covered by certificate numbers Sira 02ATEX3323X (DIP200) and Sira 02ATEX2322X (DIP100):

1. The equipment may be used in a hazardous area with flammable gases and vapours with apparatus group IIA and with temperature classes T1, T2, T3, and T4.
2. The apparatus is only certified for use in ambient temperatures in the range -20°C to +60°C and should not be used outside this range.
3. The certified numbers have an 'X' suffix that indicates that special conditions of certification apply. These conditions are; The DIP100 has an aluminium cover and precautions must be taken to reduce the risk of a frictional spark occurring. The DIP200 power must be supplied via a fuse that has a breaking capacity capable of clearing the maximum short circuit current of the truck battery.
4. Installation shall be carried out in accordance with the applicable code of practice by suitably trained personnel.
5. Repair of this equipment shall be carried out in accordance with the applicable code of practice.
6. Certification marking as detailed in DIP100 series drawing number P7278 & DIP200 series drawing number P7284.
7. If it is likely the equipment will come in contact with aggressive substances, then it is the responsibility of the user to take suitable precautions to prevent the equipment being adversely effected, ensuring the type of protection is not compromised.

Aggressive Substances: e.g. acidic liquids or gases that may attack metals or solvents that may effect polymeric materials. inspections or establishing from the materials data sheet that it is resistant to specific chemicals.



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LIQUIP INTERNATIONAL PTY LTD - 13 HUME RD SMITHFIELD SYDNEY NSW AUSTRALIA 2164
PH: +61 2 9725 9000 FAX: +61 2 9725 1252 EMAIL: liquip@liquip-nsw.com.au