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P7388 Diptronic Upgrade Instructions

The following instructions apply to:

- A) Upgrading a DIP200 EPROM to version 01.00.15 from either 01.00.09, 01.00.10, 01.00.11, 01.00.12 or 01.00.13 (consult Liquip if earlier version EPROM. Do not remove older version EPROM's).
- B) Upgrading the compression bush (DIP100-8 Special Compression Bush) in the DIP100 series sensor.
- C) Upgrading a pot (DIP100, DIP120, DIP130 – referred to as DIP1xx in these instructions).

These instructions are to be used in conjunction with the Diptronic Upgrade Kit (DIP100-12Z). This kit is composed of the following items:

- 1 x DIP1xx-12 sensor (Check with Liquip NSW you have the latest generation pot – currently E).
- 1 x DIP100-8 (Special compression bush).
- 4 x P6677 (Countersunk screws).
- 1 x DIP100-24 (Grubscrew, gold plated).
- 1 x P7388 (these Diptronic Upgrade Instructions).

This kit is to be used in conjunction with the following items as required:

- P6085 (DIP100 series gasket - EPDM type).
- P6093 (CPU gasket - EPDM type). Note, P6093B gasket to suit non-machined lids.
- P6945 EPROM (Version 01.00.15).
- DIP100-7 (Aerial cap).
- DIP100-17 (Aerial connector, gold plated - if existing damaged or worn).
- P7113 (Molybond - antisieze).
- P3360 (Loctite 243).
- Lead seals & wire.

1. Upgrading a DIP200 EPROM - Version 01.00.15 incorporates software that is used in conjunction with the latest generation of pots (DIP120-12, DIP130-12). A letter preceding the serial number (eg E0404S001) indicates these pots. Note that these pots can be used in the same network as any other generation of pot.

Note: refer P7333 Diptronic Software Upgrade Instructions for further detail.

- 1.1 Power down the CPU by switching off battery isolation switch.
- 1.2 Remove calibration seal from front panel of CPU.
- 1.3 Remove 4 allen head screws from lid & remove lid.
- 1.4 Remove EPROM from CPU (first, ground against possible static build up by touching the side of the CPU). If possible use an EPROM removal tool. If this is not available gently pry up the EPROM using a small flat head screwdriver. When one end of the EPROM is lifted by the screwdriver the EPROM can be removed with fingers.
- 1.5 Insert the new EPROM (01.00.15) in the same orientation as the removed EPROM (notch facing to the left towards the LCD panel). Be very careful not to bend any of the



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legs of the EPROM when doing this. Make sure no pins are bent and all have been inserted into a corresponding hole.

- 1.6 Power on CPU by switching on battery isolation switch.
- 1.7 Make sure the CPU boots up with no errors.

If the CPU does not boot up, switch off the battery isolation switch, check the EPROM has been inserted in the correct orientation and make sure there are no bent legs (remove and check if necessary).

- 1.8 Power down the CPU by switching off battery isolation switch.
- 1.9 Check the gasket in the lid has not deteriorated and is of the EPDM type (not neoprene).
- 1.10 Ensure all wires at the top of the CPU are pushed together against the housing away from the LCD panels. Slide the cover on from the bottom of the CPU upwards making sure no wires are trapped. Screw into place using the 4 allen head screws. Ensure they are firmly tightened to a torque of 6-7Nm.
- 1.11 Replace the calibration seal.
- 1.12 Power on the CPU by switching on battery isolation switch.
- 1.13 Save the stick length (HT) of each compartment in the Sensor Setup menu. The Dielectric should be 1.4 - 1.7 for petroleum based products.
- 1.14 Save the digital settings of each pot in the Diagnostics menu by pressing the OK button when the settings are selected.
- 1.15 Seal the calibration seal and cover.
- 1.16 Return the removed EPROM to Liquip NSW Engineering department.

2. Replacement of the top compression bush aids in producing a better fiducial signal at the top of the DIP1xx sensor for the radar device to pick up.

- 2.1 Isolate power to the CPU.
- 2.2 Unseal lid of DIP1xx, undo 4 screws/nuts and remove lid.
- 2.3 Undo delay line connector.
- 2.4 Undo positive, negative & shield wire from pot.
- 2.5 Undo 4 screws/nuts retaining pot to DIP1xx base & remove pot.
- 2.6 Remove nylon screw (P6616) on side of DIP1xx.
- 2.7 Use an allen key (either 1.5 or 2.5mm depending on type of grubscrew installed) and undo the grubscrew (DIP100-24) 2 whole turns.
- 2.8 Undo the 4 screws (P6569) fixing the aerial connector (DIP100-17).
- 2.9 Carefully remove the aerial connector by rotating slowly and gently pulling in a vertical direction. Note, in some cases the pin of the aerial connector may remain stuck in the internal rod. In this case pull upward firmly using pliers.
- 2.10 Remove the aerial cap (DIP100-7) by rotating in an anti-clockwise direction and lifting. Discard the aerial cap if it is not the type shown in P7388 on the last page – the cap should be the type that tightens until there is metal to metal contact.
- 2.11 Remove the existing compression bush (DIP100-8) and discard. Use a small flat head screwdriver to pry free if necessary.
- 2.12 Clean the thread at the top of the stick making sure there are no metal shavings.
- 2.13 Pull the internal rod up so the grubscrew is exposed.
- 2.14 The grubscrew should be a 1.5mm head, gold plated type (replace and discard as necessary). If a new grubscrew is inserted, screw in fully and then screw out 4 turns.
- 2.15 Line up the grubscrew with the hole in the side of the DIP1xx & firmly push the internal rod into place.



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- 2.16 Re-install aerial connector into aerial cap using 4 countersunk screws (P6677). Note - replace the aerial connector if it is damaged). Refer P7388 diagram on last page for installation details.
 - 2.17 Place small amount of Molybond (P7113 - anti seize) on outer thread of top of DIP1xx & allow to set. Place small amount of Loctite (P3360 - Loctite 243) on outer thread of top of DIP1xx.
 - 2.18 Place special compression bush under aerial cap checking for correct orientation (refer drawing).
 - 2.19 Fit tip of aerial connector into hole of DIP1xx rod and screw aerial cap into place – tighten to 30Nm as indicated in the P7388 diagram. This cap should tighten with metal to metal contact.
 - 2.20 Note: be careful when starting the nut not to damage or strip the thread. Do not force the aerial connector into the hole of the rod, it should slide smoothly into place (if not, then replace).
 - 2.21 Use a 1.5mm allen key to tighten the grubscrew into place against the aerial connector to a torque of 0.6 ± 0.1 Nm.
 - 2.22 Re-install nylon screw.
 - 2.23 Reattach pot to DIP1xx using 4 screws/nuts.
 - 2.24 Connect positive, negative and shield wire as before to pot.
 - 2.25 Connect delay line connector to the top of the DIP1xx and tighten (preferably with a torque spanner to 0.45 ± 0.1 Nm) to just past finger tight. Use a second spanner to hold the square gold cap, which will prevent the delay line from kinking and provide the desired orientation.
 - 2.26 Power on the CPU and check there are no communication error messages. If there are check the positive and negative in the pot are not back to front.
 - 2.27 Replace the DIP1xx lid and tighten the 4 screws to 4-5Nm. Reseal if an "NMI Truck" after calibration.
 - 2.28 In those cases where the pot is not being replaced, verify to NMI (formerly known as Weights & Measures) specifications and recalibrate if necessary. If NMI specifications are not met or if the pot is replaced, the pot must be calibrated.
3. Refer P7335 Diptronic Sensor (antennae & DIP1xx-12) Replacement Instructions for instructions on how to change a pot.

Adhere to the following points when changing a pot:

- 1) Set the ID of a new pot to its compartment number. Remember an ID can only be set through the top mil spec connector harness (below the power cable) on the CPU. The other pots in that network must be disconnected when setting the ID. Identify each pot following setting of ID also through the top mil spec connector harness.
- 2) Save the stick length (HT) and dielectric (DIEL) of each new pot.
- 3) Save the digital settings in the Diagnostics menu for each new pot.
- 4) Reset the temperature settings in Sensor Setup to match the numbers indicated on the sticker on the pot.
- 5) Verify the new pot and check to make sure the accuracy is within NMI specifications.



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Note 1: Steps 1, 2 & 3 of the pot changing instructions must be carried out with AUTO DIAGNOSTICS disabled in the calibration menu (this option is found in ver 13 software only). By default this option is disabled. Following installation and calibration this option should remain set to NO. Refer following steps:

STEP	OPERATION	DISPLAY
1	Hold CAL & press OK	CALIBRATION? NO
2	Press INC then OK	SENSOR SETUP? NO
3	Press OK	SYSTEM SETUP? NO
4	Press INC then OK	NO.OF COMPARTMENTS: #
5	Press MENU 6 times	ENABLE SENSOR AUTO DIAGNOSTICS? NO
6	Hold CAL & press OK to Exit	EXIT CALIBRATION? YES
7	Press OK to confirm exit	

Note 2: For all pots, in DIGITAL SETUP under the DIAGNOSTICS menu, the WIND value must be identical to the number on the label attached to the delay line of the corresponding pot. This is the second number from the left under PASSED. For example, in the label below the WIND value would be 152.

C0420S153
PASSED
1530 152 CFD
050 078 050



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