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Revolution Not Evolution

7310

**DIPTRONIC™
MEASURING SYSTEM MK1**

DRIVERS MANUAL



Issue D March 2010



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1.0 The Diptronic measuring system – driver delivery instructions

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.

Radar sensors that are bolted to the top of each compartment have replaced the manual dipsticks normally present. They are connected to a CPU on the side of the truck that indicates the volume in each compartment.

The Diptronic System will be permanently powered while the battery isolation switch is on. The CPU on the side of the truck is used to check (and print) the level of product in each compartment. Use the buttons on the front panel to change compartments and make a delivery.

Either follow the quick steps in section 2 or follow the steps in section 3 for a more comprehensive guide to making a delivery using Diptronic.



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2.0 Quick steps to making a delivery

Making a delivery using Diptronic is done in two simple steps:

1. Prior to unloading a compartment, hold **OK** and press **PRINT** to set the beginning of the delivery. This is the initial level of the product that will be recorded by the CPU. A 'recording start of delivery' message will be displayed on the bottom display.

2. Once the delivery is finished, press the **PRINT** button to set the end of delivery (and print a delivery ticket if using ticket printer). A 'dynamic measurement – delivery finished at XXXXXL' message will be displayed.

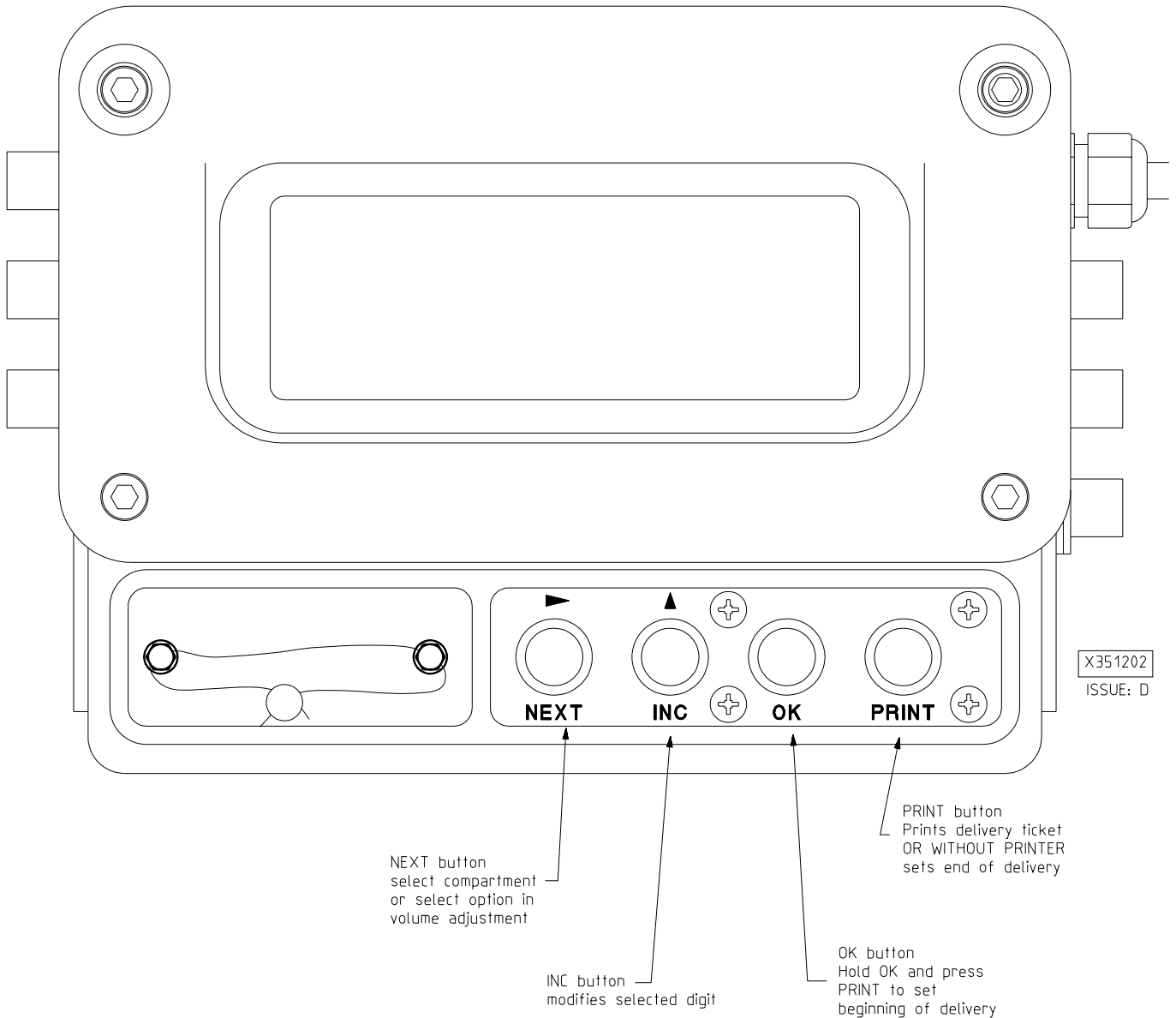
Note: The most recent delivery is stored in internal memory for reference. To view this information, hold **INC** and press **OK**, release and press the **PRINT** button two times. Following each delivery the previous delivery is erased from memory.

This menu will be automatically exited after 15sec of the last button being pressed.

The product level must be relatively stable or a PLEASE WAIT message will appear on the display. Diptronic will automatically determine when the product level is sufficiently stable and notify the user in this case.



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Note: To change the display to the next compartment, press (and hold) the NEXT button.
Press INC and OK to check the radar mm, temperature and sensor serial number.



3.0 Making a delivery using Diptronic - without ticket printer

For those cases where a ticket printer is not being used in conjunction with Diptronic, follow the procedure outlined below.

3.1 Making a partial delivery without ticket printer:

LOADING BOTTOM LOADING TANKER NO TICKET PRINTER		
1	Check for returns in each compartment to be loaded	
2	Lift guard bar	Brakes applied and vents open
3	Connect ground and overfill cables	
4	Open footvalves	
5	Connect loading arms	
6	Open API couplers	
7	Proceed loading as normal	Wet legs become wet
8	Close API couplers	
9	Close footvalves	
10	Disconnect loading arms	
11	Disconnect ground and overfill cables	
12	Lower guard bar	Brakes released and vents close



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UN-LOADING TANKER PARTIAL COMPARTMENT—NO TICKET PRINTER

1.	Drive to delivery site and lift guard bar	Brakes applied and vents open
2.	Open footvalves	
3.	Repeatedly press and hold NEXT to select each compartment to be unloaded. Hold OK and press PRINT for each selected compartment to set the start of delivery	Top display will stop blinking and a 'dynamic measurement – please wait recording start of delivery' message will be displayed on bottom display. After 15sec this changes to 'dynamic measurement – delivery started at #####L – press PRINT when finished'
4.	Connect hoses as required	
5.	Open the API adaptors	
6.	Proceed unloading as normal	
7.	When required volume has been delivered, close the API adaptors	
8.	Disconnect hoses	
9.	When adaptors are capped and area is safe, repeatedly press and hold NEXT to select each compartment that has been unloaded	
10.	Press PRINT while selecting each compartment in step 9	Top display will stop blinking & display fixed current volume. Bottom displays 'READY – end of delivery – please wait'. After 15sec top display returns to current level and bottom displays 'dynamic measurement – delivery finished at #####L'. This message will be displayed for 1min
11.	Record delivered volume of each selected compartment	
12.	Close footvalves	
13.	Lower guard bar	Brakes released and vents close
14.	Repeat steps 1 to 13 until all deliveries made	



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3.2 Making a full delivery without ticket printer:

LOADING BOTTOM LOADING TANKER NO TICKET PRINTER		
1	Check for returns in each compartment to be loaded	
2	Lift guard bar	Brakes applied and vents open
3	Connect ground and overfill cables	
4	Open footvalves	
5	Connect loading arms	
6	Open API couplers	
7	Proceed loading as normal	Wet legs become wet
8	Close API couplers	
9	Close footvalves	
10	Disconnect loading arms	
11	Disconnect ground and overfill cables	
12	Lower guard bar	Brakes released and vents close



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UN-LOADING TANKER FULL COMPARTMENT—NO TICKET PRINTER

1.	Drive to delivery site and lift guard bar	Brakes applied and vents open
2.	Open footvalves	
3.	Repeatedly press and hold NEXT to select each compartment to be unloaded. Hold OK and press PRINT for each selected compartment to set the start of delivery.	Top display will stop blinking and a 'dynamic measurement – please wait recording start of delivery' message will be displayed on bottom display. After 15sec this changes to 'dynamic measurement – delivery started at #####L – press PRINT when finished'
4.	Connect hoses as required	
5.	Open the API adaptors	
6.	Proceed unloading as normal	
7.	When compartment empty, close API adaptors.	Top display will show 'MIN-' indicating the sensor can no longer obtain a level reading from the product in the compartment. No product will be visible in the sight glass.
8.	Disconnect hoses	
9.	When adaptors are capped and area is safe, repeatedly press and hold NEXT to select each compartment that has been unloaded	
10.	Press PRINT while selecting each compartment in step 9	Top display will stop blinking & display fixed current volume. Bottom displays 'READY – end of delivery – please wait'. After 15sec top display returns to current level and bottom displays 'dynamic measurement – delivery finished at #####L'. This message will be displayed for 1min
11.	Record delivered volume of each selected compartment	
12.	Close foot valves	
13.	Lower guard bar	Brakes released and vents close



4.0 Making a delivery using Diptronic - with ticket printer

LOADING BOTTOM LOADING TANKER WITH TICKET PRINTER

For those cases where a ticket printer is being used in conjunction with Diptronic, follow the procedure outlined below.

4.1 Making a partial delivery with ticket printer:

1	Check for returns in each compartment to be loaded	
2	Lift guard bar	Brakes applied and vents open
3	Connect ground and overfill cables	
4	Open footvalves	
5	Connect loading arms	
6	Open API couplers	
7	Proceed loading as normal	Wet legs become wet
8	Close API couplers	
9	Close footvalves	
10	Disconnect loading arms	
11	Disconnect ground and overfill cables	
12	Lower guard bar	Brakes released and vents close



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UN-LOADING TANKER PARTIAL COMPARTMENT—WITH TICKET PRINTER

1.	Drive to delivery site and lift guard bar	Brakes applied and vents open
2.	Open footvalves	
3.	Insert ticket into printer	
4.	Repeatedly press and hold NEXT to select each compartment to be unloaded. Hold OK and press PRINT for each selected compartment to set the start of delivery	Top display will stop blinking and a 'dynamic measurement – please wait recording start of delivery' message will be displayed on bottom display. After 15sec this changes to 'dynamic measurement – delivery started at #####L – press PRINT when finished'
5.	Connect hoses as required	
6.	Open the API adaptors	
7.	Proceed unloading as normal	
8.	When required volume has been delivered, close the API adaptors	
9.	Disconnect hoses	
10.	When adaptors are capped and area is safe, repeatedly press and hold NEXT to select each compartment that has been unloaded	
11.	Press PRINT while selecting each compartment in step 10	Top display will stop blinking & display fixed current volume. Bottom displays 'READY – end of delivery – please wait'. After 15sec top display returns to current level and bottom displays 'dynamic measurement – delivery finished at #####L'. This message will be displayed for 1min. A customer receipt will be printed
12.	Close footvalves	
13.	Lower guard bar	Brakes released and vents close
14.	Repeat steps 1 to 13 until all deliveries made	



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4.2 Making a full delivery with ticket printer:

LOADING BOTTOM LOADING TANKER WITH TICKET PRINTER		
1	Check for returns in each compartment to be loaded	
2	Lift guard bar	Brakes applied and vents open
3	Connect ground and overfill cables	
4	Open footvalves	
5	Connect loading arms	
6	Open API couplers	
7	Proceed loading as normal	Wet legs become wet
8	Close API couplers	
9	Close footvalves	
10	Disconnect loading arms	
11	Disconnect ground and overfill cables	
12	Lower guard bar	Brakes released and vents close



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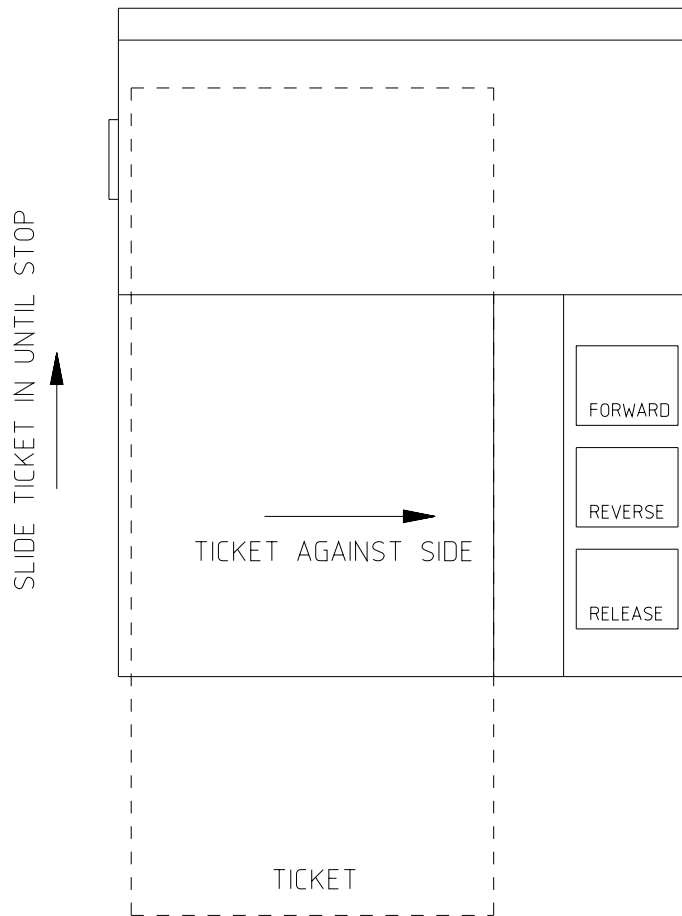
UN-LOADING TANKER FULL COMPARTMENT—WITH TICKET PRINTER

1.	Drive to delivery site and lift guard bar	Brakes applied and vents open
2.	Open footvalves	
3.	Insert ticket into printer	
4.	Repeatedly press and hold NEXT to select each compartment to be unloaded. Hold OK and press PRINT for each selected compartment to set the start of delivery	Top display will stop blinking and a 'dynamic measurement – please wait recording start of delivery' message will be displayed on bottom display. After 15sec this changes to 'dynamic measurement – delivery started at #####L – press PRINT when finished'
5.	Connect hoses as required	
6.	Open the API adaptors	
7.	Proceed unloading as normal	
8.	When compartment empty, close API adaptors.	Top display will show 'MIN-' indicating the sensor can no longer obtain a level reading from the product in the compartment. No product will be visible in the sight glass
9.	Disconnect hoses	
10.	When adaptors are capped and area is safe, repeatedly press and hold NEXT to select each compartment that has been unloaded	
11.	Press PRINT while selecting each compartment in step 10	Top display will stop blinking & display fixed current volume. Bottom displays 'READY -end of delivery – please wait'. After 15sec top display returns to current level and bottom displays 'dynamic measurement – delivery finished at #####L'. This message will be displayed for 1min. A customer receipt will be printed
12.	Close footvalves	
13.	Lower guard bar	Brakes released and vents close



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5.0 Using the ticket 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.

A standard ticket is 260mm by 114mm. The ticket is inserted 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.



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6.0 CPU battery system

When the CPU is first powered up the software version is shown on the bottom display for a few seconds. There is also a message giving the status of the internal software battery. The normal reading should show: '*MEMORY BACKUP BATTERY OK*'.

If the display shows: '*MEMORY BACKUP BATTERY LOW*' then contact Liquip for further assistance.

7.0 Calibration report ticket

To get a printout of all calibration and setup data for a particular sensor press the **NEXT** and **PRINT** buttons at the same time while in the main display. A calibration report will be printed depending on the compartment currently selected. Press (and hold) the **NEXT** button to cycle between compartments.

If there is insufficient paper inserted in the ticket printer to print all the data, a warning message will be displayed prompting for more paper. If no paper is inserted within a 10sec period after the warning message is displayed the screen will revert back to the main display. In this case simply repeat the above procedure with adequate paper in hand. The information is non-erasable.



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8.0 Sample printer tickets

Sample loading ticket

----- DELIVERY DOCKET -----

LIQUIP SALES PL

TRUCK No: ABC123
DELIVERY No: 49
DATE: 28/3/2004
TIME: 10:08
COMPARTMENT: 1
START VOLUME [L]: 00667 L
END VOLUME [L]: 00691 L
* * * DELIVERY INTO TANK * * *
----- END -----

Sample delivery ticket

----- DELIVERY DOCKET -----

LIQUIP SALES PL

TRUCK No: ABC123
DELIVERY No: 50
DATE: 28/3/2002
TIME: 16:26
COMPARTMENT: 1
START VOLUME [L]: 01381 L
END VOLUME [L]: 00270 L
DELIVERED [L]: 01111
----- END -----

Sample delivery ticket when emptied below sensor range (MIN-)

----- DELIVERY DOCKET -----

LIQUIP SALES PL

TRUCK No: ABC123
DELIVERY No: 51
DATE: 28/3/2002
TIME: 16:10
COMPARTMENT: 1
START VOLUME [L]: 00352
END VOLUME [L]: MIN-
IF COMPARTMENT IS EMPTY
DELIVERED [L]: 352
----- END -----

Sample delivery ticket with product that is delivered from above sensor range (MAX+) - product overloaded

----- DELIVERY DOCKET -----

LIQUIP SALES PL

TRUCK No: ABC123
DELIVERY No: 52
DATE: 28/3/2002
TIME: 16:23
COMPARTMENT: 1
START VOLUME [L]: MAX+
END VOLUME [L]: 01382
* * * * * INVALID DELIVERY * * * * *
----- END -----



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Sample loading ticket - with temperature compensation

----- DELIVERY DOCKET -----

LIQUIP SALES PL

TRUCK No: ABC123
DELIVERY No: 01
DATE: 23/04/2004
TIME: 10:08
COMPARTMENT: 1
PRODUCT: PULP
DENS.MAN.ENTERED: 0.752 Kg/L
CONVERTED TO +15 degrees C
START OF DELIVERY ->
UNCONV.VOL.: 01205 L
END OF DELIVERY ->
UNCONV.VOL.: 00830 L
DELIVERED ->
UNCONV.VOL.: **00375 L**
CONV.VOL.: **00368 L**
----- END -----



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9.0 System messages / diagnostics

SYMPTOM	CAUSE	CORRECTIVE ACTION
"Maximum level exceeded" message	Product overflow	Drain product
"Above measured limit" message	Product above sensor range	Drain product to lower level within sensor range
"Safe fill level exceeded" message	Product above safe fill level	Drain product to lower level within safe fill
"Communication error" message (sensor)	CPU unable to communicate with sensor	<ul style="list-style-type: none"> * Check wiring to sensors for open/short circuits * Check wiring under sensor housing for short circuits
"Communication error" message (printer)	CPU unable to communicate with printer	<ul style="list-style-type: none"> * Switch on printer * Check wiring to printer for open/short circuits * Check voltage to printer between 22 and 30V DC
CPU doesn't power up	No power from truck battery	<ul style="list-style-type: none"> * Check isolation switch is on * Check wiring between CPU and isolation switch * Check fuses
"NO PAPER" message on CPU	<ul style="list-style-type: none"> * No paper in printer * Paper inserted incorrectly 	<ul style="list-style-type: none"> * Insert paper * Check paper is straight
Printer doesn't power up	<ul style="list-style-type: none"> * Printer not turned on * Voltage to printer too low * No power to printer 	<ul style="list-style-type: none"> * Switch on printer * Voltage should be between 22V and 30V DC * Check wiring to printer for open/short circuits
CPU displays "MIN" - even when full	<ul style="list-style-type: none"> * Water in compartment * Calibration or setup error 	<ul style="list-style-type: none"> * Drain water from compartment * Contact Liquip



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APPENDIX 1— 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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