J R U

Displacement type Level Transmitter (Electronic)

OPERATION AND MAINTENANACE
INSTRUCTION MANUAL

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Displacement type Level Transmitter (Electronic)

MODEL NO: PLT-900
INSTRUCTION FOR INSTALLATION, OPERATION AND MAINTENANCE

GENERAL:

This installation, operation and maintenance manual for 'JRU' Electronic Liquid Level Transmitter include instruction for installation, maintenance and trouble shooting.

The overall assembly diagram and parts list are shown in fig 3.

PRELIMINARY STEPS BEFORE INSTALLATION:

1. Unpack the Transmitter carefully
2. Record the serial number and other name plate details for future reference.
3. Remove all straps, plugs etc. that are meant for safety while in transit.
4. Inspect for parts which may have become loose or broken in transit.
5. Read the instructions carefully before installation.

INSTALLATION CONDITIONS:

1. The Instrument should be located at an easily accessible place.
2. The Instrument should be located such that the ambient temperature do not exceed 70 Deg C
3. The Instrument should be mounted vertically as the float is likely to rub the chamber wall and may cause inaccuracy and erratic readings.

MOUNTING

Various types of mounting are possible in 'JRU' Electronic Liquid Level

Transmitter. Refer fig.2 and one typical installation is given in fig 1.

PROCEDURE FOR ASSEMBLING

The Body, Float and mechanism are supplied separately in order to avoid damage during loading, unloading and Transit.

1. Take out the body from Packing Case
2. Clean inside and outside with cloth
3. Take out float and clean the same
4. Insert the float into the body as shown fig 1
5. Mount the body vertically by using the 2 flanges attached to the body or by other means to see that the body is vertical.
6. Tie a thread of about 3 mm on to the top of the float rod fig 1
7. Keep the top flange on to the top of the body as shown taking care to see that the flange for mounting the mechanism to the right of the chamber as shown in fig 2.
8. Fix the top flange of the body o the top flange assembly by bolts as shown fig 2
9. Lift the float by using a thread on the Displacer connecting square Part 5 (fig 3) and insert into knife edge extension rod as shown.
10. For displacer not to come out, tighten with 2 screws with a screw driver Part 21 (fig 3)
11. Connect the hook of spring Part24 (fig 3)to the top end of the displacer a shown Part 22 (fig 3)
12. Now the assembly is over
13. Blind the 2 mounting flanges.

ELECTRICAL WIRING

Electrical Wiring for DC 2 Wire system has to be made as shown in fig.

ELECTRICAL CONNECTION

The Electrical connections are to be made to the junction box terminals.

For this,

1. Open the cover of the junction box. (fig 3)
2. Observe the terminal block right in for 18 of fig3
3. Introduce the supply cable through the cable gland and bring to the terminal.
4. The polarities are clearly marked on the terminals.
5. Make appropriate connections.
6. Close the cover tightly
7. Tighten the cable gland 19 (fig 3)

PRINCIPLE OF OPERATION

Refer fig 1. When the liquid level in the vessel increases the level in the Displacer Chamber also increases. This reduces the apparent weight of the Displacer changing the load of Torque tube by an amount directly proportional to the increase in liquid level.

This makes the torque tube to twist and make the torque tube center rod rotate proportional to the increase in level. The torque tube rod rotation changes the position of the magnet the level changing the output of 4-20 ma.

CALIBRATION

1. Connect the 24 VDC supply voltage to the Power supply connection of
   the instrument as shown in fig 4.
2. Pour water into the chamber till water level reaches the centre of the bottom flange. Note the reading in the Milli ohm meter. The reading should be 4mA. If not adjust Zero screws shown in 12 (fig 3) till the reading comes to 4mA fig 4
3. Pour water till the level reaches maximum. The output should be 20mA If not adjust range by removing magnet adjustment screw 13 (fig 3) and Suitably adjust the position of magnet.
4. Check zero and repeat the process till we get a 4-20mA output for a level change from 0 to Max.
5. Check the output when level is changed to 25%, 50% 75%. The corresponding readings will be 8,12,16 milli Amps.

MAINTENANCE :

The JRU Displacer type Electronic Level Transmitters are practically are trouble free. However, the following maintenance is recommended :

1. Drain out and clean the displacer chamber once in a month to remove all sludge , dust etc. from the chamber.
2. Make sure the supply volt is maintained within limit specified.
3. The output impedence should not exceed the limit .

TROUBLE SHOOTING

SYMPTOMS	CAUSES	REMEDY
1. No. output change	Movement of displacer	Clean the Chamber and Displacer. If no improvement report to factory

Electronic Circuits are very rugged gives long service - However in any event; repairs should not be tried in the field as special equipments are needed for this.

RECOMMENDED SPARE PARTS

1. Gaskets
2. Local indicator

THE LOAD IMPEDANCE Vs SUPPLY VOLTAGE

The load impedance Vs the supply voltage is given in the curve fig (7). From this load impedance for various supply voltage can be found.

WARNING:

Do not remove the cover when instrument is energized.

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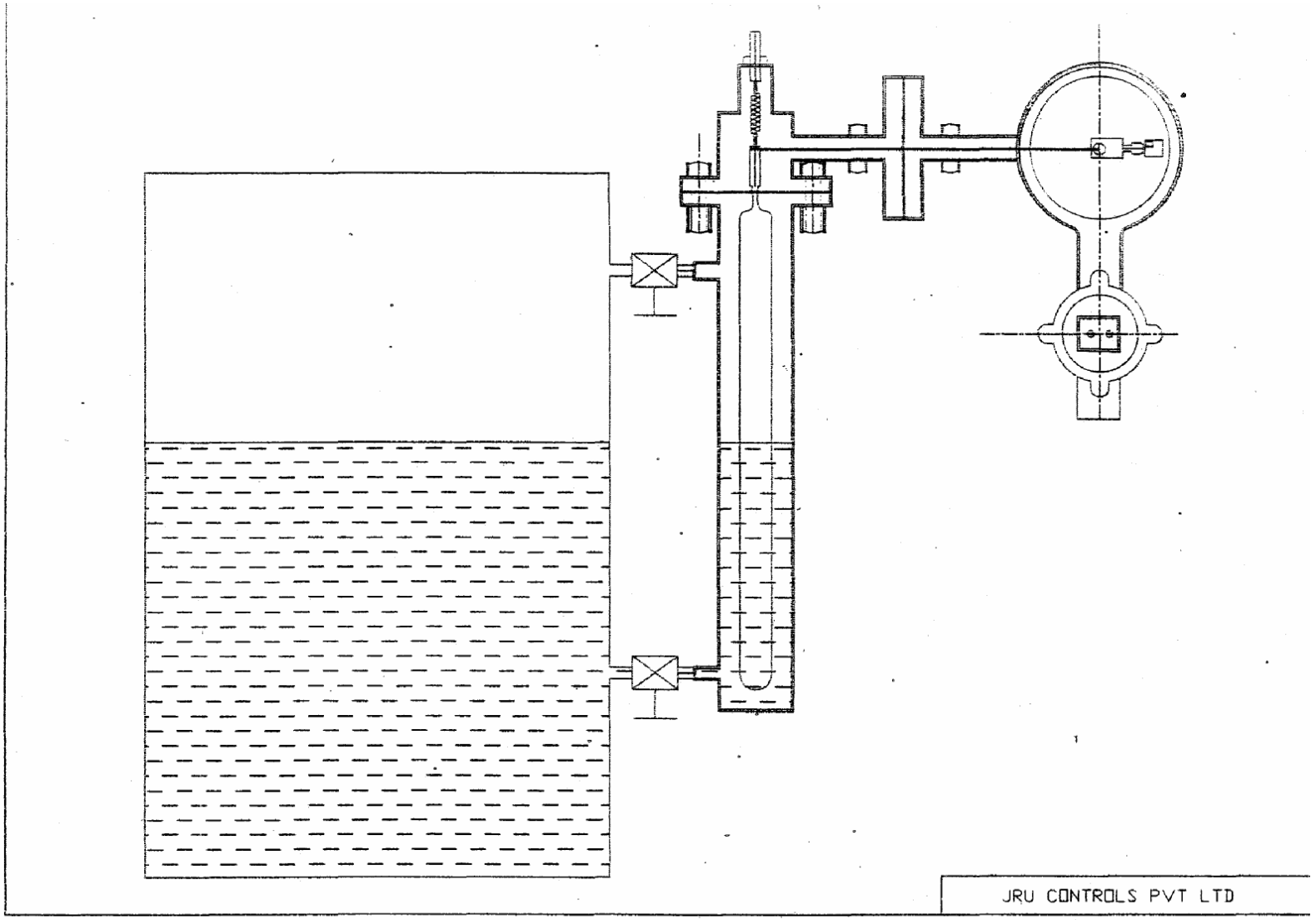
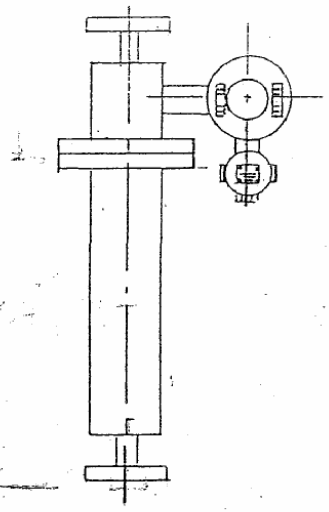
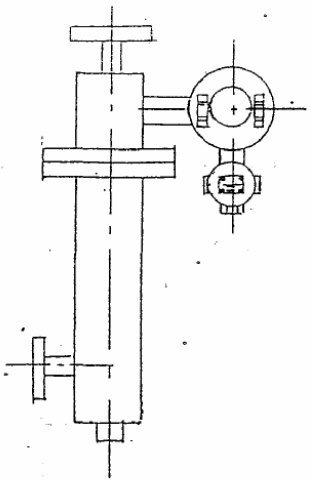


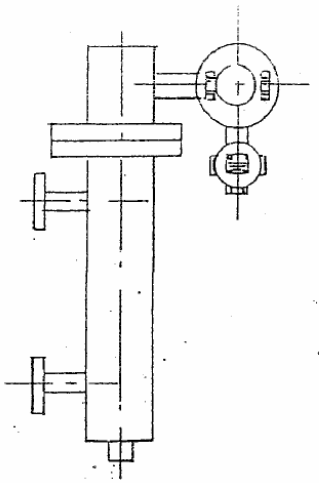
FIGURE NO 1



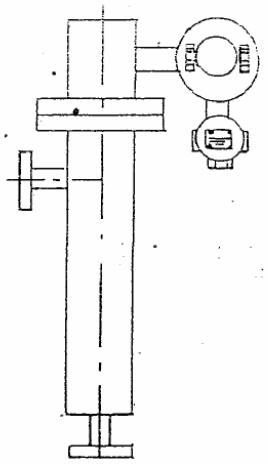
Top and bottom



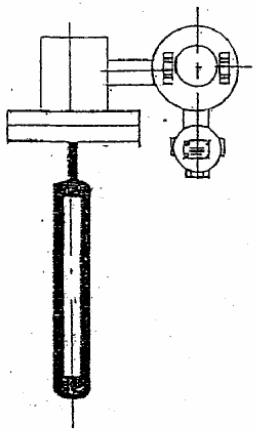
Top and lower side



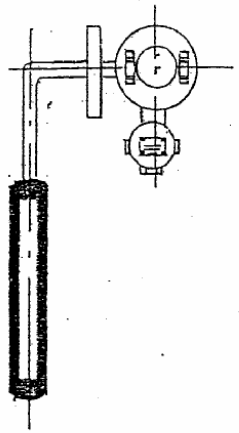
Upper and lower side



Upper side and bottom

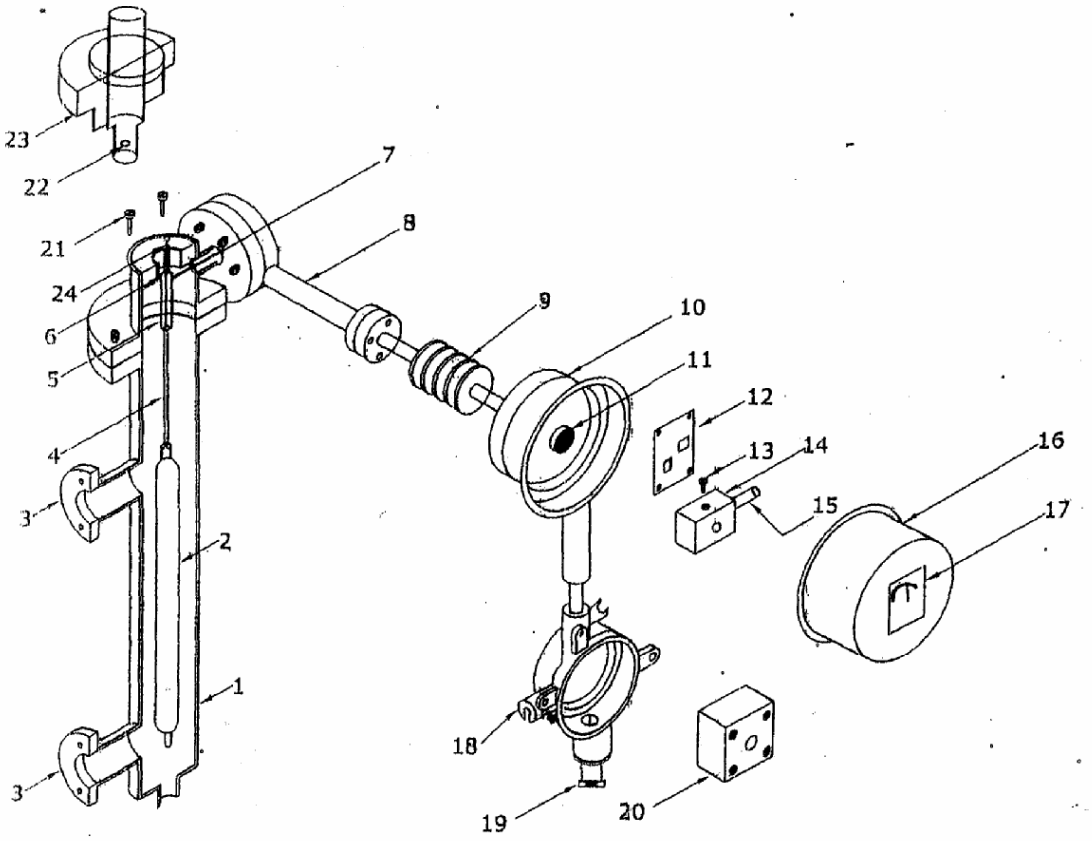


Top internal mounted



Side internal mounted

FIG (2)



1. MAIN BODY / DISPLACER CHAMBER
2. DISPLACER / FLOAT
3. PROCESS CONNECTION
4. DISPLACER CONNECTION ROD
5. DISPLACER CONNECTION SQUARE
6. DISPLACER CONNECTION SCREW
7. EXTENSION ROD
8. TORQUE TUBE HOUSING ARM
9. COOLING FIN
10. ELECTRONIC HEAD
11. TORQUE TUBE ROD
12. CIRCUIT BOARD
13. MAGNET FIXING SCREW
14. MAGNET HOLDER
15. MAGNET
16. ELECTRONIC HEAD COVER
17. ANALOG METER
18. JUNCTION BOX
19. GLAND
20. TERMINAL CONNECTOR
21. DISPLACER CONNECTING SCREW
22. SPRING HOLDER
23. DUMMY
24. SPRING

FIGURE NO 3

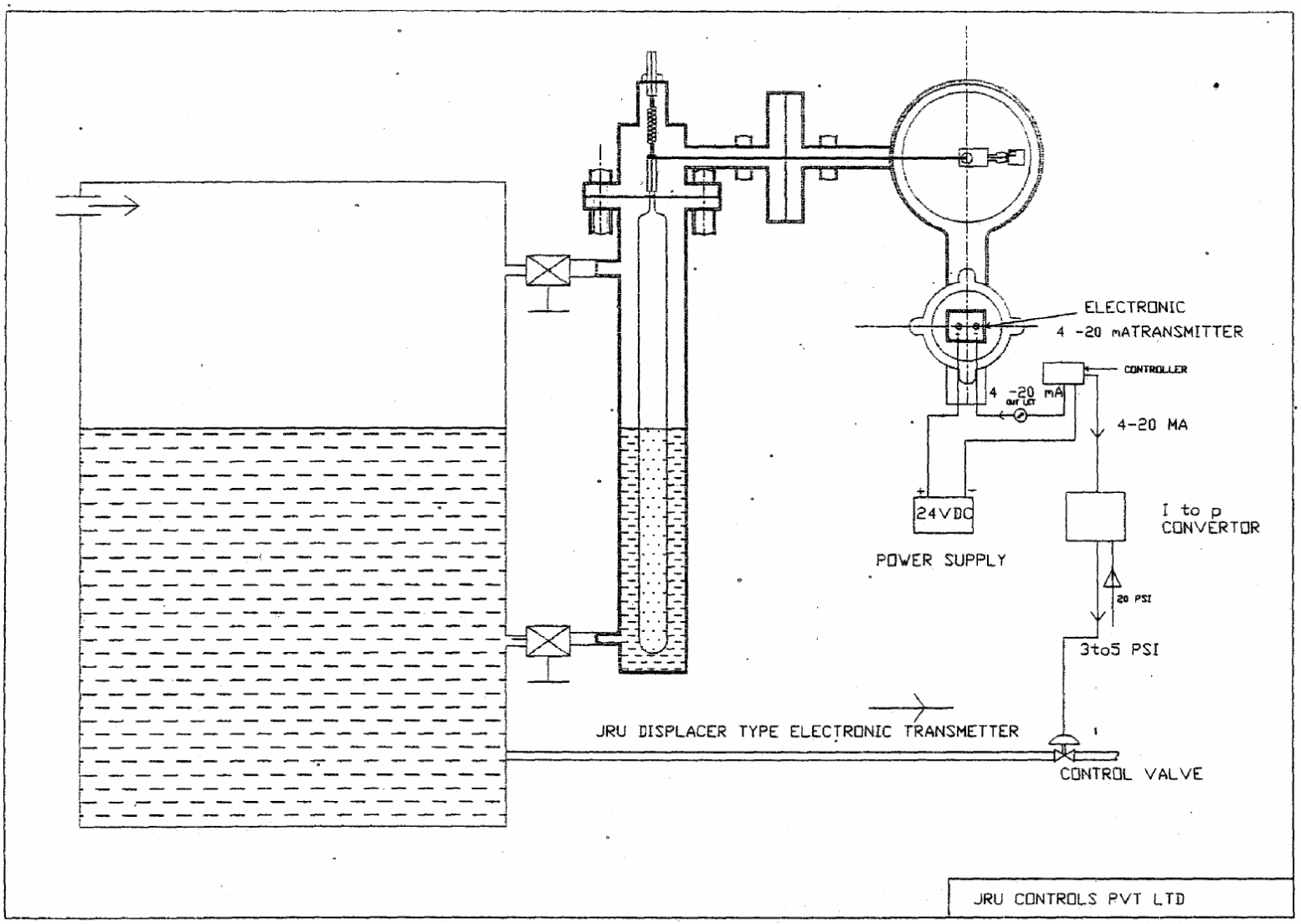

ELECTRONIC
4 -20 mATRANSMITTER
CONTROLLER
4 -20 mA
4-20 MA
24VDC
POWER SUPPLY
I to p
CONVERTOR
20 PSI
3to5 PSI
JRU DISPLACER TYPE ELECTRONIC TRANSMETTER
CONTROL VALVE
JRU CONTROLS PVT LTD

FIGURE NO 4