

VIEW FROM ARROW Z						
11_1	SEALING OF SENSOR HEAD : IP69K WAS IP67		DRN-885	17.3.22	Ajit	HMP
11	QR CODE STICKER DETAIL UPDATED			25.2.22	Ajit	HMP
10	NOTE NO. 8 OF LOCTITE SI 5910 ADDED			25.1.22	Ajit	HMP
9	IP67 WAS IP66 AND PROTECTIVE CAP VIEW ADDED			13.9.21	Ajit	HMP
8	VIEWS UPDATED AS PER AFT (PHASE-1) DESIGN & CONNECTOR MATERIAL CHANGED FROM NYLON TO PBT			15.7.21	Ajit	HMP
7	SUCTION/RETURN PORT TYPE DETAILS TABLE, VIEW ADDED, P/N. 313221 ADDED & DRG. UPDATED	RM-267		25.2.21	Ajit	HMP
6	SENSOR HEAD FINISH:- BLACK PAINT - ELECTROPHORETIC DEPOSITION (EPD) DELETED	7934	6.1.21		Ajit	HMP
5	NOTES NO. 6 ADDED, EQUIVALENT WORD DELETED IN CONNECTOR DETAILS		21.11.20		Ajit	OP.GARG
4	NOTES NO. 5, IN BOM SR. 1 EPD FINISH ADDED, COVER MATERIAL:- PBT WAS NYLON - 6, TS11879, TS10806, TS11234 ADDED		20.11.20		Ajit	OP.GARG
3	TATA LOGO, SECTION B-B, QR-CODE STICKER, NOTE NO. 4 ADDED, CONNECTOR SEALING RING MATERIAL WAS EPDM, FLANGE SEALING RING MATERIAL WAS EPDM, O-RING DIA 6.4 WAS 6.0, BAYONET COVER MATERIAL WAS CRCA STEEL NOTE NO. 3.4 ADDED IN MECHANICAL SPECS & DRG. UPDATED		19.9.20		Ajit	OP.GARG
2	DIM 301.5 ± 5 , 5.5 & 5 WAS 300 ± 5.4 & 6.5 RESPECTIVELY. DRAWING VIEW UPDATED. TABLE 'B' UPDATED. CONNECTOR VIEW UPDATED. IN TABLE BILL OF MATERIAL S.NO. 8 MATERIAL UPDATED.		28.08.19		Ajit	OP.GARG
1	DIM.31.0 ADDED, MOUNTING HEIGHT 581.4 ± 0.5 WAS 580.5 ± 0.5 , (21.4) WAS (20.5), CALIBRATION OUTPUT VOLTAGE & CONNECTOR PIN MARKING		10.07.19		Ajit	OP.GARG

**INDICATION
INSTRUMENTS LTD.
FARIDABAD (HARYANA)**

CLASSIFICATION OF CHARACTERISTICS	
CRITICAL	_____ ●
MAJOR	_____ ○
KEY INSTRUCTION	_____ ▲
MINOR	_____ NONE
LINE BELOW SYMBOL	● APPLIES TO UPPER
LINE ABOVE SYMBOL	● APPLIES TO LOWER
NO LINE WITH SYMBOLS	APPLIES TO BOTH

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ODIFICATIONS		ECN NO.	DATE	CHKD.
CUSTOMER	ITEM	QUANTITY	UNIT PRICE	TOTAL AMOUNT

TATA MOTORS LTD.

ANSWER: **III**

9	USED IN
	TITLE

CAPACITIVE FUEL LEVEL SENSOR (INTEGRATED DESIGN) 201

(INTEGRATED DESIGN) 365

For more information about the study, please contact Dr. [REDACTED] at [REDACTED].

DC-NOT-00

SCALE NTS DO NOT SCALE THE DRAWING

ALL DIMENSIONS IN mm.

	REF. DRG. NO:-	
	DRG. No.	

R 313201... Mod.M

SHEET 1 OF 2

SPECIFICATION:-

- ▲ 1. VEHICLE OPERATING SYSTEM VOLTAGE: 24V DC WITH -Ve GROUND
- 2. WARRANTY TERMS:- 3 YEARS/3,00,000 Kms. WHICHEVER IS EARLIER.

3. MECHANICAL:-

- ▲ 3.1 SENSOR HEAD OF FUEL SENDER ARE SUITED FOR MOUNTING OF FUEL TANK WITH Ø50.5mm HOLE (AS PER VIEW 'C')
- ③ ▲ 3.2 FITMENT OF FUEL SENDER :BAYONET TYPE WITH 'O' RING
USE PROPER TOOL FOR FITMENT OF FUEL SENDER IN FUEL TANK
INSTALLATION TORQUE :-VERTICAL FORCE ATLEAST 400N. MAINTAIN THE VERTICAL PRESS & ROTATE THE GAUGE 30° CLOCKWISE.
DO NOT USE MORE THAN 45Nm. THERE SHOULD BE NO LEAKAGE OF FUEL AFTER THE UNIT IS TIGHTENED
- ⑦ ▲ 3.3 SUCTION/RETURN FITTING/PLUG TORQUE: 20±5Nm
- ③ ④ 3.4 FILTER PULL OUT FORCE AFTER ASSEMBLY SHOULD NOT BE LESS THAN 8.0 kg-f
- ⑪ ⑨ ③ ④ 3.5 SEALING OF SENSOR HEAD : IP69K

4. ELECTRICAL:-

4.1 FOR ELECTRICAL CONNECTION PLEASE REFER TABLE 'B'

▲ 4.2 OPERATING VOLTAGE : 9-32 VDC WITH 80V OVER VOLTAGE PROTECTION

▲ 4.3 SUPPLY CURRENT : 15 mA @ 12VDC

: 23 mA @ 24VDC

① 4.4 OUTPUT SIGNAL : 0.5 VDC (EMPTY) TO 5VDC (FULL)

① 4.5 RESOLUTION : 10mV

③ ④ 4.6 ACCURACY : ±2.0% @ 20°C (+68°F) IN DIESEL WITH DIELECTRIC CONSTANT VALUE OF 2.1 TO 2.3

▲ 4.7 SLEEP CURRENT : 10mA MAX.

5. ENVIRONMENTAL:-

▲ 5.1 OPERATING TEMPERATURE RANGE :- -40 TO +85 DEG. CELCIUS.

▲ 5.2 STORAGE TEMP. RANGE :- -40 TO +90 DEG. CELCIUS

③ 5.3 ALL STEEL PARTS ARE TO BE ZINC PLATED & TRIVALENT YELLOW PASSIVATED

AS PER FeZn8 Cr III Y AS PER TS:10812

NOTES:-

① 1. O RING WILL BE PART OF SUPPLY.

② 2. TANK UNIT TO BE PASSED UNDER TML AGREED DVP

③ 3. FUEL SENDER TO BE CALIBRATED AT ALL FUEL INDICATION LEVEL

③ ④ 4. THE FUEL SENDER IS SELF CALIBRATING, WHICH MEANS ITS ACCURACY STAYS WITHIN ±10% EVEN IF USED IN A DIFFERENT FUEL, AS LONG AS DIELECTRIC CONSTANT OF FUEL IS WITHIN 1.75 TO 3.0.

④ ⑤ 5. THE PCB SHOULD HAVE CONFORMAL COATING

⑤ ⑥ 6. GUIDING STRIPS (02 NOS.) TO BE USED IN BOTH THE PROBES ASSEMBLY

7. DIMENSIONS WITHOUT TOLERANCE ARE FOR REFERENCE ONLY.

⑩ ⑪ 8. LOCTITE SI 5910 SHOULD BE USED FOR SENSOR HEAD SEALING

● CALIBRATION TABLE: 'A'

S.NO.	FUEL LEVEL	HEIGHT FROM FUEL TANK BOTTOM (mm)	OUTPUT VOLTAGE (V) (±2% OF FULL SPAN) ①	FUEL CAPACITY (L) (±1LTR)
1	FULL	555	5.0	365
2	3/4	425	3.85	267
3	HALF	300	2.75	179
4	1/4	175	1.64	91
5	EMPTY (HIGH)	110	1.07	47
6	EMPTY (LOW)	44	0.5	3.22

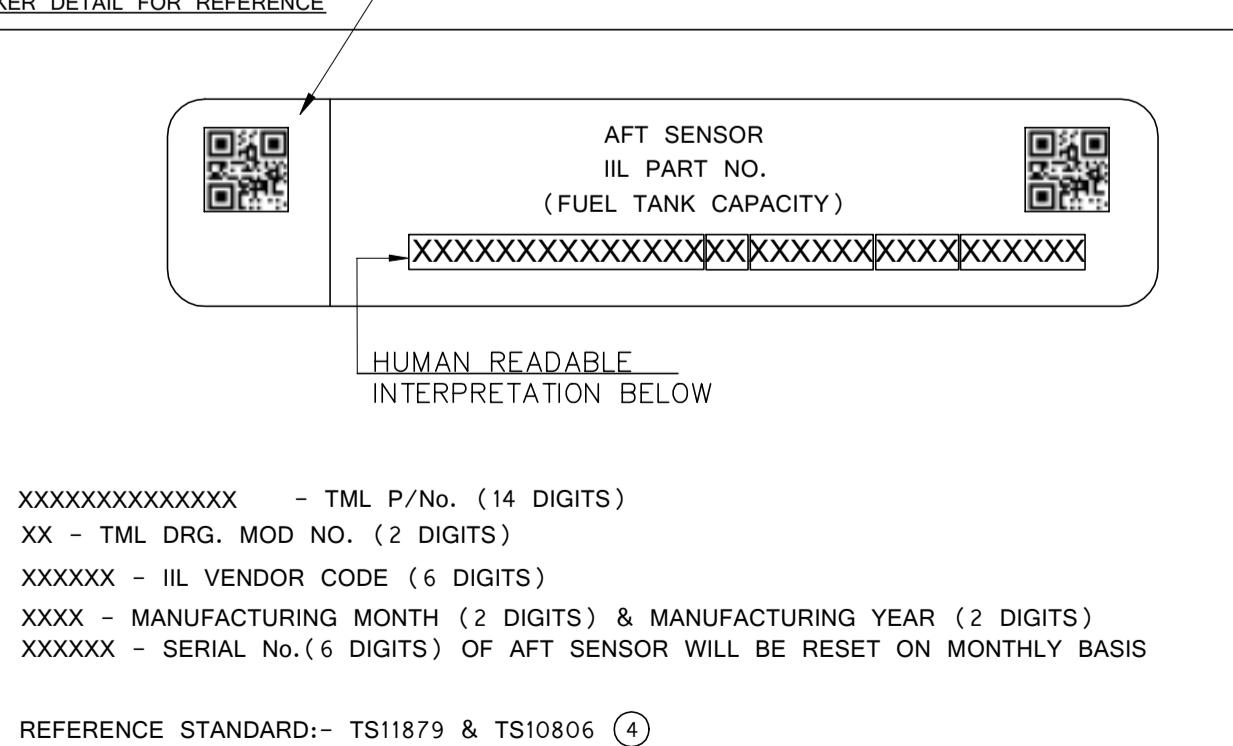
▲ TABLE: 'B'

CONNECTOR CONFIGURATION	
PIN	TYPE
1	V+ (SUPPLY)
2	V- (GROUND)
3	SIGNAL OUT (0.5-5V)
4	-----

SUB ASSLY. SERVICABLE PART LIST

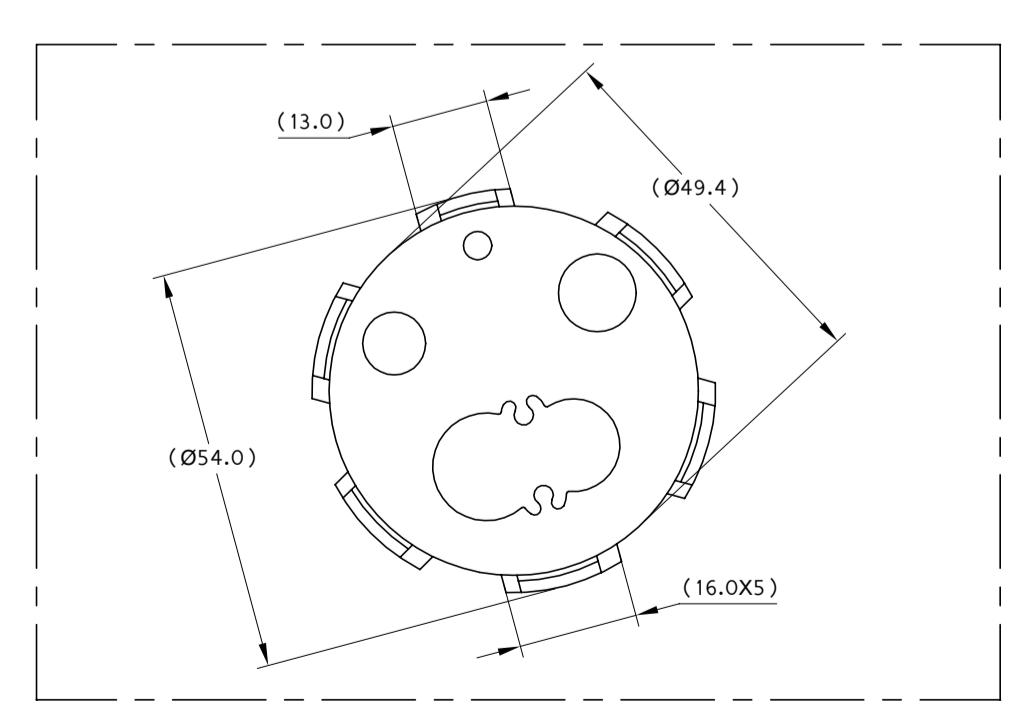
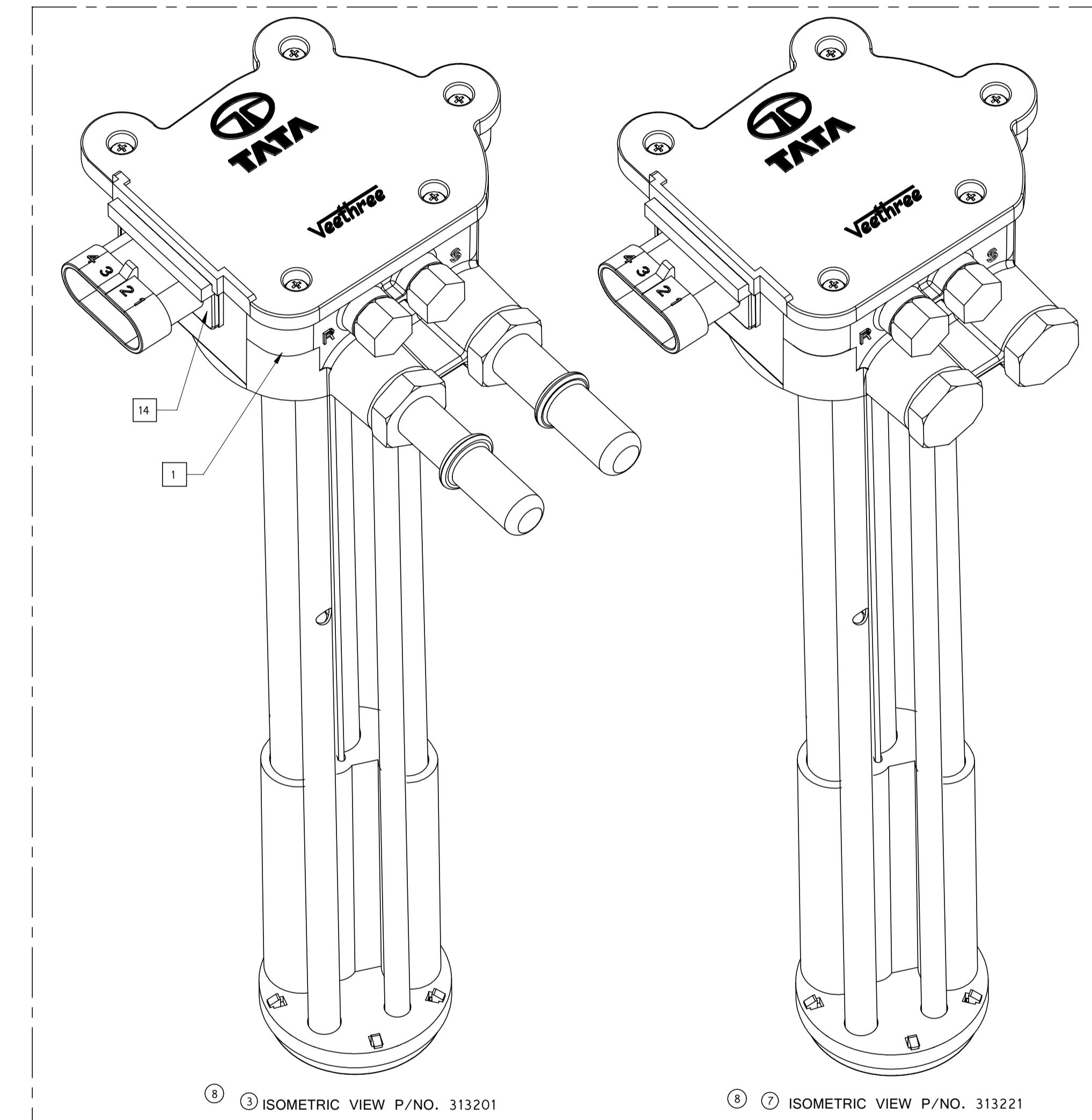
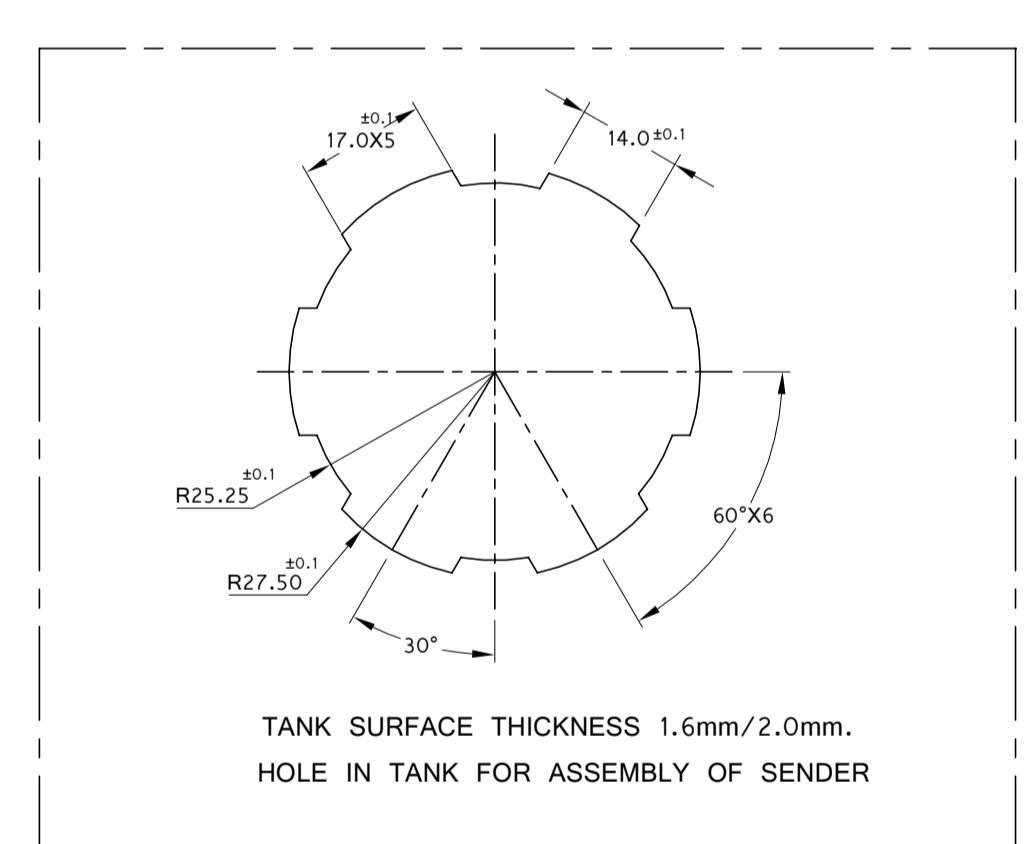
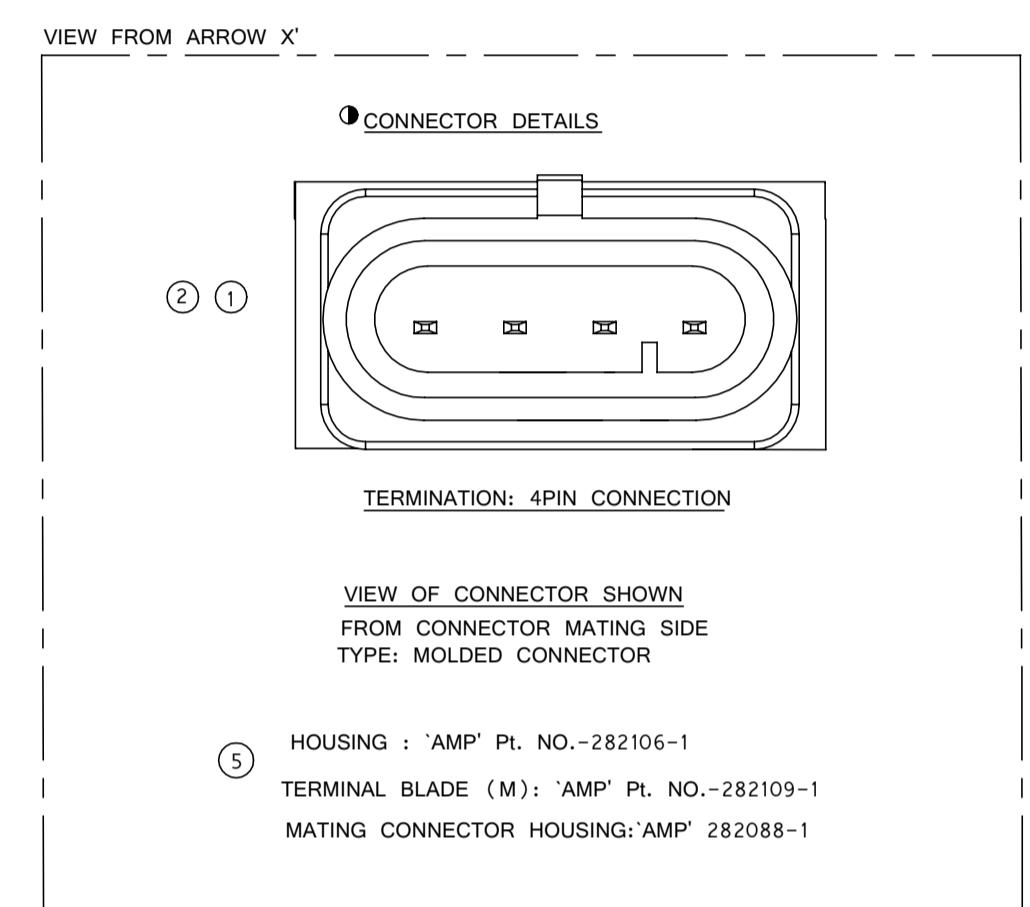
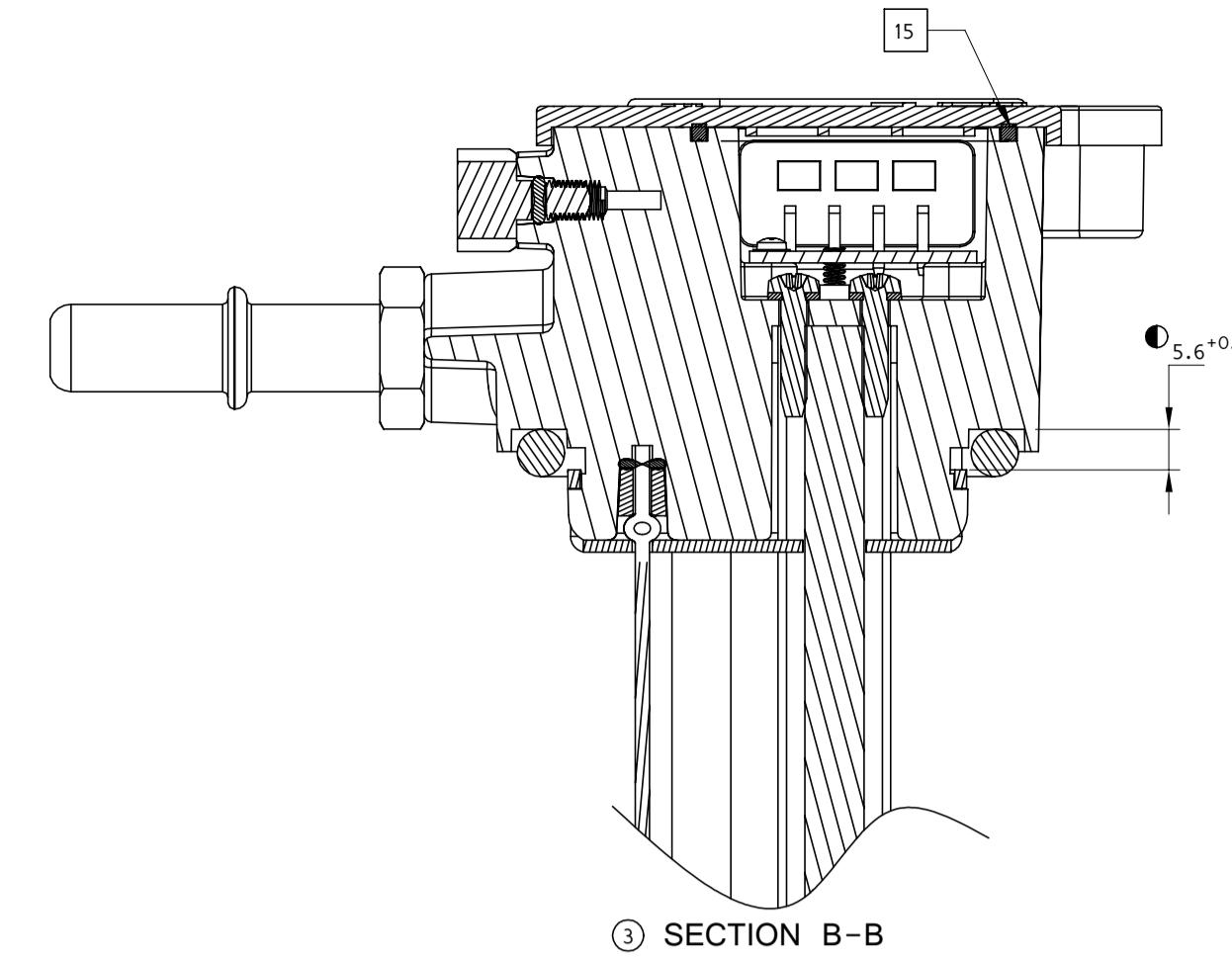
S.NO.	PRODUCT	QTY.	IIL PART No.	CUST. P/No.
1	O RING	01	ORN 40.002 ③	5120 5430 78 01N
2	FILTER	01	PFC 40.001	5039 5430 36 01N
3	ENGINE SUCTION FITTING ASSLY.	01	SFA 40.001	5039 5430 68 01N
4	ENGINE RETURN FITTING ASSLY.	01	RFA 40.001	5039 5430 68 02N

③ FIG. 1
STICKER DETAIL FOR REFERENCE
▲ TEAR THIS PART OF STICKER FOR ⑪
PASTING ON FUEL TANK CAP



BILL OF MATERIAL:-

S.NO.	PART NAME	QTY.	MATERIAL
1	SENSOR HEAD	01	ALUMINIUM ALLOY ADC-12 ⑥ ④
2	BAYONET COVER	01	STAINLESS STEEL AISI TYPE 304 ③
3	O-RING ID 55.0 X THICK. 6.4mm. ③	01	NITRILE HARDNESS SHORE 'A' 70 ±5 COLOUR-BLACK
4	CAPACITIVE TUBE (MAIN EXTRUSION)	01	ALUMINIUM 6060/6005 ③ ⑨
5	SUCTION TUBE Ø10.0	01	COPPER COATED STEEL TUBE
6	RETURN TUBE Ø8.0	01	COPPER COATED STEEL TUBE
7	CONNECTOR	01	PBT, GF 30%
8	COVER	01	PBT, GF 30% ④
9	ENGINE SUCTION FITTING	01	FREE CUTTING STEEL HEX ROD
10	ENGINE RETURN FITTING	01	FREE CUTTING BRASS
11	AUXILIARY SUCTION TUBE Ø6.3	01	COPPER COATED STEEL TUBE ④
12	PLUG SUCTION/RETURN M8X1.0	02	FREE CUTTING BRASS
13	FILTER	01	NYLON - 6
14	CONNECTOR SEALING RING	01	NBR+PVC (70:30), COLOUR-BLACK
15	SENSOR HEAD SEALING RING	01	NBR COLOUR-BLACK
16	ENGINE SUCTION PLUG M14X1.5	01	FREE CUTTING STEEL HEX ROD
17	ENGINE RETURN PLUG M12X1.5	01	FREE CUTTING STEEL HEX ROD



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DRN: BHAGAT	8.6.19	USED IN	TATA MOTORS LTD.
CHKD:	Ajit	TITLE	CAPACITIVE FUEL LEVEL SENDER (INTEGRATED DESIGN) 365 LTRS.
APPD/OP. GARG		DATE	11/11/2021
MODIFICATIONS		ECN NO.	CHKD/APPD.
CUSTOMER		SCALE	NTS
TATA MOTORS LTD.		DO NOT SCALE	THE DRAWING
ALL DIMENSIONS IN mm.			
REF. ORG. NO:-			
DRG. No. 313201... Mod.No. 11_1			