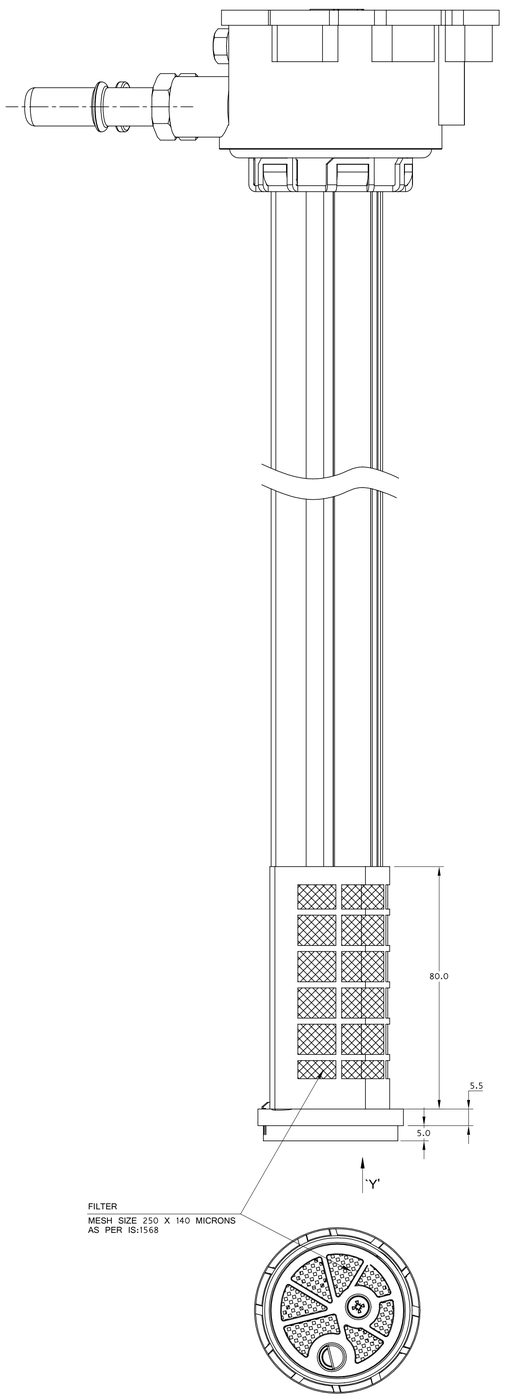
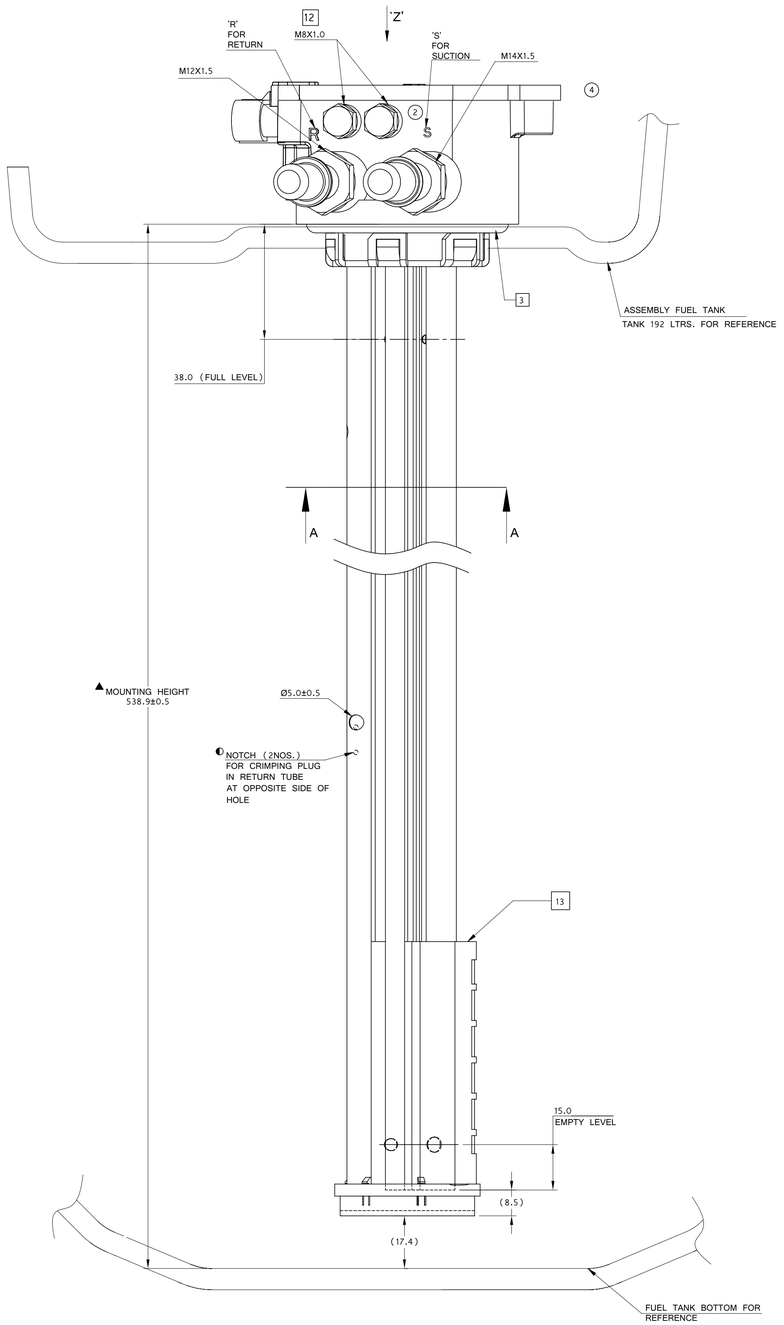
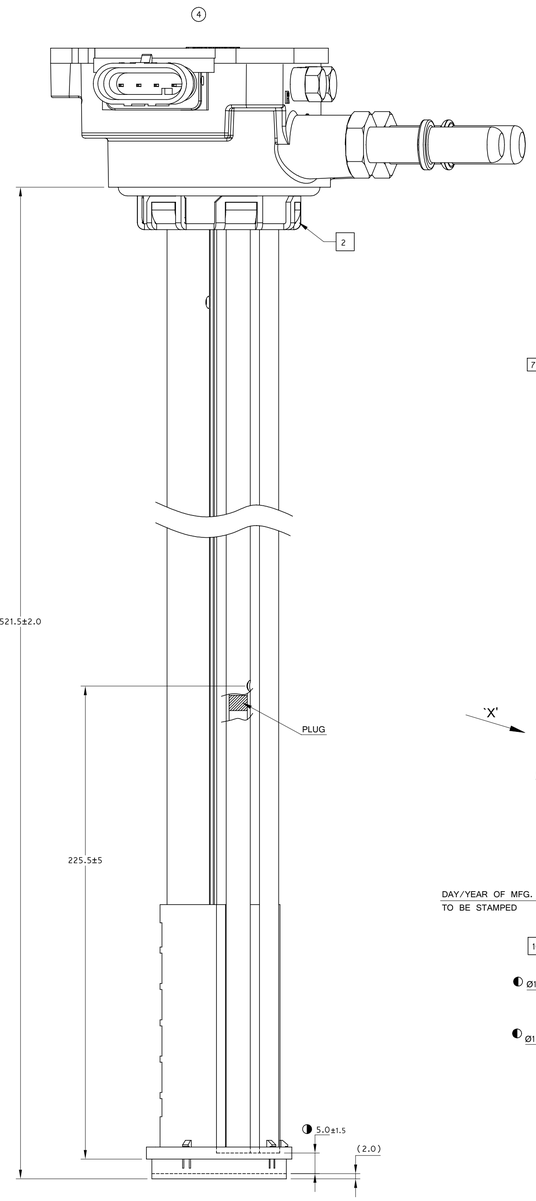
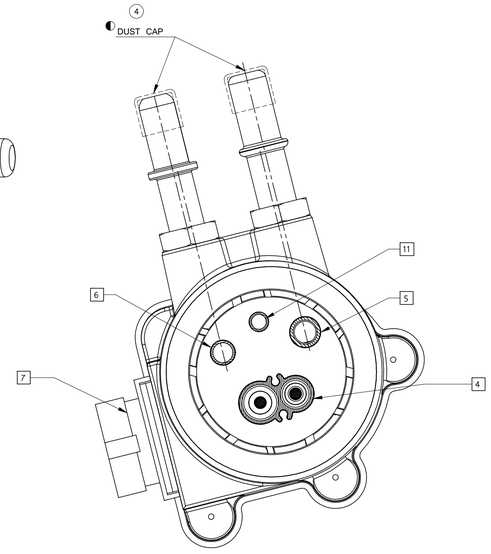


FILTER
MESH SIZE 250 X 140 MICRONS
AS PER IS:1568

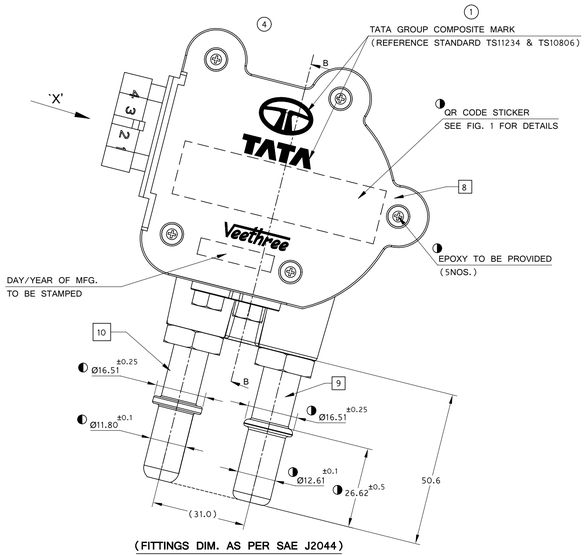
VIEW FROM ARROW 'Y'







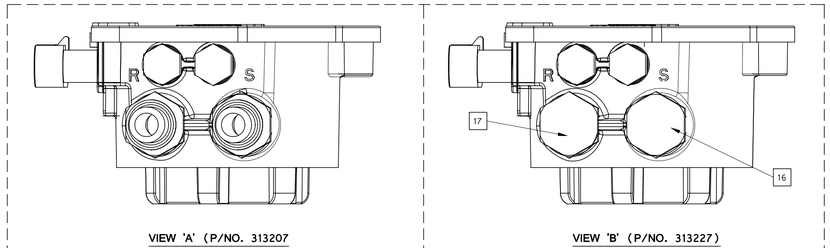
④ SECTION A-A



(FITTINGS DIM. AS PER SAE J2044)

VIEW FROM ARROW 'Z'

③ ◐ SUCTION/RETURN PORT TYPE VIEW



VIEW 'A' (P/NO. 313207

VIEW 'B' (P/NO. 313227)

③ ◐ PART NO. TABLE

S.NO.	SUCTION/RETURN PORT TYPE	DRAWING VIEW	IIL PART No.	CUSTOMER P/No.
1	FITTINGS	'A'	313207	5085 5430 4902 MOD_b
2	PLUGS	'B'	313227	5085 5430 4903 MOD_b

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

No.	MODIFICATIONS	ECN NO.	DATE	CHKD.	APPD.
6_1	SEALING OF SENSOR HEAD : IP69K WAS IP67	DRN-881	17.3.22	Ajit	Vinod
6	QR CODE STICKER DETAIL UPDATED		25.2.22	Ajit	Vinod
5	NOTE NO. 8 OF LOCTITE SI 5910 ADDED		27.1.22	Ajit	Vinod
4	IP67 WAS IP66 AND PROTECTIVE CAP VIEW ADDED VIEWS UPDATED AS PER AFT (PHASE-1) DESIGN & CONNECTOR MATERIAL CHANGED FROM NYLON TO PBT		25.9.21	Ajit	Vinod
3	SUCTION/RETURN PORT TYPE DETAILS TABLE, VIEW ADDED, P/NO. 313227 ADDED & DRG. UPDATED	RM-267	4.02.21	Ajit	I
2	SENSOR HEAD FINISH:- BLACK PAINT - ELECTROPHORETIC DEPOSITION (EPD) DELETED, VOLUME AT 3/4 FUEL LEVEL 139.0 WAS 144.8 AS PER CUSTOMER MAIL DATED 22.12.2020		6.1.21	Ajit	Hardeep
1	**NOTE NO. 5, 6 ADDED, O-RING DIA 6.4 WAS 6.0 EQUIVALENT WORD DELETED IN CONNECTOR DETAILS, BAYONET COVER MATERIAL WAS CRCA STEEL, IN BOM SR. 1 EPD FINISH ADDED, COVER MATERIAL:- PBT WAS NYLON - 6, TS11879, TS10806, TS11234 ADDED & DRG. UPDATED**		10.12.20	Ajit	Hardeep

INDICATION INSTRUMENTS LTD.
FARIDABAD (HARYANA)

DRN.	Vinod	01.10.20	USED IN
CHKD.	Ajit		
APPD.	Hardeep		

CUSTOMER: TATA MOTORS LTD.

TITLE: CAPACITIVE FUEL LEVEL SENDER (INTEGRATED DESIGN), 192 LTRS.

SCALE NTS — DO NOT SCALE THE DRAWING
ALL DIMENSIONS IN mm.
REF. DRG. No:-
DRG. No. 313207... — Mod.No. 6_1
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 SENSOR ARE SUITED FOR MOUNTING OF FUEL TANK WITH Ø50.5mm HOLE (AS PER VIEW 'C')
▲ 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
(3) ▲ 3.3 SUCTION/RETURN FITTING/PLUG TORQUE: 20±5Nm
◑ 3.4 FILTER PULL OUT FORCE AFTER ASSEMBLY SHOULD NOT BE LESS THAN 8.0 kg-f
(6_1) (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
◐ 4.4	OUTPUT SIGNAL	: 0.5 VDC (EMPTY) TO 5VDC (FULL)
◑ 4.5	RESOLUTION	: 10mV
◐ 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
◑ 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. O RING WILL BE PART OF SUPPLY.
◐ 2. TANK UNIT TO BE PASSED UNDER TML AGREED DVP
◐ 3. FUEL SENDER TO BE CALIBRATED AT ALL FUEL INDICATION LEVEL
▲ 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.
(1) ◐ 5. THE PCBA SHOULD HAVE CONFORMAL COATING
(1) ◐ 6. GUIDING STRIPS (02 NOS.) TO BE USED IN BOTH THE PROBES ASSEMBLY
7. DIMENSIONS WITHOUT TOLERANCE ARE FOR REFERENCE ONLY.
(5) ▲ 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)	FUEL CAPACITY (L) (±1LTRS.)
				192 LTRS
1	FULL	501	5.0	192.0
2	3/4	383	3.85	139.0 (2)
3	HALF	271	2.75	98.15
4	1/4	157.5	1.64	51.1
5	EMPTY (HIGH)	99	1.07	27.4
6	EMPTY (LOW)	41	0.5	5.4
7	DEAD VOLUME	25	0.5	2.8

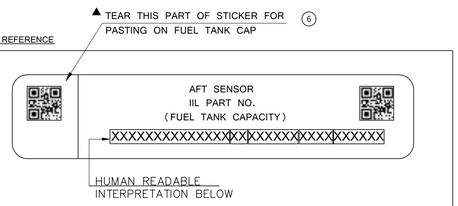
▲ **TABLE: 'B'**

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 (1)	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

FIG. 1
STICKER DETAIL FOR REFERENCE



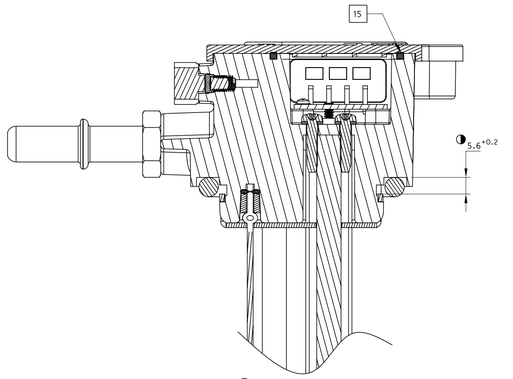
XXXXXXXXXXXXX - TML P/No. (14 DIGITS)
XX - TML DRG. MOD NO. (2 DIGITS)
XXXXXX - IIL VENDOR CODE (6 DIGITS)
XXXX - MANUFACTURING MONTH (2 DIGITS) & MANUFACTURING YEAR (2 DIGITS)
XXXXXX - SERIAL No.(6 DIGITS) OF AFT SENSOR WILL BE RESET ON MONTHLY BASIS

REFERENCE STANDARD:- TS11879 & TS10806 (1)

BILL OF MATERIAL:-

S.NO.	PART NAME	QTY.	MATERIAL
1	SENSOR HEAD	01	ALUMINIUM ALLOY ADC-12 (2)(1)
2	BAYONET COVER	01	STAINLESS STEEL AISI TYPE 304 (1)
3	O-RING ID 55.0 X THICK. 6.4mm. (1)	01	NITRILE HARDNESS SHORE 'A' 70 ±5 COLOUR-BLACK
4	CAPACITIVE TUBE (MAIN EXTRUSION)	01	ALUMINIUM 6060/6005
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	
11	AUXILIARY SUCTION TUBE Ø6.3	01	COPPER COATED STEEL TUBE (1)
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	

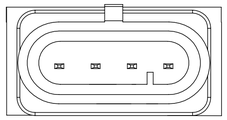
3



(3) SECTION B-B

VIEW FROM ARROW 'X'

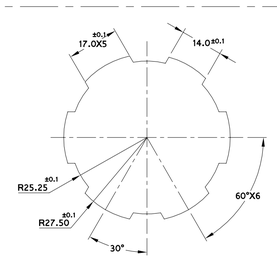
◑ CONNECTOR DETAILS



TERMINATION: 4PIN CONNECTION

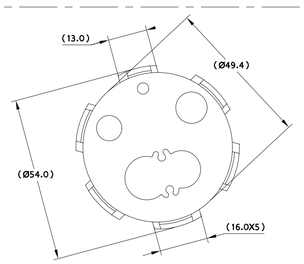
VIEW OF CONNECTOR SHOWN
FROM CONNECTOR MATING SIDE
TYPE: MOLDED CONNECTOR

HOUSING : 'AMP' Pt. NO.-282106-1
(1) TERMINAL BLADE (M): 'AMP' Pt. NO.-282109-1
MATING CONNECTOR HOUSING:'AMP' 282088-1

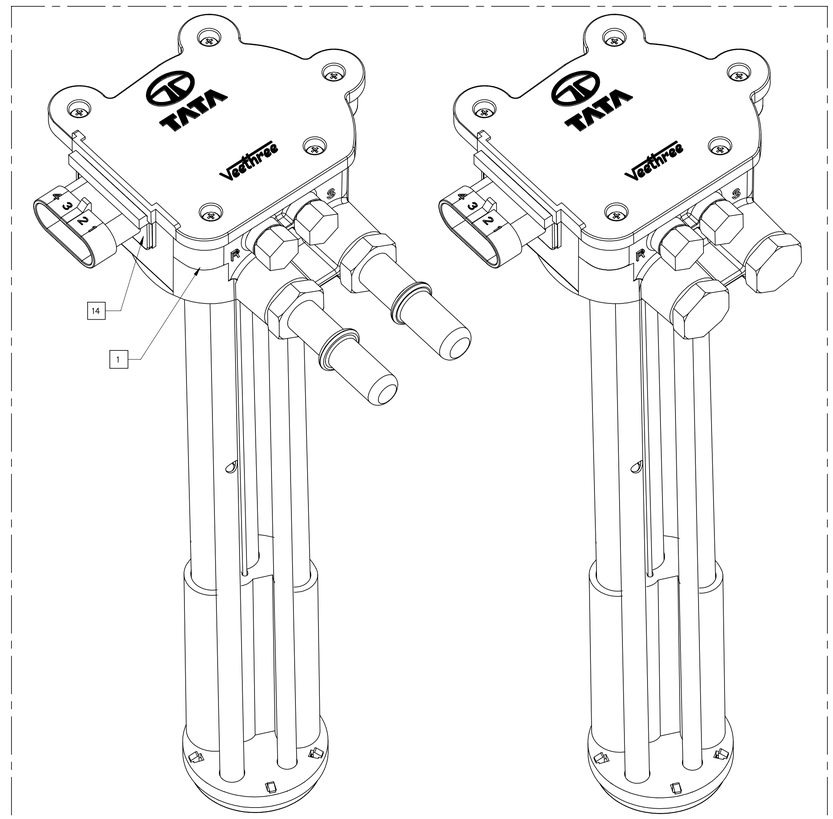


TANK SURFACE THICKNESS 1.6mm.
HOLE IN TANK FOR ASSEMBLY OF SENDER

▲ FUEL TANK HOLE VIEW 'C'



BAYONET COVER VIEW FROM BOTTOM
ONLY FOR REF.



(4) ISOMETRIC VIEW P/NO. 313207

(4) ISOMETRIC VIEW P/NO. 313227

CLASSIFICATION OF CHARACTERISTICS

CRITICAL ——— ●
MAJOR ——— ◐
KEY INSTRUCTION ——— ▲
MINOR ——— NONE

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INDICATION INSTRUMENTS LTD.
FARIDABAD (HARYANA)

DRN.	Vinod	01.10.20	
CHKD.	Ajit		
APPD.	Hardeep		

CUSTOMER: TATA MOTORS LTD.
USED IN
TITLE: CAPACITIVE FUEL LEVEL SENDER (INTEGRATED DESIGN), 192 LTRS.

SCALE NTS — DO NOT SCALE THE DRAWING
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REF. DRG. No:-
DRG. No. 313207...
SHEET 1 OF 2
Mod.No. 6_1