REPLY TO BIDDER'S PRE-BID QUERIES
ANNUAL RATE CONTRACT FOR HYDRO-TESTING OF TYPE-3 AND TYPE-4 CNG CASCADES

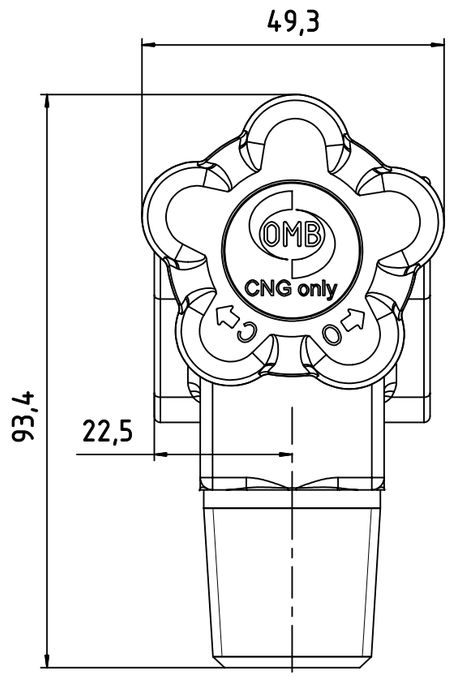
BID DOCUMENT NO. IGL/ET2/CP/CC18697

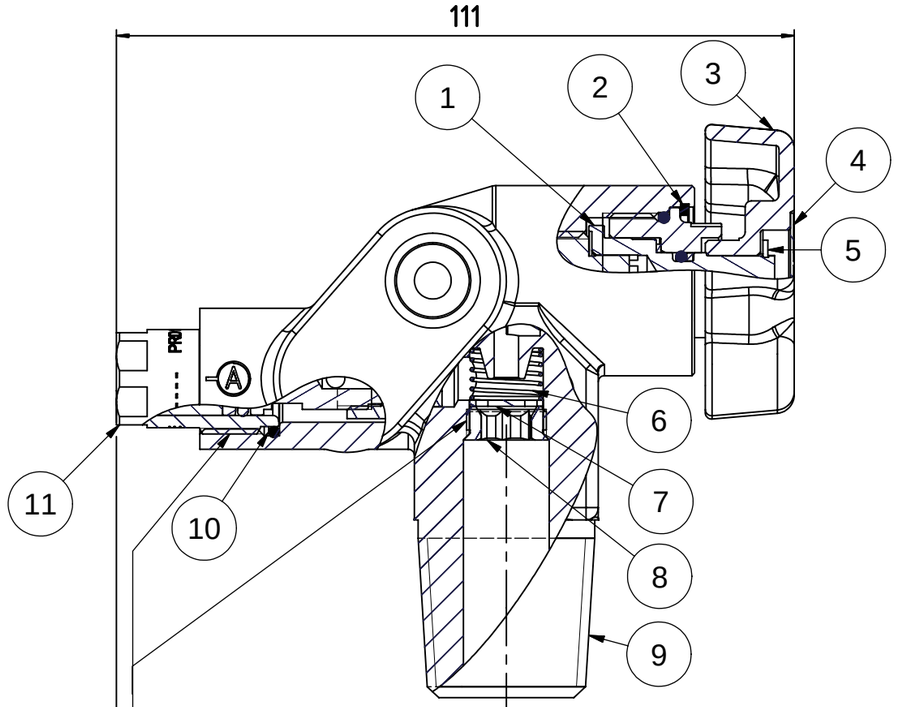
Owner: INDRAPRASTHA GAS LTD

Sr No.	Page No.	Clause No.	Tender Clause Description	Bidder Query	IGL Reply
COMMERCIAL VOLUME					
1	8	Section-I 7.1 (i)	The bidder should have minimum experience of successfully executing CNG cylinders testing work of Rs. 15,14,724/-, under single orders uring preceding 7 years from the date of issue of tender.	**Clarification on Type of Experience Required under BEC:** The Bidder Evaluation Criteria (BEC) under Section I, Clause 7.1 (i) specifies that the bidder should have executed work of minimum value of ₹15,14,724/- for "CNG cylinders testing work." Since Type-3 and Type-4 composite cylinders require significantly different testing/handling protocols, and licensing requirements under PESO as compared to Type-1 steel cylinders, it is requested to kindly clarify whether the qualifying experience must specifically pertain to testing of Type-3 / Type-4 composite cylinders, or whether experience in testing Type-1 steel cylinders would also be considered acceptable.	**Tender conditions prevail.** Type-1 CNG cylinder testing experience will also be consider however the PESO license for Type-3&4 composite cylinders is required.
2	9	Section-I 7.1 (iii)	All the testing would be done in accordance to the Gas cylinder rules guidelines (GCR-2016) which is further amended in April-2025. The Bidder should have all the additional documents & requirements, which are mentioned in GCR rule amended in April-2025	**Eligibility and Documentation under Amended GCR-2016:** Section I, Clause 7.1 (iii) states that testing shall be carried out in accordance with the Gas Cylinder Rules (GCR-2016), as amended up to April 2025, and that the bidder must possess all additional documents and requirements stipulated therein, it is requested that the specific document (s) that will be verified by IGL to establish compliance with these provisions may kindly be clarified.	**Tender conditions prevail.** Please refer the GCR rule 2025 in SCHEDULE IV point no. 02 that is Additional requirement for testing of composite cylinders. There is no specific document is required but only the Testing facility is as per the new GCR rule and follow all instructions as mentioned in the GCR
3	61	Section-V 2.13	If any cylinder is found with a passing/faulty Pressure Relief Device (PRD) assembly or cylinder valve, complete replacement of PRD assembly (if applicable) or cylinder valve (OEM make) will be done by vendor as per SOR.	**Requirement for Valve OEM Information:** As per Section V, Clause 2.13, procurement of new cylinder valves is within the vendor's scope as per OEM recommendation. Since the cost of valves varies significantly across manufacturers (for example: OMB, Emer, Vanaz, etc.), it is requested that a comprehensive list of the valve OEMs and corresponding models installed in each cascades be provided to enable accurate price quotation.	**Tender conditions prevail.** We are using OMB model Beta new valve with two different thread sizes that are 1''BS 341 and 1-1/8''-12 UNF and Minda Emer valve model ME-CVC-002 thread size as per IS:3224. Technical drawings of all the cylinder valves is attached as **Annexure-A.**
4	7	Section-I 3.0	The contract shall be valid for a period of 02 (Two) years from the date of issue of first notification of award / Letter of Acceptance (LOA).	**Impact of Material Supply on the 21-Day Delivery Timeline:** The tender stipulates a 21-day completion period per cascade. As certain spare parts are to be supplied by IGL, it is requested to confirm whether the timeline mentioned under "Duration of Contract / Delivery Schedule" (Section I, Clause 3.0, will exclude the time taken by IGL to supply such materials. In this regard, it is request confirmation of a "stop-clock" proviE7:E8sion, so that the Price Reduction Schedule (PRS) under Section IV, Clause 8.0 (Page 52) is not applied in cases where delays arise due to material supply under IGL's scope.	**Tender conditions prevail**. Delays in providing spare parts from IGL side will be excluded in delivery time of cascade hydro testing work
5		Section-I 3.0	The contract shall be valid for a period of 02 (Two) years from the date of issue of first notification of award / Letter of Acceptance (LOA).	**Projected Work quantum:** As the tender is for a two-year contract, bidder request a master list of all cascades, including their statutory hydro-test expiry dates. This information is essential for estimating the expected monthly workload/resources and planning the required facility capacity in accordance with the Scope of Work (Section V,).	**Tender conditions prevail.** List of cascades is attached as **Annexure-B.**
6	7	Section-I 1.0	Indraprastha Gas limited (IGL) (hereinafter referred as "Purchaser") is a leading natural gas retailing and distribution company and is a joint venture of GAIL India Ltd., BPCL and Govt. of NCT of Delhi. IGL is supplying Piped Natural Gas (PNG) to domestic, commercial and Industrial consumers and Compressed Natural Gas (CNG) to automobiles through steel / PE pipeline networks in NCT of Delhi & NCR along with geographical areas in UP, Haryana and Rajasthan state.	**Technical Specifications of Cylinders and Cascade Locations:** For the purpose of technical compliance and logistical planning, it is requested that details of the Cylinder Manufacturer (OEM) for each cascade, along with a cascade exact location (s) as referenced in Section I, Clause 1.0 (Page 7), may kindly be provided. This information will assist in estimating specialized tooling requirements and transportation logistic	**Tender conditions prevail.** All the cascades of Type-3&4 cylinders will be lifted from IGL station located in Delhi preferably from IGL workshops (Rohini and Patpadganj) in Delhi. Manufacturers is attached as **Annexure-C.**
7	63	Section-V 3.21	For Testing of Mobile cascades mounted on MGV: IGL will deliver the MGV with cascade installed on it at one of the IGL stations in Delhi as per decision of EIC. The scope of work includes activities not limiting to, removal of cascade from MGV, transportation of cascade to testing workshop, unloading of cascade at workshop, dismantling of cascade, inspection and hydro-stretch testing of cylinders as per ISO 11623, painting of cascade structure, assembly of cylinders, transportation of cascade to IGL station, re-installation of cascade on MGV, performance / leak testing of cascade and submission of test certificates in hard copy and PDF file in IGL. The unit of measurement for service is in numbers. Unit service for a particular configuration cascade involves all above-mentioned activities.	**Clarification on Frame Repair and Structural Replacement:** As per Section V, Clause 3.21 (Page 63) and Section VI (Schedule of Rates), the vendor is required to undertake repair / replacement of the cascade structure. As the present scope appears broad without any details, bidder requested that details regarding the extent of structural damage, detailed drawings and material specifications (of each cascade) may kindly be provided to enable accurate cost assessment. (This point is related with repairing and structural replacement of cascade frame which will be in unit "Kg" and is equivalent to weight of structure provided & replaced by vendor.	**Tender conditions prevail.** This service is required to repair either the frame or its structure if it is found in damage condition or not suitable for further usage. Its value is in unit KG per rupees and material is structural steel. It is not possible to share all the drawing of all cascades but some samples is attached as **Annexure-D**.
8	60	Section-V 2.7	The cascades are installed with top roof and other accessories, removal of these from cascade and their reinstalling after cascade testing is in vendor's scope. Reinstallation of roof on other cascade may require modification for proper fitment. The vendor is advised to bring roof along with cascade for testing in its workshop and after testing may shift combination to other station. On any case, proper fitment of cascade & roof on cascade is the responsibility of vendor. Vendor shall follow IGL safety procedure for any roof modification/ fabrication. Damage of items during work will require their replacement by vendor on free of cost basis.	**Clarification on Cascade Roof Modification/Fitment Scope:** Section V, Clause 2.7 (Page 60) requires the vendor to follow IGL safety procedures for any cascade roof modification/fabrication. In this regard, it is request that drawings and specifications of the existing cascade-roof structures, along with the expected extent of modification, may kindly be provided so that the associated labour, fabrication, and safety compliance requirements can be properly	**Tender conditions prevail**. It is not possible to share all the drawings of all cascades but some samples are attached for your reference. Modification is rarely required in case of space constraints and discussed at the time of cascade lifting or re-fitment

Note:
1. Please note that only the clarifications of the queries received from the bidder's are replied in this corrigendum, under reply to bidder's Query. In case, if any discrepancies is observed between the tender document and the clarification stated above, the tender condition shall prevails for those cases.
2. All other terms & conditions of tender document remain unaltered.
3. Bidders are requested to visit IGL website / IGL's tendering website https://igl.ewizard.in regularly for further announcement
4. Please submit the signed and stamped copy of this document along with your offer.

Annexure-A





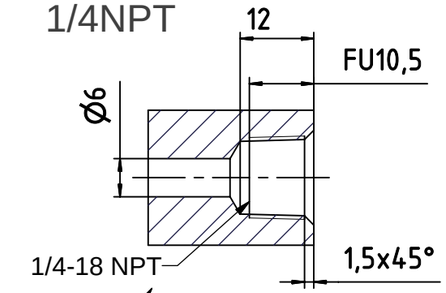
USE PERMANENT SEALER:
READ THE MOUNTING PLAN TO CHOOSE THE CORRECT TYPE

64

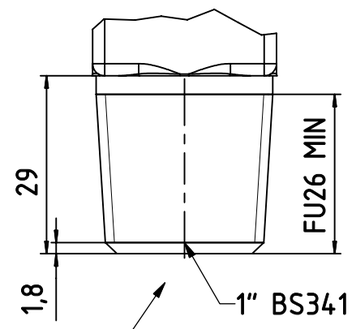
Elenco parti				
POS	DESCRIZIONE	QTÀ	MATERIALE	CODICE
1	HANDLE GROUP M22x1.5	1		693.04.122F
2	SEEGER D24 - SP I 24	1	STEEL	695.66.002
3	HANDLE	1	CW617N	693.11.204
4	OMB LOGO TYPE	1	ALUMINIUM	693.06.216
5	SEEGER D8	1	INOX	693.06.210
6	EXCESS FLOW SPRING	1	AISI 302	693.06.120
7	EXCESS FLOW SHUT-OFF WASHER	1	CW614N	691.06.116
8	NUT M13 FOR EXCESS FLOW	1	CW614N	693.02.112
9	BODY VALVE 1" BS341_ 1/4" NPT	1	CW617N	696.01.800
10	O-RING 15.6x1.78	1	FKM	691.06.121
11	SAFETY DEVICE (PRD+BD)	1	-	696.00.810F

Instruction Paper **88888252**

1/4NPT



1" BS341



6	9	6	B	N	L	N	G	G

6 9 6	*Family valve:* **BETA NEW**
B	*Container thread:* **1" BS341**
N	*Female tube fittings:* **1/4 NPT**
L	*External connection:* **SMOOTH**
N	*Safety system:* **SHORT PRD+BD(300)+EF**
G	*O-ring type:* **GLT-ED**
G	Inscription week/year **- YES**
	Paking in single box **- YES**
	Instruction paper **- YES**

"IN LINE" SOLUTION
-INDEPENDENT-

Internal Protection Cup **88888246** (3pz)

External Protection Cup **88888236** (1pz)

CRITICO / IMPORTANTE / SECONDARIO

RIPRODUZIONE E/O DIFFUSIONE VIETATA A TERMINI DI LEGGE

MODIFICA	N°	DESCRIZIONE MODIFICA	DATA	FIRMA	VISTO
	03	RDM09-153: Volantino e logo versione ADESIVA	15/05/2009	A.D.	R.S.

TOLLERANZE GENERALI UNI EN 22768 cl. m
CODICE PRIMA DEL TRATTAMENTO

NON INTERPRETATE I DISEGNI SE AVETE DUBBI CHIEDETE

FORMATO FOGLIO A3 — RICAVATO DA:

SCALA 1:1 — DATA 14/12/2006 — DISEGN. L.A. — CONTR. R.S.

TRATTAMENTO — MASSA 0,93 kg

OMB S.p.A. BRESCIA ITALY

DENOMINAZIONE: MANUAL VALVE BETA NEW _ 1" BS341 _ 1/4" NPT

MATERIALE

GRUPPO: CNG - VALVOLA BETA NEW

CODICE DISEGNO: 696BNLNGG

Annexure-B

List of Type-3 & Type-4 Cascades for Hydro-testing								
S.No.	Cascade S.No.	Cascade Configuration	Cylinder Type	Cascade Capacity (WL)	Cascade Make	Manufacturing Date	Last Hydrotest Date	Hydrotest Due Date
1	TYPE-IV/NEX-G/4500/1331	30 X 150	Type-4	4500	TIME TECHNOPLAST	Apr-23	1-Apr-23	1-Apr-26
2	TYPE-IV/NEX-G/4500/1328	30 X 150	Type-4	4500	TIME TECHNOPLAST	Apr-23	1-Apr-23	1-Apr-26
3	TYPE-IV/NEX-G/4500/1329	30 X 150	Type-4	4500	TIME TECHNOPLAST	Apr-23	1-Apr-23	1-Apr-26
4	TYPE-IV/NEX-G/4500/1334	30 X 150	Type-4	4500	TIME TECHNOPLAST	Apr-23	1-Apr-23	1-Apr-26
5	TYPE-IV/NEX-G/4500/1326	30 X 150	Type-4	4500	TIME TECHNOPLAST	Apr-23	1-Apr-23	1-Apr-26
6	TYPE-IV/NEX-G/4500/1338	30 X 150	Type-4	4500	TIME TECHNOPLAST	Apr-23	1-Apr-23	1-Apr-26
7	TYPE-IV/NEX-G/4500/1322	30 X 150	Type-4	4500	TIME TECHNOPLAST	Apr-23	1-Apr-23	1-Apr-26
8	TYPE-IV/NEX-G/4500/1336	30 X 150	Type-4	4500	TIME TECHNOPLAST	Apr-23	1-Apr-23	1-Apr-26
9	TYPE-IV/NEX-G/4500/1327	30 X 150	Type-4	4500	TIME TECHNOPLAST	Apr-23	1-Apr-23	1-Apr-26
10	TYPE-IV/NEX-G/4500/1320	30 X 150	Type-4	4500	TIME TECHNOPLAST	Apr-23	1-Apr-23	1-Apr-26
11	TYPE-IV/NEX-G/4500/1323	30 X 150	Type-4	4500	TIME TECHNOPLAST	Apr-23	1-Apr-23	1-Apr-26
12	TYPE-IV/NEX-G/4500/1332	30 X 150	Type-4	4500	TIME TECHNOPLAST	Apr-23	1-Apr-23	1-Apr-26
13	TYPE-IV/NEX-G/4500/1333	30 X 150	Type-4	4500	TIME TECHNOPLAST	Apr-23	1-Apr-23	1-Apr-26
14	TYPE-IV/NEX-G/4500/1330	30 X 150	Type-4	4500	TIME TECHNOPLAST	Apr-23	1-Apr-23	1-Apr-26
15	TYPE-IV/NEX-G/4500/1337	30 X 150	Type-4	4500	TIME TECHNOPLAST	Apr-23	1-Apr-23	1-Apr-26
16	TYPE-IV/NEX-G/4500/1325	30 X 150	Type-4	4500	TIME TECHNOPLAST	Apr-23	1-Apr-23	1-Apr-26
17	TYPE-IV/NEX-G/4500/1335	30 X 150	Type-4	4500	TIME TECHNOPLAST	Apr-23	1-Apr-23	1-Apr-26
18	TYPE-IV/NEX-G/4500/1321	30 X 150	Type-4	4500	TIME TECHNOPLAST	Apr-23	1-Apr-23	1-Apr-26
19	TYPE-IV/NEX-G/4500/1324	30 X 150	Type-4	4500	TIME TECHNOPLAST	Apr-23	1-Apr-23	1-Apr-26
20	UCPL-MEGC-4400-23-06-008	16 X 275	Type-3	4500	UTTAM	May-23	1-May-23	1-May-26
21	UCPL-MEGC-4400-23-06-005	16 X 275	Type-3	4500	UTTAM	May-23	1-May-23	1-May-26
22	UCPL-MEGC-4400-23-09-006	16 X 275	Type-3	4500	UTTAM	Jun-23	1-Jun-23	1-Jun-26
23	UCPL-MEGC-4400-23-09-009	16 X 275	Type-3	4500	UTTAM	Jun-23	1-Jun-23	1-Jun-26
24	UCPL-MEGC-4400-23-09-007	16 X 275	Type-3	4500	UTTAM	Jun-23	1-Jun-23	1-Jun-26
25	UCPL-MEGC-4400-23-09-005	16 X 275	Type-3	4500	UTTAM	Jun-23	1-Jun-23	1-Jun-26
26	UCPL-MEGC-4400-23-09-011	16 X 275	Type-3	4500	UTTAM	Jun-23	1-Jun-23	1-Jun-26
27	UCPL-MEGC-4400-23-06-007	16 X 275	Type-3	4500	UTTAM	Jun-23	1-Jun-23	1-Jun-26
28	UCPL-MEGC-4400-23-09-002	16 X 275	Type-3	4500	UTTAM	Jun-23	1-Jun-23	1-Jun-26
29	UCPL-MEGC-4400-23-09-004	16 X 275	Type-3	4500	UTTAM	Jun-23	1-Jun-23	1-Jun-26
30	UCPL-MEGC-4400-23-12-004	16 X 275	Type-3	4500	UTTAM	Jul-23	1-Jul-23	1-Jul-26
31	UCPL-MEGC-4400-23-10-004	16 X 275	Type-3	4500	UTTAM	Jul-23	1-Jul-23	1-Jul-26
32	TYPE-IV/NEX-G/4500/1388	30 X 150	Type-4	4500	TIME TECHNOPLAST	Jul-23	1-Jul-23	1-Jul-26
33	TYPE-IV/NEX-G/4500/1387	30 X 150	Type-4	4500	TIME TECHNOPLAST	Jul-23	1-Jul-23	1-Jul-26
34	UCPL-MEGC-4400-23-11	16 X 275	Type-3	4500	UTTAM	Jul-23	1-Jul-23	1-Jul-26
35	UCPL-MEGC-4400-23-12-006	16 X 275	Type-3	4500	UTTAM	Jul-23	1-Jul-23	1-Jul-26
36	UCPL-MEGC-4400-23-11-005	16 X 275	Type-3	4500	UTTAM	Jul-23	1-Jul-23	1-Jul-26
37	UCPL-MEGC-4400-23-11-001	16 X 275	Type-3	4500	UTTAM	Jul-23	1-Jul-23	1-Jul-26
38	UCPL-MEGC-4400-23-12-005	16 X 275	Type-3	4500	UTTAM	Jul-23	1-Jul-23	1-Jul-26
39	UCPL-MEGC-4400-23-11-007	16 X 275	Type-3	4500	UTTAM	Jul-23	1-Jul-23	1-Jul-26
40	UCPL-MEGC-4400-23-10-003	16 X 275	Type-3	4500	UTTAM	Jul-23	1-Jul-23	1-Jul-26
41	UCPL-MEGC-4400-23-11-006	16 X 275	Type-3	4500	UTTAM	Jul-23	1-Jul-23	1-Jul-26
42	LUI-MEGC-4500-20-11-002	16 X 275	Type-3	4500	LUXFER UTTAM	Nov-20	12-Jul-23	11-Jul-26
43	LUI-MEGC-4500-20-10-012	16 X 275	Type-3	4500	LUXFER UTTAM	Oct-20	15-Jul-23	14-Jul-26
44	LUI-MEGC-4500-21-03-009	16 X 275	Type-3	4500	LUXFER UTTAM	Jul-20	17-Jul-23	16-Jul-26
45	LUI-MEGC-4500-21-03-010	16 X 275	Type-3	4500	LUXFER UTTAM	Jul-20	1-Aug-23	31-Jul-26
46	TYPE-IV/NEX-G/4500/1400	30 X 150	Type-4	4500	TIME TECHNOPLAST	Aug-23	1-Aug-23	1-Aug-26
47	TYPE-IV/NEX-G/4500/1396	30 X 150	Type-4	4500	TIME TECHNOPLAST	Aug-23	1-Aug-23	1-Aug-26
48	TYPE-IV/NEX-G/4500/1395	30 X 150	Type-4	4500	TIME TECHNOPLAST	Aug-23	1-Aug-23	1-Aug-26
49	TYPE-IV/NEX-G/4500/1398	30 X 150	Type-4	4500	TIME TECHNOPLAST	Aug-23	1-Aug-23	1-Aug-26
50	TYPE-IV/NEX-G/4500/1393	30 X 150	Type-4	4500	TIME TECHNOPLAST	Aug-23	1-Aug-23	1-Aug-26
51	TYPE-IV/NEX-G/4500/1389	30 X 150	Type-4	4500	TIME TECHNOPLAST	Aug-23	1-Aug-23	1-Aug-26
52	TYPE-IV/NEX-G/4500/1390	30 X 150	Type-4	4500	TIME TECHNOPLAST	Aug-23	1-Aug-23	1-Aug-26
53	TYPE-IV/NEX-G/4500/1391	30 X 150	Type-4	4500	TIME TECHNOPLAST	Aug-23	1-Aug-23	1-Aug-26
54	TYPE-IV/NEX-G/4500/1392	30 X 150	Type-4	4500	TIME TECHNOPLAST	Aug-23	1-Aug-23	1-Aug-26
55	TYPE-IV/NEX-G/4500/1401	30 X 150	Type-4	4500	TIME TECHNOPLAST	Aug-23	1-Aug-23	1-Aug-26
56	TYPE-IV/NEX-G/4500/1399	30 X 150	Type-4	4500	TIME TECHNOPLAST	Aug-23	1-Aug-23	1-Aug-26
57	TYPE-IV/NEX-G/4500/1394	30 X 150	Type-4	4500	TIME TECHNOPLAST	Aug-23	1-Aug-23	1-Aug-26
58	TYPE-IV/NEX-G/4500/1407	30 X 150	Type-4	4500	TIME TECHNOPLAST	Aug-23	1-Aug-23	1-Aug-26
59	LUI-MEGC-4500-20-10-011	16 X 275	Type-3	4500	LUXFER UTTAM	Jun-20	7-Aug-23	6-Aug-26
60	LUI-MEGC-4500-20-11-003	16 X 275	Type-3	4500	LUXFER UTTAM	Dec-19	11-Aug-23	10-Aug-26
61	LUI-MEGC-4500-20-09-003	16 X 275	Type-3	4500	LUXFER UTTAM	Mar-20	21-Aug-23	20-Aug-26
62	LUI-MEGC-4500-21-03-008	16 X 275	Type-3	4500	LUXFER UTTAM	Jul-20	25-Aug-23	24-Aug-26
63	LUI-MEGC-4500-20-12-002	16 X 275	Type-3	4500	LUXFER UTTAM	Jul-20	25-Aug-23	24-Aug-26
64	LUI-MEGC-4500-20-12-001	16 X 275	Type-3	4500	LUXFER UTTAM	Jul-20	29-Aug-23	28-Aug-26
65	LUI-MEGC-4500-21-03-001	16 X 275	Type-3	4500	LUXFER UTTAM	Jul-20	31-Aug-23	30-Aug-26
66	TYPE-IV/NEX-G/4500/1410	30 X 150	Type-4	4500	TIME TECHNOPLAST	Sep-23	1-Sep-23	1-Sep-26
67	TYPE-IV/NEX-G/4500/1486	30 X 150	Type-4	4500	TIME TECHNOPLAST	Sep-23	1-Sep-23	1-Sep-26
68	TYPE-IV/NEX-G/4500/1411	30 X 150	Type-4	4500	TIME TECHNOPLAST	Sep-23	1-Sep-23	1-Sep-26
69	TYPE-IV/NEX-G/4500/1408	30 X 150	Type-4	4500	TIME TECHNOPLAST	Sep-23	1-Sep-23	1-Sep-26
70	TYPE-IV/NEX-G/4500/1409	30 X 150	Type-4	4500	TIME TECHNOPLAST	Sep-23	1-Sep-23	1-Sep-26
71	TYPE-IV/NEX-G/4500/1412	30 X 150	Type-4	4500	TIME TECHNOPLAST	Sep-23	1-Sep-23	1-Sep-26
72	LUI-MEGC-4500-21-01-017	16 X 275	Type-3	4500	LUXFER UTTAM	Aug-20	6-Sep-23	5-Sep-26
73	LUI-MEGC-4500-20-10-013	16 X 275	Type-3	4500	LUXFER UTTAM	Jun-20	9-Sep-23	8-Sep-26

Annexure-B

74	LUI-MEGC-4500-21-01-013	16 X 275	Type-3	4500	LUXFER UTTAM	Aug-20	15-Sep-23	14-Sep-26
75	LUI-MEGC-4500-20-10-014	16 X 275	Type-3	4500	LUXFER UTTAM	Jun-20	16-Sep-23	15-Sep-26
76	LUI-MEGC-4500-20-11-011	16 X 275	Type-3	4500	LUXFER UTTAM	Jul-20	19-Sep-23	18-Sep-26
77	LUI-MEGC-4500-21-01-010	16 X 275	Type-3	4500	LUXFER UTTAM	Aug-20	21-Sep-23	20-Sep-26
78	LUI-MEGC-4500-21-03-002	16 X 275	Type-3	4500	LUXFER UTTAM	Jul-20	26-Sep-23	25-Sep-26
79	LUI-MEGC-4500-21-01-015	16 X 275	Type-3	4500	LUXFER UTTAM	Aug-20	28-Sep-23	27-Sep-26
80	LUI-MEGC-4500-20-11-012	16 X 275	Type-3	4500	LUXFER UTTAM	Jul-20	28-Sep-23	27-Sep-26
81	LUI-MEGC-4500-21-02-003	16 X 275	Type-3	4500	LUXFER UTTAM	Aug-20	1-Oct-23	30-Sep-26
82	NFIE/4500/016	13 X 350	Type-4	4500	NEW FIELD	Jul-20	3-Oct-23	2-Oct-26
83	NFIE/4500/002	13 X 350	Type-4	4500	NEW FIELD	Jul-20	10-Oct-23	9-Oct-26
84	NFIE/4500/003	13 X 350	Type-4	4500	NEW FIELD	Jul-20	13-Oct-23	12-Oct-26
85	NFIE/4500/014	13 X 350	Type-4	4500	NEW FIELD	Jul-20	15-Oct-23	14-Oct-26
86	NFIE/4500/004	13 X 350	Type-4	4500	NEW FIELD	Jul-20	16-Oct-23	15-Oct-26
87	LUI-MEGC-4500-20-11-013	16 X 275	Type-3	4500	LUXFER UTTAM	Jul-20	20-Oct-23	19-Oct-26
88	NFIE/4500/006	13 X 350	Type-4	4500	NEW FIELD	Jul-20	20-Oct-23	19-Oct-26
89	NFIE/4500/007	13 X 350	Type-4	4500	NEW FIELD	Jul-20	24-Oct-23	23-Oct-26
90	NFIE/4500/020	13 X 350	Type-4	4500	NEW FIELD	Jul-20	25-Oct-23	24-Oct-26
91	NFIE/4500/017	13 X 350	Type-4	4500	NEW FIELD	Aug-20	28-Oct-23	27-Oct-26
92	NFIE/4500/010	13 X 350	Type-4	4500	NEW FIELD	Jul-20	28-Oct-23	27-Oct-26
93	NFIE/4500/005	13 X 350	Type-4	4500	NEW FIELD	Jul-20	31-Oct-23	30-Oct-26
94	NFIE/4500/018	13 X 350	Type-4	4500	NEW FIELD	Aug-20	2-Nov-23	1-Nov-26
95	NFIE/4500/013	13 X 350	Type-4	4500	NEW FIELD	Jul-20	3-Nov-23	2-Nov-26
96	NFIE/4500/009	13 X 350	Type-4	4500	NEW FIELD	Aug-20	4-Nov-23	3-Nov-26
97	NFIE/4500/001	13 X 350	Type-4	4500	NEW FIELD	Jul-20	7-Nov-23	6-Nov-26
98	NFIE/4500/012	13 X 350	Type-4	4500	NEW FIELD	Jul-20	7-Nov-23	6-Nov-26
99	NFIE/4500/015	13 X 350	Type-4	4500	NEW FIELD	Aug-20	10-Nov-23	9-Nov-26
100	LUI-MEGC-4500-21-02-008	16 X 275	Type-3	4500	LUXFER UTTAM	Oct-20	11-Nov-23	10-Nov-26
101	LUI-MEGC-4500-21-02-012	16 X 275	Type-3	4500	LUXFER UTTAM	Oct-20	12-Apr-24	11-Apr-27
102	NFIE/4500/008	13 X 350	Type-4	4500	NEW FIELD	Jul-20	13-Apr-24	12-Apr-27
103	NFIE/4500/011	13 X 350	Type-4	4500	NEW FIELD	Aug-20	14-Apr-24	13-Apr-27
104	LUI-MEGC-4500-21-01-003	16 X 275	Type-3	4500	LUXFER UTTAM	Oct-20	14-Apr-24	13-Apr-27
105	LUI-MEGC-4500-21-02-018	16 X 275	Type-3	4500	LUXFER UTTAM	Oct-20	16-Apr-24	15-Apr-27
106	LUI-MEGC-4500-21-04-004	16 X 275	Type-3	4500	LUXFER UTTAM	Nov-20	16-Apr-24	15-Apr-27
107	LUI-MEGC-4500-21-02-005	16 X 275	Type-3	4500	LUXFER UTTAM	Nov-20	17-Apr-24	16-Apr-27
108	LUI-MEGC-4500-21-01-004	16 X 275	Type-3	4500	LUXFER UTTAM	Oct-20	19-Apr-24	18-Apr-27
109	LUI-MEGC-4500-21-01-006	16 X 275	Type-3	4500	LUXFER UTTAM	Oct-20	19-Apr-24	18-Apr-27
110	NFIE/4500/037	13 X 350	Type-4	4500	NEW FIELD	Mar-21	22-Apr-24	21-Apr-27
111	LUI-MEGC-4500-21-02-009	16 X 275	Type-3	4500	LUXFER UTTAM	Oct-20	24-Apr-24	23-Apr-27
112	LUI-MEGC-4500-21-01-009	16 X 275	Type-3	4500	LUXFER UTTAM	Oct-20	27-Apr-24	26-Apr-27
113	LUI-MEGC-4500-21-03-014	16 X 275	Type-3	4500	LUXFER UTTAM	Nov-20	30-Apr-24	29-Apr-27
114	TYPE-IV/NEX-G/4500/1521	30 X 150	Type-4	4500	TIME TECHNOPLAST	May-24	1-May-24	1-May-27
115	TYPE-IV/NEX-G/4500/1544	30 X 150	Type-4	4500	TIME TECHNOPLAST	May-24	1-May-24	1-May-27
116	TYPE-IV/NEX-G/4500/1545	30 X 150	Type-4	4500	TIME TECHNOPLAST	May-24	1-May-24	1-May-27
117	TYPE-IV/NEX-G/4500/1523	30 X 150	Type-4	4500	TIME TECHNOPLAST	May-24	1-May-24	1-May-27
118	TYPE-IV/NEX-G/4500/1543	30 X 150	Type-4	4500	TIME TECHNOPLAST	May-24	1-May-24	1-May-27
119	TYPE-IV/NEX-G/4500/1519	30 X 150	Type-4	4500	TIME TECHNOPLAST	May-24	1-May-24	1-May-27
120	TYPE-IV/NEX-G/4500/1520	30 X 150	Type-4	4500	TIME TECHNOPLAST	May-24	1-May-24	1-May-27
121	TYPE-IV/NEX-G/4500/1522	30 X 150	Type-4	4500	TIME TECHNOPLAST	May-24	1-May-24	1-May-27
122	TYPE-IV/NEX-G/4500/1524	30 X 150	Type-4	4500	TIME TECHNOPLAST	May-24	1-May-24	1-May-27
123	LUI-MEGC-4500-21-01-005	16 X 275	Type-3	4500	LUXFER UTTAM	Oct-20	4-May-24	3-May-27
124	NFIE/4500/034	13 X 350	Type-4	4500	NEW FIELD	Mar-21	6-May-24	5-May-27
125	LUI-MEGC-4500-21-02-004	16 X 275	Type-3	4500	LUXFER UTTAM	Nov-20	6-May-24	5-May-27
126	NFIE/4500/019	13 X 350	Type-4	4500	NEW FIELD	Feb-21	8-May-24	7-May-27
127	LUI-MEGC-4500-21-04-009	16 X 275	Type-3	4500	LUXFER UTTAM	Dec-20	10-May-24	9-May-27
128	LUI-MEGC-4500-21-04-005	16 X 275	Type-3	4500	LUXFER UTTAM	Dec-20	10-May-24	9-May-27
129	LUI-MEGC-4500-21-04-003	16 X 275	Type-3	4500	LUXFER UTTAM	Nov-20	10-May-24	9-May-27
130	LUI-MEGC-4500-21-01-007	16 X 275	Type-3	4500	LUXFER UTTAM	Oct-20	14-May-24	13-May-27
131	NFIE/4500/033	13 X 350	Type-4	4500	NEW FIELD	Mar-21	18-May-24	17-May-27
132	LUI-MEGC-4500-21-04-011	16 X 275	Type-3	4500	LUXFER UTTAM	Jan-21	19-May-24	18-May-27
133	LUI-MEGC-4500-21-04-010	16 X 275	Type-3	4500	LUXFER UTTAM	Jan-21	21-May-24	20-May-27
134	LUI-MEGC-4500-21-03-015	16 X 275	Type-3	4500	LUXFER UTTAM	Dec-20	21-May-24	20-May-27
135	LUI-MEGC-4500-21-07-012	16 X 275	Type-3	4500	LUXFER UTTAM	Mar-21	22-May-24	21-May-27
136	LUI-MEGC-4500-21-06-007	16 X 275	Type-3	4500	LUXFER UTTAM	Feb-21	22-May-24	21-May-27
137	LUI-MEGC-4500-21-03-016	16 X 275	Type-3	4500	LUXFER UTTAM	Dec-20	23-May-24	22-May-27
138	NFIE/4500/035	13 X 350	Type-4	4500	NEW FIELD	Mar-21	24-May-24	23-May-27
139	LUI-MEGC-4500-21-05-003	16 X 275	Type-3	4500	LUXFER UTTAM	Mar-21	31-May-24	30-May-27
140	LUI-MEGC-4500-21-05-002	16 X 275	Type-3	4500	LUXFER UTTAM	Feb-21	8-Jun-24	7-Jun-27
141	LUI-MEGC-4500-21-06-018	16 X 275	Type-3	4500	LUXFER UTTAM	Feb-21	10-Jun-24	9-Jun-27
142	LUI-MEGC-4500-21-06-009	16 X 275	Type-3	4500	LUXFER UTTAM	Mar-21	11-Jun-24	10-Jun-27
143	LUI-MEGC-4500-21-10-007	16 X 275	Type-3	4500	LUXFER UTTAM	Apr-21	12-Jun-24	11-Jun-27
144	LUI-MEGC-4500-21-08-008	16 X 275	Type-3	4500	LUXFER UTTAM	Apr-21	13-Jun-24	12-Jun-27
145	NFIE/4500/022	13 X 350	Type-4	4500	NEW FIELD	Mar-21	13-Jun-24	12-Jun-27
146	NFIE/4500/021	13 X 350	Type-4	4500	NEW FIELD	Mar-21	14-Jun-24	13-Jun-27
147	LUI-MEGC-4500-21-06-019	16 X 275	Type-3	4500	LUXFER UTTAM	Feb-21	25-Jun-24	24-Jun-27
148	LUI-MEGC-4500-21-06-008	16 X 275	Type-3	4500	LUXFER UTTAM	Mar-21	27-Jun-24	26-Jun-27
149	LUI-MEGC-4500-21-11-009	16 X 275	Type-3	4500	LUXFER UTTAM	Jun-21	30-Jun-24	29-Jun-27
150	LUI-MEGC-4500-21-08-009	16 X 275	Type-3	4500	LUXFER UTTAM	May-21	3-Jul-24	2-Jul-27

Annexure-B

151	LUI-MEGC-4500-21-09-009	16 X 275	Type-3	4500	LUXFER UTTAM	Apr-21	3-Jul-24	2-Jul-27
152	NFIE/4500/036	13 X 350	Type-4	4500	NEW FIELD	Mar-21	4-Jul-24	3-Jul-27
153	NFIE/4500/023	13 X 350	Type-4	4500	NEW FIELD	Mar-21	4-Jul-24	3-Jul-27
154	LUI-MEGC-4500-21-07-015	16 X 275	Type-3	4500	LUXFER UTTAM	Mar-21	10-Jul-24	9-Jul-27
155	LUI-MEGC-4500-21-09-001	16 X 275	Type-3	4500	LUXFER UTTAM	May-21	12-Jul-24	11-Jul-27
156	LUI-MEGC-4500-21-08-015	16 X 275	Type-3	4500	LUXFER UTTAM	May-21	18-Jul-24	17-Jul-27
157	LUI-MEGC-4500-21-08-016	16 X 275	Type-3	4500	LUXFER UTTAM	May-21	29-Jul-24	28-Jul-27
158	LUI-MEGC-4500-21-11-007	16 X 275	Type-3	4500	LUXFER UTTAM	Jun-21	29-Jul-24	28-Jul-27
159	LUI-MEGC-4500-21-10-008	16 X 275	Type-3	4500	LUXFER UTTAM	Jun-21	31-Jul-24	30-Jul-27
160	NFIE/4500/038	13 X 350	Type-4	4500	NEW FIELD	Apr-21	31-Jul-24	30-Jul-27
161	LUI-MEGC-4500-21-09-002	16 X 275	Type-3	4500	LUXFER UTTAM	May-21	1-Aug-24	31-Jul-27
162	NFIE/4500/028	13 X 350	Type-4	4500	NEW FIELD	Apr-21	2-Aug-24	1-Aug-27
163	LUI-MEGC-4500-21-07-014	16 X 275	Type-3	4500	LUXFER UTTAM	Mar-21	3-Aug-24	2-Aug-27
164	LUI-MEGC-4500-21-09-006	16 X 275	Type-3	4500	LUXFER UTTAM	Apr-21	9-Aug-24	8-Aug-27
165	LUI-MEGC-4500-21-08-010	16 X 275	Type-3	4500	LUXFER UTTAM	May-21	12-Aug-24	11-Aug-27
166	LUI-MEGC-4500-21-07-013	16 X 275	Type-3	4500	LUXFER UTTAM	Mar-21	20-Aug-24	19-Aug-27
167	LUI-MEGC-4500-21-10-011	16 X 275	Type-3	4500	LUXFER UTTAM	Jun-21	22-Aug-24	21-Aug-27
168	LUI-MEGC-4500-21-10-009	16 X 275	Type-3	4500	LUXFER UTTAM	Jun-21	23-Aug-24	22-Aug-27
169	LUI-MEGC-4500-21-11-005	16 X 275	Type-3	4500	LUXFER UTTAM	Jun-21	24-Aug-24	23-Aug-27
170	NFIE/4500/024	13 X 350	Type-4	4500	NEW FIELD	Mar-21	26-Aug-24	25-Aug-27
171	LUI-MEGC-4500-21-06-017	16 X 275	Type-3	4500	LUXFER UTTAM	Feb-21	5-Sep-24	4-Sep-27
172	NFIE/4500/030	13 X 350	Type-4	4500	NEW FIELD	Apr-21	9-Sep-24	8-Sep-27
173	NFIE/4500/025	13 X 350	Type-4	4500	NEW FIELD	Mar-21	15-Sep-24	14-Sep-27
174	LUI-MEGC-4500-21-08-017	16 X 275	Type-3	4500	LUXFER UTTAM	May-21	18-Sep-24	17-Sep-27
175	LUI-MEGC-4500-21-10-010	16 X 275	Type-3	4500	LUXFER UTTAM	Jun-21	19-Sep-24	18-Sep-27
176	NFIE/4500/031	13 X 350	Type-4	4500	NEW FIELD	Apr-21	20-Sep-24	19-Sep-27
177	LUI-MEGC-4500-21-11-008	16 X 275	Type-3	4500	LUXFER UTTAM	Jun-21	20-Sep-24	19-Sep-27
178	LUI-MEGC-4500-21-11-006	16 X 275	Type-3	4500	LUXFER UTTAM	Jun-21	21-Sep-24	20-Sep-27
179	NFIE/4500/027	13 X 350	Type-4	4500	NEW FIELD	Apr-21	22-Sep-24	21-Sep-27
180	NFIE/4500/026	13 X 350	Type-4	4500	NEW FIELD	Apr-21	1-Oct-24	30-Sep-27
181	NFIE/4500/029	13 X 350	Type-4	4500	NEW FIELD	Apr-21	7-Oct-24	6-Oct-27
182	LUX-615332000080	16 X 275	Type-3	4500	LUXFER UTTAM	Aug-21	10-Oct-24	9-Oct-27
183	LUX-615332000085	16 X 275	Type-3	4500	LUXFER UTTAM	Aug-21	11-Oct-24	10-Oct-27
184	LUX-615332000079	16 X 275	Type-3	4500	LUXFER UTTAM	Aug-21	11-Oct-24	10-Oct-27
185	NFIE/4500/039	13 X 350	Type-4	4500	NEW FIELD	Apr-21	13-Oct-24	12-Oct-27
186	LUX-615332000076	16 X 275	Type-3	4500	LUXFER UTTAM	Aug-21	14-Oct-24	13-Oct-27
187	LUX-615332000078	16 X 275	Type-3	4500	LUXFER UTTAM	Aug-21	17-Oct-24	16-Oct-27
188	LUX-615332000077	16 X 275	Type-3	4500	LUXFER UTTAM	Aug-21	18-Oct-24	17-Oct-27
189	LUX-615332000082	16 X 275	Type-3	4500	LUXFER UTTAM	Aug-21	7-Nov-24	6-Nov-27
190	LUX-615332000083	16 X 275	Type-3	4500	LUXFER UTTAM	Aug-21	8-Nov-24	7-Nov-27
191	LUX-615332000092	16 X 275	Type-3	4500	LUXFER UTTAM	Nov-21	9-Nov-24	8-Nov-27
192	LUX-615332000084	16 X 275	Type-3	4500	LUXFER UTTAM	Aug-21	10-Nov-24	9-Nov-27
193	LUX-615332000091	16 X 275	Type-3	4500	LUXFER UTTAM	Nov-21	11-Nov-24	10-Nov-27
194	LUX-615332000090	16 X 275	Type-3	4500	LUXFER UTTAM	Nov-21	12-Nov-24	11-Nov-27
195	LUX-615332000081	16 X 275	Type-3	4500	LUXFER UTTAM	Aug-21	12-Nov-24	11-Nov-27
196	LUX-615332000088	16 X 275	Type-3	4500	LUXFER UTTAM	Nov-21	18-Nov-24	17-Nov-27
197	LUX-615332000086	16 X 275	Type-3	4500	LUXFER UTTAM	Nov-21	19-Nov-24	18-Nov-27
198	MRU	55 X 156	Type-4	8580	CHROMA ATOR	Dec-20	3-Jan-25	2-Jan-28
199	LUX-615332000087	16 X 275	Type-3	4500	LUXFER UTTAM	Nov-21	27-Apr-25	26-Apr-28

MOHD. AZAM ZUBERI

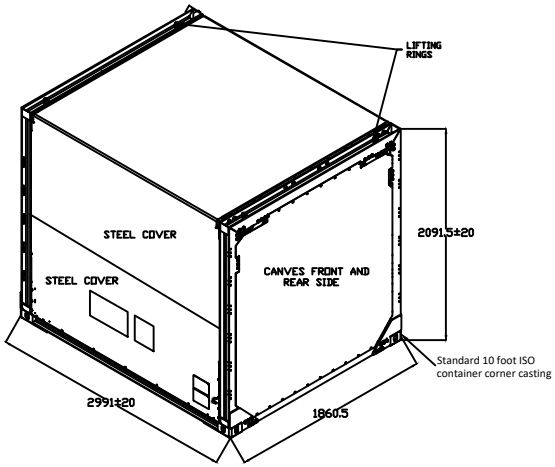
Digitally signed by MOHD. AZAM ZUBERI
DN: cn=MOHD. AZAM ZUBERI, o=INDRAPRASTHA GAS LIMITED, ou, email=azam.zuberi@igl.co.in, c=IN
Date: 2025.09.27 14:48:35 +05'30'

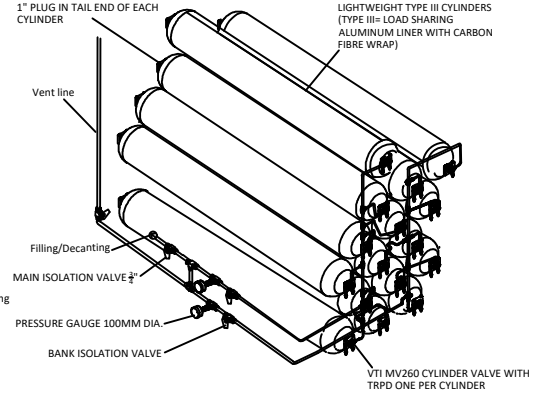
Annexure-C & D

for approval purpose

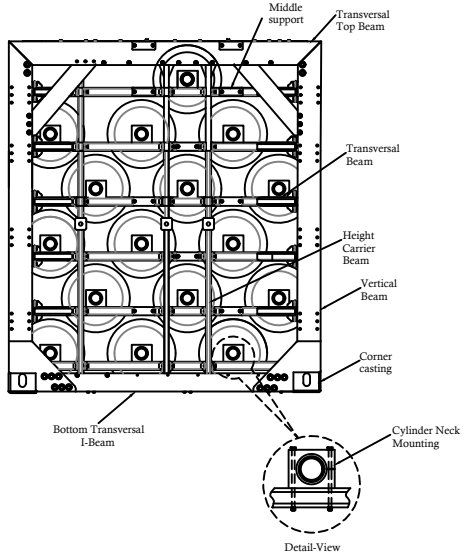
CAPACITY & MASS

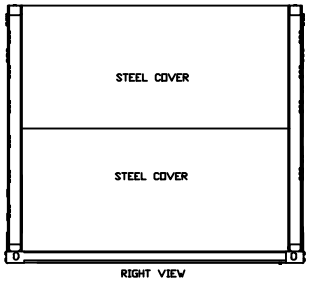
CYLINDER	CYL. COUNT	CYL. VOLUME	VOLUME	TARE	SERVICE PRESSURE(MAX.)	250 barg
TYPE III	16	275L-280L	4400L-4480L	~3,125kg	TEST PRESSURE	375 barg

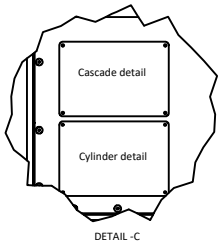


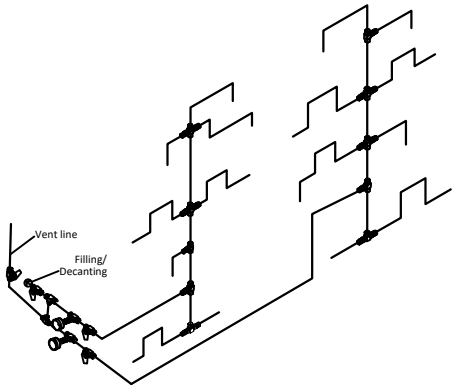


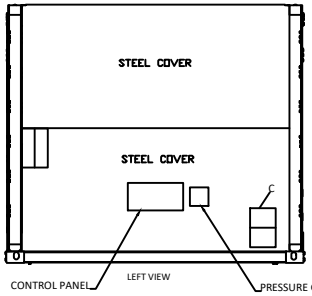
Cylinder Mounting Arrangement











Rev. no.	Description	Date
0	Fresh issue	

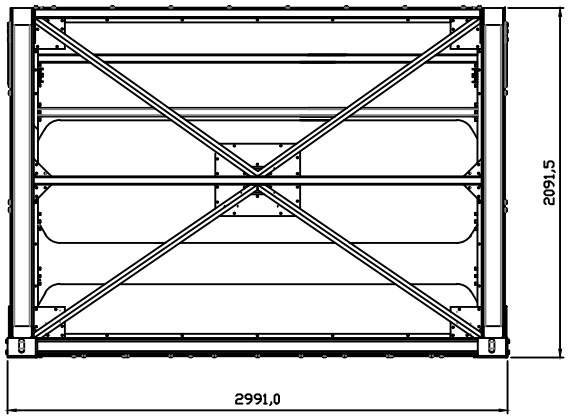
This drawing is a property of:
Luxfer Uttam India Pvt Ltd

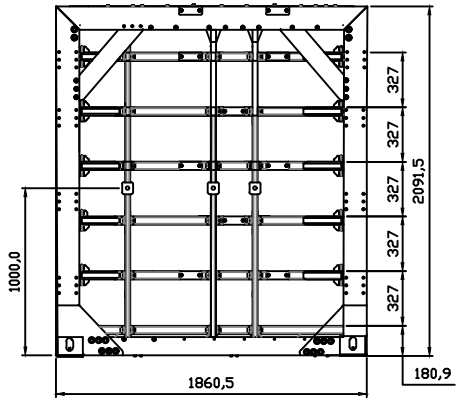
LUXFER

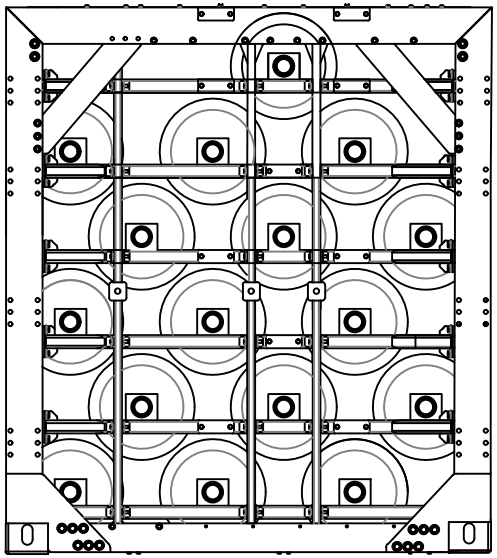
		NAME	SIG.	DATE
ALL DIMENSION ARE IN mm	MATERIAL:			
TOLERANCE WHERE UNSPECIFIED IS: Follow ISO2768m	TITLE: 4500 LTR (GAD)	DGN.		17.06.20
		CHK.		17.06.20
		APPD.		17.06.20

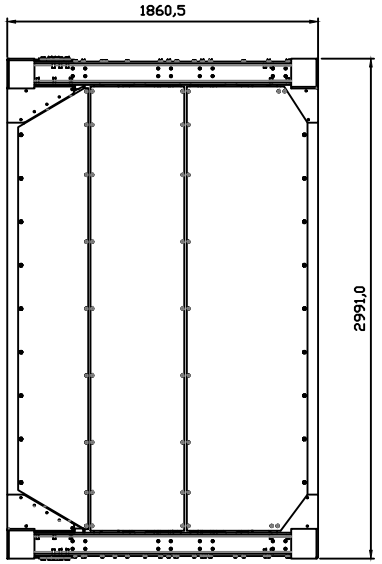
CLIENT: | Part NO. | DWG NO: GAD-4400-80-1-B-001 | REV: 0

	for sample purpose
	for production purpose









This drawing is a property of:
Luxfer Uttam India Pvt Ltd

LUXFER

0	Fresh issue	
Rev. no.	Description	Date

ALL DIMENSION ARE IN mm
TOLERANCE WHERE UNSPECIFIED IS: Follow ISO2768m

MATERIAL: S355

TITLE: DIMENSIONS OVERVIEW

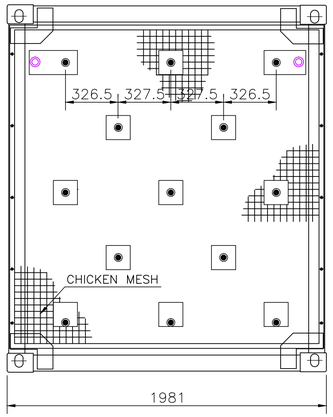
	NAME	SIG.	DATE
DGN.			31.08.20
CHK.			31.08.20
APPD.			31.08.20

CLIENT:

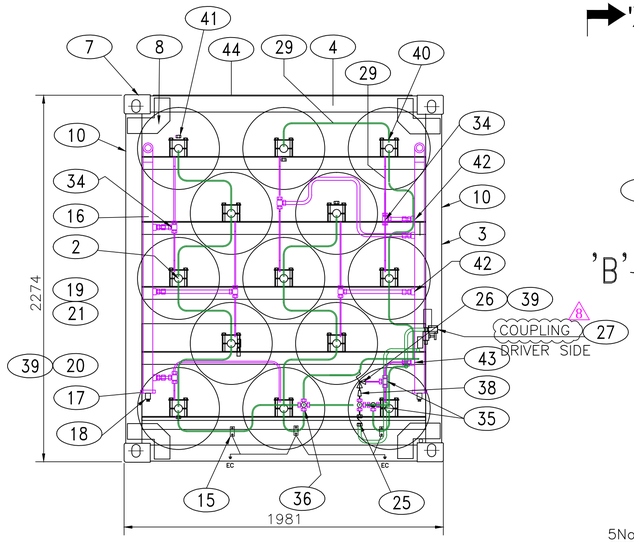
Part NO.

DWG NO: 000003

REV: 0

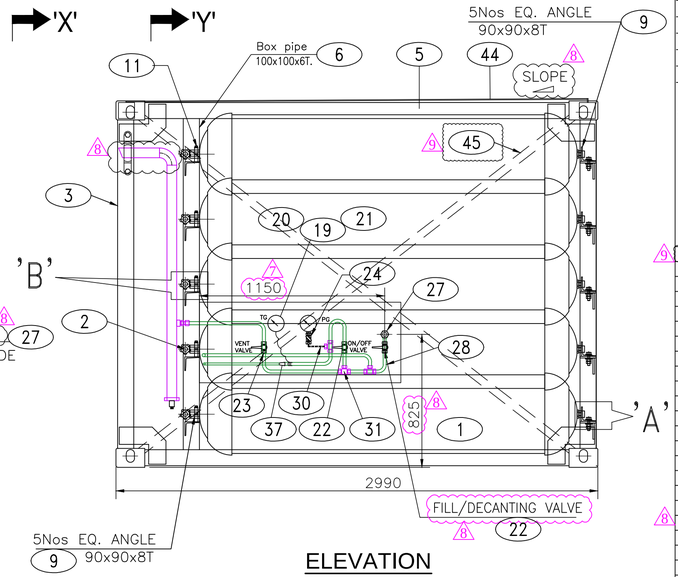


VIEW-X-X
(FRONT/OPRATIONAL SIDE)



VIEW-Y-Y

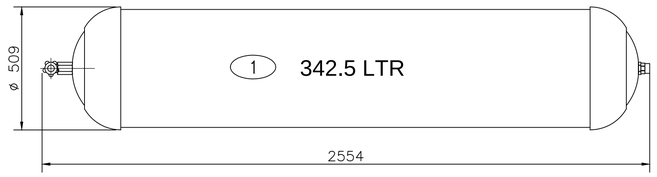
■ VENT LINE
■ PRESSURE LINE

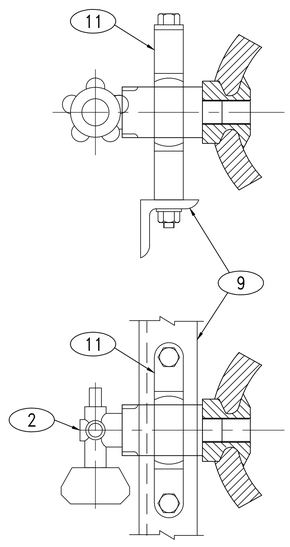


ELEVATION

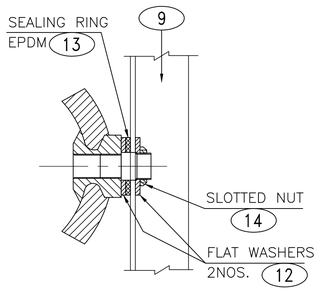
'X' 'Y'

L x W x H :- 2990 x 1981 x 2274 13 CYL x 342.5 = 4452.5 WL





DETAIL–'B'



DETAIL–'A'

CYLINDER HOLDING DETAIL

NOTE:-

1)ALL DIMENSIONS ARE IN mm. UNLESS OTHERWISE SPECIFIED.
2)ALL SHARP CORNERS SHALL BE SUITABLY ROUNDED OFF & GROUND FLUSH.
3)FRAME STRUCTURAL SHALL BE APPLIED WITH JOTAMASTIC 80 AL (100 MICRON x 2 COAT) AND FINAL GOLDEN YELLOW (50 MICRON x2 COAT)
4)STRUCTURAL STEEL SHALL BE OF ROLLED STEELS
5)CASCADE WEIGHT (WITH CYLINDERS & FITTINGS) =2.1 TON (APPROX)
6)CASCADE WORKING PRESSURE 250 BAR.(Max)
7)CYLINDER LEN. 2554mm (APROX)
8)ALL PIPE LINE UP TO CYLINDER VALVE HYDROTESTED AT 350 Kg/cm2g
9)INSTRUTION NOTE "DO NOT DEPRESSURE BELOW 15Bar. KEEP IT 15Bar"
10)TEMP. GAUGE & PR. GAUGE ARE BUMER, GIC OR WIKA MAKE

TECHNICAL SPECIFICATION

EMPTY WEIGHT OF CASCADE (kgs)		~ 2100
WEIGHT OF CNG GAS AT 250BAR(kgs)		~ 995
TOTAL WEIGHT OF CASCADE (kgs)		~ 2978
TOTAL WATER VOLUME (ltrs.)		4452.5
13 NOS. CYLINDER EMPTY WEIGHT (kgs)		~1300

PRIORITY FILLINGS
SINGLE BANK : 13 CYLS.

P.NO.	DESCRIPTION	SIZE	MATERIAL	QTY.
45	BOX PIPE – FRAME	1 1/2" x 1"	M.S.	4
44	TOP PLATE	2800 X 1760 x 3T	M.S.	1
43	SOCKET WELD CONNECTOR	3/8"O.D	S.S 316	2
42	SOCKET WELD CONNECTOR	3/4"O.D	S.S 316	6
41	PLUG	1/4"MNPT	S.S 316	3
40	CONNECTOR	1/4"MNPT x 3/8"O.D	S.S 316	36
39	CONNECTOR	1/4"MNPT x 1/4"O.D	S.S 316	3
38	UNION REDU.	3/4"x1/4" O.D	S.S 316	1
37	UNION REDU.	3/4"x3/8" O.D	S.S 316	1
36	CROSS	3/8"O.D	S.S 316	1
35	TEE	3/8"x3/8"x1/4" O.D	S.S 316	3
34	TEE	3/8"x3/8"x3/4" O.D	S.S 316	6
33	DELETED	–	–	–
32	DELETED	–	–	1
31	EQ.TEE	3/4"O.D	S.S 316	3
30	TUBE	1/4"O.D x 0.035	S.S 316	2.5 MTR
29	TUBE	3/8"O.D x 0.049	S.S 316	18 MTR
28	TUBE	3/4"O.D x 0.095	S.S 316	10 MTR
27	COUPLING	1/2"NPT-F COUPLING	S.S 316	1
26	PSV	1/4" O.D	S.S	1
25	NRV	3/4" O.D	S.S 316	1
24	NEEDLE VALVE	1/4" O.D	S.S 316	1
23	BALL VALVE	3/4" O.D	S.S 316	1
22	BALL VALVE	3/4" O.D	S.S 316	2
21	TEMP. GAUGE	DIAL 4",RANGE –20 TO +80°C	S.S 316	1
20	PRESSURE GAUGE	DIAL 4" ,RANGE 0 TO 400	S.S 316	1
19	PG PLATE	1250 x 500 x3T.	MS	1
18	COUPLING & PLUGE	1/2"NPT-F & 1/2"NPT-M	S.S	2 & 2
17	CLOSER PLATE	ø40 O.D x 5THK.	S.S	2
16	PIPE	25NB x SCH.10S	S.S	2+2MTR
15	EARTHING CLAMP	–	S.S.	3
14	SLOTTED NUT	M 55 x 16T	C.S.	13
13	SEALING RING	OD. 80 x HEX SLOT A/F 56	EPDM	13
12	FLAT WASHERS	OD. 80 x ID. 60 x 3T	C.S	26
11	BOX CLAMP.	PCH-50		13
10	TARPOLIN	6550 X 3000	–	20 SQ.MT.
9	EQ. ANGLE	90x90x8T–1930 LG.	M.S	10
8	CORNER PLATE	6T x 300 W x 300Lg.	MS	16
7	CORNER BLOCK	125T x 165 W x 180Lg.	MS	8
6	Box pipe	100x100x6T.–2054Lg.	M.S Box Pipe	2
5	Horizontal Members	100x100x6T.–2634Lg.	M.S Box Pipe	4
4	Horizontal Members	100x100x6T.–1657Lg.	M.S Box Pipe	4
3	Vertical Members	100x100x6T.–2038Lg.	M.S Box Pipe	4
2	Valve	CNG VALVE	Wheel Op.	13
1	Cylinder	342.5 LTR	TYPE–4 Cylinder	13

REV. NO.	DATE	DESCRIPTION	PREPARED	CHECKED	APPROVED
9	28.06.21	REVISED AS PER COMMENTS	MNL	NJP	SRP
8	14.06.21	REVISED AS PER COMMENTS	RS	NJP	SRP
7	25.05.21	REVISED AS PER COMMENTS	RS	NJP	SRP

Revisions

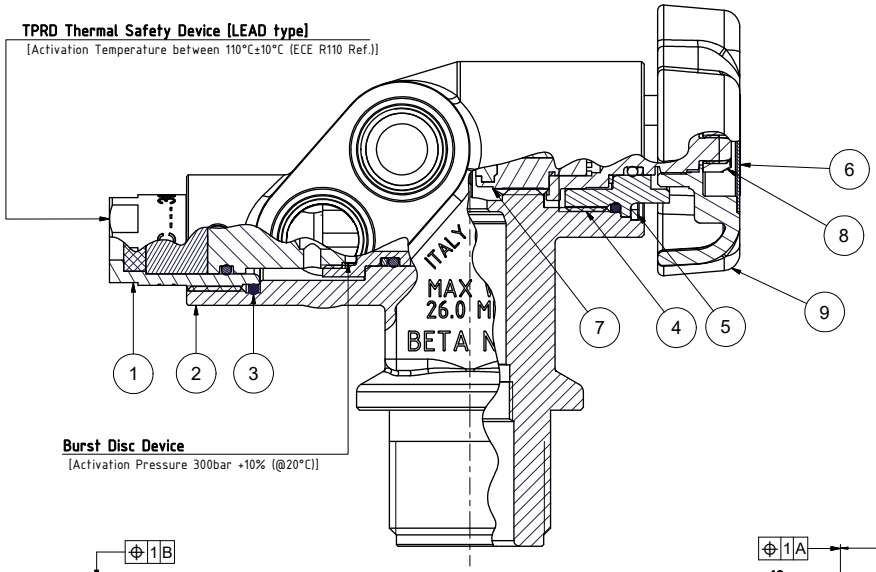
NEW FIELD INDUSTRIAL EQUIPMENT PVT.LTD
702, YASKAMAL, SAYAJIGUNJ
VADODARA - 390 005 GUJARAT, INDIA

DRAWN BY:	CHECKED BY:	APPD BY:	DATE:
RS	NJP	RAM	04.09.20

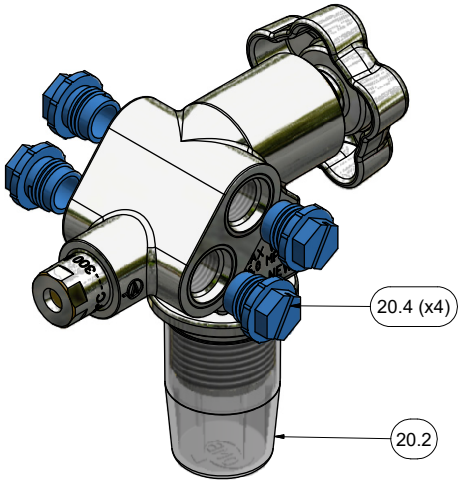
TITLE: GA OF CNG CASCADE 342.5Ltr. -250 bar.
4452.5 WL

SCALE:	JOB NO: EJ-4500	DRAWING NUMBER:	REV.:
NTS	TAG NO: 4500 / XX	30/E/3896/1	9

TPRD Thermal Safety Device [LEAD type]
[Activation Temperature between 110°C±10°C (ECE R110 Ref.)]



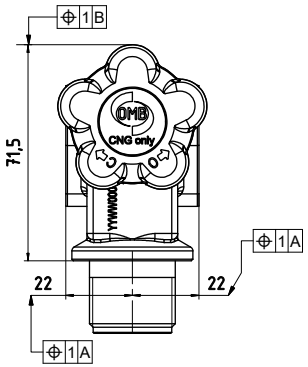
Burst Disc Device
[Activation Pressure 300bar +10% (@20°C)]

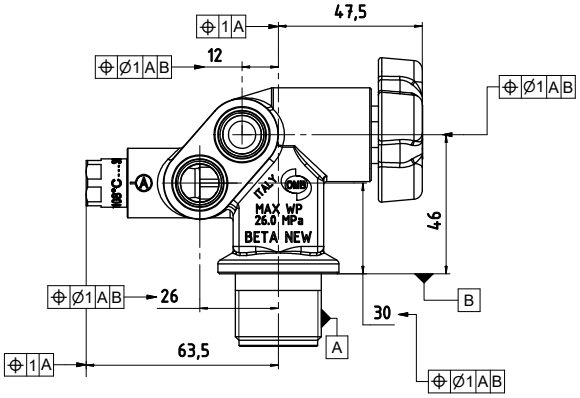


Elenco parti			
Pos.	Description	Q.ty	Code
1	PreAss. TPRD+Disc Device (Indipendent)	1	696.00.810F
2	Machined Valve Body	1	696.14.832
3	Venting O-Ring 15.6x1.78	1	691.06.121
4	Manual Tap Group (Preassembled)	1	69304254V
5	Seeger D24 - SP I 24	1	695.66.002
6	OMB LogoType (Adesive)	1	693.06.216
7	Tightness plunger	1	695.04.515
8	Nut M5x0.8 UNI 7474	1	694.06.985
9	Metal Handwheel	1	696.11.847

*** Accessories ***			
20.1	Stem O-Ring (inside a bag)	1	693.88.126F
20.2	Stem protection cap	1	691.06.003
20.3	Instructions	1	88888.252
20.4	Connection protective cap	4	88888.288

IMPORTANT REMARK FOR THE CUSTOMER:
THE ABSENCE OF THE EXCESS FLOW INVOLVES THE DECADENCE OF THE ECE-R110 APPROVAL. THIS ASPECT WILL REMAIN UNDER THE SYSTEM CONSTRUCTOR RESPONSABILITY.





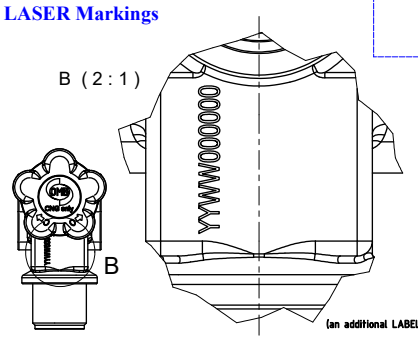
T *Safety discharge connection:* **DOUBLE PORTS**

6	9	6	U	U	L	R	G	G	T

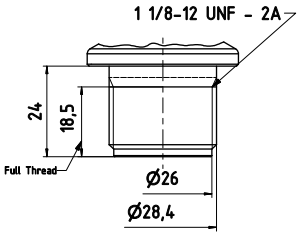
6 9 6	*Family valve:* **BETA NEW**
U	*Container thread:* **1"1/8 - 12UNF -2A**
U	*Female tube fittings:* **9/16" - 18UNF -2B**
L	*External connection:* **SMOOTH**
R	*Safety system:* **TPRD + Burst Disc** (w/o EF Device)
G	*O-ring type:* **GLT-ED**
G	Inscription week/year - **YES** (Standard) Packing in single box - **YES** Instruction paper - **YES**

Laser Markings detail

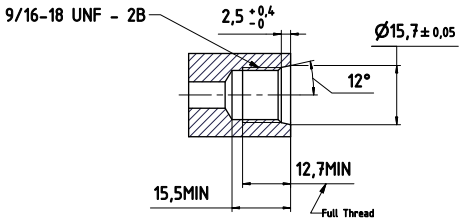
LASER Markings

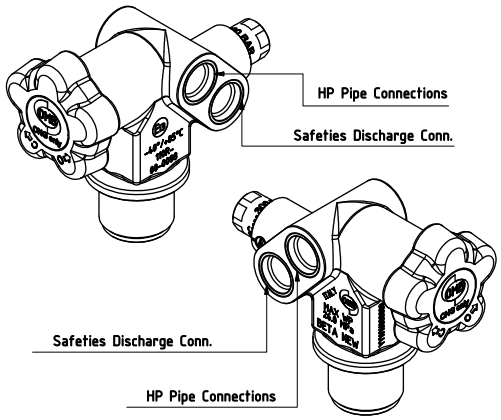


Stem Detail
1"1/8 -12 UNF - 2A



Connections Detail (x4)
9/16"-18 UNF - 2B





00	RDM20-073: Issued				GENERAL TOLERANCE EN 22768 cl. m K	
REVISION No	REVISION DESCRIPTION	REVISION DATE	MODIFIED BY	CONTROL BY	PRE TREATMENT	PART NUMBER
CRITICAL / IMPORTANT	DO NOT INTERPRET THE DRAWINGS, IF YOU HAVE DOUBTS ENQUIRE FOR EXPLANATIONS	PAPER SIZE A2	SCALE	DATE 10/02/2020	DRAWN BY N.D.	CONTROL BY R.S	TREATMENT	WEIGHT 0,9 kg
For critical and important dimensions subjected to checks for variables we require a CPK value ≥ 1.33	REFERENCE.							
OMB S.p.A. BRESCIA ITALY	DESCRIPTION: Manual Valve "BETA NEW" – Stem 1"1/8UNF – 9/16"UNF – TPRD/Burst Disc (w/o EF Device)				MATERIAL	
	PROJECT GROUP: P-CNG007				PART NUMBER: 696UULRGGT	

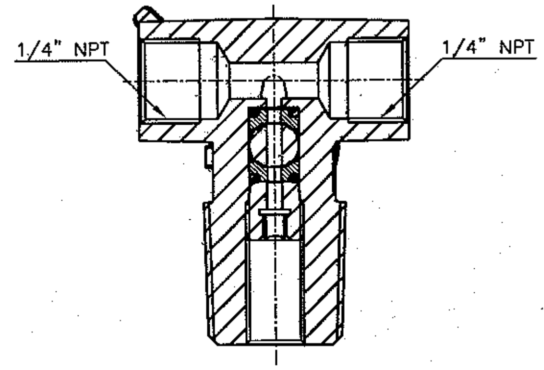
THIS DRAWING IS THE SOLE PROPERTY OF M/S MINDA AUTOGAS LTD. IT SHALL NOT BE COPIED/REPRODUCED/MADE KNOWN TO ANY OTHER PARTY IN PART OR IN FULL WITHOUT OUR PRIOR WRITTEN PERMISSION.

DRG.NO.:

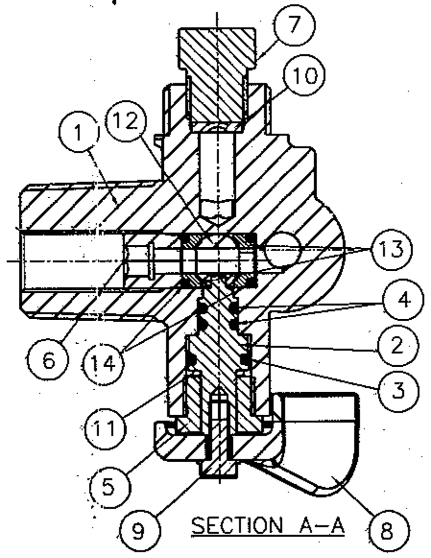
CLASSIFICATION OF CHARACTERISTICS			
CRITICAL	●	KEY INSTRUCTION	▲
MAJOR	◐	S. NO OF DIMENSION	< >

GD&T SYMBOL: STRAIGHTNESS, SYMMETRY, FLATNESS, CIRCULAR RUN OUT, CIRCULARITY, TOTAL RUN OUT, CYLINDRICITY, PERPENDICULARITY, PROFILE OF ANY LINE, ANGULARITY, PROFILE OF ANY SURFACE, POSITION, PARALLELISM, CONCENTRICITY

DO NOT SCALE, ASK IF IN DOUBT	
Total no. of dimensions	
Major dimensions	
Other dimensions	



SECTION B–B

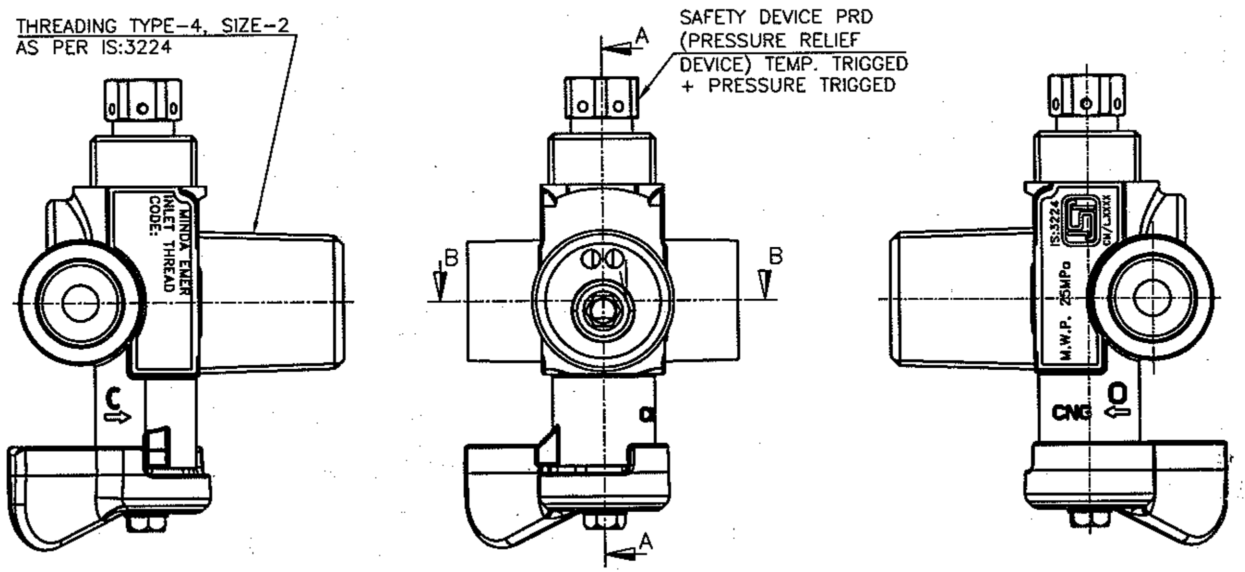


SECTION A–A

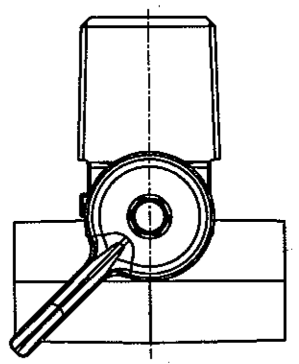
S.NO	ITEM DESCRIPTION	MINDA PART NO	MATERIAL	QTY.
14	HNBR O–RING	A4D–C–5753	HNBR –40°C 85 Sh.A	2
13	BALL SMALL SEAT	A4D–C–5743	DELRIN	2
12	BALL WITH PASSAGE	A4D–C–5763	BRASS AS PER IS:319 Gr–1, HB	1
11	WASHER	A4D–C–5742	DELRIN	1
10	BURST DISC	A4D–C–6256	CONFIRMS TO IS:5903 (FLAT DISC)	1
9	INOX HEXAGONAL HEAD SCREW	A4D–C–5745	SS302	1
8	RED BRASS HANDWELL	A4D–C–5748	ADC12	1
7	SUB ASSY. PRESSURE RELIEF DEVICE WITH FUSIBLE ALLOY	A4D–C–6218–02	TO COMPLY IS:3224	1
6	BALL SEATS METAL RING	A4D–C–5769	BRASS AS PER IS:319 Gr–1, HB	1
5	HANDWELL METAL RING	A4D–C–5750	BRASS AS PER IS:319 Gr–1, HB	1
4	HNBR O–RING	A4D–C–5770	HNBR –40°C 85 Sh.A	2
3	HNBR O–RING	A4D–C–5754	HNBR –40°C 85 Sh.A	1
2	PREASSEMBLED HANDWELL PIN WITH O–RING	A4D–C–5766	EN1A	1
1	BODY CYL. VALVE MACHINED	A4D–C–6308	BRASS FHTB–1 AS PER IS:6912	1

OPERATING CONDITIONS	
APPLICATION FUEL	[illegible]
WORKING PRESSURE (MPa)	2[illegible]
BURST DISC BURSTING PRESSURE (MPa)	3[illegible]
FUSIBLE PLUG YIELD TEMPERATURE (°C)	1[illegible]

अनुमोदित APPROVED
पत्र संख्या / Letter No. G-3(40)230(I)
दिनांक / Date 10.01.2018
मुख्य विस्फोटक नियंत्रक / Chief Controller of Explosives



MODEL NO.	PART No. / DRG No.	DESCRIPTION	VALVE INLET THREAD SIZE	VALVE OUTLET THREAD
ME–CVC–002	A4D–A–6334	CYLINDER VALVE CASCADE ME–CVC–002	TYPE 4, SIZE–2	1/4" NPT



NOTES:
1. VALVE CLASSIFICATION: DIRECT ACTING VALVE
2. VALVE TYPE: DESIGN SIMILAR TO TYPE–A, BUT KNOB OPERATED.
3. METHOD OF SPINDLE SEALING: BALL TYPE VALVE.
4. ALL OTHER REQUIREMENTS STATED IN IS:3224 WHICH ARE NOT MENTIONED IN THIS DRAWING SHALL ALSO BE COMPLIED WITH.
5. SPECIFICATIONS MENTIONED AGAINST ITEM DESCRIPTION IN BILL OF MATERIAL ARE MANUFACTURER DECLARATION.

7/12/2017
(अमरजीत सिंह / Amarjit Singh)
BUREAU OF INDIAN STANDARDS
S.C.O. 21, Sector-12, Faridabad

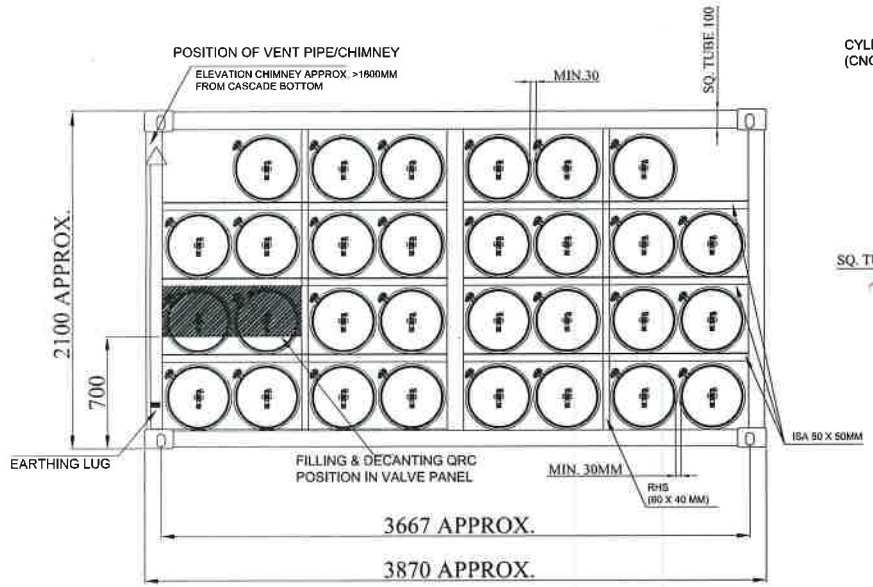
For Minda Emer Technologies Ltd.
Authorised Signatory

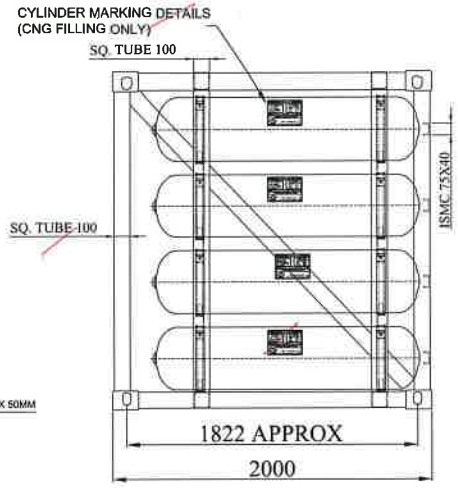
CAD UPD	NO.	ECN NO.	REVISION DETAILS	DATE	PREP	CHKD	APPD
				5.12.17	RC		

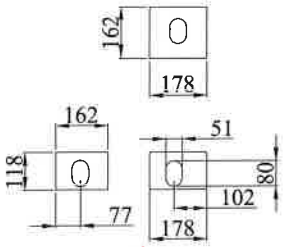
REFERENCE : ---
SURFACE TREATMENT: -
CAD SOFTWARE
ANG.TOL. ---
GEN.TOL.
SCALE NTS
PART FOR: CYLINDER VALVE FOR CASCADE TYPE–4
MATERIAL: REFER TABLE
- ALL DIMENSIONS ARE IN mm.
- NO SHARP EDGES, CRACKS, DEFORMATIONS, ETC. ALLOWED
ELV/RoHS STATUS: ELV ☑ RoHS ☐
Mass (gms): ---
DESCRIPTION: CYLINDER VALVE CASCADE ME–CVC–002
UNO MINDA — emer — MINDA EMER TECHNOLOGIES LIMITED GURGAON, HARYANA (INDIA).
DRG.NO. A4D–A–6334 — 1/1 — A2
FILE PATH:

PE	1
SQA	1
QA	1
PUR	2
DEPT.	NO
DISTBN.	

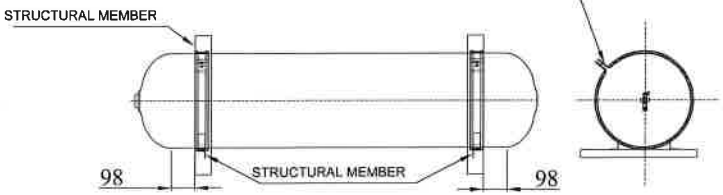
Form no. SOP0703/F15 | ISSUE / Rev.No : 00 | Revision Date: 01.04.08







ISO CASTING CORNER (ISO 1161)
FOR CASCADE MOUNTING



MOUNTING STRAP
WITH EPDM CUSHIONING PAD
SUPPORTING 360° OF CYLINDER

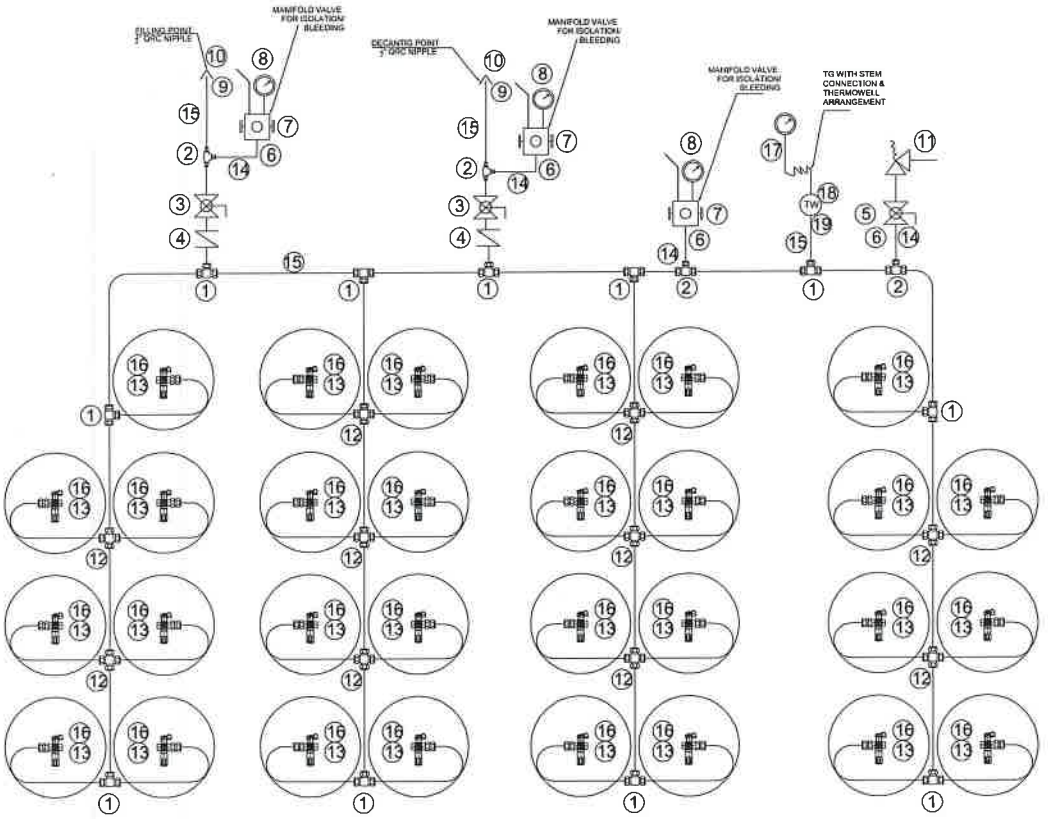
**CYLINDERS SHALL BE MOUNTED/FIXED ON FRAME AS PER OISD 179 REQUIREMENT

NOTES :

1. ALL SHARP EDGE CORNERS SHALL BE SUITABLY FINISHED.
2. STRUCTURAL STEEL GRADE SHALL BE IS 2062 & IS 4923 FOR FRAME FABRICATION.
3. FRAME STRUCTURE SHALL BE CORROSION FREE
4. FRAME SHALL BE FREE STANDING.
5. SHOT BLASTING SHALL BE DONE TO SA 2.5
6. PAINTING SHALL BE DONE IN TWO COATS OF EPOXY PRIMER AND PAINT RAL 7032. MIN. DFT SHALL BE MIN. 200 MICRONS.
7. CASCADE SHALL HAVE LIFTING AND MOUNTING FACILITY WITH ISO CORNER CASTINGS AS PER ISO 1161
8. CYLINDER DESIGN IN ACCORDANCE WITH ISO 11119-3 (PESO APPROVED LICENCE NO.- G.3(42)812)
9. CASCADE CAPACITY : 4500L (WATER CAPACITY) (AT AMBIENT TEMPERATURE)
10. EACH PNEUMATIC FITTING SHALL BE TESTED FOR LEAKAGE AT MINIMUM 250 BAR
11. CYLINDER DIMENSIONS : Ø392 x 1670 mm
12. NO. OF CYLINDERS : 30
13. WEIGHT OF CYLINDER : 44 ± 2 KG
14. CASCADE OUTER DIMENSION : 3870 x 2000 x 2100 MM APPROX.
15. CASCADE EMPTY WEIGHT (INCLUDING CYLINDERS, MOUNTING STRAPS, TUBING AND FITTINGS) : 3.0 METRIC TONNE
16. CASCADE CYLINDERS SHALL BE PURGED AND SUPPLIED WITH N2 FILLED AT 2 BAR
17. CASCADE WORKING PRESSURE : 250 BAR MAX, AT 15 °C
18. CYLINDER DESIGN, CONSTRUCTION, MANUFACTURING AND TESTING IN ACCORDANCE WITH ISO 11119-3 (2013)
19. 4G CALCULATION FOR ALL DIRECTION ON CYLINDERS MOUNTED FRAME SHALL BE SUBMITTED SEPARATELY
20. CYLINDERS SHALL BE MOUNTED IN FRAME AS PER OISD 179 REQUIREMENT
21. PESO APPROVED CYLINDER OF SAME CAPACITY SHALL GET FITTED IN CASCADE WITH REQUIRED 'CNG' FILLING PERMISSION BY PESO.

R3A

ALL DIMS. ARE IN M.M., EXCEPT STATED.	PROJECT	IGL		
THIS DRAWING / DOCUMENT IS THE PROPERTY OF TIME. IT SHOULD NOT BE COPIED OR REPRODUCED IN ANY FORM WITHOUT WRITTEN PERMISSION OF TIME, MUMBAI.	EQUIPMENT	CNG CASCADE		
	QTY. REQD.	01		
TITLE :- GA DRAWING 4500L (30 x 150L) CNG CASCADE -IGL		NAME	SIGN.	DATE
	DRN. BY	Rajesh Singh		13.04.2023
	CHD. BY	R.B.		13.04.2023
	APP. BY	N.J.		13.04.2023
TIME TECHNOPLAST LTD. 102, Todi Complex, 35, Saki-Vihar Road, Andheri (East), Mumbai - 400 072. Maharashtra, (INDIA)	SCALE 1:1	DRG. NO. :- MEGC 30 1B 4.5KL 22		REV. R2
PATH D:\cascade\IGL\30 CYLINDER\MEGC 30 1B 4.5KL 22 R2 GA DRAWING.dwg				Size-A3



SR.	PART NAME	MATL. SIZE / DRG. NO.	MATL.	QTY.	REMARKS
19	CONNECTOR	3/4" OD x 1/2" NPTF	S.S. 316	1	PARKER /SWAGELOK/HAMLET
18	THERMOWELL	INSTRUMENT CONNECTION ½" NPTF & PROCESS CONNCETION ½" NPTM	S.S. 316	1	GIC
17	TEMPRETURE GAUGE	1/2" NPTM, 100MM,LONG CABLE WITH CAPILLARY TYPE, TEMP. RANGE (- 50°C TO 200°C)	S.S. 316	1	WIKA/BAUMER/GIL
16	CYLINDER VALVE			30	EMER/OMB/APPROVED BY CCOE
15	TUBING	3/4" OD x 0.095" THK.	S.S. 316	50	SANDVIK/TUBACEX/PARKER
14	TUBING	1/2" OD x 0.065" THK.	S.S. 316	10	SANDVIK/TUBACEX/PARKER
13	MALE CONNECTOR	3/4" OD x 1/2" NPTM	S.S. 316	31	PARKER /SWAGELOK/HAMLET
12	EQUAL CROSS	3/4" OD	S.S. 316	11	PARKER /SWAGELOK/HAMLET
11	SAFTY RELIEF VALVE	1/4" OD 1/4" NPTM WITH 1/2" OD 1/4" NPTF CONNECTOR (PRESSURE RATING 4000-5000 PSI)	S.S. 316	1	PARKER /SWAGELOK
10	QRC NIPPLE	1/2" OD x 1/2" NPTF	S.S. 316	2	PARKER
9	MALE CONNECTOR	3/4" OD x 1/2" NPTM	S.S. 316	2	PARKER /SWAGELOK/HAMLET
8	PRESSURE GAUGE	1/2" NPTM, 100MM, GLYCERINE FILLED	S.S. 316	3	WIKA/BAUMER/GIL
7	VALVE MANIFOLD	3 WAY WITH VENT & ISOLATION	S.S. 316	3	PARKER /SWAGELOK
6	MALE CONNECTOR	1/2" OD x 1/2" NPT	S.S. 316	4	PARKER /SWAGELOK/HAMLET
5	BALL VALVE	1/2" OD	S.S. 316	1	PARKER /SWAGELOK
4	NON RETURN VALVE	3/4" OD	S.S. 316	2	PARKER /SWAGELOK
3	BALL VALVE	3/4" OD	S.S. 316	2	PARKER /SWAGELOK
2	UNEQUAL TEE	3/4" x 1/2" x 3/4" OD	S.S. 316	4	PARKER /SWAGELOK/HAMLET
1	EQUAL TEE	3/4" OD	S.S. 316	11	PARKER /SWAGELOK/HAMLET

NOTES :

1. APPROVED MAKE SS FITTINGS & VALVES TEST CERTIFICATES SHALL BE PROVIDED AT THE TIME OF THIRD PARTY INSPECTION FOR REVIEW.

2. CYLINDER VALVE WITH TPRD & BURST DISC. INLET THREAD CONNECTION AS PER IS 3224; TYPE 4 SIZE 2 THREAD

ALL DIMS. ARE IN M.M., EXCEPT STATED.

PROJECT	IGL		
EQUIPMENT	CNG CASCADE		
QTY. REQD.	01		
	NAME	SIGN.	DATE
DRN. BY	Rajesh Singh		13.04.2023
CHD. BY	R.B.		13.04.2023
APP. BY	N.J.		13.04.2023

TITLE :- P & ID - PRESSURE MANIFOLD 4500L 1 BANK CASCADE

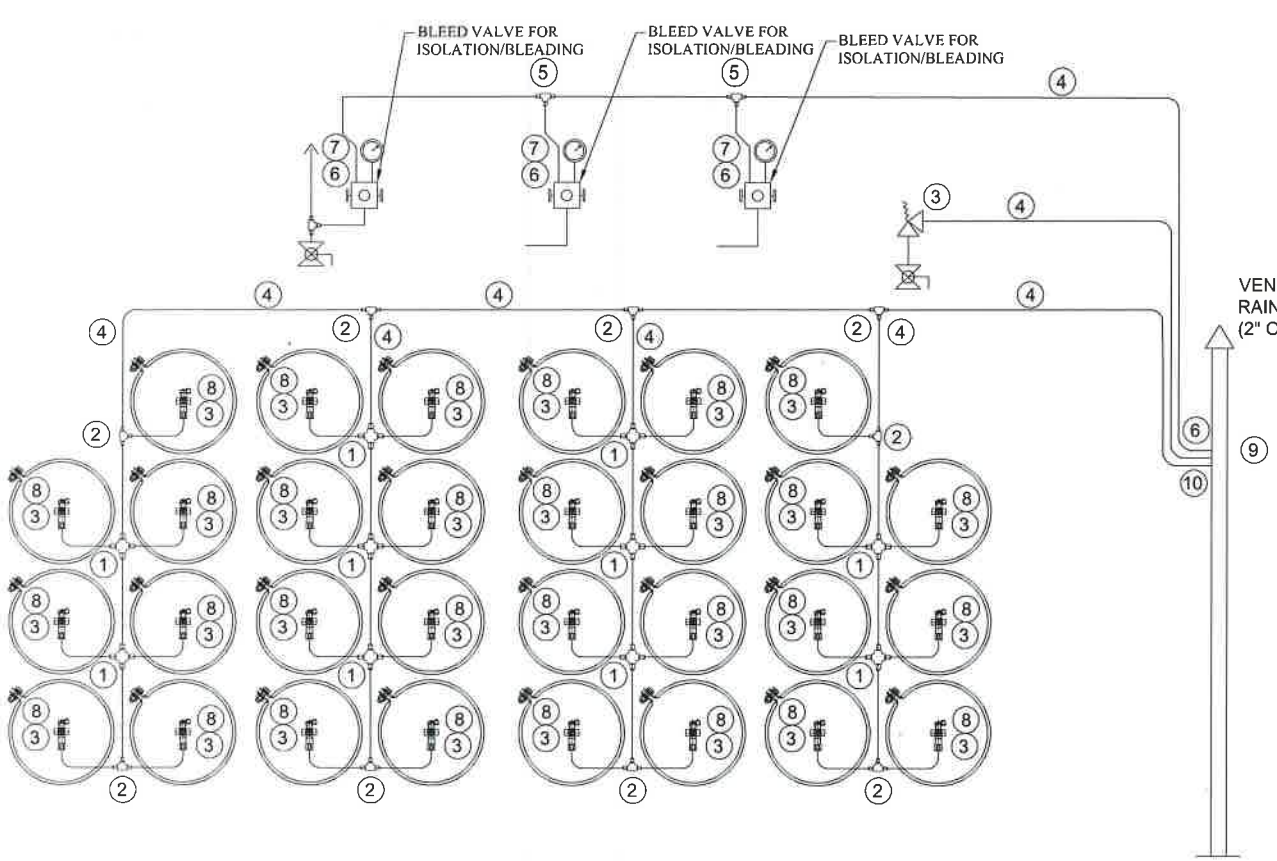
SCALE 1:1

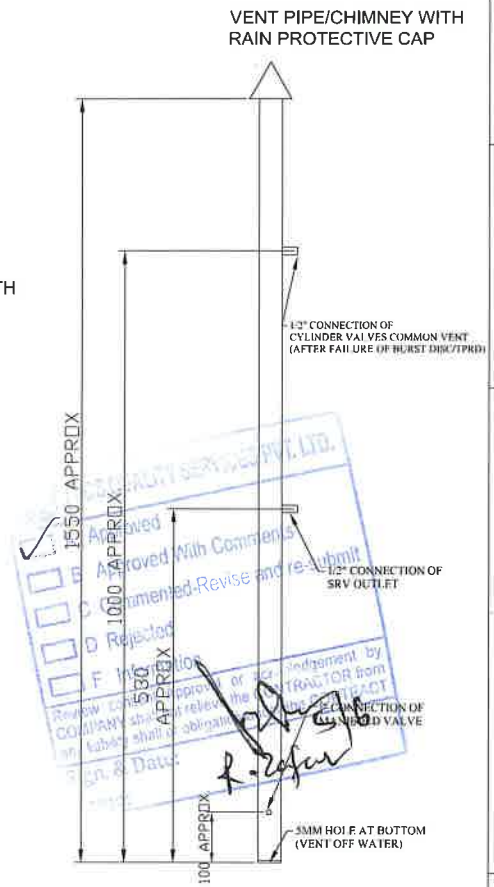
DRG. NO. :- MEGC301B4.5KL22 REV. R3 A

TIME TECHNOPLAST LTD.
102, Todi Complex, 35, Saki-Vihar Road, Andheri (East), Mumbai - 400 072. Maharashtra. (INDIA)

PATH D:\cascade\IGL\30 CYLINDER\MEGC 30 1B 4.5KL 22 R3 P & ID PRESSURE MANIFOLD.dwg

Size-A3





GA OF VENT PIPE HEADER/CHIMNEY

SR.	PART NAME	MATL. SIZE / DRG. NO.	MATL.	QTY.	REMARKS
10	MALE CONNECTOR	1/2" OD x 1/2" NPTM	S.S. 316	2	PARKER /SWAGELOK/HAMLET
9	VENT HEADER PIPE	2" OD , 2M LONG	M.S.	1	TTL
8	PLUG FOR UNUSED PORT	1/4" NPTM	SS 316	30	PARKER /SWAGELOK/HAMLET
7	TUBING	1/4" OD	S.S. 316	7	SANDVIK /TUBACEX/PARKER
6	MALE CONNECTOR	1/4" OD x 1/2" NPTM	S.S. 316	5	PARKER /SWAGELOK/HAMLET
5	EQUAL TEE	1/4" OD	S.S. 316	2	PARKER /SWAGELOK/HAMLET
4	TUBING	1/2" OD	S.S. 316	45	SANDVIK /TUBACEX/PARKER
3	MALE CONNECTOR	1/2" OD x 1/4" NPTM	S.S. 316	30	PARKER /SWAGELOK/HAMLET
2	EQUAL TEE	1/2" OD	S.S. 316	9	PARKER /SWAGELOK/HAMLET
1	EQUAL CROSS	1/2" OD	S.S. 316	11	PARKER /SWAGELOK/HAMLET

NOTE :
1. CYLINDER VALVE WITH TPRD AND BURST DISC. THREAD DIMENSIONS AS PER IS 3224 : 2002 TYPE 4 SIZE 2 OF EMER MAKE (PESO APPROVED)

R3A

ALL DIMS. ARE IN M.M., EXCEPT STATED.

PROJECT	IGL		
EQUIPMENT	CASCADE		
QTY. REQD.	01		
	NAME	SIGN.	DATE
DRN. BY	Rajesh Singh		13.04.2023
CHD. BY	R.B.		13.04.2023
APP. BY	N.J.		13.04.2023

TITLE :- P & ID - VENT MANIFOLD 4500L 1BANK CASCADE

SCALE 1:1

DRG. NO. :- MEGC 30 1B 4.5KL 22 R2

REV.

TIME TECHNOPLAST LTD.
102, Todi Complex, 35, Saki-Vihar Road, Andheri (East),
Mumbai - 400 072. Maharashtra, (INDIA)

PATH D:\cascade\IGL\30 CYLINDER\MEGC 30 1B 4.5KL 22 R2 P & ID VENT MANIFOLD.dwg

Size-A3