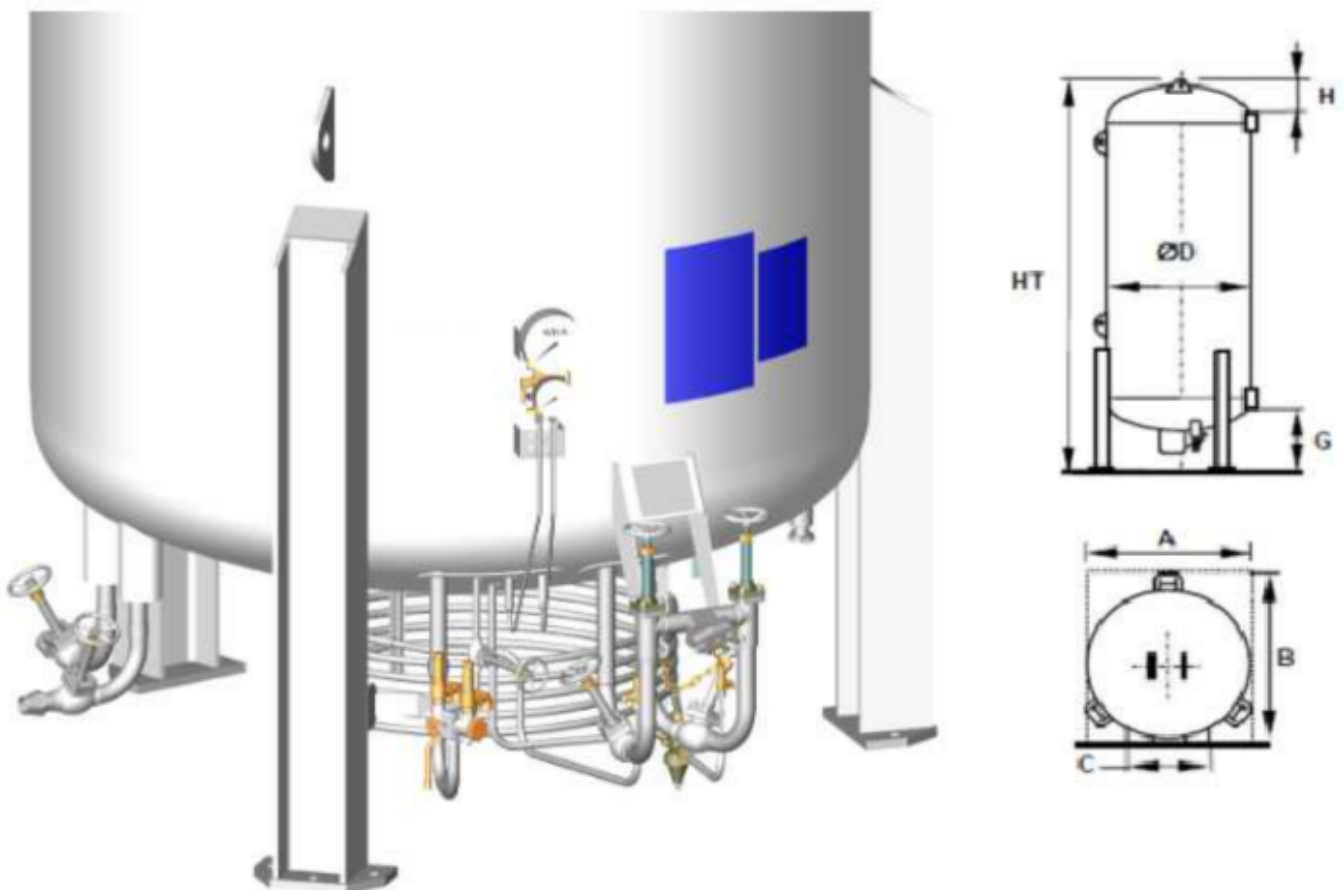


CRYOLOR ASIA PACIFIC introduces the latest generation vacuum insulated cryogenic tank, the **Céline 3**, for Liquid Nitrogen, Oxygen or Argon service. Available in a range of sizes with a Maximum Allowable Working Pressure of **250 psig** (≈ 17 bar), **Céline 3** is designed in accordance with **ASME Section VIII Division 1 with 'U' stamp**.

Moreover, the support legs used in the Céline 3 range are calculated **to resist high winds and earthquakes (IBC code)**

- **The widest range of standard options:** Introduced by CRYOLOR, our innovative modular design using prefabricated piping modules, allows the basic model to be customized to satisfy virtually all possible technical requirements.
- **A maximum use of Stainless steel:** Only Céline 3 uses as much stainless in its construction to guarantee the lowest life cycle costs - valves, interconnecting piping, pressure raising coil and all welded connections are stainless steel.
- **Components selected for their operational reliability:** Mono-bloc pressure building economizer - regulator, safety system with dual relief valves and burst discs as standard, stainless steel valves.
- **Reduced overall operational costs:** Optimized pipework layout with fewer connections minimize potential leaks and facilitate operation & servicing, filling assembly isolation valves, proven painting techniques guarantee years of carefree operation.



Disclaimer: The image shown above is just a representation of the tank, The actual product may vary on its appearance and size.

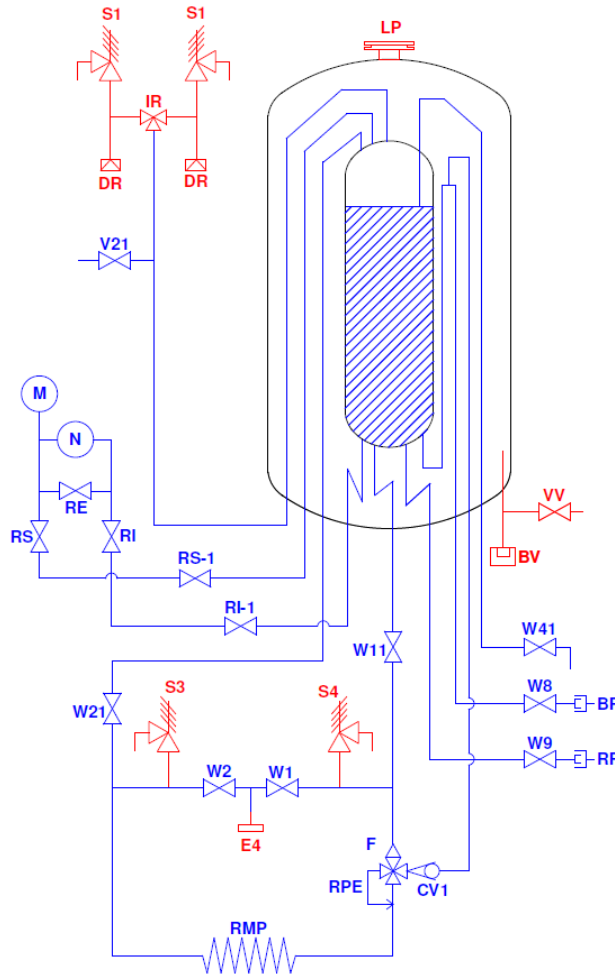
| TYPE | CA 6 (1.5 KUSG) | | CA 11 (3 KUSG) | | CA 14 (4 KUSG) | | CA 19 (5 KUSG) | | CA 21 (6 KUSG) | | CA 27 (7.5 KUSG) | |
|---------------------------------------|--------------------|-------|-------------------|-------|-------------------|-------|-------------------|-------|-------------------|-------|---------------------|--------|
| Gross capacity (liters / USG) * | 6150 | 1625 | 10540 | 2784 | 14910 | 3939 | 19290 | 5096 | 23660 | 6250 | 28040 | 7407 |
| Net capacity (liters / USG) * | 5843 | 1544 | 10013 | 2645 | 14165 | 3742 | 18326 | 4841 | 22477 | 5938 | 26638 | 7037 |
| Boil off Rate O2 (%) | 0.28 | | 0.26 | | 0.24 | | 0.23 | | 0.22 | | 0.20 | |
| Empty weight (kg / lbs) | 4200 | 9259 | 5600 | 12346 | 7250 | 15984 | 8650 | 19070 | 10200 | 22487 | 11700 | 25794 |
| Weight full Nitrogen (kg / lbs) - LIN | 8921 | 19668 | 13691 | 30182 | 18695 | 41216 | 23457 | 51715 | 28361 | 62526 | 33224 | 73245 |
| Weight full Oxygen (kg / lbs) - LOX | 10867 | 23957 | 17025 | 37533 | 23412 | 51615 | 29560 | 65169 | 35846 | 79027 | 42094 | 92801 |
| Weight full Argon (kg / lbs) - LAR | 12339 | 27203 | 19548 | 43096 | 26982 | 59485 | 34178 | 75350 | 41510 | 91515 | 48807 | 107600 |
| Continuous flow rate | | | | | | | | | | | | |
| For 8 Hours at 8 bar (Nm3/h) - LIN | 500 | | 500 | | 500 | | 2000 | | 2000 | | 2000 | |
| For 8 Hours at 8 bar (Nm3/h) - LOX | 555 | | 555 | | 555 | | 2225 | | 2225 | | 2225 | |
| For 8 Hours at 8 bar (Nm3/h) - LAR | 585 | | 585 | | 585 | | 2345 | | 2345 | | 2345 | |
| ∅ Diameter (mm / feet) | 2200 / 7.2 | | | | | | | | | | | |
| HT height (mm / feet) | 4200 | 13.8 | 5200 | 17.1 | 7660 | 25.1 | 8600 | 28.2 | 10235 | 33.6 | 11740 | 38.5 |
| H (mm / feet) | 520 / 1.7 | | | | | | | | | | | |
| G (mm / feet) | 1055 / 3.5 | | | | | | | | | | | |
| A (mm / feet) | 2300 / 7.5 | | | | | | | | | | | |
| B (mm / feet) | 2500 / 8.2 | | | | | | | | | | | |
| C (mm / feet) | 1245 / 4.1 | | | | | | | | | | | |

| TYPE | CA 33 (9 KUSG) | | CA 41 (11 KUSG) | | CA 47 (13 KUSG) | | CA 53 (15 KUSG) | | CA 63 (17 KUSG) | |
|---------------------------------------|-------------------|--------|--------------------|--------|--------------------|--------|--------------------|--------|--------------------|--------|
| Gross capacity (liters / USG) * | 34340 | 9072 | 41300 | 10910 | 47530 | 12556 | 56270 | 14865 | 63750 | 16841 |
| Net capacity (liters / USG) * | 32623 | 8618 | 39235 | 10365 | 45154 | 11928 | 53457 | 14122 | 60563 | 15999 |
| Boil off Rate O2 (%) | 0.18 | | 0.16 | | 0.15 | | 0.15 | | 0.13 | |
| Empty weight (kg / lbs) | 14400 | 31747 | 16700 | 36817 | 19100 | 42108 | 21500 | 47399 | 23700 | 52250 |
| Weight full Nitrogen (kg / lbs) - LIN | 40759 | 89859 | 48402 | 106708 | 55584 | 122543 | 64693 | 142624 | 72635 | 160133 |
| Weight full Oxygen (kg / lbs) - LOX | 51623 | 113809 | 61467 | 135512 | 70621 | 155692 | 82494 | 181869 | 92802 | 204594 |
| Weight full Argon (kg / lbs) - LAR | 59844 | 131933 | 71354 | 157309 | 82000 | 180778 | 95966 | 211568 | 108064 | 238241 |
| Continuous flow rate | | | | | | | | | | |
| For 8 Hours at 8 bar (Nm3/h) - LIN | 2000 | | 2000 | | 2000 | | 2000 | | 2000 | |
| For 8 Hours at 8 bar (Nm3/h) - LOX | 2225 | | 2225 | | 2225 | | 2225 | | 2225 | |
| For 8 Hours at 8 bar (Nm3/h) - LAR | 2345 | | 2345 | | 2345 | | 2345 | | 2345 | |
| ∅ Diameter (mm / feet) | 2840 / 9.3 | | | | | | | | | |
| HT height (mm / feet) | 8850 | 29.04 | 10510 | 34.48 | 11543 | 37.87 | 13510 | 44.32 | 15025 | 49.29 |
| H (mm / feet) | 650 / 2.2 | | | | | | | | 3660 / 12 | |
| G (mm / feet) | 1100 / 3.6 | | | | | | | | | |
| A (mm / feet) | 3000 / 9.8 | | | | | | | | | |
| B (mm / feet) | 3350 / 11 | | | | | | | | | |
| C (mm / feet) | 1530 / 5 | | | | | | | | | |

* Manufacturing tolerance : ± 4%

The density of LIN / LOX / LAR is 808 / 1141 / 1393 Kg/m³ respectively, and has been considered in the weight calculation.

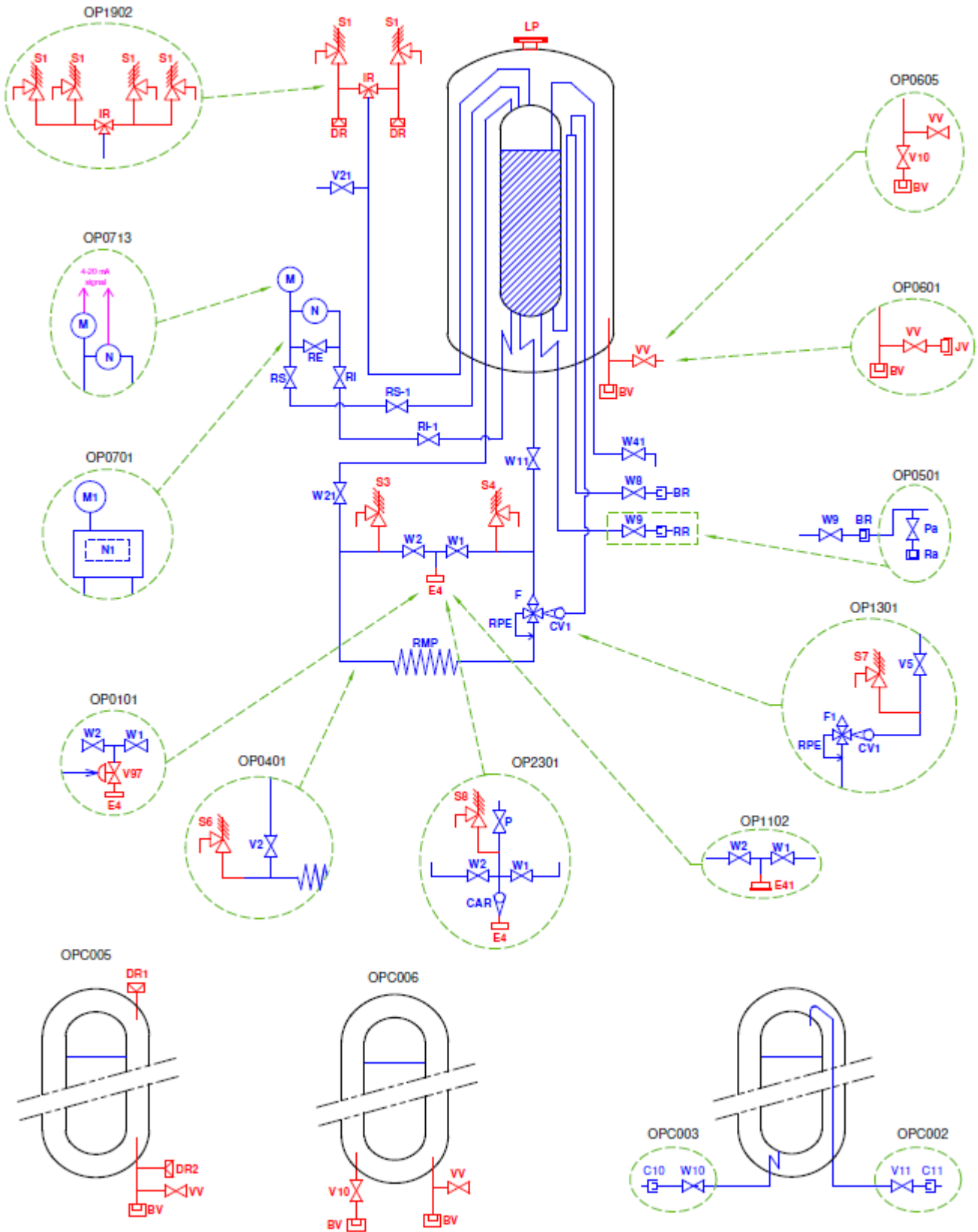
FLOW DIAGRAM (Standard)



| REFERENCE | NOMENCLATURE | SIZE |
|--------------------|---|-----------------------|
| W1, W11 | Bottom Filling Valves | DN 25 < 21 kl Tanks |
| W2, W21 | Top Filling Valves | DN 40 ≥ 21 kl Tanks |
| S3-S4 | Line Safety Valve | 1/4" |
| E4 | Filling Connection | DN 40 |
| S1 | Inner Vessel Safety Valve | 1/2" |
| DR | Inner Vessel Protection Device | 1/2" |
| IR | 3-Way Valve | DN 20 |
| M | Pressure Indicator | - |
| N | Level Indicator | |
| RI | Level Gauge Manifold, Liquid | |
| RE | Level Gauge Manifold, Equalizer | |
| RS | Level Gauge Manifold, Gas | |
| W41 | Full trycock Valve | DN 15 |
| LP | Lift Plate | As per Cryolor design |
| BV | Vacuum Connection | - |
| W8 + BR | Withdrawal Valve - Gas + Connection | DN 25 < 21 kl Tanks |
| W9 + RR | Withdrawal Valve - Liquid + Connection | DN 40 ≥ 21 kl Tanks |
| RPE & F | Pressure Regulator / Economizer with Filter | - |
| CV1 | Check Valve | |
| RMP | Pressure Building Coil | |
| V21 | Vent Valve | DN 15 |
| VV | Vacuum probe isolation valve | - |

Note : All operating valve are “Bestobell” make as per standard.

FLOW DIAGRAM (with Options)



| REFERENCE | NOMENCLATURE (OPTIONS) | SIZE |
|---------------|--|---------------------|
| OP0101 | Over pressurization protection (To avoid over pressure filling & Ensure vessel safety while filling) | |
| V97 | Over pressurization protection valve | DN 40 |
| C6 | MG 97 valve connection | |
| OP0401 | Pressure Building Coil Isolation valve | |
| S6 | Line Safety Valve | 1/4" |
| V2 | Pressure Building Coil Isolating Valve | DN 15 |
| OP0501 | Liquid Analysis Connection | |
| Pa | Liquid Analysis Valve | DN 15 |
| Ra | Quick Connection | |
| OP0601 | Annular space vacuum detection / Vacuum sensor / Vacuum measuring probe | |
| VV | Vacuum Isolation Valve | 1/8" |
| JV | Vacuum Thermocouple Connection | 1/8" |
| OP0605 | Vacuum Isolation valve | |
| V10 | Vacuum isolation valve -Edwards Vacuum valve Type SP10K & SP25K | |
| OP0701 | Teleflo Diva | |
| M1 & N1 | Digital Level indicator & Analog Pressure indicator | |
| OP0713 | Wika with Telemetry (4-20mA) option | |
| | 4-20 mA Telemetry provision with wika gauge | |
| OP1102 | ISO filling connection / Optional adaptor 1 1/2" 300 lbs | |
| E41 | ISO Flange connection for Filling | DN 40 |
| OP1301 | Economizer Isolation valve | |
| V5 | Globe Valve With Check | DN 15 |
| S7 | Line Safety Valve | 1/4" |
| OP1902 | Additional safety relief valves | |
| | 4 Number of safety relief valves without bursting disc | |
| OP2301 | Filling assembly with Check valve, Check valve & Purge valve | |
| S8 | Line Safety Valve | 1/4" |
| P | Purge Valve | |
| CAR | Check Valve | |
| OP5301 | Footprint template | |
| | Footprint drawing available before tank shipment (For foundation work at customer site) | |
| OPC001 | 10% Trycock | |
| | Net capacity of tank with 10% gas phase | |
| OPC002 | Additional Top filling / Gas withdrawal line | |
| V11 | Top filling / Gas withdrawal valve | DN 25 < 21 kl Tanks |
| C11 | Top filling / Gas withdrawal connection | DN 40 ≥ 21 kl Tanks |
| OPC003 | Additional Liquid withdrawal line | |
| W10 | Liquid withdrawal valve | DN 25 < 21 kl Tanks |
| C10 | Liquid withdrawal connection | DN 40 ≥ 21 kl Tanks |
| OPC005 | Rupture disc for Outer vessel safety relief | |
| DR1 & DR2 | Vacuum bursting disc (Instead of lift plate) | |
| OPC006 | Additional vacuum pumping line for vacuum valve | |
| BV | Vacuum pump down connection | |
| V10 | Vacuum isolation valve -Edwards Vacuum valve Type SP10K & SP25K | |

| REFERENCE | NOMENCLATURE (OPTIONS) | SIZE |
|---------------|--|------|
| OPC007 | ANSI flange connection on withdrawals | |
| | ASNI flange connection on withdrawals (Instead of 3 part coupling) | |
| OPC008 | Metal P&ID | |
| | Metal P&ID instead of Laminated sheet P&ID | |
| OPC009 | Upsizing liquid withdrawal valve (W9) to DN 50 / 2" | |
| | Liquid withdrawal valve size increased to DN50 / 2" (Valve size DN50, Pipe size DN25/DN40) | |
| OPC010 | Liquid withdrawal line (W9) to DN 50 / 2" | |
| | Liquid withdrawal line size DN50 / 2" (Both Pipe & Valve) | |
| OPC012 | LAR-CGA connection on Filling cluster | |
| | CGA-Filling connection for Liquid Argon | |
| OPC013 | LOX-CGA connection on Filling cluster | |
| | CGA-Filling connection for Liquid Oxygen | |
| OPC014 | LIN-CGA connection on Filling cluster | |
| | CGA-Filling connection for Liquid Nitrogen | |
| OPC015 | MOM Certificate | |
| | MOM certificate available | |
| OPC016 | Herose valves (Instead of Bestobell valves) | |
| | Operating valves are Herose make, instead of Bestobell make | |
| OPC017 | Customer LOGO | |
| | Customer requirement LOGO fixed on tank. | |

Note:

- This technical specification is purely an indication, It can't be considered as a contractual document.
- This technical specification is subject to change without prior intimation.