

# VERTICAL CRYOGENIC STORAGE TANK USA STOCK

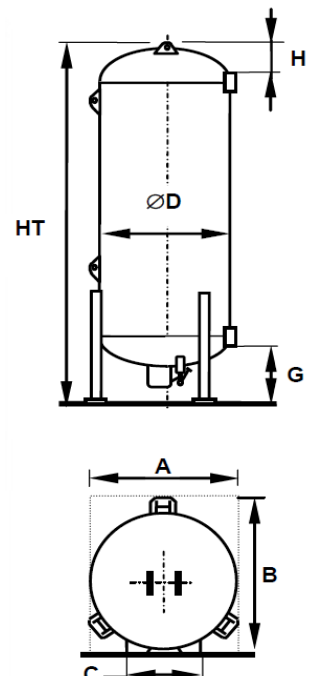
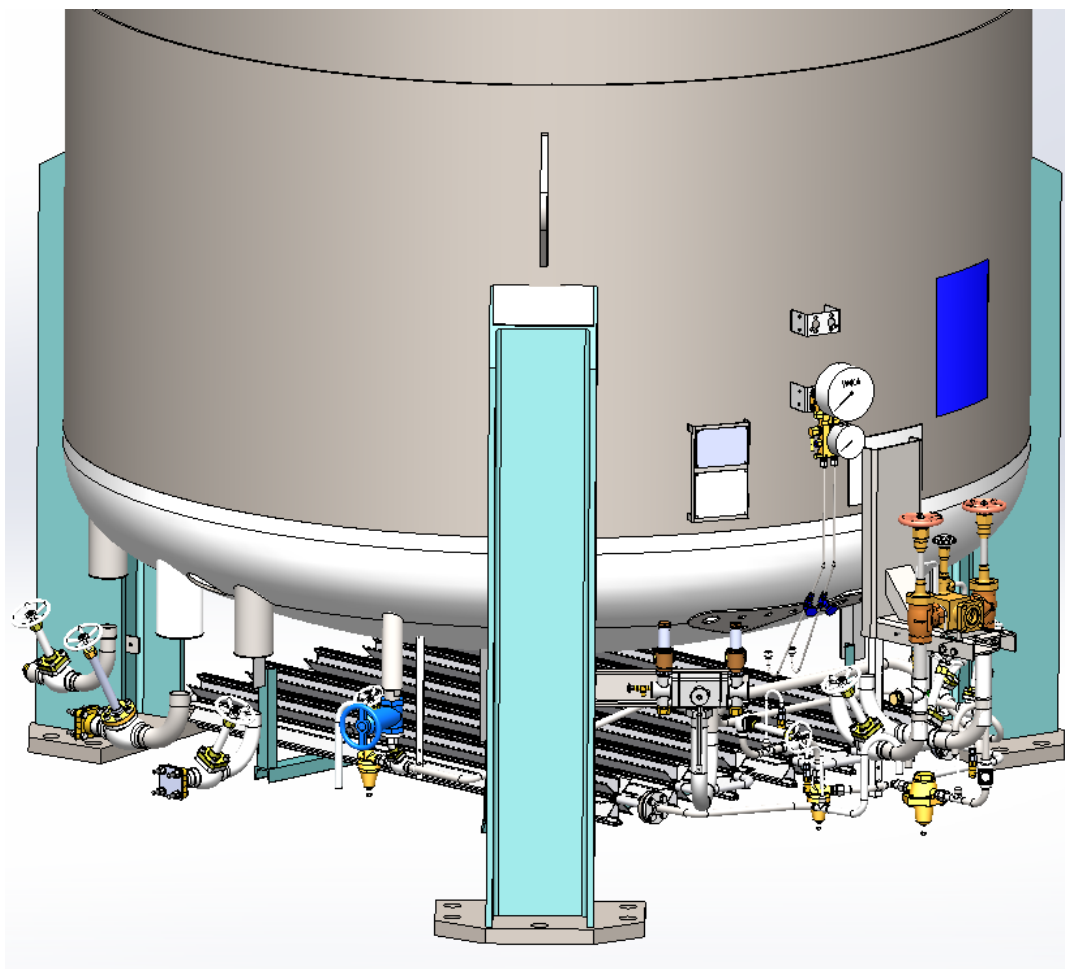


**CRYOLOR ASIA PACIFIC** introduces the latest generation vacuum insulated cryogenic tank, the Céline 3, for Liquid Nitrogen, Oxygen or Argon service. Available in a range of sizes with a Maximum Allowable Working Pressure of **250 psig** ( $\approx 17$  bar), Céline 3 is designed in accordance with **ASME Section VIII Division 1 + Mandatory appendix-44 (cold stretch) with 'U' stamp**.

Moreover, the support legs used in the Céline 3 range are calculated **to resist high winds and earthquakes according to IBC code Zone 0 to Zone 4**.

- **A maximum use of Stainless steel:** Only Céline 3 uses as much stainless steel in its construction to guarantee the lowest life cycle costs.
- **Components selected for their operational reliability** - mono-bloc pressure building economizer - regulator, safety system with dual relief valves and bursting discs as standard, aluminium star fin pressure building unit.
- **Reduced overall operational costs** - optimized pipe work layout with fewer connections minimize potential

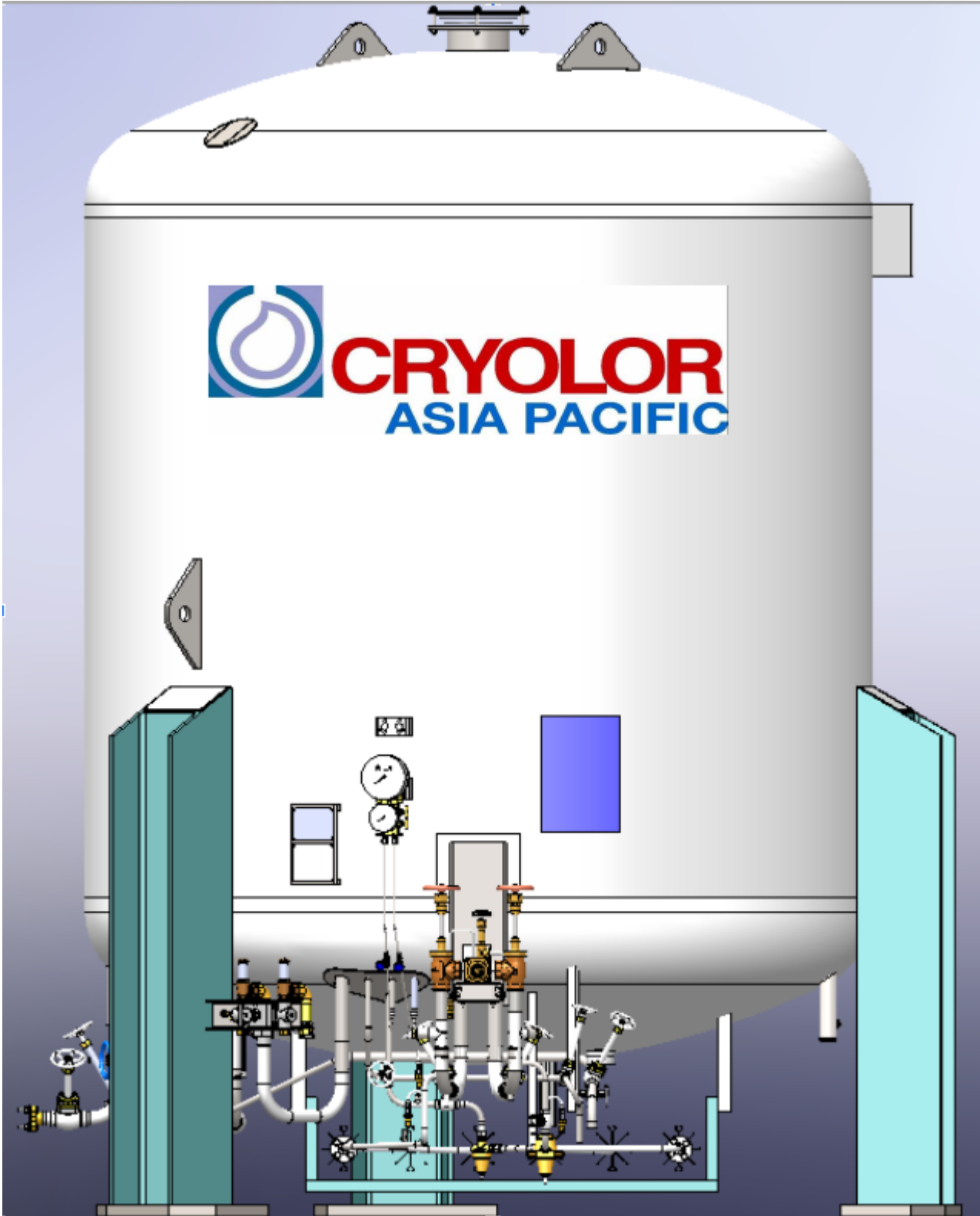
leaks and facilitate operation & servicing, filling assembly isolation valves, proven painting techniques guarantee years of problem free operation.



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

# VERTICAL CRYOGENIC STORAGE TANK USA STOCK

## TANK VIEW



# VERTICAL CRYOGENIC STORAGE TANK

## USA STOCK



| TYPE   | CA06<br>(1.5 KUSG) |       | CA11<br>(3 KUSG) |       | CA21<br>(6 KUSG) |       | CA33<br>(5 KUSG) |        |
|--|--------------------|-------|------------------|-------|------------------|-------|------------------|--------|
| Gross capacity (liters / USG) *                          | 6150               | 1625  | 10540            | 2784  | 23660            | 6250  | 34340            | 9072   |
| Net capacity (liters / USG) *                            | 5843               | 1544  | 10013            | 2645  | 22477            | 5938  | 32623            | 8618   |
| Boil off Rate O2 (%)                                     | 0.28               |       | 0.26             |       | 0.22             |       | 0.18             |        |
| Empty weight (kg / lbs)                                  | 4200               | 9259  | 5600             | 12346 | 10200            | 22487 | 14400            | 31747  |
| Weight full Nitrogen (kg / lbs) - LIN                    | 8921               | 19668 | 13691            | 30182 | 28361            | 62526 | 40759            | 89859  |
| Weight full Oxygen (kg / lbs) - LOX                      | 10867              | 23957 | 17025            | 37533 | 35846            | 79027 | 51623            | 113809 |
| Weight full Argon (kg / lbs) - LAR                       | 12339              | 27203 | 19548            | 43096 | 41510            | 91515 | 59844            | 131933 |
| Continuous flow rate For 8 Hours at 116 psi (SCFH) - LIN | 18700              |       | 18700            |       | 18700            |       | 37400            |        |
| Ø Diameter (in / feet)                                   | 86.6 / 7.2         |       |                  |       |                  |       | 111.8 / 9.3      |        |
| HT height (in / feet)                                    | 165.3              | 13.8  | 204.7            | 17.1  | 301.6            | 25.1  | 348.4            | 29.04  |
| H (in / feet)  | 20.4 / 1.7         |       |                  |       |                  |       | 25.6 / 2.2       |        |
| G (in / feet)  | 41.5 / 3.5         |       |                  |       |                  |       | 43.3 / 3.6       |        |
| A (in / feet)  | 90.5 / 7.5         |       |                  |       |                  |       | 118.1 / 9.8      |        |
| B (in / feet)  | 98.4 / 8.2         |       |                  |       |                  |       | 131.9 / 11       |        |
| C (in / feet)  | 49.0 / 4.1         |       |                  |       |                  |       | 60.2 / 5         |        |

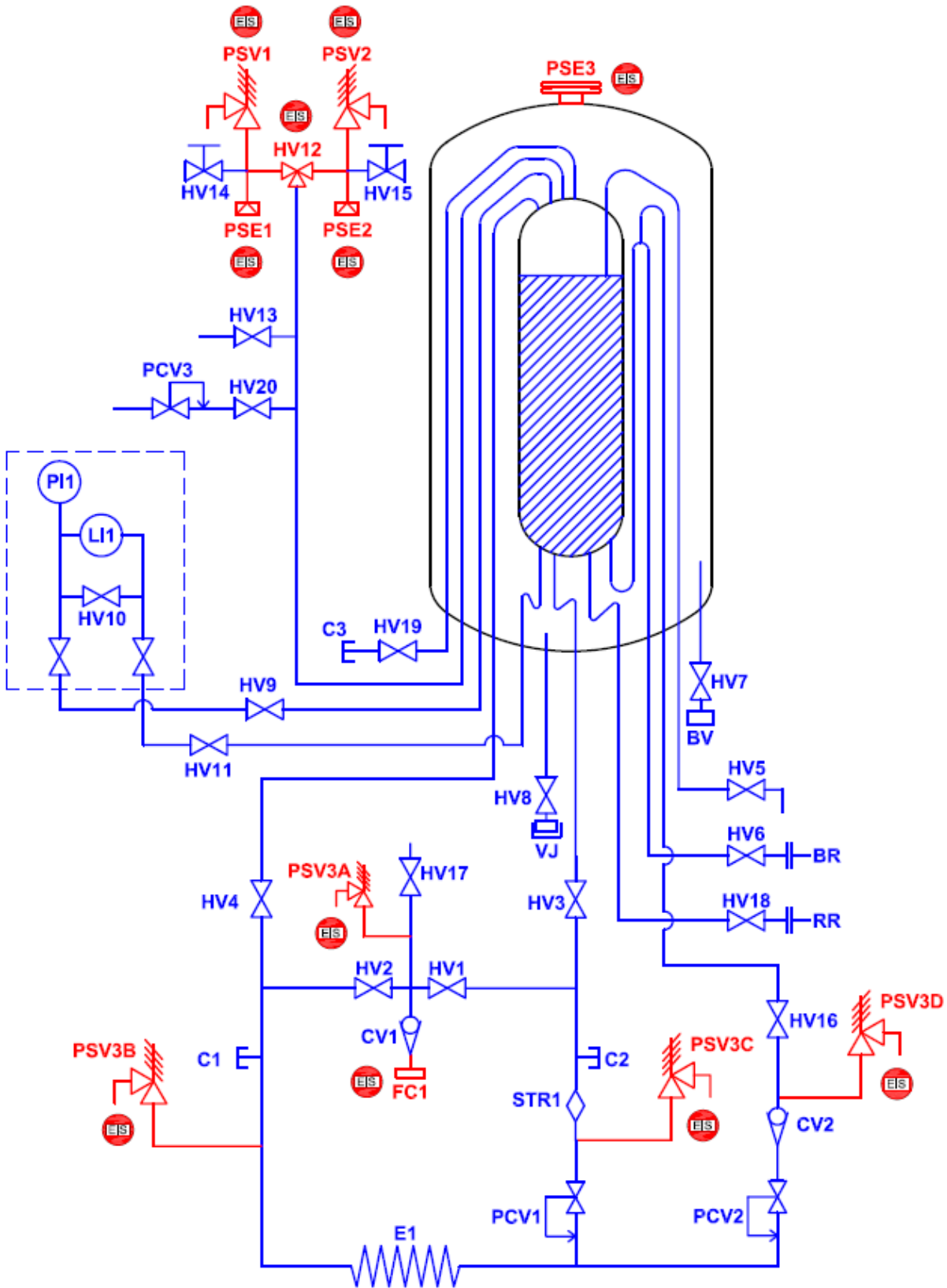
| TYPE   | CA41<br>(11 KUSG) |        | CA47<br>(13 KUSG) |        | CA53<br>(15 KUSG) |        | CA63<br>(17 KUSG) |        |
|--|-------------------|--------|-------------------|--------|-------------------|--------|-------------------|--------|
| Gross capacity (liters / USG) *                          | 41300             | 10910  | 47530             | 12556  | 56270             | 14865  | 63750             | 16841  |
| Net capacity (liters / USG) *                            | 39235             | 10365  | 45154             | 11928  | 53457             | 14122  | 60563             | 15999  |
| Boil off Rate O2 (%)                                     | 0.16              |        | 0.15              |        | 0.15              |        | 0.13              |        |
| Empty weight (kg / lbs)                                  | 16700             | 36817  | 19100             | 42108  | 21500             | 47399  | 23700             | 52250  |
| Weight full Nitrogen (kg / lbs) - LIN                    | 48402             | 106708 | 55584             | 122543 | 64693             | 142624 | 72635             | 160133 |
| Weight full Oxygen (kg / lbs) - LOX                      | 61467             | 135512 | 70621             | 155692 | 82494             | 181869 | 92802             | 204594 |
| Weight full Argon (kg / lbs) - LAR                       | 71354             | 157309 | 82000             | 180778 | 95966             | 211568 | 108064            | 238241 |
| Continuous flow rate For 8 Hours at 116 psi (SCFH) - LIN | 37400             |        |                   |        |                   |        |                   |        |
| Ø Diameter (in / feet)                                   | 111.8 / 9.3       |        |                   |        |                   |        |                   |        |
| HT height (in / feet)                                    | 414               | 34.48  | 454               | 37.87  | 532               | 44.32  | 592               | 49.29  |
| H (in / feet)  | 25.6 / 2.2        |        |                   |        |                   |        | 144.1 / 12        |        |
| G (in / feet)  | 43.3 / 3.6        |        |                   |        |                   |        |                   |        |
| A (in / feet)  | 118.1 / 9.8       |        |                   |        |                   |        |                   |        |
| B (in / feet)  | 131.9 / 11        |        |                   |        |                   |        |                   |        |
| C (in / feet)  | 60.2 / 5          |        |                   |        |                   |        |                   |        |

\* Manufacturing tolerance : ± 4%  
Note : Trycock level is 95%.

The density of LIN / LOX / LAR is 808 / 1141 / 1393 Kg/m<sup>3</sup> respectively, and has been considered in the weight calculation.

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## FLOW DIAGRAM



**RED : EIS (Elements Important for Safety)**

# VERTICAL CRYOGENIC STORAGE TANK

## USA STOCK



### NOMENCLATURE (HEROSE valves with REGO fill cluster )

| REFERENCE   | DESCRIPTION                    | SIZE        |             | VALVE             |  |
|-------------|--------------------------------|-------------|-------------|-------------------|--|
|             |                                | CA06 - CA11 | CA21 - CA63 | MANUFACTURER      | MODEL NUMBER                                       |
| BV          | Vacuum pump down connection    | -           |             | -                 | -  |
| BR          | Vaporizer connection           | 1"          | 1 1/2"      | -                 | Groove type Muller flange                          |
| C1, C2      | Connections for additional PBU | 1"          |             | -                 | Threaded plug                                      |
| C3          | Connection of vapor return     | 1"          | 1 1/2"      | -                 | Threaded plug                                      |
| FC1         | Filling coupling               | 1 1/2"      |             | REGO              | 1" : CFM00002D<br>1 1/2" : CFM00004D               |
| CV1         | Filling check valve            | 1"          | 1 1/2"      |                   |  |
| HV1         | Filling liquid                 | 1"          | 1 1/2"      |                   |  |
| HV2         | Filling gas                    | 1"          | 1 1/2"      |                   |  |
| HV17        | Purge valve                    | 1/2"        |             |                   |  |
| HV3         | Doubling filling liquid        | 1"          | 1 1/2"      | HEROSE            | 1" : 01321.2533.0014<br>1 1/2" : 01321.4048.0014   |
| HV4         | Doubling filling gas           | 1"          | 1 1/2"      | HEROSE            | 1" : 01321.2533.0014<br>1 1/2" : 01321.4048.0014   |
| HV5         | Full trycock                   | 1/2"        |             | HEROSE            | 01321.1521.0014                                    |
| HV6         | Gas use                        | 1"          | 1 1/2"      | HEROSE            | 1" : 01321.2533.0014<br>1 1/2" : 01321.4048.0014   |
| HV7         | Vacuum isolation valve         | 1 1/2"      |             | SAUNDERS          | 1.5"- 2205-S-11R-E2                                |
| HV8         | Vacuum probe isolation Valve   | -           |             | HOKE              | 4551-F2B-1/8"                                      |
| HV9         | Level gauge manifold, Gas      | -           |             | SWAGELOK / PARKER | SS-1RS4-SC11 / 4A-V4LR-SS-C3                       |
| HV11        | Level gauge manifold, Liquid   | -           |             | SWAGELOK / PARKER | SS-1RS4-SC11 / 4A-V4LR-SS-C3                       |
| HV12        | 3 way diverter                 | 3/4"        | 1 1/4"      | HEROSE            | 3/4" : 06510-2040-6426<br>1 1/4" : 06510-3210-6227 |
| HV13        | Gas purge                      | 1"          |             | HEROSE            | 01321.2533.0014                                    |
| HV14 & HV15 | Vent valve for safety tree     | 1/4"        |             | SWAGELOK / REGO   | B-4JNA2-SC11 / CMM250A                             |
| HV16        | Economizer isolation valve     | 1/2"        |             | HEROSE            | 01321.1521.0014                                    |
| HV18        | Liquid use                     | 1 1/2"      | 2"          | HEROSE            | 1 1/2" : 01321.4048.0014<br>2" : 01321.5060.0014   |
| HV19        | Vapor Return line              | 1"          | 1 1/2"      | HEROSE            | 1" : 01321.2533.0014<br>1 1/2" : 01321.4048.0014   |

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### NOMENCLATURE (HEROSE valves with REGO fill cluster )

| REFERENCE       | DESCRIPTION                           | SIZE        |             | VALVE             |   |
|-----------------|---------------------------------------|-------------|-------------|-------------------|---|
|                 |                                       | CA06 - CA11 | CA21 - CA63 | MANUFACTURER      | MODEL NUMBER  |
| HV20            | Ext. Economizer isolation valve       | 1/2"        |             | HEROSE            | 01321.1521.0014   |
| PSE1, PSE2      | Vessel bursting disk                  | 1/2"        | 1"          | BS&B              | Plug Type   |
| PSE3            | Annular space pressure relief         | -           |             | CRYOLOR           | Lift plate  |
| PSV1 & PSV2     | Vessel safety valve                   | 1/2"        | 1"          | HEROSE            | 1/2" : 06388-1004-5000<br>1" : 06388-1510-5000          |
| PSV3A-PSV3D     | Thermal expansion valve               | -           |             | GENERANT          | CRB-250B-K-580  |
| PCV1            | Pressure build regulator              | 1/2"        |             | CASH ACME         | Type B; Set at 116 psi                                  |
| PCV2            | Economiser regulator                  | 1/2"        |             | CASH ACME         | Type FRM2; Set at 123 psi                               |
| PCV3            | Back pressure regulator to atmosphere | 1/2"        |             | CASH ACME         | Type FRM2; Set at 232 psi                               |
| STR1            | Strainer                              | 1/2"        |             | HEROSE            | 08414.1521.0004   |
| CV2             | Economizer check valve                | 1/2"        |             | HEROSE            | 05416.1521.0004   |
| RR              | Liquid use connection                 | 1 1/2"      | 2"          | -                 | Groove type Muller flange                               |
| VJ              | Vacuum gauge                          | -           |             | TELEDYNE HASTINGS | DV-6R   |
| E1              | Pressure build-up vaporizer           | -           | -           | ALUMINIUM FIN     | CA06-CA21 KL : 500 Nm3/hr<br>CA33-CA63 KL : 1000 Nm3/hr |
| LI1             | Liquid level gauge                    | -           |             | WIKA              | MODEL: 712.15.160                                       |
| PI1             | Pressure gauge                        |             |             |                   |   |
| HV10            | Level gauge manifold, Equalizer       |             |             |                   |   |
| <b>OPTIONAL</b> |                                       |             |             |                   |   |
| HV18            | Liquid use                            | -           | * 3"        | HEROSE            | 01321.8088.0014   |

#### Note:

- \* 3" Liquid withdrawal is not a standard supply, it will be made to order.
- 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.