

Section-IV- Scope of Work (SOW)

32.1 General

Transport services are required for transporting of CNG cascades from “Mother/ Online Stations (OLS)” to “Daughter Booster Stations (DBS)/ Daughter stations (DS)” at locations mentioned elsewhere in Tender Document. Number of vehicles required for the contract is as defined elsewhere in the tender document. The carrying payload capacity of vehicle shall be as detailed in relevant of Scope of Work. CNG cascades mounted on vehicle deployed as per tender requirement shall be filled from OLS for transporting to DBS or DS.

32.2 Specification

The scope of services of CNG transport services shall in general consist of but not limited to the following scope of services.

- a) Deployed vehicles as per requirement as defined elsewhere in the tender.
- b) Vehicles offered by the CONTRACTOR should be of the following specifications:
 - **For 3000 WL Cascade Capacity Type 1 referred as Light Commercial Vehicle (LCV):**
 - The vehicle shall be fully built up type including driver cabin and loading body. Only chassis type vehicle shall not be considered.
 - All the three sides of load carrying body of the vehicle shall be removable type (i.e. drop side deck type) for easy accessibility of the cascades.
 - Cargo deck: 17 feet length X 7.3 feet width X 2 feet height to accommodate the cascade of 3000 WL Capacity
 - Indicative cascade dimensions (approx.): 4000 mm Length X 2210 mm Width X 1905 mm Height (For details, refer attached drawings)
 - Pay Load: Not less than 6.5 Tons
 - Fuel: CNG (as detailed below)
 - GA wise Indicative no. of vehicles: As detailed elsewhere in the tender document
- c) HNGPL shall arrange CNG mobile cascades. The cascades shall be securely mounted on vehicle chassis with nut and bolts. The mounting nuts and bolts should be lock tightened and not become loose during normal operation. After taking over custody of cascades, up keeping and safety of cascades is the responsibility of the contractor. Any loss or damage to the items such as valve/ knobs/ fittings/ valve handle/ pressure gauge/ Cylinder/ tube or any other component of cascades shall be rectified/ repaired at the risk & cost of contractor, and restore to original conditions, if loss or damage is due to contractor's mistake. Any leakage/loose bolting or slings /loose clamp etc in the cascade shall have to be immediately reported to HNGPL and further transportation of cascade shall have to be carried out only after rectifying the same. Contractor shall also ensure that no unfit cascade is used in service.

HNGPL will provide replacement cascade, if cascade repair is not possible. Removal of existing cascade, installation of replacement cascade and its secure mounting on vehicle is in contractor's scope. The cascade replacement will also be required for statutory

testing viz cascade hydro-testing. Removal, replacement and re-fitment of cascade in all such cases shall remain in contractor's scope. The contractor undertakes that their representative shall ensure proper feeding of CNG in cascade. Any loss/mishap on account of poor tightening of cascade shall be sole responsibility of contractor. The contractor shall indemnify HNGPL for any losses due to it.

These cascades shall be used to transport CNG from GAIL/ HNGPL Online/ Mother CNG Station to Daughter/ Daughter Booster Station. On expiry or termination of the contract, cascades shall be returned at HNGPL stores.

- d) All material/ fittings required for securely mounting of the cascades such as nut, bolts etc. and crane services required for loading and unloading of cascades have to be arranged by the CONTRACTOR at his own cost. CONTRACTOR shall securely mount the CNG cascade and make all necessary mounting arrangement including hiring of crane for lifting and handling of CNG cascades, supply of "U" bolts and nuts for anchoring cascades frame to chassis and installation of necessary supporting stiffener at requisite positions. The complete job of mounting CNG cascade to the satisfaction of the Engineer-in- Charge shall be completed within one day of issue of the cascade.
- e) Driver of the vehicle shall make/ remove the quick release coupling connection at the CNG stations, operate the Cascades Manifold valves. Check and record the cascade pressure at CNG stations and DBS / DS. For doing these jobs in a safe manner, the driver has to be trained in any CNG station of HNGPL before actual deployment to drive the cascade mounted vehicle.
- f) The CONTRACTOR shall bear the entire operational cost of the vehicle for transportation of CNG in cascades, which shall include but not limited to the following:
 - a. Salary and other emoluments for the driver & contractor's overheads.
 - b. Cost of fuels, brake oil and lubricating oil required for operation of the vehicles.
 - c. Maintenance and repair cost of the vehicles, CCTV in cabin and other related expenses.
 - d. Licenses, permits, road tax, insurance including 3rd party insurance and any other statutory levies etc.
 - e. Loading / unloading of Cascade
- g) The CONTRACTOR shall operate their vehicles at their own risk entirely and HNGPL shall in no case be held responsible for any damage to the vehicles while on HNGPL work. The CONTRACTOR shall maintain the vehicles in sound healthy working condition at all times. The contractor will rectify any defect notified by HNGPL immediately.
- h) The CONTRACTOR shall ensure the safe and correct delivery of CNG at the nominated destinations in the same condition in terms of quality and quantity as FILLED. Any infringement of the above will be deemed as unlawful and HNGPL will hold the CONTRACTOR legally responsible for the same. Additionally, HNGPL also reserves the right in such an event, to forthwith terminate the CONTRACT and/ or to impose penalties on the CONTRACTOR as HNGPL may deem fit.
11. CONTRACTOR shall provide mobile phone its workers for communicating for movement control. The safety and security of the handsets will be the responsibility of the CONTRACTOR. In case of loss and damage, the CONTRACTOR shall be liable for repairing the sets immediately at his own cost.

12. The mobilized fleet to be fitted with two earthing connections, spark/ flame arrestor of a design approved by Chief Controller of Explosives and provided with wheel jack, tool kit, and spare wheel.
12. The mobilized vehicle shall be painted as per color code and description provided by HNGPL in addition to the statutory display requirements to carry CNG. The CONTRACTOR shall be responsible for providing suitable signboards/ display boards during vehicle movement on road or in parked condition. Each vehicle has to be painted rear and side panels for display of company name and logo in combination to fulfill the requirements of display of under rules 130 to 137 of Central Motor Vehicles Rules 1989. Painting of the color codes and all other statutory displays have to be done by the CONTRACTOR at his own cost before deploying the vehicles for carrying CNG cascades.
13. Fire extinguishers (10 Kg DCP & 4.5 Kg CO₂, one number each) for each vehicle shall be supplied by the party at his own cost and the same shall be mounted on vehicle as per the directions of site Engineer or Fire Officer of HNGPL Limited. The cost of supply and fabrication of steel material for mounting the extinguishers shall be borne by the CONTRACTOR. Contractor shall also maintain a first aid box in the vehicle at his own cost. The fabrication of steel frame / mounting for the extinguishers shall be as per the directions of HNGPL F&S dept. Maintenance of fire extinguishers shall be carried out by contractor as per requirement of HNGPL schedule.
14. CONTRACTOR shall indemnify HNGPL for any action under Motor Vehicle Act.
15. Transport services shall be provided round the clock on designated routes and as per the schedule given by Engineer-in-charge on all days. Transport on all days. Transport services shall be governed as follows:
 - a) Disconnect the quick connect coupling of the cascade after proper de- pressurization of the hose, as soon as storage pressure falls to a level decided by the Engineer-in - charge or site personnel of HNGPL and transport the cascade to Mother / filling stations.
 - b) Connect the cascade with the filling hose by connecting quick connect coupling available at mother stations for refilling.
 - c) Transport the filled mobile cascades from Mother/ filling stations to daughter stations and connect to compressor through quick connect coupling.
 - d) Each vehicle shall be provided with a logbook and the pressure level in the mobile cascade in each bank, time, station name etc. to be filled at commencement of each trip. Opening and closing reading of the odometer have to be noted in the logbook. Driver shall also record any leakage, burst disc failure during the trip if any. The logbook has to be signed by station manager/ technician/operator for each trip and countersigned by site personnel of HNGPL daily.
 - e) Daily filling & dispatch statement has to be prepared by the CONTRACTOR and the same has to be submitted daily at the respective control rooms of HNGPL by 8 AM daily.
 - f) It is to ensure that that while hoses are connected with the mobile cascade/ vehicle, nobody shall be inside the vehicle. Any kind of loss occurred due to negligence/ mistake of driver during operation shall be borne by the agency/ contractor. The driver must be available at all times near the vehicle when the hoses are connected with the mobile

cascades.

15. The drivers shall wear uniform and shoes at the time of duty. Drivers have to maintain the discipline and decorum in the CNG stations. Drivers without proper uniform will not be allowed for duties.
16. CONTRACT shall carry out all schedules for maintenance of vehicle and provide the copy of schedule of maintenance record to Engineer-in-charge.
17. CONTRACTOR shall plan schedule of maintenance in consultation and prior permission of Engineer- in-charge.
18. The CONTRACTOR shall be required to take comprehensive insurance policy coverage including 3rd party insurance for each vehicle taken from a reputed insurance company and shall keep in force during the tenure of the CONTRACT.
19. The Bidder shall obtain the Traffic Police clearance for 24-hour entry permit for plying CNG Cascades mounted vehicle on road. The contractor would be responsible for obtaining the 24 hrs permission from respective Traffic Authorities / Offices /Police. Any assistance/document required in this regard shall be provided by HNGPL. However, in case of non-availability of permit, additional cost of running of vehicles because of penalty by traffic authority shall be borne by contractor and if find necessary, HNGPL may begin payment from the date, when contractor has obtained traffic police "24 hours Entry Permit".
20. Vehicle provided under the transport services should be covered under National Permit at CONTRACTOR"s cost.
21. The CONTRACTOR shall ensure that no person in the vehicle would smoke or no fire or other ingredients of ignition should be permitted in the vicinity of the vehicle. No other flammable goods should be carried in the vehicle. The vehicle engaged for transportation of CNG shall not carry any persons or goods other than the crew of the vehicle.
22. The Bidder shall provide GPS for all the vehicles:
 - (i) Each Vehicle shall have GPS system with all antennas completely shielded with in the dashboard. The GPS should be fitted with a backup battery of minimum 24 hours. The web portal shall have the capability to view location of the vehicle with an accuracy of 100 meters. The web portal shall also have provision for replay of journey, report on stoppage time and location with idle time sorting. The entire instrumentation including GPS, battery, cable etc for accessing Vehicle location is in contractor's scope. The contractor shall arrange for round the clock maintenance of the GPS system to avoid any disturbance.
 - (ii) The GPS system shall have a display provision for a monthly MIS sheet consisting of following information of individual Vehicle - Nos. of over speed incidents, max speed, No data period (total period for which GPS was not available, start location, end location etc. In addition, bidder shall provide the API / URL link of GPS to HNGPL to connect with vehicle live movement tracking mobile app if made available by HNGPL.

23.0 Duty Hours:

Contractor shall maintain driver duty hours as per motor vehicle act and other statutory regulations. However, HNGPL will levy penalty of up to Rs 500 per day for cases where driver works beyond 16 hours in a day. The driver duty hours shall fulfill

requirements of statutory regulations.

All vehicles shall be fitted with proper seat belt. The drivers shall remain available in vehicle throughout 24 hours in all days.

24.DRIVERS AND OTHER WORKMEN REQUIREMENT:

24.1 Qualification of Driver

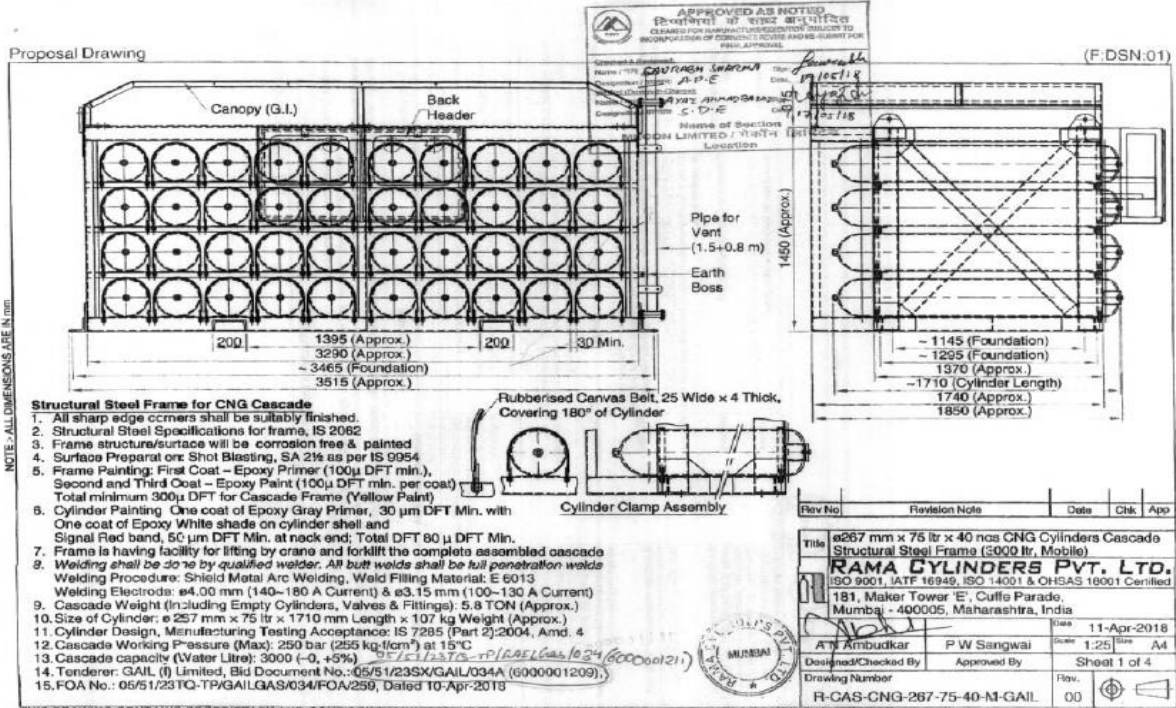
- **Educational Qualification:** The driver shall have bare minimum education so that he shall read and write in Hindi/ Regional language.
- **Driving License:** The drivers MUST HAVE valid driving licenses issued by competent authority for driving goods carrying vehicle.
- **Hazardous goods driving certificate:** The driver must have a valid certificate for driving hazardous goods vehicles from govt / PSU approved training school/institute.
- **Medical fitness:** The drivers must be medically fit and shall have a certificate issued from registered doctor. The certificate shall be revalidated at least on annual basis or as per doctor's advice.
- **Training:** The contractor shall conduct periodic training program to get the drivers fully acquainted with OWNER safety requirements. The contractor will make the drivers available to OWNER for training on defensive driving, first aid, firefighting, emergency preparedness and any other training which OWNER considers necessary. New drivers prior to commencing their duties shall undergo an induction program carried out by supervisor/ fire and safety supervisor. In case complaint of driving quality and involvement in an accident, immediate corrective action may be taken to avoid repetition of such incidences in future.

24.2 Supervisory service

Contractor shall deploy adequate nos. of supervisors in his office (may or may not be in respective GAs) with mobile phones for effective supervision and better coordination of vehicle movement among EICs and Vehicle Drivers. The roles and responsibility of Supervisor shall be as under:

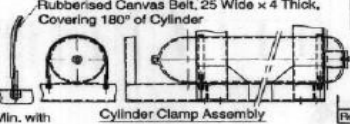
- i. Shall be responsible to manage the fleet management of vehicles operating for HNGPL.
- ii. Shall be responsible for coordination with Drivers for smooth fleet operations.

CONFIGURATION 40 X 75 = 3000 WL CAPACITY



NOTE: ALL DIMENSIONS ARE IN mm.

- Structural Steel Frame for CNG Cascade**
- All sharp edge corners shall be suitably finished.
 - Structural Steel Specifications for frame, IS 2062
 - Frame structure/surface will be corrosion free & painted
 - Surface Preparation: Shot Blasting, SA 2½ as per IS 9954
 - Frame Painting: First Coat – Epoxy Primer (100µ DFT min.), Second and Third Coat – Epoxy Paint (100µ DFT min. per coat) Total minimum 300µ DFT for Cascade Frame (Yellow Paint)
 - Cylinder Painting: One coat of Epoxy Gray Primer, 30 µm DFT Min. with One coat of Epoxy White shade on cylinder shell and Signal Red band, 50 µm DFT Min. at neck end; Total DFT 80 µm DFT Min.
 - Frame is having facility for lifting by crane and forklift the complete assembled cascade
 - Welding shall be done by qualified welder. All butt welds shall be full penetration welds
Welding Procedure: Shield Metal Arc Welding, Weld Filling Material: E 6013
Welding Electrode: ø4.00 mm (140–180 A Current) & ø3.15 mm (100–130 A Current)
 - Cascade Weight (Including Empty Cylinders, Valves & Fittings): 5.8 TON (Approx.)
 - Size of Cylinder: ø257 mm x 75 ltr x 1710 mm Length x 107 kg Weight (Approx.)
 - Cylinder Design, Manufacturing Testing Acceptance: IS 7285 (Part 2):2004, Amd. 4
 - Cascade Working Pressure (Max): 250 bar (250 kg/cm²) at 15°C
 - Cascade capacity (Water Litre): 3000 (-0, +5%)
 - Tenderer: GAIL (I) Limited, Bid Document No.: 05/51/23SX/GAIL/034A (6000001209)
 - FOA No.: 05/51/23TC-TP/GAIL/GAS/034/FOA/259, Dated 10-Apr-2018

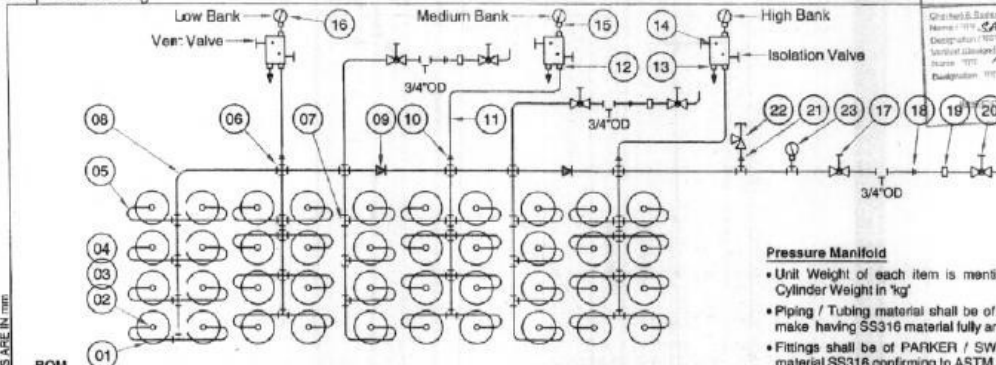


Rev No.	Revision Note	Date	Chk	App

Title		Date	
ø267 mm x 75 ltr x 40 nos CNG Cylinders Cascade Structural Steel Frame (5000 ltr, Mobile)		11-Apr-2018	
RAMA CYLINDERS PVT. LTD. ISO 9001, IATF 16949, ISO 14001 & OHSAS 18001 Certified 181, Maker Tower 'E', Cuffe Parade, Mumbai - 400005, Maharashtra, India			
Designed/Checked By	Approved By	Scale	Sheet
A.N. Amburkar	P.W. Sangwal	1:25	1 of 4
Drawing Number		Rev.	
R-CAS-CNG-267-75-40-M-GAIL		00	

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Proposal Drawing



APPROVED: **सुभाषित**
 WITHOUT PREJUDICE TO CONTRACTUAL OBLIGATIONS AND LIABILITIES (EDSN:01)
 Checked & Signed: **SARABJIT SHARMA** Date: **17/05/18**
 Designation: **A.P.E**
 Verified/Reviewed/Checked: **AVI AHMAD BAINI** Date: **17/05/18**
 Drawn: **S.D.E**
 Name of Section: _____
 Location: _____

NOTE: ALL DIMENSIONS ARE IN mm

BOM					
23	Temperature Gauge, 4" Dial, Liquid Filled, 0-100°C Range	01	990	Wika/Baumer SS	
22	Pressure Relief Valve, Set Pressure 275 bar	01	280	Parker/Swagelok SS316	
21	Straight Reducer, 3/4" OD x 1/4" OD Tube	01	50	Parker/Swagelok SS316	
20	Bleed Valve, 1/4" NPT-M	03	35	Parker/Swagelok SS316	
19	Female Bulk Head Connector 1/4" OD x 1/4" NPT-F	03	50	Parker/Swagelok SS316	
18	Straight Reducer, 3/4" OD x 1/4" OD Tube	03	50	Parker/Swagelok SS316	
17	Two Way Ball Valve, 3/4" OD, Panel Mount	03	680	Parker/Swagelok SS316	
16	Pressure Gauge, 4" Dial, Glycerine Filled, 0 - 400 kg/cm ² Range	03	995	Wika/Baumer SS	
15	Female Adaptor, 1/4" OD x 1/4" NPT-F	03	35	Parker/Swagelok SS316	
14	Two Valve Manifold Block	03	685	Parker/Swagelok SS316	
13	Male Connector, 1/4" OD x 1/4" NPT-M	03	40	Parker/Swagelok SS316	
12	Male Connector, 1/4" OD x 1/2" NPT-M	06	45	Parker/Swagelok SS316	
11	SS Tube, 1/4" OD x 0.035" Thick, Annealed, ASTM A269/A213	07m	120	Sandvik/Tubacex SS316	
10	Straight Reducer, 3/4" OD x 1/4" OD Tube	03	50	Parker/Swagelok SS316	
09	Non Return Valve, 3/4" OD	02	550	Parker/Swagelok SS316	
08	SS Tube, 3/4" OD x 0.035" Thick, Annealed, ASTM A269/A213	12m	990	Sandvik/Tubacex SS316	
07	3 Way Fitting, 3/4" OD	15	40	Parker/Swagelok SS316	
06	4 Way Fitting, 3/4" OD	17	40	Parker/Swagelok SS316	
05	SS Tube, 3/4" OD x 0.035" Thick, Annealed, ASTM A269/A213	18m	990	Sandvik/Tubacex SS316	
04	Male Connector, 3/4" OD x 1/4" NPT-M	40	50	Parker/Swagelok SS316	
03	Nut with Bull Nose Connector	40	60	Vanaz/Tekno Brass	
02	CNG Cylinder Valve with Fusible Plug & Burst Disc	40	700	Vanaz/Tekno Brass	
01	CNG Cylinder, ø267 mm x 75 ltr x 255 bar Working Pressure	40	107 kg	RAMA CrMo Steel	
Sr	Description/Item	Qty (Nos)	Aprox Weight (gram)	Make	Material

Pressure Manifold

- Unit Weight of each item is mention in 'gram' excluding Cylinder Weight in 'kg'
- Piping / Tubing material shall be of SANDVIK / TUBACEX make having SS316 material fully annealed.
- Fittings shall be of PARKER / SWAGelok make having material SS316 conforming to ASTM A182 /ASME SA 182
- Bank Distribution

Low Bank	: 20 Cylinders
Medium Bank	: 12 Cylinders
High Bank	: 08 Cylinders
(5:3:2 by volume)	40 Cylinders

Rev No	Revision Note	Date	Chk	App

Title		Date	
ø267 mm x 75 ltr x 40 nos CNG Cylinders Cascade Pressure Manifold (3000 ltr, Mobile Cascade)		11-Apr-2018	
RAMA CYLINDERS PVT. LTD.			
ISO 9001, IATF 16949, ISO 14001 & OHSAS 18001 Certified			
181, Maker Tower 'E', Cuffe Parade, Mumbai - 400005, Maharashtra, India			
Designed/Checked By	Approved By	Scale	NTS ^{Rev} A4
A N Ambudkar	P W Sangwal		
Drawing Number		Rev	
R-CAS-CNG-267-75-40-M-GAIL		00	

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Proposal Drawing

(F:DSN:01)

APPROVED/अनुमोदित
 WITHOUT PREJUDICE TO CONTRACTUAL OBLIGATIONS AND LIABILITIES

Checked & Reviewed: **CAUSHI SHARMA** Date: **19/01/18**
 Drawn: **A.P.P.** Date: **13/01/18**
 Modified/Revised/Change: **AVR. ANAND BORA** Date: **13/01/18**
 Designation: **SDE** Date: **13/01/18**

Name of Section: **MECON LIMITED / मेकॉन लिमिटेड**
 Location:



Vent Manifold

- Piping/Tubing material shall be of SANDVIK / TUBACEX make having SS316, material fully annealed, ASTM A 269/A 213
- Fittings shall be of PARKER / SWAGelok make having SS 316 material conforming to ASTM A182 / ASME SA 182
- Height of vent shall be 3 m above working level. One Vent Pipe of 800 long shall be supplied loose & to be bolted at site

NOTE:- ALL DIMENSIONS ARE IN mm

BOM

Sr	Description/Item	Qty (Nos)	Aprox Waight (gram)	Make	Material
11	Rain Ingress Protection Cap	01	—	Indigenous/Standard	CS
10	Flange, Socket Weld + Drill d	3+1	—	Indigenous/Standard	CS
09	Header Pipe, 1500+800 Lcng	1+1	—	Indigenous/Standard	CS
08	Female Nipple, 3/4" NPT-F	02	—	Indigenous/Standard	CS
07	Male Connector, 3/4" OD x 3/4" NPT-M	02	40	Parker/Swagelok	SS316
06	SS Tube, 3/4" OD x 0.035" Thick	10m	—	Sandvik/Tubacex	SS316
05	3 Way Fitting, 3/4" OD	02	40	Parker/Swagelok	SS316
04	4 Way Fitting, 3/4" OD	18	40	Parker/Swagelok	SS316
03	Straight Reducer, 3/4" OD x 1/2" OD Tube	40	65	Parker/Swagelok	SS316
02	SS Tube, 1/2" OD x 0.065" Thick	22m	—	Sandvik/Tubacex	SS316
01	Male Connector, 1/2" OD x 3/8" NPT-M	40	45	Parker/Swagelok	SS316

Detail Item No. 8

Rev No	Revision Note	Date	Chk	App
<p>Title: ø267 mm x 75 ltr x 40 nos CNG Cylinders Cascade Vent Manifold (3000 ltr, Mobile)</p> <p>RAMA CYLINDERS PVT. LTD. ISO 9001, IATF 16949, ISO 14001 & OHSAS 18001 Certified 181, Maker Tower 'E', Cuffe Parade, Mumbai - 400005, Maharashtra, India</p> <p>Date: 11-Apr-2018 Scale: NTS Size: A4 Designed/Checked By: A.P.P. Approved By: P.W. Sangwai Drawing Number: R-CAS-CNG-267-75-40-M-GAIL Rev: 00 Sheet 3 of 4</p>				

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