

CONTRACTOR SHALL PROVIDE A BAUER C23.2 M-SERIES™ DUPLEX CNG COMPRESSOR OR AN APPROVED EQUAL IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS:

System Performance Summary

C23 M-Series Performance Table (Duplex)									
Model	Inlet Pressure (psig)		Capacity¹				No. stages each compressor	Motor	
	(Min)	(Max)	scfm	m3/h	DGE/H	GGE/H		hp	kW
C23.2	10	15	150	255	64	75	4	50	37

Criteria	Value
Electrical classification	Class 1, Division 2, Group D in accordance with NFPA 70, latest edition, Article 500
Discharge pressure, maximum	5000 psig
Voltage	480 V
Frequency	60 Hz

System Component Description

Overview:

- Skid mounted
- Cabinet enclosed
- NEMA 4 control panel includes the PLC and HMI, locally mounted
- NEMA 7 starter panel includes motor starter and other power components, locally mounted

Skid (common to both compressors)

- Welded assembly of precision formed steel plate for strict tolerance control
- Lift/tie-down provision at each corner
- Powder coated with a zinc rich primer and a topcoat for superior corrosion resistance

Cabinet (common to both compressors)

- Made of galvanized sheet steel and powder coated for superior corrosion resistance
- Insulated for noise reduction, 85 dba average measured
- at a distance of three (3) meters from enclosure
- Cooling air intake louver panels, qty. 2, removable for internal access
- Entry door (qty. 1) with internal emergency release
- Interior lighting, qty. 2 LED
- Infrared methane gas detector (0–100% LEL), qty. 1
- Cosmetic facade at enclosure roof line

Instrumentation (each compressor)

- Pressure sensor for inlet, oil and final pressure
- Locally mounted pressure gauge for each stage and oil pressure
- Temperature sensor for ambient and final stage temperature
- Check valve at the outlet of compressor
- Pressure maintaining valve at the outlet of the compressor to improve efficiency of the final separator

Piping, Tubing and Hose (common to DUPLEX package)

- Skid edge connections for gas inlet, power and high-pressure outlet
- All package tube runs use high quality, fully annealed, seamless type 316 stainless steel tubing ASTM A269 or A213 or equivalent with two-ferrule stainless steel tube fittings
- All package process pipe runs use 316 stainless steel pipe and pipe fittings
- Hose where flexibility is required

High Pressure Compressor Model C23.X (qty. 2)

- Pressure-resistant crankcase up to 230 psig
- Air-cooled with a cooler after each stage
- Safety valve after each stage
- Oil pump for forced-fed lubrication
- Oil sump separate from crankcase
- Oil level sight glass
- Oil filter
- Oil drain valve
- Maximum pitch and roll, 30° from level in all directions
- Separator after each stage, connected to automatic drain system

- Flywheel for belt drive. Includes bolt-on fan wings for additional cooling of compressor.
- All high-pressure tube connections made with two-ferrule compression fittings

Automatic Condensate Drain Device (each compressor)

- Each separator is drained individually by its own ACD device in a sequenced blow down cycle
- Adjustable drain interval and drain duration timer for each stage's condensate drain, adjustable according to condition of the gas
- Manual drain valve for each condensate drain device to override automatic operation for troubleshooting
- Unloaded starting of compressor

Intake and Vapor Recovery Tanks (common to DUPLEX package)

For control of the gas from the skid-edge inlet connection to the inlet of the compressor including the capture and recycling of gas during a compressor blow down.

- Solenoid valve (normally closed)
- Strainer
- Stainless steel piping
- Flexible hose where required
- Tanks, qty. 1 inlet buffer tank and qty. 1 Vapor recovery tank, integrated to compressor skid. Tanks designed and constructed in accordance with ASME Code Section VIII, Division 1, "U" stamped and registered with the National Board. Exterior surface of tanks is painted with one coat of primer and one topcoat.

Each tank includes:

- Pressure gauge
- Safety valve for overpressure protection. Outlet of safety valve is connected to vent stack manifold.
- Drain valve for low point drain of accumulated liquid from tank
- Vent valve to vent gas from tank for maintenance. Vent connected to vent stack manifold.

Control Panel (NEMA 4 locally mounted)

The system is controlled by a programmable logic controller (PLC). The control panel is supplied in a NEMA 4 enclosure that is locally mounted on the skid and accessible from to the operator from outside the cabinet. A backlit color touch screen (HMI) serves as the operator interface to the system.

- **Automatic** start/stop operation according to customer requirements

- **Supervision** of operating parameters
- **Display** of operating data, maintenance information and alarms
- **Alarm** in case of deviation from specified operation parameters

Indication of:

- Operating messages / status of system
- Configuration parameters (password protected)
- Maintenance requirements
- Hour meter
- Power-ON status light
- % LEL
- Alarm status light and on HMI
- Alarm history via HMI

Supervision or control of:

- Intake pressure, low and high alarm
- Compressor final stage temperature
- Final pressure, indication
- Oil pressure, low pressure alarm
- % LEL
- Maintenance intervals
- Signal for solenoid valve at intake line
- Ambient (=cooling) temperature, low and high temperature alarm
- Signal for automatic condensate drain device including cycle registration for final separator life
- Local Emergency stop device

Technical Data for PLC:	
Hazardous ratings:	cULus Class 1 Zone 2/ Division 2, FM Class 1 Division 2
Technical Data for HMI:	
Hazardous ratings:	ATEX Zone 2, ATEX Zone 22, cULus Class 1 Zone 2/ Division 2, FM Class 1 Division 2

Starter Panel (NEMA 7 locally mounted):

The starter panel includes the high voltage power components required by the system. It is mounted to the compressor skid, prewired and tested at the factory.

- Soft starter for each main motor
- Contactor for each compressor's cooling fan
- Emergency stop pushbutton
- 24 V power supply
- Analog hour meter
- All necessary auxiliary relays, fuses and terminal boards

Required Options:

- Enclosure combustible gas detector
- Interstage pressure and temperature monitoring for each compressor
- Remote communication modem - enabling remote fault transmission and notifications with full HMI screen access (Remote HMI)

Standards/Compliances: NFPA 52, latest edition

NFPA 70, latest edition

C-UL-US electric panel

Manufacture's quality management system shall be registered to ISO 9001:2008

Documentation: 1x Instruction Manual and parts list with illustrated drawings

1x Warranty registration card

1x Wiring schematic

Warranty: 5-year limited system warranty.

Warranty statement shall be included with bidding documents. Failure to submit the manufacturer's warranty statement or meet the system warranty will disqualify the submitted bid.

CNG Storage Spheres: Vendor to supply and install two 48-inch ASME CNG high-pressure storage spheres. One bottom stackable storage sphere and one top mount sphere. Block/bleed and drain valves with 5,000 psi MAWP.