

## Item 18: VRU Electric Drive HB-NK100-30-36DV

### Design Conditions

**Model:** HB-NK100-30-36DV  
**Type:** HY-BON/EDI VRU standard design  
**Design:** 30-110 MSCFD (based on the following conditions)

Suction Pressure:	0 psig	Discharge Pressure:	100 psig
Suction Temperature:	100 °F	Discharge Temperature:	210 to 230 °F
Specific Gravity:	SP. GRAVITY	"N" Value:	1.16-1.24 (assumed)
Elevation:	3000 ftasl	Ambient Temperature:	100 °F

### Compressor and associated equipment

- A. Compressor: Rotorcomp Model NK100 rotary screw compressor, **this compressor is intended for use in sweet gas service, H<sub>2</sub>S levels in excess of 20 ppm voids the warranty on the compressor**, complete with the following:
- Rotary Screw Gas End
  - Oil Separator integral w/compressor
  - Receiver Tank integral w/compressor
  - Oil Separator Cartridge integral w/compressor
  - Thermostat Regulator
  - Minimum Pressure Valve
  - Oil Level Sight Glass
  - Heat Exchanger for Compressor Oil Cooling.
  - Compressor to be direct driven via a flexible coupling complete with guard.
- B. Discharge Check Valve: 1" Tulsa (or equal), threaded end, steel body with stainless steel trim, 275 PSIG working pressure.
- C. Compressor Capacity Control By-Pass: 1" Kimray Model 130-SMT-D single acting motor valve, ductile iron.

### Electric motor

- B. 30 HP, 3600 RPM, 460/3/60 NEMA B rating with 1.15 SF, Class F insulation, and TEFC enclosure. Manufacturer: TECO or equal.

### Scrubber

- B. Suction Scrubber: HY-BON/EDI, vertical single compartment standard scrubber. Size 16" OD x 36" seam to seam, 150 PSIG working pressure. 4" flanged inlet and outlet, 1" FNPT drain with 1" stainless steel trim ball valve. Ductile iron gagecocks rated at 150 lb. WP complete with guarded heavy-duty tubular sight glass. ASME code stamped. No mist extractor is provided in vessel.
- High Liquid Level Switch: Murphy Model LS200 liquid level switch, SS trim, explosion proof, rated for 1500 PSIG working pressure, 2" NPT connections.
  - Liquid Level Control: Murphy Model LS200 liquid level switch, SS trim, explosion proof, rated for 1500 PSIG working pressure, 2" NPT connection.
  - Liquid Transfer Pump: Tuthill Model 2LE liquid transfer pump direct coupled to a ¾ HP, 1800 RPM, 460/3/60, TEFC electric motor. System designed to automatically remove free liquids from the Suction Scrubber.

### Electric controls

- D. Motor Starter: NEMA 3R weatherproof panel, shipped loose for remote mounting by others, complete with the following:
  - a. Fused disconnect, with external safety handle.
  - b. VFD Drive for compressor motor
  - c. Dry type transformer, 250 VA, 460/120 volt.
- E. Control Panel: Unit controlled by an Allen Bradley Micrologix 1400 Programmable Logic Controller mounted in a NEMA 4 weatherproof enclosure and mounted on skid. Control Panel is rated for Class 1 Div 2 area, complete with the following:
  - a. Alphanumeric interface to indicate status of the unit.
  - b. On/Off Switch on panel exterior.
  - c. Shutdown Indicators as follows:
    - i. High Discharge Temperature
    - ii. High Discharge Pressure
    - iii. High Liquid Level – Suction Scrubber
    - iv. Low Suction Pressure
    - v. Low Compressor Oil Pressure
    - vi. Motor Overload
  - d. Skid and panel prewired and tested. All wiring, conduit and fittings on skid are compliant with NEC latest edition (Class I, Division 2, Group D).

**Enhanced EPA Quad O compliance reporting and data logging are standard with the HY-BON/EDI AB 1400 panel, as well as enhanced immediate unit response time by means of an additional analog I/O card. This card works in conjunction with the VFD to ensure quicker response time when operating with a Vapor Recovery Tower.**

- F. Electrical controls, local mounted except as noted:
  - a. Discharge Pressure Transmitters: Pressure Systems (or equal), 4–20 mA, stainless steel trim, explosion proof, range as required for service, w/ 1/2" isolation valve.
  - b. High Discharge Temperature: Reotemp (or equal) temperature transmitter, 4–20 mA, stainless steel thermowell, explosion proof, 0–400 °F range.
  - c. Suction Pressure Transmitter: Rosemount 2088 (or equal), 4–20 mA, explosion proof, stainless steel trim. Range as required for service on atmospheric tanks or VRT.

### Instrumentation

- C. Thermometers: S.S. case, with S.S. thermowell, range as required for service.
- D. Pressure Gauges: S.S. trim, range as required for service.

### Fabricated steel skid

- B. One shop fabricated, heavy-duty oilfield type skid, welded up from steel channel sections. Approximate size is 5' x 8'.

### Documentation

- B. Two electronic parts and operations manual will be provided. Additional hard copy manuals available at US \$1,000.00 each.

### General construction

- F. All 2" and larger piping is 150# ANSI ASA flanged and welded per the requirements of the methods described by Cimarron Energy's standard shop welding procedure, as qualified per ASME, Section IX.
- G. Piping is air leak tested, hydrostatic tested and x-rayed per ASME B31.3.
- H. Components assembled and unitized per all applicable codes, on skid and shop tested with air.

- I. Cimarron Energy's standard equipment may contain parts from different manufacturers than called out above. Any alternate parts will be of equal or greater scope.
- J. Unit to be cleaned, primed, and painted, final color Desert Tan.
- K. This compressor is intended for use in sweet gas service.
- L. **Service in H<sub>2</sub>S levels in excess of 20 ppm voids the warranty on the compressor.**

