

## Model 3656 M-Group Close Coupled Unit Typical Engineering Specifications

### I. SCOPE

The contractor shall provide \_\_\_\_\_ (quantity) close coupled, end suction centrifugal pump unit/s, Model 3656 M-Group as manufactured by G&L, A GOULDS PUMPS COMPANY or equal.

All pump units shall be of one manufacturer and provided complete including electric motor drive.

### II. CONDITIONS OF SERVICE

A. Equipment item number	_____	_____	_____
B. Flange Inside Diameter	_____	_____	_____
Suction (inches) FF	_____	_____	_____
Discharge (inches) FF	_____	_____	_____
C. Primary Service Condition	_____	_____	_____
Capacity (GPM)	_____	_____	_____
Total Head (feet)	_____	_____	_____
Efficiency (%)	_____	_____	_____
D. Minimum Total Head at Shutoff (feet)	_____	_____	_____
E. Maximum Impeller Diameter (inches)	_____	_____	_____
F. Operating Speed (RPM)	_____	_____	_____
G. Maximum Motor HP	_____	_____	_____

### III. PUMP CONSTRUCTION

Each pump shall be designed for clockwise rotation viewed from driven end and include the following design features.

#### A. PUMP END COMPONENTS

##### A.1. Casing

The pump casing shall be spiral volute type, back pull-out design with ASA 150 lb. flat faced flanged suction and discharge connections above 2½" size and shall be constructed of Cast Iron, ASTM A48 CL20 material.

The pump discharge nozzle shall be tangentially oriented.

The complete pump unit shall be supported by the power frame.

A pump casing drain shall be provided with a (steel or brass) pipe plug.

##### A.2. Wear Ring

Replaceable casing and seal housing wear ring of \_\_\_\_\_, (Cast Iron ASTM A48 CL20 or Bronze ASTM B584) shall be provided and held securely by means of interference fits.

##### A.3. Impeller

The pump impeller shall be of enclosed design, constructed of \_\_\_\_\_, (Cast Iron ASTM A48 CL20 or Bronze ASTM B584) material and key driven. A stainless steel bolt and washer shall provide positive attachment of the impeller to the motor shaft.

##### A.4. Seal Housing/Adapter

The seal housing and motor adapter shall be of 1-piece design, constructed of Cast Iron, ASTM A48 CL20. Registered mating fits to the pump casing and power frame shall maintain positive unit alignment and support. Sealing of casing pressure shall be maintained by an "O-ring" of BUNA-N material. Motor and casing connection shall be held securely by means of grade 5, high strength hex cap screws.

A bottom drainage port shall be provided to allow condensation or seal leakage to drain and not be retained within the adapter.

**A.5. Mechanical Seal**

The pump shaft seal shall be a John Crane Type 21 mechanical seal or equal constructed of the following materials.

Seal Type	Stationary Face	Rotating Face	Elastomers	Metal Components
Standard	Ceramic	Carbon	BUNA-N	18-8 SS
Option				

**A.6. Shaft Sleeve**

The pump shaft sleeve shall be constructed of AISI Type 303 stainless steel and shall be of the hook type design, locked in place by the impeller without necessity of other mechanical locking devices.

**IV. ELECTRIC MOTOR**

The pump drive motor shall be non-overloading of NEMA standard design JM-frame suitable for horizontal mounting and close coupled to the pump unit as described above.

The motor rating shall be:

\_\_\_\_\_ HP, \_\_\_\_\_ RPM  
 \_\_\_\_\_ phase, \_\_\_\_\_ Hz, \_\_\_\_\_ volts  
 Totally enclosed, fan cooled enclosure  
 1.15 Service Factor  
 High Efficiency

**V. TESTING**

- A. Each pump casing shall be hydrostatically tested by the manufacturer in accordance with Hydraulic Institute Standards at 250 PSIG.
- B. Production performance testing will be conducted by the manufacturer on each pump unit. Head at shut off and a minimum of 2 operating points will be measured at design speed to verify performance.