SUPPLY OF MOTOR OPERATED BALL VALVES

1. TECHNICAL REQUIREMENTS:

	Description	Compliance (Y/N)	Deviation (if any)
SPECIFICATON FOR MOTOR OPERATED BALL VALVES AT TS-3, FAISALABAD			
1.	Supply of 12"-150# MOV Ball Valve as per attached Specification sheet as Annexure-A (MGS–TP–MOV– SPEC dated: 26 August 2020) Qty.: 1 No.		
2.	Supply of 14"-150# MOV Ball Valve as per attached Specification sheet as Annexure-A (MGS–TP–MOV– SPEC dated: 26 August 2020) Qty.: 1 No.		
3.	**THIRD PARTY INSPECTION** Inspection of Motor Operated Ball Valves with Actuators is required from one of the following inspection companies before shipment for prior approval by PARCO: • M/S. SGS • M/S. TUV AUSTRIA • M/S. CROWN AGENTS • M/S. GERMINSCHER LLOYD • M/S. LLOYDS • M/S. INTERTEK • M/S. BUREAU VERITAS		
4.	**SPECIFICATIONS**		
4.1	This specification covers requirements for Ball type MOVs along with electric actuators associated with quarter turn Ball Valves reduced bore 12"x10" - Class 150 and 14"x12" - Class 150 having built-in integral starters. **DESIGN : API 6D** **END FLANGE : ANSI B 16.5** **FACE-TO-FACE : ANSI B 16.10** **SHELL & SEAL TEST : API 598** **SERVICE : HSD / MOGAS**		
4.2	Flanged Ends, Raised Face		
4.3	Three piece split body		
4.4	Trunnion mounted		
4.5	Double block and bleed		
4.6	Stem seals : Min Two stem O-Rings		

PARCO

4.7	Anti-static device		
4.8	Anti-blow out proof stem		
4.9	Venting and drain fittings		
4.10	Fire safe to API 6FA		
4.11	Emergency sealant injection for seats and stem		
4.12	Self-lubricating stem and trunnion bearings to assure low operating torque throughout entire valve life		
4.13	Automatic Relief device for body cavity trapped pressure.		
4.14	Supporting feet		
4.15	Lifting lugs		
5.	**MATERIAL**		
	1. Body: A 216 WCB / A105 / LF2		
	2. Ball: Stainless Steel + ENP		
	3. Stem: Stainless Steel + ENP		
	4. Seat Rings: Stainless Steel + ENP		
	5. Seat Insert: Reinforced PTFE / Viton.		
	6. O'Rings: Viton.		
	7. Gasket: Viton.		
	8. Bolting: A 193 B7 / A 194 2H		
	9. Operation & Maintenance Manuals with Part List: 03 Sets.		
	10. Operating Temperature Range: -4° C to 50°		
6.	**SPECIFICATIONS FOR ELECTRIC ACTUATOR FOR BALL VALVE**		
6.1	**REFERENCE CODES / STANDARDS:** I.E.C, NEMA, BASEEFA, ISA In the event of foreign standards the manufacturer shall verify and certify that the requirements and tolerance of standards are at least equivalent to corresponding I.E.C standards.		

6.2	**OPERATING CONDITIONS:** Design Temperature Max: -4°C to 50°C Design Pressure Max: 20 kg/cm2 Operating Pressure: 08 kg/cm2 Fluid Density: 717@38C Flow rate: 550m3/hr Humidity: Upto 91% condensing		
6.3	**HAZARDOUS AREA CLASSIFICATION:** Zone 1 EEx d IIC T4		
7.	**MECHANICAL DESIGN:**		
7.1	Rated actuator torque to be 1.5 times the valve torque specified by the valve manufacturer. RPM of Motor shall be compatible with valve movement		
7.2	Mechanical assembly and coupling between valve and operator shall be designed so that it has no resistance to different torque efforts or eventual sticking of its element, due to valve or the actuator. The use of rupturing piece is admitted but in such case it must be easily accessible and replaceable. The same apply to motor which must be easily replaceable without need of dismantling the essential parts of the actuator.		
7.3	The actuator shall be designed and sized to provide adequate thrust / torque to guarantee smooth valve operation against maximum differential pressure of 285psi. (Torque / Thermal valves of actuator / valve to be specified).		
7.4	Hand wheel shall be fitted with clutching and de-clutching device ensuring hand operation if electrical actuator fails.		
7.5	Mechanical position indicator shall be provided independent of electrical system.		
7.6	Adjustable torque limit switches for open/close operation shall be provided.		
7.7	Steel on bronze worm gear sets with anti-friction bearings and durable epoxy coating shall be provided.		
7.8	Quarter turn mechanism shall be incorporated with mechanical adjustable stops for 90° rotation ± 10° adjustments which can be modified for rotation up to 360° without motor breakers or complex locking mechanism.		
8.	**ELECTRICAL DESIGN:**		
8.1	Electric power supply shall be 3-phase 400 V, 50 Hz. The design shall be such that the motor actuator can be operated at 0.90 to 1.1 of rated voltage.		
8.2	Control supply voltage shall be 24 VDC.		

8.3	Enclosure: Explosion proof with at least 2 cable entries. 1- ½"-Power, 1-1/4"-Control. The Power Cable entry in MOV shall be suitable for an entry through an explosion proof gland and cable size 2.5 mm2, 4 Core/Copper/XLPE/PVC/SWA/PVC.		
8.4	Control Station: Open / close spring return switches (rotary). Local / remote / stop selector with pad lockable in all 3 positions. - LCD display valve position as percent open. - LED Background. - LED indication for close / open and intermediate position.		
8.5	Auto phase protection and correction/Loss Power.		
8.6	Failure Action: Stay put		
8.7	Open / Close time: not more than 01 min (60 secs).		
8.8	Over torque protection.		
8.9	Motor thermal protection with embedded thermal switches.		
8.10	Command / Status feedback output switches. - Remote Open and Close Command thru 24V Pulse - Monitor or availability relay 01 No. - Open positions 2 Nos. - Close positions 2 Nos. - Contact rating 5.0 Amps at 24 VDC.		
8.11	Terminal block: Separate TBs for 400 V A.C Power input and control 24 VDC.		
8.12	Integral Starter		
8.13	Manufacturer AUMA / Rotork / Bernard Controls		
8.14	IP Class: 65 (Dust Tight and Water Jets)		
8.15	Duty Rating: 15 mins		
9.	**DOCUMENTATION**		
	As built drawings (3 sets)		
	Control Schematics (3 sets)		
	Maintenance Manuals (3 sets)		
	Test Certificates (3 sets)		
	Spare Parts List (3 sets)		

SPECIFICATON FOR MOTOR OPERATED BALL VALVES AT TS-3, FAISALABAD

INTRODUCTION:

This specification covers requirements for Ball type MOVs along with electric actuators associated with quarter turn Ball Valves reduced bore 12"x10" - Class 150 and 14"x12" - Class 150 having built-in integral starters.

DESIGN	:	**API 6D**
END FLANGE	:	**ANSI B 16.5**
FACE-TO-FACE	:	**ANSI B 16.10**
SHELL & SEAL TEST	:	**API 598**
SERVICE	:	**HSD / MOGAS**

- Flanged Ends, Raised Face
- Three piece split body
- Trunnion mounted
- Double block and bleed
- Stem seals : Min Two stem O-Rings
- Anti static device
- Anti blow out proof stem
- Venting and drain fittings
- Fire safe to API 6FA
- Emergency sealant injection for seats and stem
- Self lubricating stem and trunnion bearings to assure low operating torque through out entire valve life
- Automatic Relief device for body cavity trapped pressure.
- Supporting feet
- Lifting lugs

MATERIAL:

1.	Body	:	A 216 WCB / A105 / LF2
2.	Ball	:	Stainless Steel + ENP
3.	Stem	:	Stainless Steel + ENP
4.	Seat Rings.	:	Stainless Steel + ENP
5.	Seat Insert	:	Reinforced PTFE / Viton.
6.	O'Rings	:	Viton.
7.	Gasket	:	Viton.
8.	Bolting	:	A 193 B7 / A 194 2H
9.	Operation & Maintenance Manuals with Part List	:	03 Sets.
10.	Operating Temperature Range	:	-4° C to 50° C

TECHNICAL SPECIFICATION

ELECTRIC ACTUATORS FOR BALL VALVES

1.0 SPECIFICATIONS

1.1 REFERENCE CODES / STANDARDS:

I.E.C, NEMA, BASEEFA, ISA

In the event of foreign standards the manufacturer shall verify and certify that the requirements and tolerance of standards are at least equivalent to corresponding I.E.C standards.

1.2 OPERATING CONDITIONS:

Design Temperature Max	:	-4°C to 50°C
Design Pressure Max	:	20 kg/cm^2
Operating Pressure	:	08 kg/cm^2
Fluid Density	:	717@38C
Flow rate	:	550m^3/hr
Humidity	:	Upto 91% condensing

1.3 HAZARDOUS AREA CLASSIFICATION:

Zone 1 EEx d IIC T4

2.0 MECHANICAL DESIGN :

2.1 Rated actuator torque to be 1.5 times the valve torque specified by the valve manufacturer. RPM of Motor shall be compatible with valve movement

2.2 Mechanical assembly and coupling between valve and operator shall be designed so that it has no resistance to different torque efforts or eventual sticking of its element, due to valve or the actuator.

The use of rupturing piece is admitted but in such case it must be easily accessible and replaceable. The same apply to motor which must be easily replaceable without need of dismantling the essential parts of the actuator.

2.3 The actuator shall be designed and sized to provide adequate thrust / torque to guarantee smooth valve operation against maximum differential pressure of 285psi. (Torque / Thermal valves of actuator / valve to be specified).

2.4 Hand wheel shall be fitted with clutching and de-clutching device ensuring hand operation if electrical actuator fails.

2.5 Mechanical position indicator shall be provided independent of electrical system.

2.6 Adjustable torque limit switches for open/close operation shall be provided.

2.7 Steel on bronze worm gear sets with anti-friction bearings and durable epoxy coating shall be provided.

2.8 Quarter turn mechanism shall be incorporated with mechanical adjustable stops for 90° rotation ± 10° adjustments which can be modified for rotation up to 360° without motor breakers or complex locking mechanism.

3.0 ELECTRICAL DESIGN:

3.1 Electric power supply shall be 3-phase 400 V, 50 Hz. The design shall be such that the motor actuator can be operated at 0.90 to 1.1 of rated voltage.

3.2 Control supply voltage shall be 24 VDC.

3.3 Enclosure: Explosion proof with at least 2 cable entries. 1- ½"-Power, 1-1/4"-Control. The Power Cable entry in MOV shall be suitable for an entry through an explosion proof gland and cable size 2.5 mm2, 4 Core/Copper/ XLPE/PVC/SWA/PVC.

3.4 Control Station: Open / close spring return switches (rotary).
Local / remote / stop selector with pad lockable in all 3 positions.

- LCD display valve position as percent open.
- LED Background.
- LED indication for close / open and intermediate position.

3.5 Auto phase protection and correction/Loss Power.

3.6 Failure Action: Stay put

3.7 Open / Close time: not more than 01 min (60 secs).

3.8 Over torque protection.

3.9 Motor thermal protection with embedded thermal switches.

3.10 Command / Status feedback output switches.

- Remote Open and Close Command thru 24V Pulse
- Monitor or availability relay 01 No.
- Open positions 2 Nos.
- Close positions 2 Nos.
- Contact rating 5.0 Amps at 24 VDC.

3.11 Terminal block: Separate TBs for 400 V A.C Power input and control 24 VDC.

3.12 Integral Starter

3.13 Manufacturer AUMA / Rotork / Bernard Controls

3.14 IP Class: 65 (Dust Tight and Water Jets)

3.15 Duty Rating: 15 mins

4.0 DOCUMENTATION :

Vendor shall provide following documents.

4.1	As built drawings	3 sets.
4.2	Control schematics	3 sets.
4.3	Maintenance manuals	3 sets.
4.4	Test Certificates	3 sets.
4.5	Spare parts list	3 sets.
4.6	Wiring Diagram	3 sets.

Note: All the above mentioned documents should be sent.

5.0 NAME PLATES:

Material of name plates shall be stainless steel and all data shall be clearly and deeply stamped into the metal or indicated on raised letters.

NB:

1. Mill Test certificates of each item will be required.
2. Valves of API approved manufacturers holding valid API certificate will be acceptable.
3. Only Valves of European /USA / Japanese origin will be acceptable.
4. Bids not supported with requisite technical literature/leaflets will not be entertained.
5. Third Party inspection of complete valve with Actuator.