

	Bharat Heavy Electricals Ltd Boiler Auxiliaries Plant Ranipet-632 406	EDC/GATES & DAMPERS TECHNICAL SPECIFICATION	
SPECIFICATION NO: GDRS: 028		REV NO:04	PAGE NO 01 OF 05

1	Item	Scotch-Yoke type Pneumatic Actuator	Vendor / Acceptance / Comments
2	Scope of supply	Scotch-Yoke type Pneumatic Quarter-Turn Actuator along with Manual Over ride, Wiring, Junction box & accessories.	
	Type	Heavy duty, Double acting; 100% Fail safe (Refer Fig.01.)	
3	Application	For Dampers: a) Regulation (4-20mA), and b) Open/Close (within 10 seconds)	
	Actuator Mounting Orientation	Horizontal/Vertical w.r.t ground. Refer purchase enquiry.	
4	RH/LH & Open/Close Directions of Actuator	Refer Fig.02-A & 02-B. Refer purchase enquiry.	
5	Operating Medium	Instrument air (Compressed Air) 4 kg/cm ² filtered & lubricated.	
6	Working Environment	Dusty, corrosive & highly polluted. Temperature may go up to 150° C.	
7	Output Torque required, kgm	Refer purchase enquiry.	
8	Actuator Mounting Bore dia, mm	Refer purchase enquiry.	
		Suitable BUSH with TWO key-ways 180deg apart to be provided by Vendor.	
9	Actuator Model Number & Volume, liters	Vendor to specify.	
10	Actuator Material (Vendor to specify)	a)Actuator Body b)Guide Bar & Chrome Plating Thickness c)Self-Lubricating Bearings (Location & Type/Make) d)Scotch, Yoke & Yoke Pin e)Sliding Block f)Seals (VITON)	
11	Type of Yoke	Symmetric/Canted (Vendor to specify). Also vendor to furnish Torque Characteristic curve during Enquiry Stage.	
12	Piston Material	Vendor to specify.	
13	Cylinder Bush Bearing Material	Vendor to specify.	
14	Cylinder ID Chrome plating Thickness	a) Double acting pneumatic cylinder	
		b) Hydraulic cylinder	

04	20.07.2019	Sl.nos.12,21 revised	Suresh	Ashwin Dhinakar
03	13.06.2019	Sl.nos.02,03,08,21 revised	Suresh	Ashwin Dhinakar
REV	DATE	DESCRIPTION	PREPARED	APPROVED

SL. NO	Particulars	Description	Vendor / Acceptance /Comments
15	Actuator Coupling	Not Applicable.	
16	Manual Over Ride & Type	To be provided; Hydraulic Without Spring Return.	
17	Smart Positioner	To be provided as per specification GDRS:029/ Latest Rev.	
18	Smart Positioner Make & Model number	Vendor to specify.	
19	Pneumatic Hook Up Diagram	Refer 2-57-999-25089/ Latest Rev. Vendor pneumatic circuit diagram to be submitted during Enquiry Stage. (THIS IS TECHNICAL EVALUATION CRITERIA)	
20	Control Logics/Fail Safe Conditions	Open/Close – Less than 10 seconds	
		Air Failure – Quick Open (Less than 10 seconds)	
		Power Failure – Quick Open (Less than 10 seconds)	
		Signal Failure (4-20mA) – Quick Open (Less than 10 seconds)	
		Emergency Signal – Quick Open (Less than 10 seconds)	
21	Tie Rods	Internal or External, vendor to specify.	
22	Material of Damper shaft mounting bush	Vendor to specify.	
23	Location of accessories,pneumatic circuit & junction box	On the Actuator Assembly.	
24	Enclosure for accessories,pneumatic circuit,junction box	Completely closed box-type enclosure with 180deg Swing door; gaskets and Lock to be provided. Material: SS304.	
25	Junction Box & Wiring	a)One termination Junction box (JB) to be provided with 2 Rows & 12 Nos of terminals. All wirings are to be terminated into JB with brass cable glands. b)Wiring Diagram to be submitted by Vendor during GA drawing approval stage. c)Wiring to be done with proper crimping lug & identification ferrules. d)Suitable cable glands shall be used at junction box (1619+1611 Commet) to ensure water & dust proof wiring. e)Finally wired JB has to meet IP55.	
		Material: FRP	
26	Protection Class of Actuator	IP 67	

SL. NO	Particulars	Description	Vendor / Acceptance /Comments
27	a)No. of Travel Adjustment Bolts provided	Vendor to specify	
	b)Location of End Travel Stopper Bolts.	Vendor to specify	
28	Standard Travel Adjustment Range	Vendor to specify	
29	Inspection	100 percent inspection by BHEL or BHEL approved agency.	
30	Pressure Test	During testing, the piston shall operate smoothly at the given Minimum working pressure. The test shall be carried out Several (Minimum 5) times of operation.	
31	Name plate	Two name plates are to be fastened at the front end cover (i.e. one near the port face & another opposite to this). It has to contain the following details. 1) Manufactures name 2) Maximum working pressure (kg/cm ²) 3) Mounting Bore diameter (mm) 4) Actuator torque (kgm) 5) BHEL material code (Indent No / P.O.Ref.) 6) Year and month of manufacture and serial number. 7) Actuator weight in kgs	
32	Painting	Surface preparation – Blast cleaning of SA 2 1/2 to a surface profile of 35 to 50 micron. Epoxy primer -as per IS 13238 with film thickness of 30 micron. Epoxy finish paint as per is 14209 with film thickness of 30 micron. Shade 692 of IS 5. (Or as per Vendor Standard, to be specified) Total DFT =60 micron. Note: suitable care to be taken to protect the machined surface during blast cleaning.	
33	Packing	Actuator assembly - Wrapped in polythene paper and packed in wooden crate to prevent water/dust ingress.	
34	Documents during Enquiry	The following details shall be furnished by the supplier during offer itself; without this the offer will not be considered. a) Point wise acceptance /comment for specification GDRS:028 (Refer latest rev) to be submitted along with offer. b) General Arrangement drawing with sectional view & material specification. c) Spares recommended for commissioning d) Spares recommended for two years trouble free operation. e) Seal Kit model no & make. f) Catalogue, if any	
35	Drawing for approval	Approval to be obtained for detailed drawing with BOM & Spare kit BOM before manufacturing.	

36	Documents during Supply	The following documents shall be submitted by the supplier along with supply of Air cylinder a) Material test certificate. b) Operational test certificate. c) Operation and Maintenance manual-indicating assembly, dismantling, operation, maintenance, instruction and spare kit make & model details.	
37	Notes	All sharp corners & edges are to be rounded of (Approximately R2)	
38	End connections	SS304 dummy plugs to be suitably provided in Pneumatic circuit & Hydraulic circuit end connections.	



