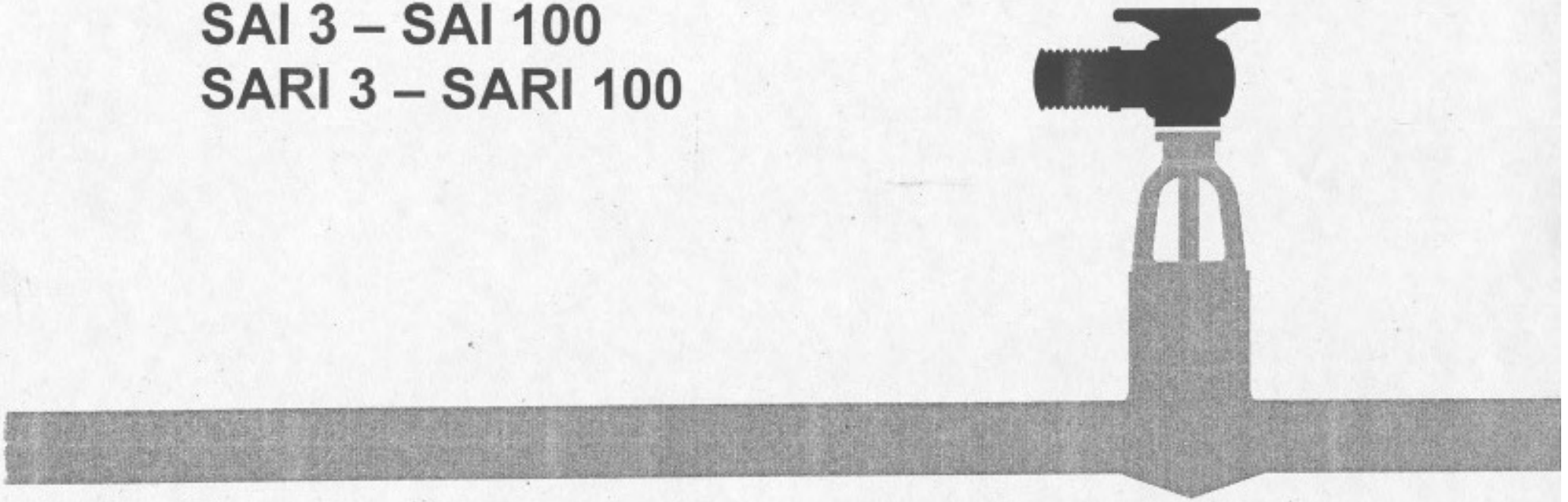
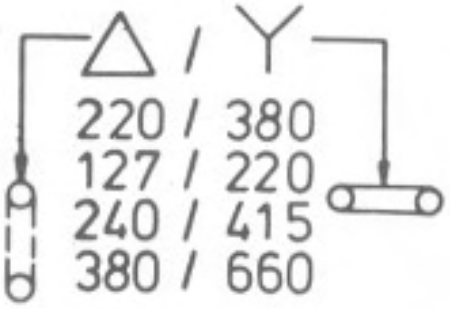
auma (india) pvt ltd

Operation instruction

SAI 3 – SAI 100
SARI 3 – SARI 100

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127 / 220
240 / 415
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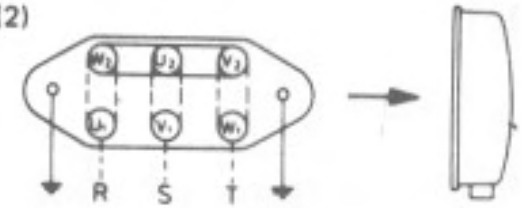
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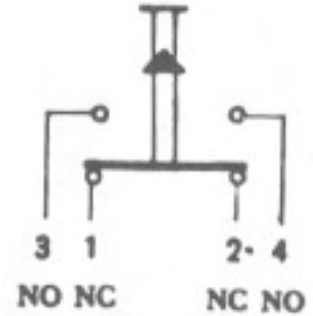
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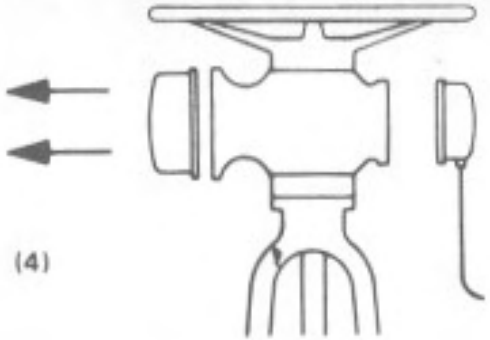

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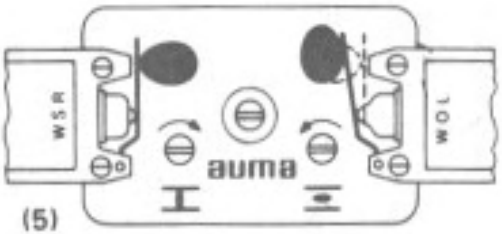
WSR
auma
WOL

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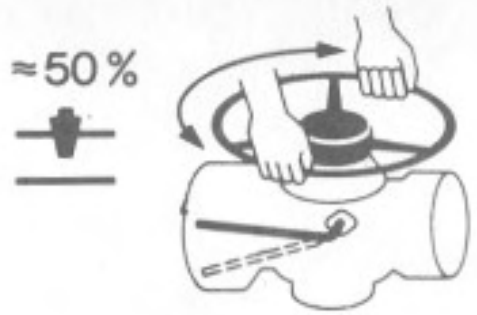
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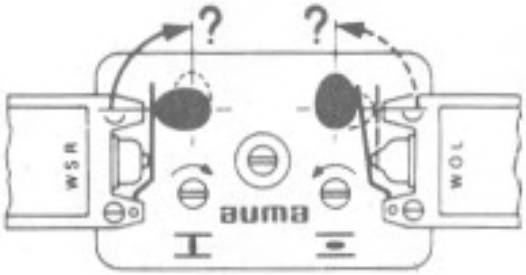
?
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WSR
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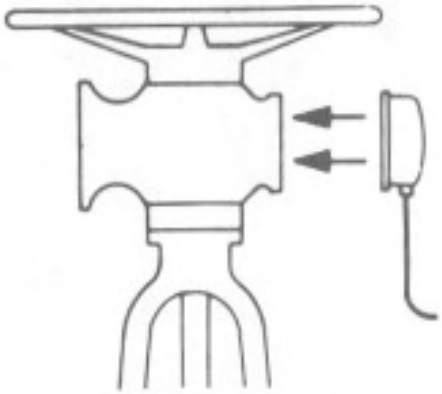


CAUTION

Thermo switches are provided to protect Motor windings, These should be connected in panel control circuit (Refer Terminal Plan) else our warranty in void.

1. Electric connection
   For 3 phase AC - motors:
   Check whether terminal links are fitted to suit type of motor and power supply (fig. 1). Connect wires R–S–T to terminal pins U_1–V_1–W_1 (fig. 2), for flame proof enclosure at clip-on terminals.
   For single - phase or DC - motors see instructions in terminal compartment.
   Connect control wires according to wiring diagram. Terminal plan is inside the terminal compartment.
   Note : The two circuits of each switch (fig. 3) are suitable only for the same potential.

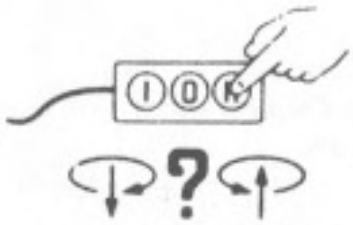
2. *Remove cover at switch compartment (fig. 4).*
   Valve completely closed : WSR tripped
   Check whether limit-switch has tripped (fig. 5).
   Valve completely opened : WOL tripped

3. Engage manual drive :
   Push declutch lever as indicated by arrow (fig. 6). If resistance is felt, turn handwheel slowly while lever is pressed till manual drive engages..

4. *Operate valve to intermediate position manually (fig. 7).*
   Direction OPEN (⊟) turn handwheel anti-clockwise. Direction CLOSED (⊥) turn handwheel clockwise. Switch cam at ⊥ (Z) or ⊟ (O) should rotate 90° and release the switch (fig. 8), if set properly.

5. *Ensure sealing faces at control plug are clean and check whether O-ring is ok, apply thin film of non-acid grease to sealing faces, then replace plug cover (fig. 9).*

(10)



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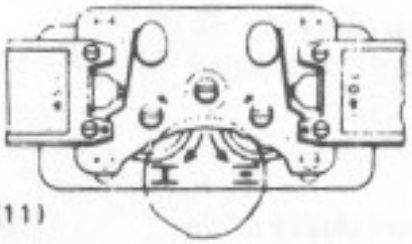

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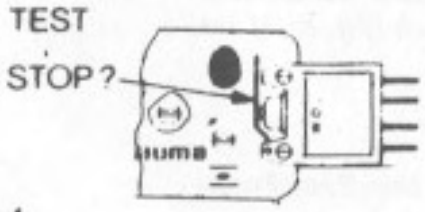

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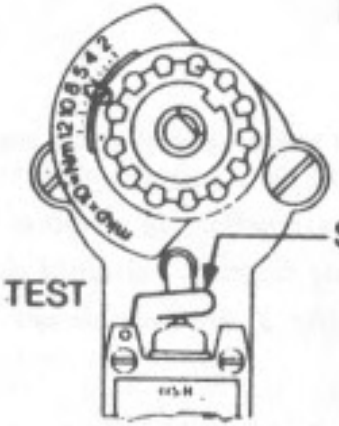

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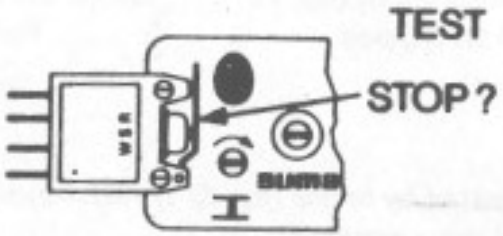

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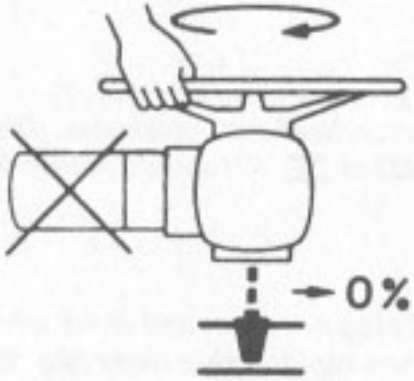

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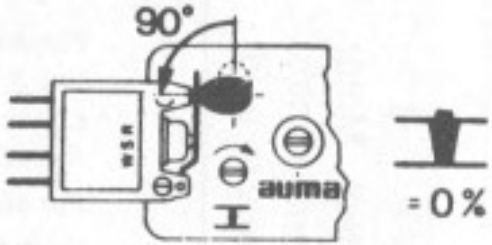

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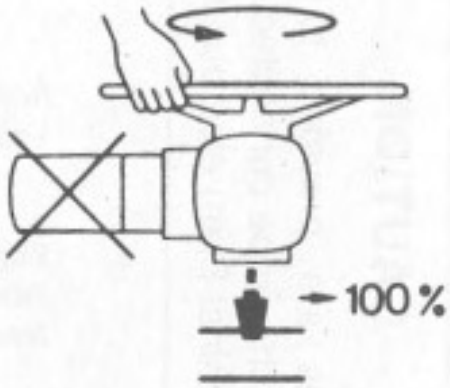

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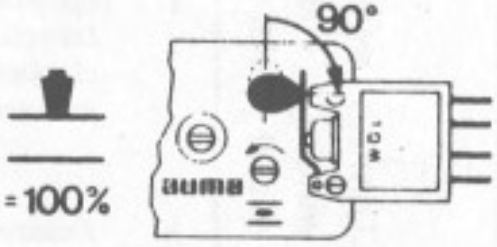


6. *Connect to mains. Switch on motor momentarily. Manual drive will be disengaged automatically. Check direction of rotation (fig. 10), observing arrows at limit switch counter gear (fig. 11).*

   If incorrect, stop immediately and change sense of rotation (if 3 phase AC-motor, exchange any two phases).

7. *Start actuator in OPEN direction and switch off by manually tripping limit switch WOL (fig. 12).*

8. *Start actuator in CLOSED direction and switch off by manually tripping torque switch DSR. Tip switch operating lever easily only! (fig. 13). For actuators with double torque switch check OPEN direction in the same way.*

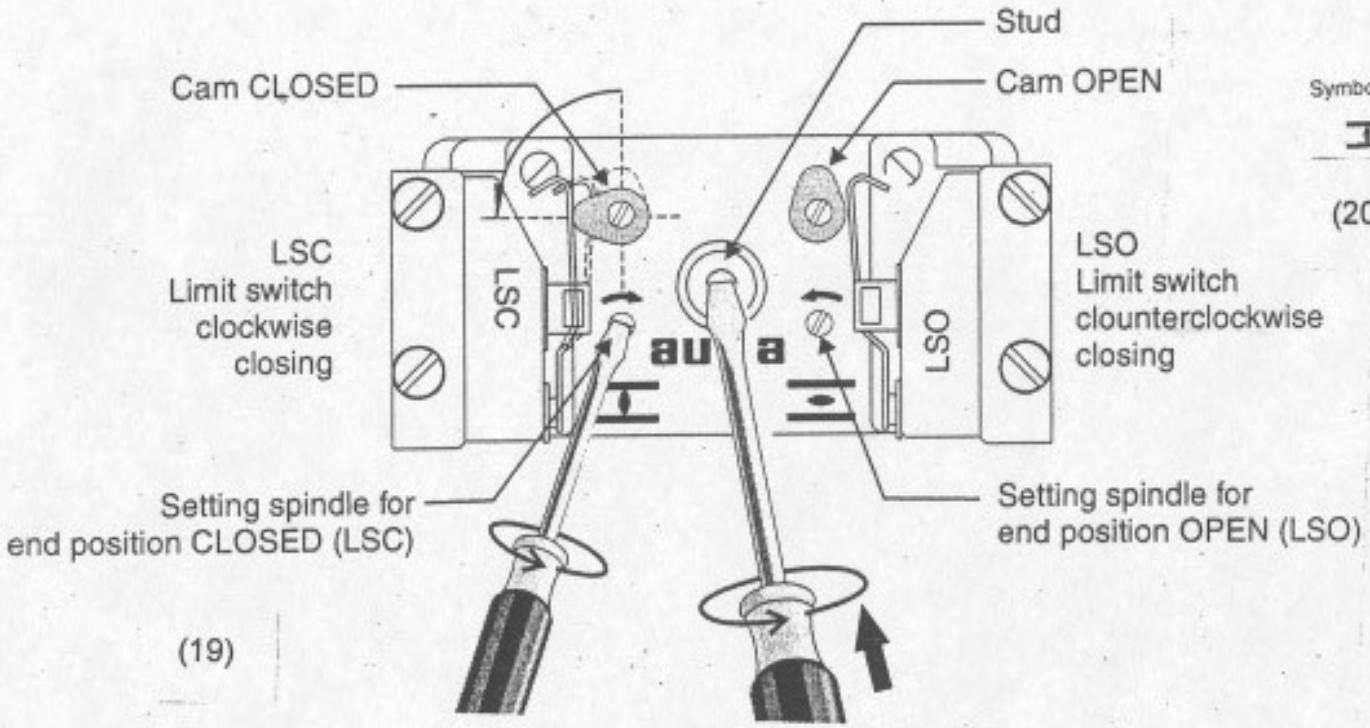
9. *For position seated closing: Start actuator in CLOSED direction and switch off by manually tripping limit switch WSR (fig. 14).*

10. *If actuator does not stop check connection of terminals and the control wiring.*

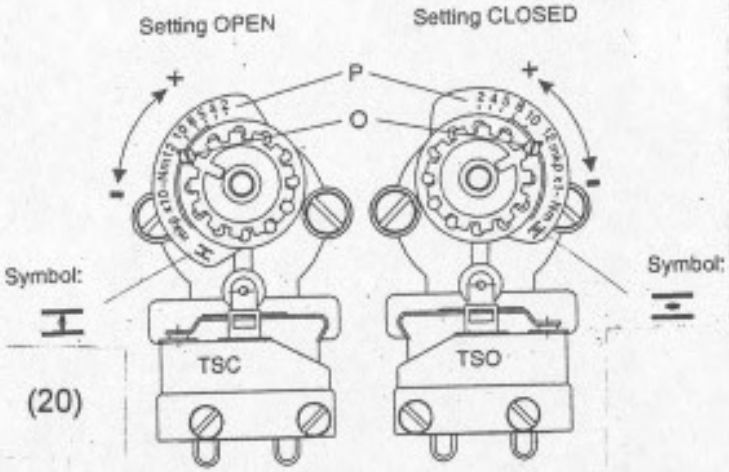
11. *Determine over-run of actuator in both directions by visual inspection (amount of additional rotation of spindle or valve movement after actuator is switched off).*

12. *Engage manual drive and operate actuator to fully closed position (fig. 15), while observing the switch cam for limit switch WSR.*
    For position seating : When the switch has tripped (fig. 16) continue turning handwheel to the final position and check whether the remaining travel corresponds to the over-run. If not, reset to suit. see point 14.
    For torque seating : Limit switch WSR must trip shortly before reaching end-position CLOSED (fig. 16).

13. *Operate actuator manually to OPEN-position (fig. 17). Check in the same way as described above for position seating, see point 12 (fig. 18).*


Cam CLOSED
Stud
Cam OPEN
LSC
Limit switch
clockwise
closing
LSC
au
a
LSO
LSO
Limit switch
clounterclockwise
closing
Setting spindle for
end position CLOSED (LSC)
Setting spindle for
end position OPEN (LSO)

(19)


Setting OPEN
Setting CLOSED
P
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Symbol:

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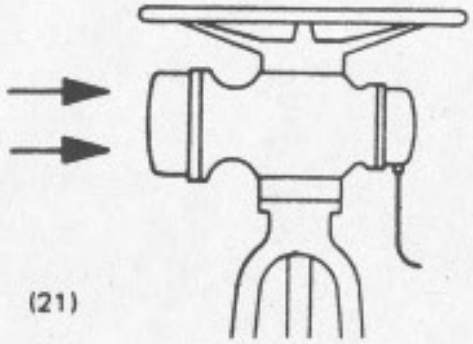


(21)

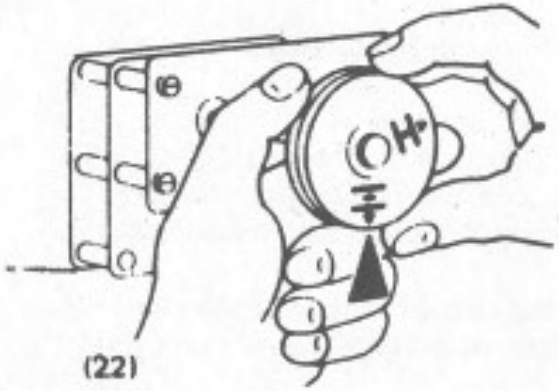
14. *Resetting limit-switching :*
   - *Operate valve away from end-position to account for over-run or to the desired switch tripping point.*
   - *Push thrust bolt I inwards and turn (fig. 19). The bolt remains in this position.*
   - *For CLOSED position turn spindle marked* ⊥ *(Z), (for OPEN position spindle marked* ⊤ *, O) slowly as indicated by arrow (fig. 19). Distinct "clicks" can be felt and heard. Continue turning the spindle until the cam operates the switch. At this stage the spindle should not "click" any more and should not be turned any further.*
     If inadvertently you override the tripping point, continue turning the spindle slowly in the same direction till the switch cam goes back to its original position. Repeat setting instructions as above described.
   - *Turn thrust bolt I till it snaps back into its original position by spring action.*

15. ***Torque switching (fig. 20).***
   If the actuator is switched off by torque switch over its travel before reaching an end-position please check whether the valve stem is damaged or dirt adhering to it. If necessary, and with the valve maker's consent, the setting of the tripping torque may be raised slightly.

16. Setting : *Figures on the torque switch operating cam indicate the valves in Nm (1 mkp ≈ 10 Nm, 1 lbsft. = 1.36 Nm). Loosen screw and turn the cam till the desired torque coincides with the arrow mark, then fasten lock-screw.*

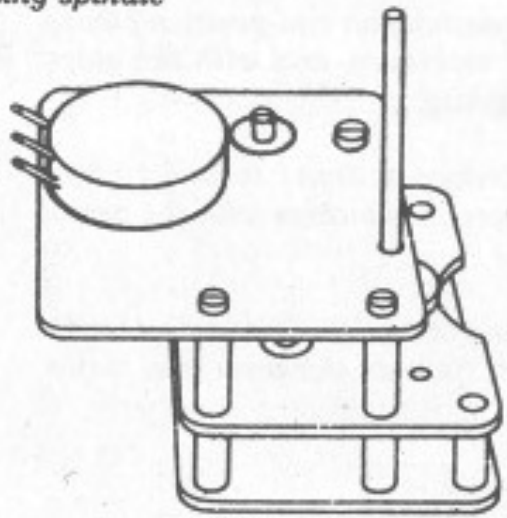
17. Immediately after start-up : *Ensure sealing faces at cover and housing are clean. Check whether O-ring is correctly in position and apply a thin film of non-acid grease. Replace the cover and fasten with 4 screws (fig. 21).*

18. ***Fasten control cover screws and tighten glands at conduit entries.***



(22)

setting spindle



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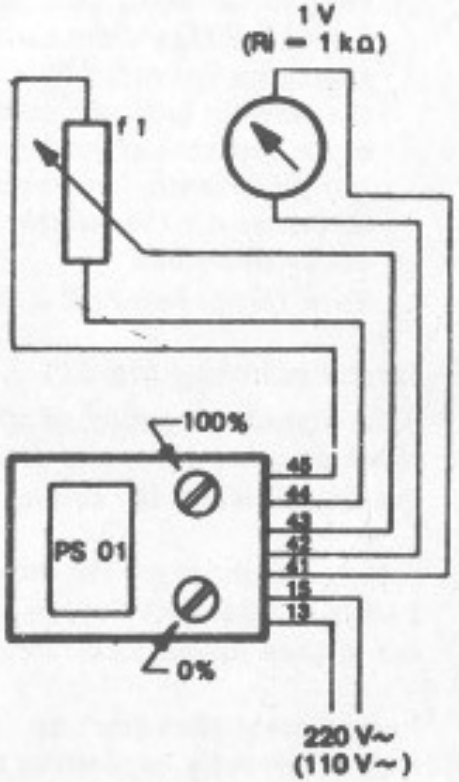


Setting of optional equipment

19. Mechanical position indicator : *The two dials have aslip clutch for easy adjustment. At valve fully closed turn dial* ⊤ *(CLOSED) till the arrow is in alignment with the mark on the show glass. Operate valve into fully OPEN position and adjust dial marked* ⊤ *(OPEN) till the arrow mark is in alignment with the mark on the cover.*

Note : The dial ⊤ *(CLOSED) must be held in position while adjusting dial* ⊤ *(OPEN). (fig. 22).*

20. Electric position transmitter

Through a reduction gearing (selected to suit turns required by valve travel) a potentiometer will be driven. A suitable power supply unit supplies a low voltage current. The valve position can be read on a remote instrument with a percentage scale.

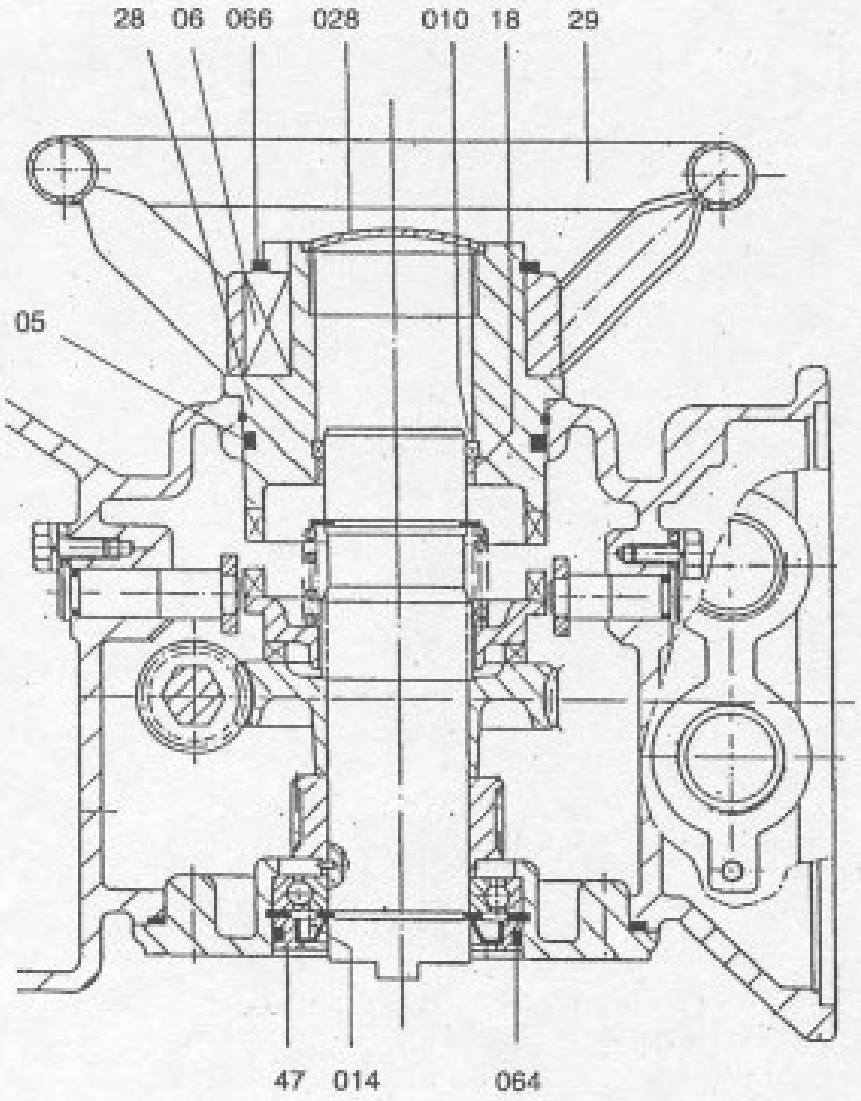
21. Setting

Operate valve to the fully CLOSED position (= 0%). Set potentiometer to its starting position by turning the wiper[1]), which has a slip clutch (fig. 23).

Adjust the position meter to zero by trimming potentiometer in the power supply unit (fig. 24). Operate valve to the fully OPEN position (= 100%). Adjust the position meter to max. range with the help of the trimming potentiometer in the power supply unit (fig. 24). Check indication for both end positions. If required, make slight re-adjustment.

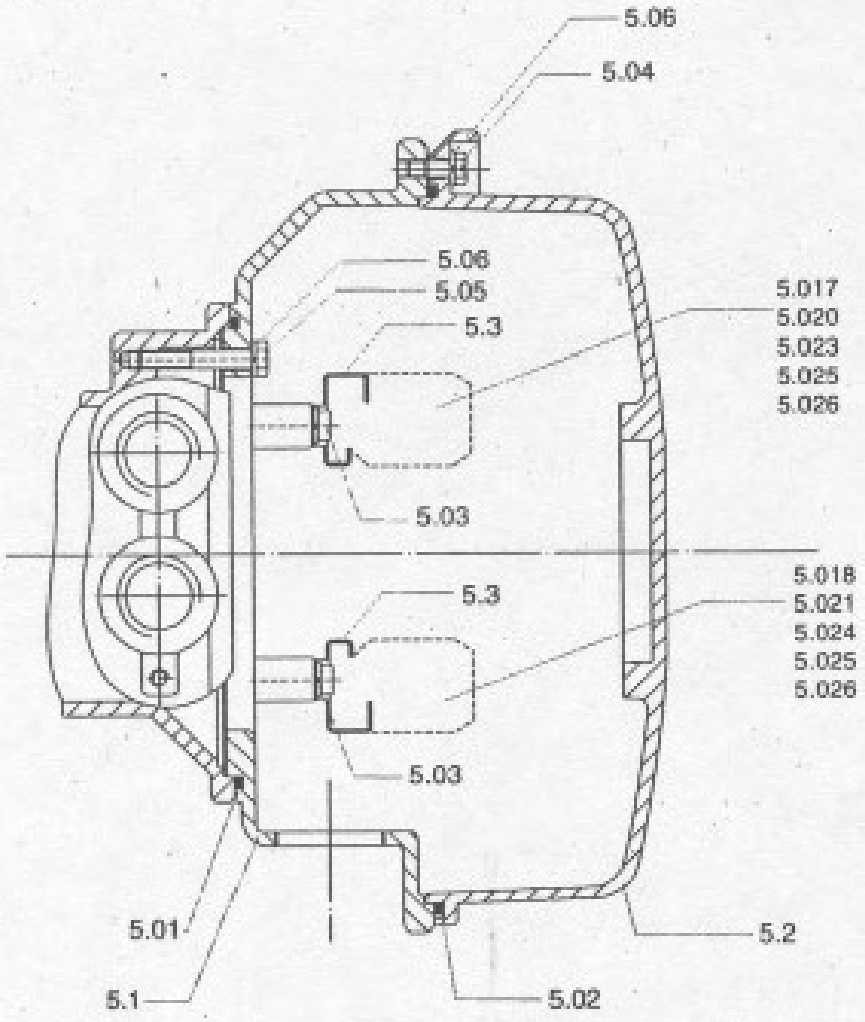
[1]) applies only to open potentiometer as shown in figure 23.

Handwheel



No.	Designation	No.	Designation
18	Bushing	010	Quad ring for handwheel
28	Handwheel hub	028	Lid
29	Handwheel	064	O-ring for O-ring retainer
47	O-ring retainer	066	Circlip
05	O-ring for handwheel hub	014	Oil seal for SAI 6
06	Parallel key		Quad ring for SAI 12 – SAI 100

Electrical connection with terminals



No.	Designation	No.	Designation
5.1	Terminal frame	5.017	Control terminal max. 4.0 mm²
5.2	Terminal box cover	5.018	Motor terminal max. 10 mm²
5.3	Terminal rails	5.020	Protective earth terminal max. 4.0 mm²
		5.021	Protective earth terminal max. 10 mm²
5.01	O-ring, ∅ 152X3.5	5.023	Cover
5.02	O-ring, ∅ 240 X 4	5.024	Cover
5.03	Bolt	5.025	Clamping saddle
5.04	Reduced-shaft bolt	5.026	Links
5.05	Hexagon bolt		
5.06	Lock washer		

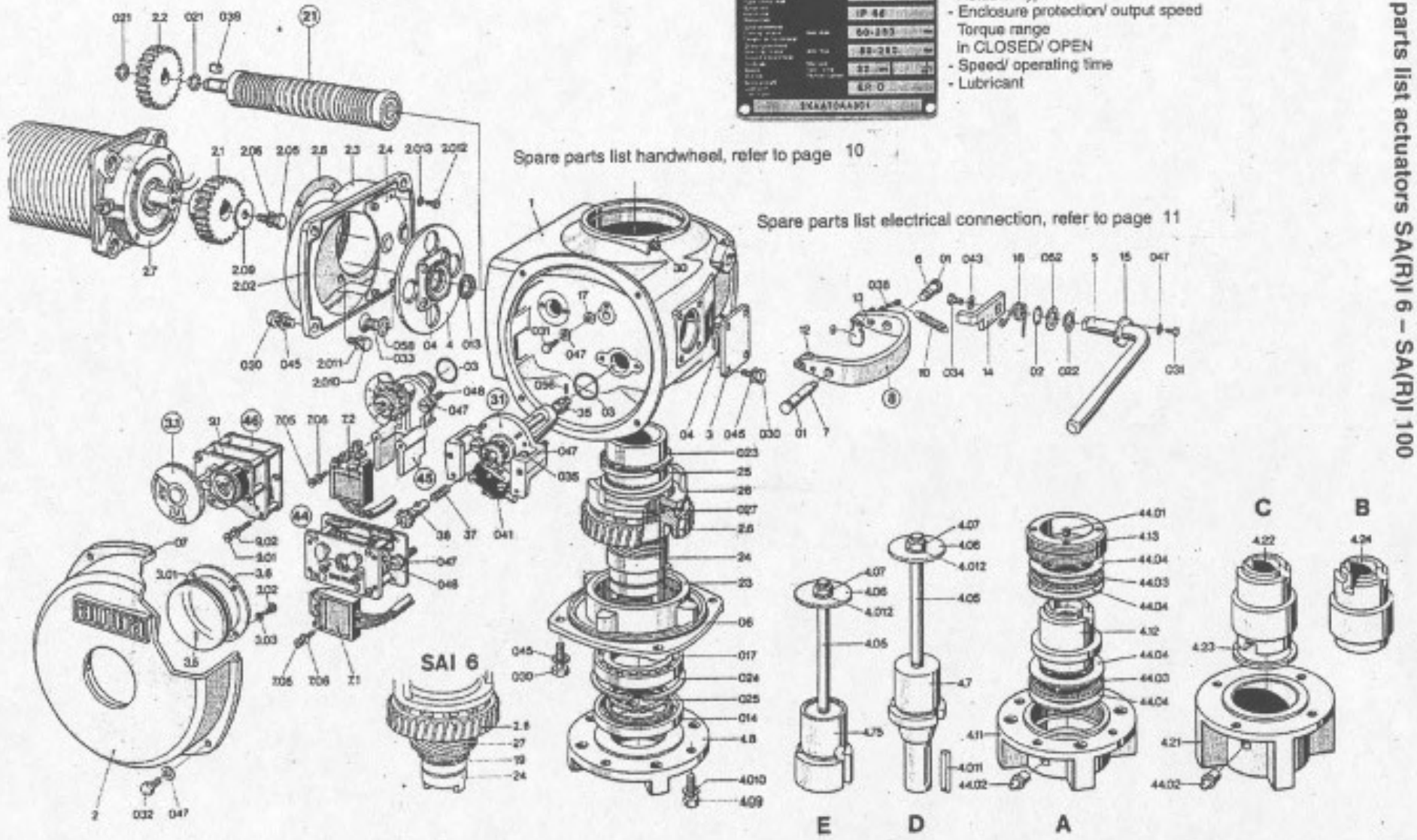
Cross sections for connection: Control cables max. 4.0 mm²
Motor connection max. 10 mm²

Sample name plate

- Commission number
- Works number
- Actuator type
- Enclosure protection/ output speed
  Torque range
  in CLOSED/ OPEN
- Speed/ operating time
- Lubricant

Spare parts list handwheel, refer to page 10

Spare parts list electrical connection, refer to page 11



Note:
Please state type and commission no. of the actuator (see name plate) when ordering spare parts. Delivered spare parts may slightly vary from the representation in these instructions.

Nr.	Designation	No.	Designation	No.	Designation
1	Housing	031	Hexagon bolt	4.23	Thrust ring
2	Cover	032	Reduced-shaft bolt	4.24	Plug sleeve (type B)
3	External bearing retainer	033	Oval head screw	4.75	Drive socket (type E)
4	Internal bearing retainer	034	Hexagon bolt		
5	Declutch lever	035	Socket head cap screw	4.05	Stud bolt
6	Clutch roller pin, short	038	Cotter pin	4.06	Washer
7	Clutch roller pin, long	039	Parallel key	4.07	Hexagon nut
8	Clutch fork assembly	041	Blinker switch	4.09	Hexagon bolt
9	Declutch latch	043	Clamping washer	4.010	Lock washer
10	Extension spring	045	Lock washer	4.011	Parallel key
12	Clutch ring support pin	047	Lock washer	4.012	Lock washer
13	Spring tension plate	048	Socket head cap screw		
14	Declutch tripping arm	052	Support washer	44.01	Grub screw
15	Retaining plate	056	Roll pin	44.02	Grease nipple
16	Return spring	058	Star washer	44.03	Needle bearing
17	Washer			44.04	Bearing race
18	Bushing	2.1	Pinion		
19	Snap ring	2.2	Spur gear	7.1	Microswitch (limit)
21	Worm shaft assembly	2.3	Motor mounting flange	7.2	Microswitch (torque)
23	Bearing flange	2.4	Shield	7.05	Socket head cap screw
24	Hollow shaft	2.6	Worm wheel	7.06	Lock washer
25	Compression spring	2.7	Motor		
26	Clutch ring	2.8	Gasket	9.1	Potentiometer
27	Helical gear (SAI / SARI 6 only)			9.01	Socket head cap screw
		2.02	Gasket	9.02	Lock washer
30	Handwheel retainer	2.05	Hexagon bolt		
35	Helical pinion	2.06	Lock washer		
36	Pinion with shaft	2.09	Washer		
37	Compression spring	2.010	Hexagon bolt		
		2.011	Lock washer		
01	O-ring (clutch roller pin)	2.012	Socket head cap screw		
02	O-ring (declutch lever)	2.013	Lock washer		
03	O-ring (drive assly. flanges)				
04	O-ring (bearing retainer)	3.1	Indicator assembly		
06	O-ring (bearing flange)	3.5	Indicator glass		
07	O-ring (cover)	3.6	Glass retaining ring		
013	Oil seal	3.01	O-ring (indicator glass)		
014	Oil seal (subclause 15.4).	3.02	Socket head cap screw		
017	Ball bearing	3.03	Lock washer		
021	Circlip				
022	Circlip	4.7	Shaft coupling (type D)		
023	Circlip	4.8	Mounting flange (D+E)		
024	Circlip	4.11	Mounting flange (A)		
025	Circlip	4.12	Stem nut (type A)		
027	Circlip	4.13	Bearing lock nut		
030	Hexagon bolt	4.21	Mounting flange (B+C)		
		4.22	Dog coupling (type C)		

All auma actuators are 100% tested and factory checked. Actuators are supplied ready for service. Most of the actuators are supplied to valve manufacturers for mounting to valves. It is usual for the valve manufacturer to set the switches and test the motorised valve.

Special care should be taken when commissioning. Wrong connection or faulty control wiring may result in damage to the motorised valve.

In case the actuators will not be mounted or commissioned for a long period, take care for adequate (dry) storage, refer to our instruction sheet "Transport, Storage and Commissioning of auma-actuators".

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DD/MN.011 ISSUE 04/09

PROCUREMENT OF SPARES AND SERVICES FROM UNAUTHORIZED AGENCIES

It has come to our notice that some unauthorized agencies are offering spares and/ or service for AUMA Group products to end-users. It is clarified through this note that AUMA India is one of the Global Service Hubs of AUMA Group and responsible for offering Service support in Indian sub-continent. AUMA India as a policy does not authorize any external agency to offer service support on AUMA Group products in view of competency and product liability issues and all such services are coordinated by AUMA India directly. In case of availing the services of external agencies, AUMA India would not be able to offer any future support on the products handled by unauthorized third parties. However, routine maintenance activities carried out by the end-users or their representatives is very much acceptable.

AUMA India sells the spares of AUMA Group products either directly or through the authorized dealers. AUMA India products contain some standard catalogue parts such as fasteners, connectors etc, but majority of items are manufactured according to AUMA design and drawings. It is extremely important that spurious and sub-standard parts are **not** used in repair and overhauling of AUMA Group products to ensure desired performance in critical operations controlled by AUMA products. While end-users can buy standard catalogues parts of other manufacturers directly from authorized sources, all special parts as per AUMA design have to be necessarily procured from AUMA dealers or directly from AUMA. AUMA Service Engineers are instructed no to carry out any service using spares procured from unauthorized agencies.