

Chapter 70

ACTUATOR, WESTERN, TYPE EJ 25, Mk. 17 AND 17A

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Introduction

1. These two actuators differ from the actuator described in A.P.4343, Vol. 6, Sect. 17, Chap. 2, App. 7 on Western EJ 25 series in respect of mounting, reduction gears and length and time of stroke. They also differ from each other in respect of

electrical connection. Details of variations are given below:—

DISMANTLING, INSPECTION, REPAIR AND RE-ASSEMBLY

2. These are all described in A.P.4343, Vol. 6, Sect. 17, Chap. 2, App. 7.

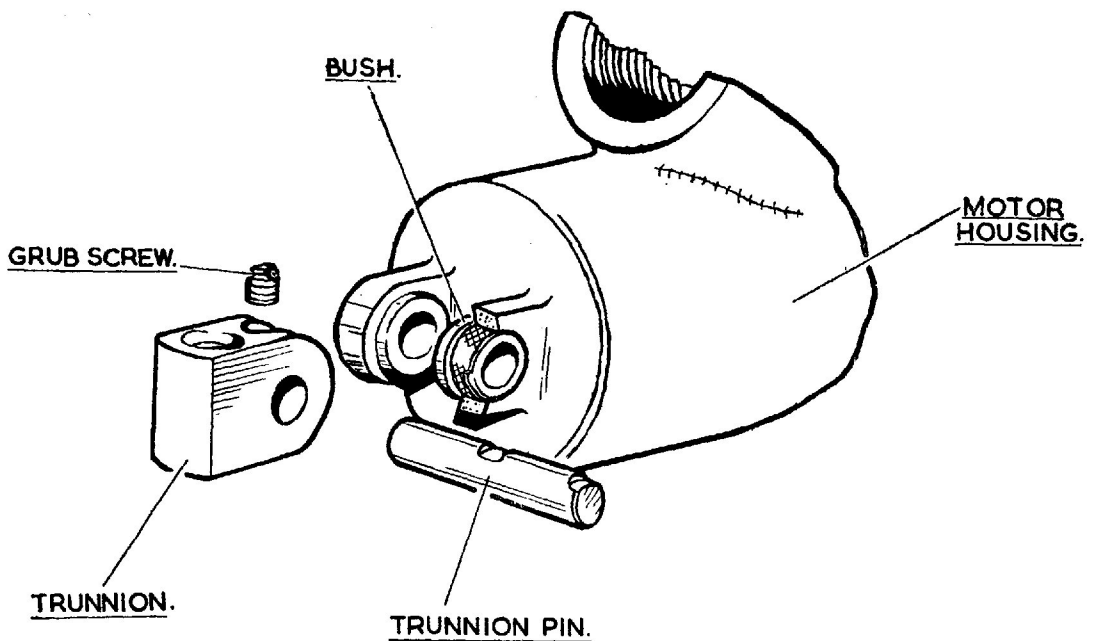


Fig. 1. Fixed end fitting

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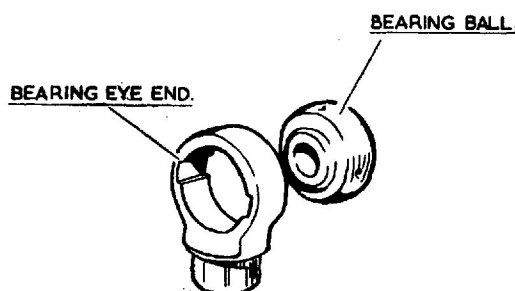


Fig. 2. Moving end fitting

End fittings

3. Each actuator is attached at the fixed end by a bolt passing through a universal trunnion, whilst the moving end is attached by a bolt passing through a self-aligning eye.

Fixing centres and stroke

4. The fixing centres, length and time of stroke are as follows:—

- (a) Extended centres 7.35 in. ± 0.02 in.
- (b) Retracted centres 6.35 in. ± 0.02 in.
- (c) Stroke length 1.00 inch
- (d) Time of stroke at 28V and 25 lb. opposing load 6 seconds

Reduction gears

5. Three-stage epicyclic reduction gears are fitted, having a total reduction ratio of 78.6 : 1.

Electrical connection

6. Actuator Mk. 17 is fitted with Breeze plug Ref. No. Z.560060 (Plessey Ref. No. CZ.48993) and Mk. 17A is fitted with Breeze plug Ref. No. Z.560565 (Plessey Ref. No. CZ.48993/5), the difference being in pin orientation.

TESTING

Actuator

7. Load tests are as follows, and are to be carried out on the actuator after repair and re-assembly:—

- (1) A running-in test of approximately 10 runs in each direction is to be made at 25 volts and 25 lb. opposing load.
- (2) A functional test should be performed at 28 volts d.c. and opposing loads of zero, 25 lb. and 37 lb. The maximum current consumption and the time the piston takes to complete its 1.00 inch travel should not exceed the following figures:—

Load (lb.)	Max. current (amp.)	Max. time (sec.)
0	0.9	5.75
25	1.0	6.00
37	1.1	6.35

Motor

8. Motor tests are described in A.P.4343, Vol. 6, Sect. 17, Chap. 2, App. 7.

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SCHEDULE OF FITS, CLEARANCES AND REPAIR TOLERANCES

APPENDIX 1

All dimensions in inches

Actuator, Western, Type EJ 25, Mk. 17 and 17A

Item No. (1)	Description (2)	Dimension New (3)	Permissible Worn Dimension (4)	Clearance New (5)	Permissible Worn Clearance (6)	Remarks (7)
1	ACTUATOR					
2	Trunnion, bore	0.125	0.127	0.00125	0.003	
3	Trunnion pin, dia.	0.125	0.124	0		
4	Locating plate } bore	0.875	—	0.0004		
5	Piston housing } bore	nominal	—	clear to 0.0005 interf.	0.0004	Bearing selected to give the fits quoted in Col. 5
6	Ballrace o/d	—	—			
7	Ballrace i/d	0.375	—	0.0005	0.0005	Bearing selected to give the fits quoted in Col. 5
8	Land on worm, dia.	nominal	—	clear to 0.0004 interf.		
9	Piston housing bush, bore	0.4375	0.4380	0.0010		
10	Piston o/d	0.4375	0.4365	0.0002	0.0015	
	Piston housing guide slots, width	0.1875	0.1905	0.004		
	Piston lugs, width	0.1875	0.1855	0.001	0.005	

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SCHEDULE OF FITS, CLEARANCES AND REPAIR TOLERANCES

APPENDIX 1 (continued)

All dimensions in inches

Actuators, Western, Type EJ 25, Mk. 17 and 17A

Item No. (1)	Description (2)	Dimension New (3)	Permissible Worn Dimension (4)	Clearance New (5)	Permissible Worn Clearance (6)	Remarks (7)
11	MOTOR	Self-aligning eye, spherical bore	0.495	—	—	Ground to fit together with no perceptible backlash
12		Bearing ball	—	—	—	
13		Worm assembly	—	—	0.0015	Max. end float 0.001
14		Worm and piston thread	—	—	—	
15		End cap solenoid core, dia.	0.5175 nominal	—	0.0005 clear to 0.0005 interf.	
16		Ballrace sealing cup, o/d	—	—	—	Bearings selected to give the fits quoted in Col. 5
17		Ballrace i/d	0.1875 nominal	—	0.0001 interf. to 0.0004 interf.	
18		Armature shaft, dia.	—	—	—	Bearings selected to give the interference fits quoted in Col. 5
19		Brush length	0.30	0.20	—	