

## Chapter 69

# ACTUATOR, WESTERN, TYPE EJ 25, Mk. 1A AND 1E

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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.

### End fittings

3. Each actuator is attached at the fixed end by a bolt passing through a universal

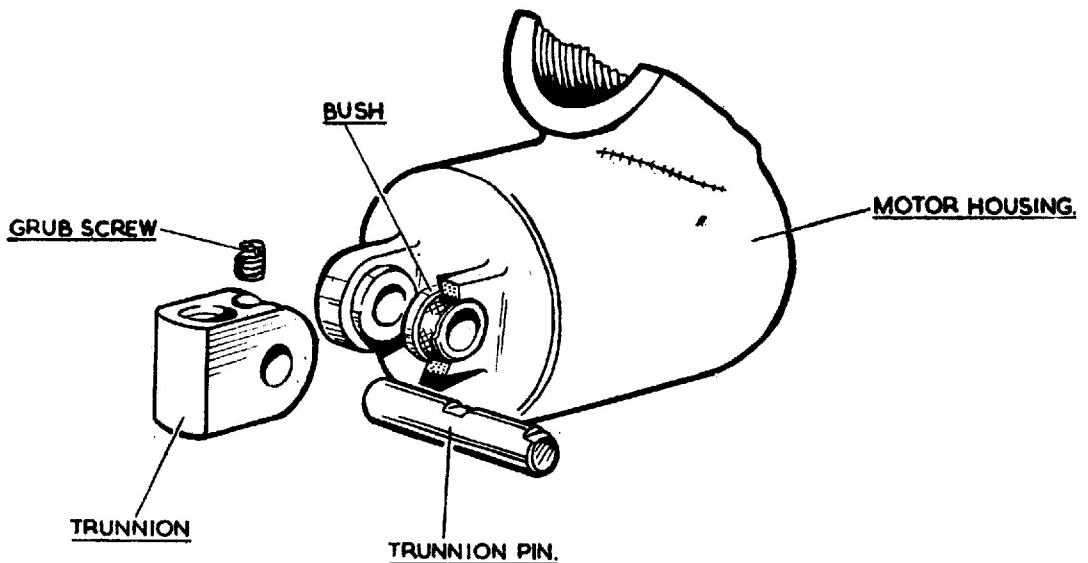


Fig. 1. Fixed end fitting

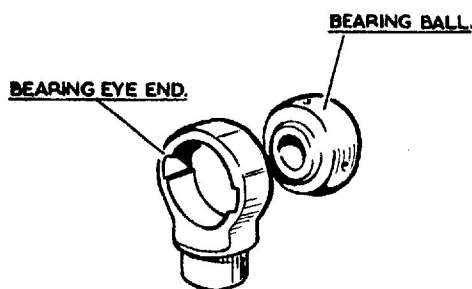


Fig. 2. Moving end fitting

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.  $\pm 0.02$  in.
- (b) Retracted centres 6.35 in.  $\pm 0.02$  in.
- (c) Stroke length .... 1.00 inch
- (d) Time of stroke at 28V and 25 lb. opposing load .... 3.5 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. 1A is fitted with Breeze plug Ref. No. Z.560060 (Plessey Ref. No. CZ.48993) and Mk. 1E is fitted with Breeze plug Ref. No. Z560565 (Plessey Ref. No. CZ.48993/5), the difference being in pin orientation.

#### TESTING

##### Actuator

7. Load tests as follows 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 the 1.00 inch travel should not exceed the following figures:—

Load (lb.)	Max. current (amp.)	Max. time (sec.)
0	0.8	3.43
25	1.0	3.88
37	1.1	4.00

##### Motor

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

# SCHEDULE OF FITS, CLEARANCES AND REPAIR TOLERANCES

## APPENDIX 1

All dimensions in inches

Actuator, Western, Type EJ 25, Mk. 1A and 1E

Item No. (1)	Description (2)	Dimension New (3)	Permissible Worn Dimension (4)	Clearance New (5)	Permissible Worn Clearance (6)	Remarks (7)
1	<b>ACTUATOR</b>					
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	0.0004	Bearing selected to give the fits quoted in Col. 5
5	Piston housing }	nominal	—	clear to 0.0005 interf.		
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	0.0015	
10	Piston o/d	0.4375	0.4365	0.0002		
11	Piston housing guide slots, width	0.1875	0.1905	0.004	0.005	
12	Piston lugs, width	0.1875	0.1855	0.001		

RESTRICTED

# RESTRICTED

## SCHEDULE OF FITS, CLEARANCES AND REPAIR TOLERANCES

APPENDIX 1 (continued)

All dimensions in inches

Actuators, Western, Type EJ 25, Mk. 1A and 1E

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	—	—	As new	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.	0.0005	Bearings selected to give the fits quoted in Col. 5
16		Ballrace sealing cup, o/d					
17		Ballrace i/d	0.1875 nominal	—	0.0001 interf. to 0.0004 interf.	As new	Bearings selected to give the interference fits quoted in Col. 5
18		Armature shaft, dia.					
19		Brush length	0.30	0.20	—	—	