

Chapter 10

ACTUATOR, WESTERN, TYPE EJ 25, MK. 9A

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Introduction

1. This actuator differs from that described in A.P.4343, Vol. 1, Sect. 17, App. 7 on Western EJ 25 series, in respect of mounting, length of stroke and time of stroke at nominal load.

Details of these variations are given in para. 4.

DISMANTLING, INSPECTION, REPAIR AND RE-ASSEMBLY

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

End fittings

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

Fixing centres, stroke, and time of stroke

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

- (a) Extended centres 7.13 in. ± 0.02 in.
- (b) Contracted centres 6.35 in. ± 0.02 in.
- (c) Stroke 0.78 in.

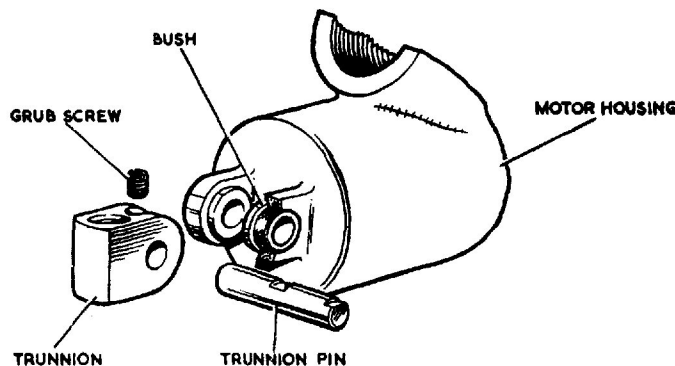


Fig. 1. Fixed end-fitting

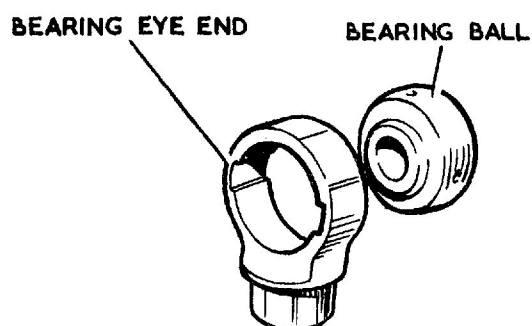


Fig. 2. Moving end-fitting

- (d) Time of stroke at 28 volts and opposing load 25 lb. is 3.15 seconds.

Reduction gears

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

TESTING

Actuator

6. Load tests as follows are to be carried

out on the actuator after repair and re-assembly.

(1) A running-in test consisting of approximately 10 runs in each direction, at 25 volts and with 25 lb. opposing load.

(2) A functional test should be performed by connecting the actuator to a 28 volt d.c. supply and applying loads of 0, 25 and 37 lb. The maximum current consumption and the time the piston takes to complete its 0.78 inch travel should not exceed the figures given below:—

Load (lb.)	Max current (amp.)	Max. time (seconds)
0	0.90	2.81
25	1.20	3.15
37	1.45	3.60

Motor

7. Motor torque tests are described in A.P.4343, Vol. 6, Sect. 18.

RESTRICTED

SCHEDULE OF FITS, CLEARANCES AND REPAIR TOLERANCES

APPENDIX 1

All dimensions in inches

Actuator, Western, Type EJ 25, Mk. 9A

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

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SCHEDULE OF FITS, CLEARANCES AND REPAIR TOLERANCES

APPENDIX 1 (continued)

All dimensions in inches

Actuator, Western, Type EJ 25, Mk. 6A

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