

Chapter 61

ACTUATOR, WESTERN, TYPE EJ 25, MK. 6A

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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 below.

The motor also differs in the following respects:—

- A dust shield is fitted at the commutator end of the armature spindle.
- The armature spindle is not splined at the pinion end.

- The pinion is held in place on the armature spindle by means of a parallel pin instead of by a spring clip and splining.

DISMANTLING, INSPECTION, REPAIR AND RE-ASSEMBLY

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

End fittings

- This actuator is attached at the fixed end by a special bolt 0.2188 in. diameter which passes through two lugs which are integral

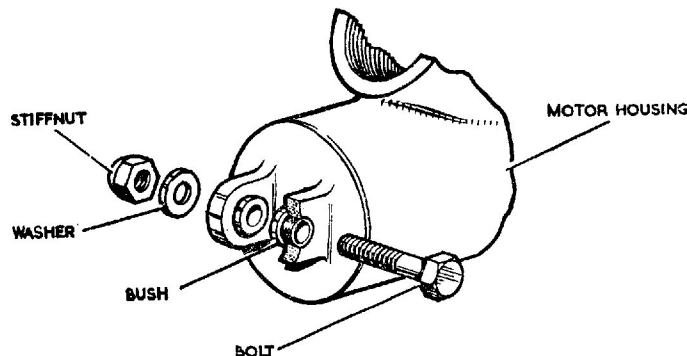


Fig. 1. Fixed end-fitting

SCREWED PLUG

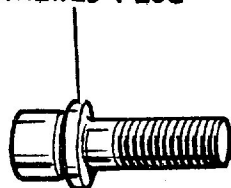


Fig. 2. Moving end-fitting

with the motor housing, whilst the moving end is attached by a $\frac{1}{4}$ in. screwed plug.

Fixing centres, stroke and time of stroke

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

- (a) Extended centres 7.03 in. ± 0.02 in.
- (b) Contracted centres 6.03 in. ± 0.02 in.
- (c) Stroke 1.00 in.
- (d) Time of stroke at 28 volts and opposing load of 25 lb. is 13 to 17 seconds.

Reduction gears

5. Four-stage epicyclic reduction gears are fitted, having a total reduction ratio of 256 : 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 1.0 inch travel should not exceed the figures given below:—

Load (lb.)	Max. current (amp.)	Max. time (seconds)
0	0.80	16.50
25	0.85	17.00
37	0.95	18.25

Motor

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

SCHEDULE OF FITS, CLEARANCES AND REPAIR TOLERANCES

APPENDIX 1

All dimensions in inches

Actuator, Westerm. 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)
1	ACTUATOR					
2	Trunnion bush, bore	0.142	0.144	0.0015 0.0005	0.004	
3	Bolt, dia.	0.141	0.140			
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	
	Piston lugs, width	0.1875	0.1855			

RESTRICTED

RESTRICTED

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)
11	ACTUATOR Worm assembly, end float	—	—	0.0015	—	
12	Worm and piston thread	—	—	—	—	Maximum end float 0.001
13	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
14	Ballrace sealing cup o/d	—	—	—	—	
15	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
16	Armature and driving shafts, dia.	—	—	—	—	
17	Brush length	0.30	0.20	—	—	