


# rotork®

Keeping the World Flowing  
for Future Generations

## IQ Range

### Thrust Compensator Option

Instructions for Safe Use, Installation,  
and Maintenance

 **This manual contains important safety information. Please ensure it is thoroughly read and understood before installing, operating or maintaining the equipment.**

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**⚠ WARNING:** This document must be read in conjunction with the IQ Instructions for Safe Use, Installation, Basic Setup and Maintenance Manual (PUB002-039).

## 1. Introduction

The thrust compensator assembly is designed to absorb excess thrust being delivered to the valve structure as the result of stem expansion due to temperature variation or high speed operation. In addition, it is designed to maintain sufficient thrust to retain valve closed position sealing on cooling and contraction.

**⚠ CAUTION:** Each compensator is individually configured for the specific, individual valve details provided. It is therefore mandatory that each actuator-compensator assembly remains paired and is fitted only to the intended valve as specified with the enquiry/order.



Fig. 1.1 Rotork Thrust Compensator

## 2. Preparing the Drive Bush

### 2.1 Thrust Compensators All Sizes

Place the thrust compensator with the base plate (2) facing upwards. Remove the 4 cap-headed screws (1) holding the base plate (2) in place and remove the base plate (2) to gain access to the drive bush assembly (3). Remove the drive bush assembly (3) complete with its bearing assembly from the thrust compensator housing. Before machining the drive bush, the bearings and O-rings must be removed.

**⚠ WARNING:** Do not remove or tamper with recessed cap-headed screws(\*). Adjustment or removal may result in application failure and/or injury.

**⚠ CAUTION:** Failure to remove the bearing and O-rings from the drive bush prior to machining may result in damage to the bearing or O-ring components.

**⚠ WARNING:** Component assembly and mass may present a finger trap hazard.



Fig. 2.1.1

## 2.2 Disassembly of bearing assembly: IQ10 – IQ35

Locate and loosen the locking socket set screw in the bearing stop ring (7).

Unscrew the bearing stop ring from the drive bush (5). Slide the bearing (6) off the drive bush (5). Keep the drive bush (5) and stop ring (7) in a safe clean place.

Ensure the male thread and the O-ring on the drive bush is not damaged during machining. Machine the drive bush (5) to suit the valve stem, allowing for generous clearance on the screw thread for rising stem valves.

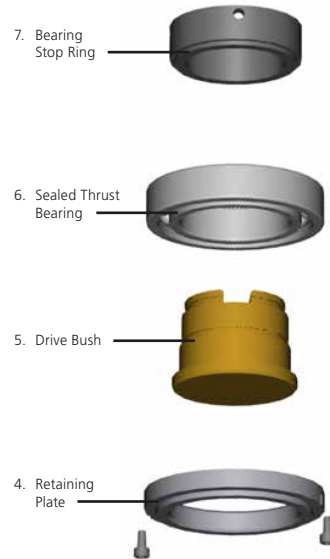


Fig. 2.2.1

## 2.3 Reassembly: IQ10 – IQ35

**⚠ WARNING: Failure to fully clean and grease the drive bush and O-rings before reassembly could result in damage.**

Remove all swarf from the drive bush (5) ensuring the O-rings on the drive bush (5) and bearing stop ring (7) are undamaged, clean and greased.

Slide the bearing assembly (6) onto the drive bush (5) and ensure it is fitted down to the drive bush shoulder.

Screw the bearing stop ring (7) with the locking socket set screw uppermost on to the drive bush (5) until it is hand tight. Tighten the locking socket set screw to lock rotation of the bearing stop ring (7).

The locking socket set screw must be sufficiently tight to prevent the assembly working loose during operation. Refer to the following table for correct tightening information.

*continued over...*

Locking Socket Screw Size	Torque	
	Nm	lbf.ft
M4	2.2	1.62
M6	7.8	5.75

Grease and refit the drive bush assembly (3) into the thrust compensator housing ensuring that the slots on the drive bush (3) are located into the drive dogs of the hollow input shaft inside the thrust compensator housing.

Refit the base plate (2) and secure with cap-headed screws (1). Tighten M6 cap-headed base retaining screws (1) to 11 Nm / 8 lbf.ft.

## 2.4 Disassembly of bearing assembly: IQ40 – IQ95

Locate and remove the snap ring (12) using a suitable tool. Remove the split collar (11). Slide the thrust bearing (10) and O-rings (9) off the drive bush (8).

Keep the bearing, O-rings and drive bush locating components in a safe clean place. The split collar (11) must be kept as a matched pair.

Machine the drive bush (8) to suit the valve stem, allowing a generous clearance on the screw thread.



## 2.5 Reassembly: IQ40 – IQ95

**⚠ WARNING: Failure to fully clean and grease the drive bush and O-rings before reassembly could result in damage.**

Remove all swarf from the drive bush (8) and refit O-rings, ensuring all O-rings are undamaged, clean and greased (for typical greases refer to PUB002-039 Section 11, weights and measures).

Slide the thrust bearing (10) onto the drive bush and ensure it is fitted down to the drive bush shoulder. Grease and refit matched pair split collar (11) and snap ring (12).

Grease and refit the drive bush assembly (3) into the thrust compensator housing ensuring that the slots on the drive bush (3) are located into the drive dogs of the hollow input shaft inside the thrust compensator housing.

Refit the base plate (2) and secure with cap-headed screws (1). Tighten M6 cap-headed base retaining screws (1) to 11 Nm / 8 lbf.ft.

Fig. 2.4.1

### 3. Mounting the Actuator

**⚠ WARNING: Refer to the Weights and Measures section in this manual to ensure correct lifting practices are followed.**

Ensure that the valve is secure before fitting the actuator as the combination may be top heavy and therefore unstable.

If it is necessary to lift the actuator using mechanical lifting equipment, certified slings should be attached as indicated in Fig 3.1. The thrust compensator assembly may also require lifting equipment, certified slings should be attached to a minimum of 4 of the fixing holes with equal spacing to ensure a stable, balanced lift.

At all times, trained and experienced personnel should ensure safe lifting particularly when mounting actuators.

**⚠ WARNING: The thrust compensator assembly and actuator should be fully supported until full valve shaft engagement is achieved and the assembly is secured onto the valve flange.**

A suitable mounting flange conforming to ISO 5210 or USA Standard MSS SP101 must be fitted to the valve.

Actuator to valve fixing must conform to Material Specification ISO Class 8.8, yield strength 628 N/mm<sup>2</sup>.

**⚠ WARNING: Do not lift the actuator and the valve combination via the actuator. Always lift the valve/actuator assembly via the valve. Each assembly must be assessed on an individual basis for lifting.**



Fig. 3.1



Fig. 3.2

## 4. Fitting the Thrust Compensator

### 4.1 Fitting the Actuator and Thrust Compensator as a combined Unit: IQ10 – IQ35

Fit the machined drive bush into the thrust compensator as previously described, lower the actuator onto the threaded valve stem, engage hand operation and wind the hand wheel to engage the drive bush onto the stem. Continue winding until the actuator is fully lowered onto the valve flange. Wind two further turns, fit securing bolts and tighten fully to the required torque indicated in PUB002-039 Fig. 6.1.3.

### 4.2 Fitting Thrust Compensator to Valve Actuator: IQ40 – IQ95

Fit the loose base plate (2) and drive bush assembly (3) on to the valve stem. Lower the thrust compensator housing onto the valve stem and drive bush assembly (3). Rotate to align the drive dogs of the hollow input shaft to the slots on the machined drive bush assembly (3). Lower until the thrust compensator main body is positioned onto the thrust compensator base plate (2). Manually rotate the thrust compensator assembly to align holes in base plate (2) thrust compensator housing and valve flange. Fit the securing bolts and tighten to ensure the thrust compensator is secure on the valve flange.

**⚠ WARNING: Remove lifting equipment before commencing the next step.**

Fit the mounting studs to the actuator until hand tight. Lower the actuator onto the thrust compensator and rotate until the mounting studs are aligned with the holes on the thrust compensator. Engage manual operation, turn hand wheel until the drive dogs on the actuator align with the drive bush of the thrust compensator. Lower the actuator until the flange is flush with the thrust compensator.

Using nuts provided, fix actuator to thrust compensator and tighten to required torque, 101 Nm / 74 lbf.ft.

Open the valve by 2 turns and firmly tighten thrust compensator to the valve flange. Fixings should be tightened as per PUB002-039 Fig.6.1.3.

**For all other Actuator mounting instructions please refer to PUB002-039.**



Fig. 4.2.1

## 5. Weights

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### Standard Actuator only:

Actuator Size	Weight kg (lbs)
IQ10	31 (68)
IQ12	31 (68)
IQ18	31 (68)
IQ19	54 (119)
IQ20	54 (119)
IQ25	54 (119)
IQ35	75 (165)
IQ40	145 (320)
IQ70	145 (320)
IQ90	160 (353)
IQ91	150 (331)
IQ95	160 (353)

### Thrust Compensator only:

Actuator Size	Weight kg (lbs)
IQ10-18	10 (22)
IQ19-25	16 (35)
IQ35	26 (57)
IQ40-95	200 (440)

### Actuator and Thrust Compensator combination:

Actuator Size	Weight kg (lbs)
IQ10	41 (90)
IQ12	41 (90)
IQ18	41 (90)
IQ19	70 (154)
IQ20	70 (154)
IQ25	70 (154)
IQ35	101 (223)
IQ40	345 (760)
IQ70	345 (760)
IQ90	360 (793)
IQ91	350 (771)
IQ95	360 (793)



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