EB 7000

⚠ Warning

Forward this manual to the person responsible for Installation, Operation and Maintenance of the product described herein. Without access to this information, faulty Installation, Operation or Maintenance may result in personal injury or equipment damage.

Installation, Operation and Maintenance of the Airflex® Model EB and ER Element Assemblies

⚠ Caution:

Use Only Genuine Airflex® Replacement Parts

The Airflex Division of Eaton Corporation recommends the use of genuine Airflex replacement parts. The use of non-genuine Airflex replacement parts could result in substandard product performance, and may void your Eaton warranty. For optimum performance, contact Airflex:

In the U.S.A. and Canada: **(800) 233-5890**
Outside the U.S.A. and Canada: **(216) 281-2211**

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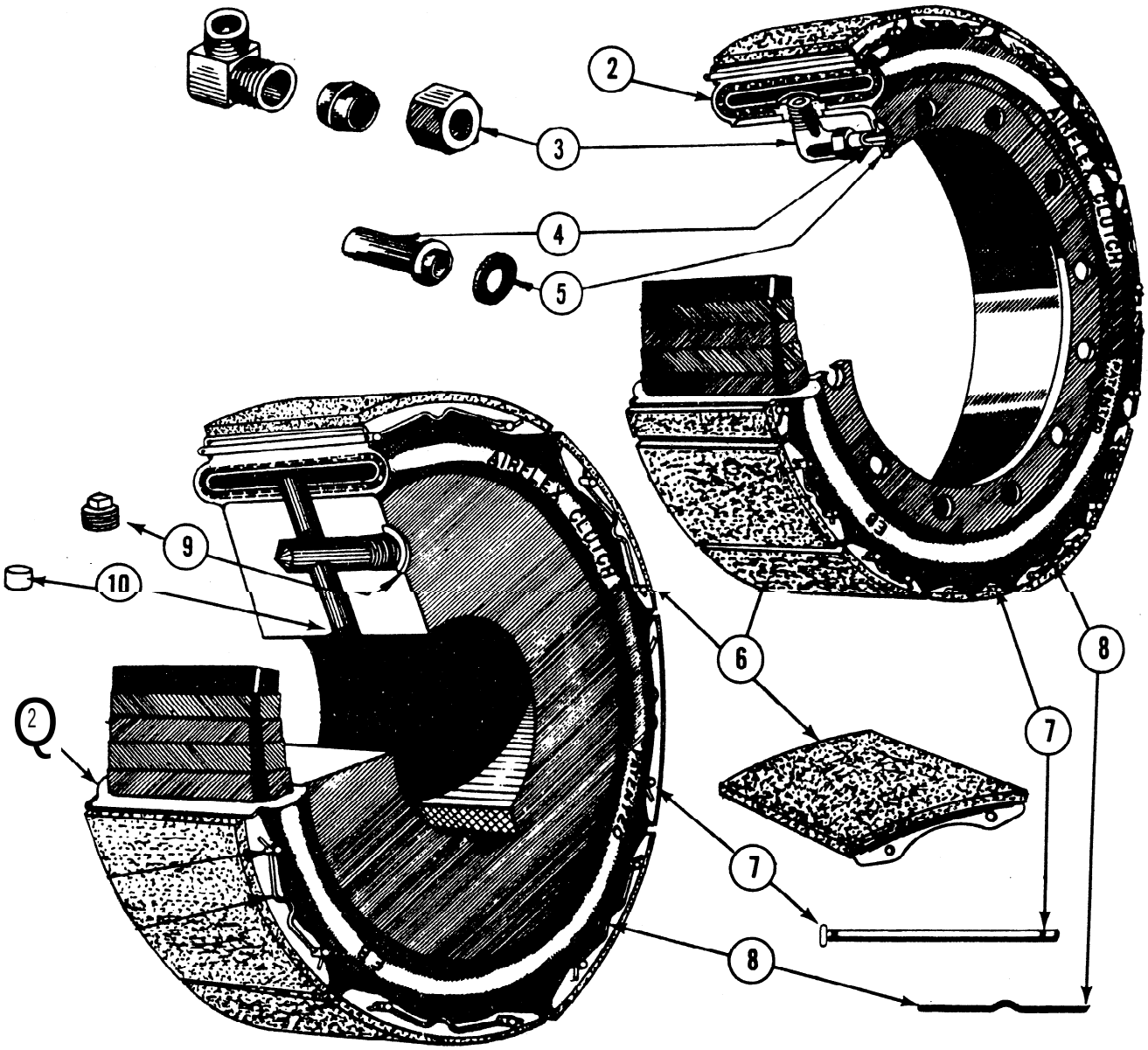
COMPONENT PARTS FOR AIRFLEX TYPE EB AND ER ELEMENTS



ITEM	DESCRIPTION
1	Complete Element Assembly
2	Rim (Hub) and Tube Assembly
3	Elbow Assembly
4	Air Connection Tube
5	Air Connection Gasket
6	Friction Shoe Assembly
7	Shoe Pin
8	Lockwire
9	Pipe Plug (Used is Air Enters Through Shaft)
10	Plug (Used if Air Enters Through Side Connection

NOTE: The rim and actuating tube are bonded together and are available as an assembly only. Size 4EB125 friction linings are bonded to the rubber tube and are not replaceable. Items 6, 7 and 8 not required on 6ER and 8ER type elements.

I. OPERATION

A. DESCRIPTION

The Airflex "EB" Element Assembly is designed and built to provide dependable clutch or brake service. It can also be used as a light slip clutch or tension brake. All the torque load is transmitted by the neoprene rubber and cord tube. The tube absorbs damaging shocks and compensates for misalignment, thus protecting both driving and driven members of the machine. The "EB" element combines the advantages of a rugged clutch and a disconnecting, flexible coupling. Also it requires no lubrication or adjustment.

The Airflex "ER" is of a similar design except that the friction surface is rubber. The increase in the coefficient of friction results in maximum torque capacity in a minimum diameter. This type is engaged when both driving and driven members are at zero RPM differential.

B. HOW IT WORKS

The Neoprene rubber and cord actuating tube (2) is the only moving part in the Airflex "EB" and "ER" elements. Air expands the actuating tube, uniformly engaging the 360 degree friction surface. The actuating air tube automatically compensates for friction shoe wear, eliminating the need for adjustment. The tube is resilient and can compensate for angular or parallel misalignment of driving and driven member. Maximum recommended operating air pressure is 110 PSIG, 20 PSIG for slip applications.

The 4EB125 thru 8EB200 are furnished with solid hubs. 12EB350 thru 24EB475 are furnished with single flange rims.

C. ELEMENT ADJUSTMENT

Airflex EB elements are completely self-adjusting and automatically compensate for lining and friction drum wear. They operate without springs, torque bars or any metal-to-metal moving parts. Lubrication is not required. The torque developed is proportional to the applied air pressure. By limiting the applied air pressure, the element will act as a torque limiting device and provide overload protection. To accomplish regulated or cushioned engagement of the element, a flow control valve is installed with restricted flow to element and free flow away from element. By adjusting the restricted flow, the rate of element engagement may be varied. Note that the flow control valve does not regulate air pressure. The supply pressure, which may be controlled by a pressure regulator, must always be adequate to carry the maximum required load.

I I.- INSTALLATION

Caution: Air inflation of the Airflex element tube without a friction drum in place will cause permanent damage to element.

A. MOUNTING

1. The solid hub type elements are mounted directly on the shaft by using an interference (press) fit. The recommended interference is .000 to .002 tight on shaft sizes up through 3.5". Care should be taken when heating the element hub so as not to "cook" the rubber tube. It is recommended that an induction bearing heater rather than a torch be used. Freezing the shaft by using dry ice will facilitate assembly. It is also recommended that an anti-seizing compound be used.

   When air is to enter through the radial hole in the hub, a positive stop i.e. shoulder, lockcollar etc. should be used to help align the air holes in the hub and the shaft.

2. The element must be inserted squarely into the element hub and the mounting nuts and bolts equally torqued. The unit should be properly centered in relation to shaft and friction drum to provide adequate running clearance.

   When mounting element rim flange to mating spider or adapter, the rubber air connection gasket (5) should be placed in position in the rim recess and on the shoulder of the air connection tube (4). Apply small amount of gasket cement to rubber gasket to hold it in position during installation. As mounting bolts are tightened, the gasket is compressed, thereby preventing leakage of air. In locations where excessive amounts of grease and oil may be thrown on the element, protective baffles or guards should be used to protect the rubber tube and friction surface.

B. ALIGNMENT

Parallel and angular alignment is recommended. Good alignment is essential for optimum clutch performance. Misalignment results in vibration and in preloaded bearings, gears and other machine components. These factors reduce the service life of other machine components considerably. Misalignment stresses are proportional to shaft speed. Misalignment allowances are therefore, dictated by shaft speed. To extend the service life of machine components, we recommend the closest possible alignment when installing an Airflex element.

C. AIR SYSTEM

1. AIR PIPING

Pneumatic piping should be free of foreign **material** such as pipe dope, metal chips, etc. **Pipe ends** should be reamed after cutting to **prevent reductions** of effective pipe diameter. Selecting **the proper size** of pipe and valve is very important **for proper operation** in cyclic applications. Keep the **number of 90" elbows** and sharp bends to a minimum **and avoid the use of** street elbows in piping.

Undersized pipe or air **system components** will cause sluggish response, and **may** contribute to accelerated wear of friction lining. **Air line** lubricators are not required for the Airflex element and, if used, should be of the nonadjustable mist type.

2. AIR TANK

For elements operating on rapid cyclic duty an air accumulator tank with pressure regulator and gauge is recommended except in those cases where the installation may be near a large supply line. Always install the pressure regulator in the supply line to the tank and provide a drain at the bottom for blowing off condensation which may accumulate in the system. The air tank also serves as an excellent filter.

3, CONTROL VALVES

The controlling air valve should be mounted' as close to the element as possible. For cyclic. applications, the solenoid air valve should be a three-way pilot-operated poppet type. If you have special control problems, our Engineering Department will submit recommendations upon request.

4. AIRFLEX ROTORSEAL

Air to operate a clutch is usually introdued into the end of the shaft through the Airflex rotorseal, which must be connected to the air piping with a section of flexible air hose. Rigid piping to the rotorseal will tend to preload the bearings. Air to operate a brake is usually introduced directly to the inlet valve on the element.

The Airflex rotorseal is designed to give trouble-free service under the most severe conditions, without requiring special attention.

Due to the extreme accuracy and close tolerance on **internal parts,** considerable care is required when **rebuilding rotorseals** in the field. Many customers **consider the rotorseal** as a disposable item since a **replacement is relatively inexpensive. See operation and maintenance instruction** per table 1 .

Rotorseal Type	Maintenance and Service Instructions
AA2, **B2, B3, C2**	RS9010
RH	**RS9030**
AD, BD, FDA	**RS9040**
BT	**RS9070**

TABLE 1

5. QUICK RELEASE VALVE

The Airflex quick release valve is a quick dumping air valve developed for instantaneous release of air from element. The quick release valve contains a plunger assembly which is designed to function on a differential in air pressure controlled by the solenoid valve. It is very important that each quick release valve exhaust freely. If it fails to exhaust or seal, the end cap should be removed, the plunger cleaned and the internal surface of the housing wiped out. The plunger would be lubricated with light lube oil and reassembled. See operation and maintenance instructions QRV9080.

Exhaust noise from the quick release valve can be reduced by using a muffler which is available as an optional feature. With the muffler the noise energy level can be reduced by 90%. This is well below specifications of the Walsh-Healy Act.

III. MAINTENANCE

A. POINTS TO CHECK WHEN INSPECTING THE AIRFLEX ELEMENT:

1. The condition of the friction surface of the drum. (See table 2).

   a. If the drum surface is badly grooved **or worn, the** surface may be remachined. The minimum **drum** diameter should not exceed the **wear shown in** table 2.

Element Size	Max. Allowable Wear on Drum Dia. *
4EB125 Thru 14EB400	3/32"
16EB475 Thru 24EB475	1/8"

TABLE 2

*Note: The number preceding letters EB in the element size designates the original drum dia. in inches.
EXAMPLE:
12EB350-Original Drum Dia. = 12 inches.

2. The condition of the friction shoe assemblies.

   a. If friction linings are glazed, this condition can be corrected by sanding the friction lining to remove the glaze. Linings that have been worn to minimum allowable thickness (see replacement of friction shoes) should be replaced.

3. The condition of the rubber tube. (Ref. paragraph 5, below).

   a. If there are air bubbles or signs of ply separation on the tube, the rim and tube must be replaced.

4. Oil or grease on the friction surface or on the tube.

   a. If oil or grease accidentally gets on the element assembly, the oil or grease should be wiped dry. The rubber tube should be thoroughly cleaned. If friction shoes have been contaminated, they should be removed and cleaned.

   (See instructions below for friction shoe replacement). For light contamination, Fuller's Earth may be used to remove grease or oil from the friction lining surface. If the lining is saturated with oil or grease, a solvent such as VM and P Naptha or Petroleum Ether should be used to degrease the lining. A cloth dampened with the solvent may be used to wipe the grease off the lining, or the friction shoe assembly may be dipped into the solvent. Severely saturated linings may have to be replaced.

   Caution: The recommended solvents are flammable and should be used with the proper safety precautions.

5. Friction shoes do not retract,,

   a. Malfunction of the quick release valve may cause the friction shoes to retract slowly, resulting in friction shoe drag and overheating. Inspect quick release valve, see paragraph 5, page 3.

   b. The actuating tube may loose its resiliency due **to heat curing** of the rubber or rubber growth due **to grease** contamination. A tube in this con**dition will not retract** the friction shoes. Rim and tube must **be replaced.**

6. Leaks in **the air lines or in** the rotorseal.

   a. Repair as **necessary.**

B. REPLACEMENT OF FRICTION SHOES

Friction shoes should be replaced after the friction **material has** worn down to 1/16" except 4EB125. **When 4EB125** lining thickness has worn down to 1/32", the element should be replaced. Any air-operated element with worn friction shoes necessarily requires an increased amount of air on cyclic duty.

1. To change EB friction shoes.

   a. Remove friction shoe pin lockwires (8), and withdraw shoe pins (7).

   Caution: When detaching element do not lose the rubber gasket (5) which seals the air passage between the element and mating part.

   b. Old friction shoe assemblies can then be removed from the element.

   c. Place new friction shoe assemblies in position; insert shoe pins so holes in the ends are in position to insert lockwires.

   d. Slide lockwires through holes so that scallop of bend in wire points toward the shaft on which element is mounted. Bend each end of wire outward from element shaft. Use only the proper size Airflex type lockwires available from the factory.

In any correspondence regarding Airflex equipment, always refer to size shown on side wall of rubber tube and serial number stamped on rim of element near air entry hole.

Call or write Eaton Corporation, Industrial Drive Division, Airflex Plant, 9919 Clinton Road, Cleveland, Ohio 44144.

IV. PARTS LIST
TYPE EB ELEMENTS

		ITEM													
		1	2	3	4	5	6		7		8		9	10
Size	Description	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.	Qty.	Part No.	Qty.	Part No.	Qty.	Part No.	Part No.
4EB125	With Solid Hub	145019B											77x1	153x12
6EB200	With Solid Hub	145022	8106				8588	6	200356	12	66x13	6	77x2	153x12
8EB250	With Solid Hub	145117	9174				9251	8	9434	16	66x13	8	77x2	153x12
9EB325	Minus Side Conn.	145218	9931				9933	9	9936	18	66x13	9		
	With Side Conn.	145274	9931	131x11	9944	72x15	9933	9	9936	18	66x13	9		
10EB300	Minus Side Conn.	145119	9180				9254	10	9492	20	66x13	10		
	With Side Conn.	145120	9180	131x11	9944	72x15	9254	10	9492	20	66x13	10		
12EB350	Minus Side Conn.	145122	9183				9260	12	9508	24	66x13	12		
	With Side Conn.	145123	9183	131x11	9944	72x15	9260	12	9508	24	66x 13	12		
14EB400	Minus Side Conn.	145125	9186				9263	14	8863	28	66x13	14		
	With Side Conn.	145126	9186	131x11	9944	72x15	9263	14	8863	28	66x13	14		
16EB475	Minus Side Conn.	145128	9189				9266	12	8994	24	66x14	12		
	With Side Conn.	145129	9189	131x12	11318	72x11	9266	12	8994	24	66x14	12		
19EB475	Minus Side Conn.	145131	9192				9269	14	8994	28	66x14	14		
	With Side Conn.	145132	9192	131x 5	11318	72x11	9269	14	8994	28	66x14	14		
21.5EB475	Minus Side Conn.	145134	9194				9272	16	8994	32	66x14	16		
	With Side Conn.	145135	9194	131x 5	11318	72x11	9272	16	8994	32	66x14	16		
24EB475	Minus Side Conn.	145137	9197				9275	18	8994	36	66x14	18		
	With Side Conn.	145138	9197	131x 5	11318	72x11	9275	18	8994	36	66x14	18		

TYPE ER ELEMENTS

6ER200	With Solid Hub	145158											77x2	153x12
8ER250	With Solid Hub	145159											77x2	153x12
10ER300	Minus Side Conn.	145161	9132											
	With Side Conn.	145161A	9132	131x11	9944	72x15								
12ER350	Minus Side Conn.	145164	9135											
	With Side Conn.	145165	9135	131x11	9944	72x15								
14ER400	Minus Side Conn.	145167	9138											
	With Side Conn.	145168	9138	131x11	9944	72x15								
16ER475	Minus Side Conn.	145170	9141											
	With Side Conn.	145171	9141	131x12	11318	72x11								
19ER475	Minus Side Conn.	145173	9144											
	With Side Conn.	145174	9144	131x 5	11318	72x11								
21.5ER475	Minus Side Conn.	145176	9147											
	With Side Conn.	145177	9147	131x 5	11318	72x11								
24ER475	Minus Side Conn.	145179	9150											
	With Side Conn.	145180	9150	131x 5	11318	72x11								

Airflex®

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EATON PRODUCT WARRANTY

Subject to the conditions stated herein, Eaton Corporation warrants to the Purchaser that each new Airflex Product manufactured by Eaton will be free from failures caused by defects in material and workmanship, and will deliver its rated capacity, for a period of twelve (12) months from the date of shipment to Purchaser, provided such Product is properly installed, properly maintained, operated under normal conditions and with competent supervision. Warranty claims shall be made in writing and the part or parts shall, if requested by Airflex Division, be returned prepaid to the Airflex Division for inspection. Upon a determination that a defect exists, Eaton shall thereupon correct any defect, at its option either by repairing any defective part or parts or by making available at Eaton's plant a repaired or replacement part. This warranty does not extend to normal wear parts or components of the Product, such as friction material and friction surfaces.

LIMITATION OF WARRANTY

THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES WHETHER WRITTEN, ORAL OR IMPLIED. ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE SPECIFICALLY EXCLUDED.

In no event shall Eaton be liable for special, incidental or consequential damages. Eaton's liability arising out of the supplying of such Product, or its use, whether in warranty, contract or otherwise, shall in no case exceed the cost of correcting defects in the Products as herein provided. Upon expiration of the twelve (12) month period, all such liability shall terminate. THE FOREGOING SHALL CONSTITUTE THE SOLE REMEDY OF PURCHASER AND THE SOLE LIABILITY OF EATON.

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