



M.I. 9679
*Rev. A

MODERNIZATION RECOMMENDATION

REPLACEMENT OF "TRICO" WINDSHIELD WIPER MOTORS

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* This publication is revised. It supersedes previous issue of this number dated July 1990.

PURPOSE:

To provide instructions for installation of replacement EMD "JUMBO" wiper motors and control valves in place of former Trico motors and controls.

APPLICATION:

As applied to locomotive models delivered prior to June, 1990.

REFERENCES:

Figure 1 (Page 2).....Trico Motor Identification
 Table 1 (page 2).....Replacement Motor Part Numbers
 Dwg. No. 8371049.....Window Wiper Application
 Table 2 (Page 3).....Arm And Blade Replacements
 Table 3 (Page 4).....Replacement Parts (Front Window)
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DISCUSSION:

I. TRICO MOTOR ASSEMBLY REPLACEMENT

The following steps are necessary to replace the Trico wiper motors with the "JUMBO" motor assemblies:

1. AIR SUPPLY DETERMINATION

In order to define the correct replacement motor, the air supply side must be determined by identifying the specific application of the motor. The left and right side designation is defined by looking at the motor from the shaft end, as shown in Figure 1 on page 3.

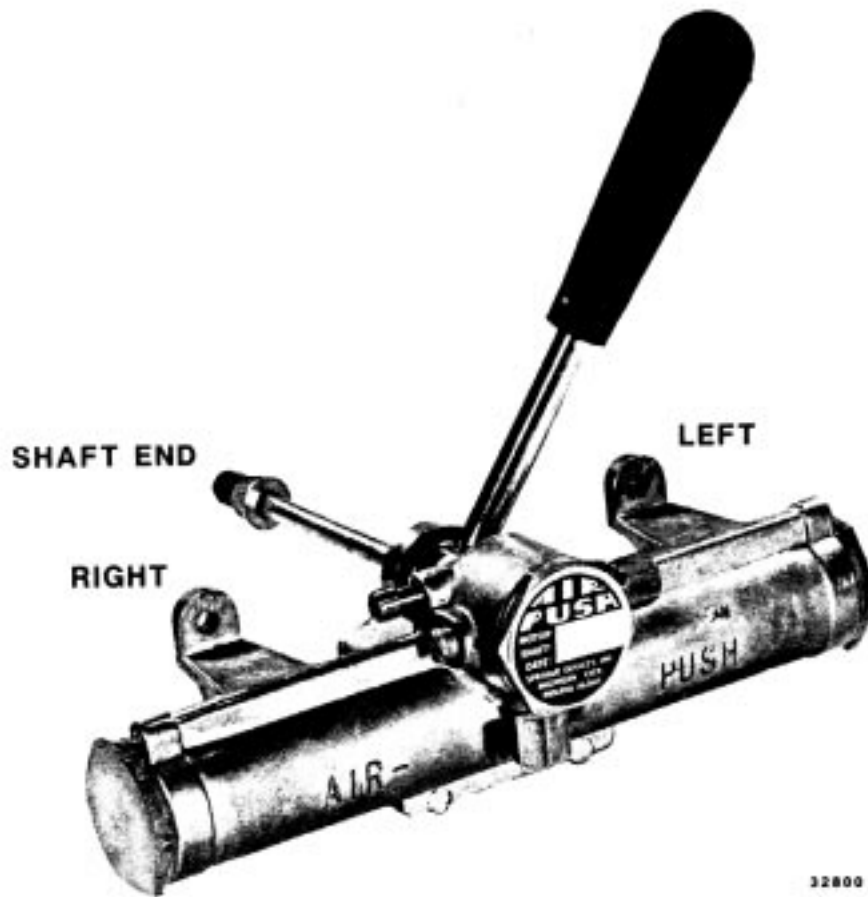


Figure 1. Motor Assembly Identification

2. REPLACEMENT MOTOR PART NUMBERS

Locate the appropriate replacement motor part number from the current motor's EMD or vendor part number using the following table:

Table 1 (Page 1 of 2). REPLACEMENT MOTOR PART NUMBERS				
TRICO MOTOR EMD P/NO.	TRICO MOTOR VENDOR P/NO.	REMOTE CONTROL VALVE	REPLACE W/ EMD JUMBO P/NO. (LEFT)	REPLACE W/ EMD JUMBO P/NO. (RIGHT)
8310357	B4424	Yes	40019234	40024835
8310358	B44231	Yes	40019237	40019849
8310359	B4423	Yes	40019237	40019849
8322144	B4424-2	Yes	40019234	40024835
8335922	B44234	Yes	40023346	40023348

Table 1 (Page 2 of 2). REPLACEMENT MOTOR PART NUMBERS

TRICO MOTOR EMD P/NO.	TRICO MOTOR VENDOR P/NO.	REMOTE CONTROL VALVE	REPLACE W/ EMD JUMBO P/NO. (LEFT)	REPLACE W/ EMD JUMBO P/NO. (RIGHT)
8335923	B44235	Yes	40023346	40023348
8335924	B23536	Yes	40019234	40024835
8336056	B44245	Yes	40019237	40017849
8343468	B23537	Yes	40017847	40023349
8343469	D23536	Yes	40019237	40017849
8371407	B442312	No	40019238	40025863
8371408	B442313	No	40019241	40019242
8385217	D23551	Yes	40017848	40024836
8396376	B442315	No	40025861	40025864
8413774	B442318	No	40025862	40025865
8454075	D23568-1	Yes	40017847	40023349
9524424	FPD605	Yes	40019233	40019245
9524426 *	FPD603	Yes	40017847	40023349
9545825	B442334	No	40019238	40025863
9545917	D23556	No	40019239	40019240
9547195 **	D23612	No	40021288	-

* The Trico motor is a 30° sweep motor. The minimum sweep available with the JUMBO motor is 40°. In order to use the 40° sweep motor as a replacement, the arm and blade lengths will have to be changed. There are two (2) different arms and one (1) blade that this motor drives. Table 2 that follows is a listing of the arm and blade replacements for this motor.

** This motor part number will come with a channel that must be welded in place. Reference EMD Dwg. No. 8371049 - Window Wiper Application for details.

Table 2. ARM AND BLADE REPLACEMENTS

TRICO EMD P/NO.	REPLACE W/ EMD JUMBO P/NO.
9524446 - 24" Blade	8410881 - 18" Blade
9525700 - 16.15" Pantograph Arm	40020990 - 12" Pantograph Arm
9525701 - 24" Pantograph Arm	40020420 - 18" Pantograph Arm

NOTE: These are arm and blade replacements for this motor application only!

3. CONTROL VALVE REPLACEMENT

The control valves for the Trico motors are not compatible with those for the EMD JUMBO motor assemblies. Those motor assemblies with remotely located control valves (on side wall, front overhead console, etc.), will require a replacement control valve. Replace the Trico control valves with EMD P/No. 2337450 Regulating Valve.

Those motor assemblies with the control valve as part of the motor assembly have a replacement motor with an integral control valve as well.

4. APPLICATION PARTS

The parts and small hardware used to apply the replacement motor to the locomotive is dependent on the motor location in the cab. Once the motor location is known, refer to one of the following sections and tables to determine the necessary application parts.

A. FRONT WINDOW

The following parts are needed for applying a replacement motor to the front window:

EMD P/NO.	DESCRIPTION	QUANTITY
8128523	Bearing Asm. Outer	1
6926993	Plate Bearing Mtg.	1
120380	Washer - 1/4" Lock	2
132259	Screw - 1/4"-20 Fil Hd	2
120217	Washer - #10 Lock	2
436730	Screw - #10-24 Pan Hd	2

B. SIDE WINDOW AND DOORS

The following parts are needed for applying a replacement motor to a side window or door:

EMD P/NO.	DESCRIPTION	QUANTITY
120380	Washer - 1/4" Lock	2
132259	Screw - 1/4"-20 Fil Hd	2

5. REWORK

It may be necessary to rework the existing tube assemblies to suit the new motor and control valve applications. In some cases, new mounting holes may need to be drilled.

II. MOTOR PARTS AND REPAIR KIT REPLACEMENT

Due to the design differences between the Trico motors and the EMD JUMBO motors, replacement motor parts and repair kits will no longer be available for the Trico units. The following is a listing of the Trico service parts that are no longer available. If any of these parts are needed, the motor itself must be replaced. To replace a motor assembly, refer to the Trico motor assembly replacement Section I, earlier in this Modification Recommendation.

PART	DESCRIPTION
133689	Screw
8310362	Nut
8310363	Gasket
8310364	Nut
8310366	Valve Asm.
8316914	Piston
8316915	Packing
8316916	Washer
8316917	Retainer
8316918	Head...Piston
8316919	Valve
8316920	Head Asm., Valve
8316923	Washer
8316924	Screw
8316925	Screen
8316926	Lever Asm.
8316928	Lever Asm.
8316931	Bearing
8316932	Segment...Gear
8316933	Handle Asm.
8316934	Nut
8316935	Gasket

Table 5 (Page 2 of 3). SERVICE PARTS (No Longer Available)

PART	DESCRIPTION
8316936	Gasket
8316938	Silencer Asm., Exh.
8316940	Nut
8316941	Shield
8316944	Connector
8316945	Hose
8317044	Piston Asm., Wiper
8317045	Stop Asm.
8317046	Segment Asm.
8317103	Shield
8317104	Nut
8317106	Nut
8317123	Body
8317125	Spring
8317126	Stem
8317127	Pin
8317128	Washer
8317129	Washer
8317131	Valve
8328293	Cylinder Asm.
8328295	Shaft
8328298	Plate
8334836	Kit, Repair
8343067	Shaft Asm.
8343068	Plate
8343069	Nut
8343070	Shield, Rain
8343071	Washer
8343073	Shaft, Motor
8343074	Bearing
8343077	Nut
8343103	Piston

Table 5 (Page 3 of 3). SERVICE PARTS (No Longer Available)

PART	DESCRIPTION
8343106	Washer
8343107	Washer
8343110	Unit Asm., Valv. Stop
8348876	Retainer Clip, Spring
8385560	Plate
8385561	Shaft
8385563	Shaft
8397485	Kit, Repair
8397804	Piston Asm.
9535583	Valve
9553416	Knob Asm.
9553570	Screw, Set
9553571	Plate Asm.
9556477	Screw Asm.
9578198	Shaft Asm., Gear

III. CONTROL VALVE REPLACEMENT

Due to the incompatibility of the two types of motors and control valves, the replacement of a Trico control valve will require a new motor, as well as the control valve. Refer to the Trico motor assembly and control valve replacement in Section I, earlier in this Modification Recommendation, for the appropriate motor and control valve replacements.

IV. WIPER ARM AND BLADE REPLACEMENT

Arms and blades of the Trico and JUMBO units are not compatible with one another. To replace a Trico unit arm or blade, both the arm and blade must be replaced.

1. ARC ARMS

When replacing an arc arm that is part of a dual driven arm assembly both arms, blades, and the connecting rod must be replaced. The following is a listing of arc arms and connecting rods with their corresponding replacements. For replacement blades, refer to part 3 of this section.

EMD P/NO.	TRICO P/NO.	DESCRIPTION	REPLACE W/ EMD P/NO.
8385214	90040JL	Arc Arm	9088065
8371409	87570118TM	Arc Arm	40020426
8385215	91160-1	Connecting Rod Asm.	9330029
8447001	91160-2	Connecting Rod Asm.	40018364

2. PANTOGRAPH ARMS

The following is a listing of the pantograph arms with their corresponding replacements. To apply the JUMBO pantograph arm to the current wiper arrangement, the pivot assembly must be replaced. Each arm replacement below requires EMD P/No. 40020424 - pivot mounting plate assembly - be purchased to replace the Trico outer spacer and guide pivot. Refer to part 3 of this section to find the appropriate blade.

EMD P/NO.	TRICO P/NO.	REPLACE W/ EMD P/NO.
8310360	82126319TM	40020420
8310361	82126418TM	40020421
8383045	82126318	40020422
8413486	82126274TM	40020422
8454076	82126277TM	40020422
9524427	82126117SL	40020425
9525701	82126217TM	40020425
9525700	82126318TM	40020421

3. **BLADES**

The following listing contains the replacement part numbers for blades. The blade length is also referenced in this listing.

EMD P/NO.	TRICO P/NO.	BLADE LENGTH	REPLACE W/ EMD P/NO.
8310368	8860047TM	18"	8410881
8322145	8860046TM	16"	8128733
8348903	8860042TM	12"	8351298
8371410	8860068TM	20"	8407810
8413485	8860044TM	14"	8057342
9524446	M-874-24TM	24"	40012067
9524447	M-874-47TM	18"	8410881

V. **CONNECTING ROD REPLACEMENT**

The connecting rod used on the Trico unit is not directly interchangeable with the linkage arm on the JUMBO unit. To replace the connecting rod, the wiper arms, blades and rod must be replaced. Refer to part 2 and 3 preceding section IV for appropriate replacement part numbers.

VI. **KNURLED DRIVER REPLACEMENT**

The knurled drivers from the Trico unit can be directly replaced with those from a JUMBO unit. The appropriate replacements are listed in the following table.

EMD P/NO.	TRICO P/NO.	REPLACE W/ EMD P/NO.
8316942	896324-1	9085799
8343072	86324	9085800

VII. **EMD P/NO. 8335943 - PIVOT ASSEMBLY REPLACEMENT**

This part from the Trico unit can be replaced by a JUMBO pivot mounting plate assembly, pantograph arm, and blade. For part numbers, refer to part 2 of section IV on "Wiper Arm And Blade Replacement."

VIII. EMD P/NO. 8385216 - AUXILIARY DRIVE ASSEMBLY

This part from the Trico unit can be replaced by the following part numbers:

Table 10. AUXILIARY DRIVE REPLACEMENT PARTS		
EMD P/NO.	DESCRIPTION	QUANTITY
9310331	Shaft & Bearing Asm.	1
8128523	Bearing Asm. Outer	1
6926993	Plate Bearing Mtg.	2
436730	Screw - #10-24 Pan Hd	4
120217	Washer #10 Lock	4

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