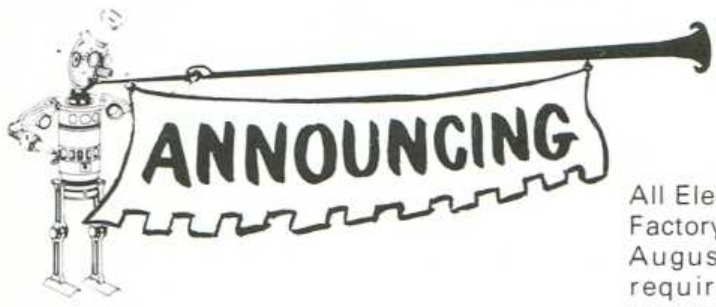
No. 5L-80
May 5, 1980

LOCOMOTIVE

ELECTRO-MOTIVE

Pointers



1980 INVENTORY

All Electro-Motive Parts Warehouse Distribution Centers and Factory Branches will suspend parts shipments the week of August 4 for the annual inventory. Scheduling of your requirements in advance - for this week only - will be appreciated.

Special arrangements for "Out of Service" orders have been made for this week, and normal operations will resume on August 11.

La Grange manufacturing facilities will also be closed beginning August 4, resuming operations on August 11.

"SUPER SERIES" TROUBLESHOOTING GUIDES

It has been determined that the following tests might damage locomotive electrical components and should thus be deleted from all "Super Series" troubleshooting guides.

"Connect jumper between LC-TP13 and LC-TP25.

Unit should unload and ammeter indication should fall to near 0. (kW Regulator.)

Remove jumper from between LC-TP13 and LC-TP25.

Ammeter should indicate 200 to 300 amperes."

The tests appear in the following:

On page 60 of the GP40X Excitation And Power Control System Qualification And Troubleshooting Guide dated October 1977.

On page 66 of the GP40X And SD40-2(SS) Excitation And Power Control System Qualification And Troubleshooting Guide dated June 1978.

On page 71 of the SD40X Electrical Qualification And Troubleshooting Guide dated March 1980.

DISCONTINUANCE OF REPAIR SERVICE ON VISCOUS CRANKSHAFT VIBRATION DAMPERS 8404560 AND 8452042

Viscous crankshaft vibration dampers 8404560 and 8452042 that are applicable to 8, 12, 16-645E3, E4, E5, E7; 16-645E3A and 20-645E3, E3A, E4, E5 and E7 model engine assemblies, have been determined by EMD to no longer be economical for remanufacturing. As a result, EMD will no longer provide a "Remanufacture and Return" service for viscous crankshaft vibration dampers 8404560 and 8452042.

Viscous crankshaft vibration dampers 8404560 and 8452042 returned to EMD *separately* will be scrapped on EMD property. If returned as a part of a Unit Exchange or Repair and Return engine assembly, we will visually inspect and qualify dampers 8404560 and 8452042 with less than 3 years of service. Qualified dampers will be cleaned and reused. Those viscous dampers that do not qualify for reuse, will be scrapped by EMD and replaced with EMD's new gear-type damper 9323945.

A Service Department Publication

Electro-Motive Division Of General Motors La Grange, Illinois 60525

IDENTIFICATION OF CASE-HARDENED COUPLER AND YOKE PINS AND BUSHINGS

In Pointers No. 13L-78, December 4, 1978, we announced the availability of case-hardened coupler and draft gear yoke pins and bushings. The question has been raised regarding a means to identify these pins and bushings.

EMD has two sources of supply, Delta Rail and General Bearing, for our Parts Department stock.

The pins supplied by General Bearing will have a "GB-C" stamped on the end. The bushings will have "C" and the part number stamped on the edge, about 3/32" high. The pins and bushings from Delta Rail will have a "C" on the edge plus their insignia "D."

PRESTRESSED STAINLESS STEEL TOP RINGS FOR PISTONS IN 645 SERIES TURBOCHARGED ENGINES

Electro-Motive has introduced an improved "prestressed" stainless steel top compression piston ring for turbocharged 645 series diesel engines. This ring is similar to the previous design stainless steel top ring with flash chrome sides, except the face and edge chamfer of the stainless steel are prestressed by shot peening prior to application of the chrome plating. The compressive residual stress layer resulting from the shot peening inhibits crack propagation and results in a significant reduction in ring breakage, confirmed by over two years of field testing.

Ring 9338809 has replaced previous design ring 8433002 in all turbocharged 645 series engines produced since July 1979. It has also been supplied as a service replacement part. Although these rings can be used in blower-type engines, the less severe duty of such engines does not require prestressed top rings. Therefore, the non-prestressed 8470090 stainless steel ring without flash chrome sides and all its corresponding oversizes have been retained for use in blower-type engines.

The following tables list part numbers for individual rings, ring sets, and piston and ring assemblies containing the prestressed stainless steel compression ring for the No. 1 piston groove.

TOP PISTON RING

Prestressed stainless steel, flash chrome sides.

Part No.	Diameter	Width
9338809	STANDARD	STANDARD
9338810	.030 O.S.	STANDARD
9338811	.060 O.S.	STANDARD
9338812	STANDARD	1/64 O.S.
9338813	.030 O.S.	1/64 O.S.
9338814	.060 O.S.	1/64 O.S.
9338815	STANDARD	1/32 O.S.
9338816	.030 O.S.	1/32 O.S.
9338817	.060 O.S.	1/32 O.S.

PISTON RING SETS

The following ring sets for turbocharged engines contain the prestressed top ring.

Part No.	Diameter	Top Ring Width
9516928	STANDARD	STANDARD
9516929	.030 O.S.	STANDARD
9516930	.060 O.S.	STANDARD
9516931	STANDARD	1/64 O.S.
9516932	.030 O.S.	1/64 O.S.
9516933	.060 O.S.	1/64 O.S.
9516934	STANDARD	1/32 O.S.
9516935	.030 O.S.	1/32 O.S.
9516936	.060 O.S.	1/32 O.S.

PISTON AND RING ASSEMBLIES

The following piston and ring assemblies for the noted turbocharged engine applications contain the prestressed top ring.

Part No.	Diameter	Application
9516937	STANDARD	645E3
9516940	.030 O.S.	TURBOCHARGED
9516941	.060 O.S.	ENGINES
9516939	STANDARD	645E3A, 645E3B, 645F3
9517815	.030 O.S.	TURBOCHARGED
9517816	.060 O.S.	ENGINES

GOVERNOR SPEEDER SPRINGS

Since 1964, PG governor speeder springs have been manufactured using a special reverse modulus spring wire which provides temperature compensation of the speed setting mechanism. Speeder springs manufactured of the special wire will have a finite life when repeatedly cycled over a wide speed range. The life of the spring is determined by the speed range and the number of speed cycles.

All PGR speeder springs manufactured since November 1978 have an improved cycle life and have been marked with a date code for identification purposes, Fig. 1.

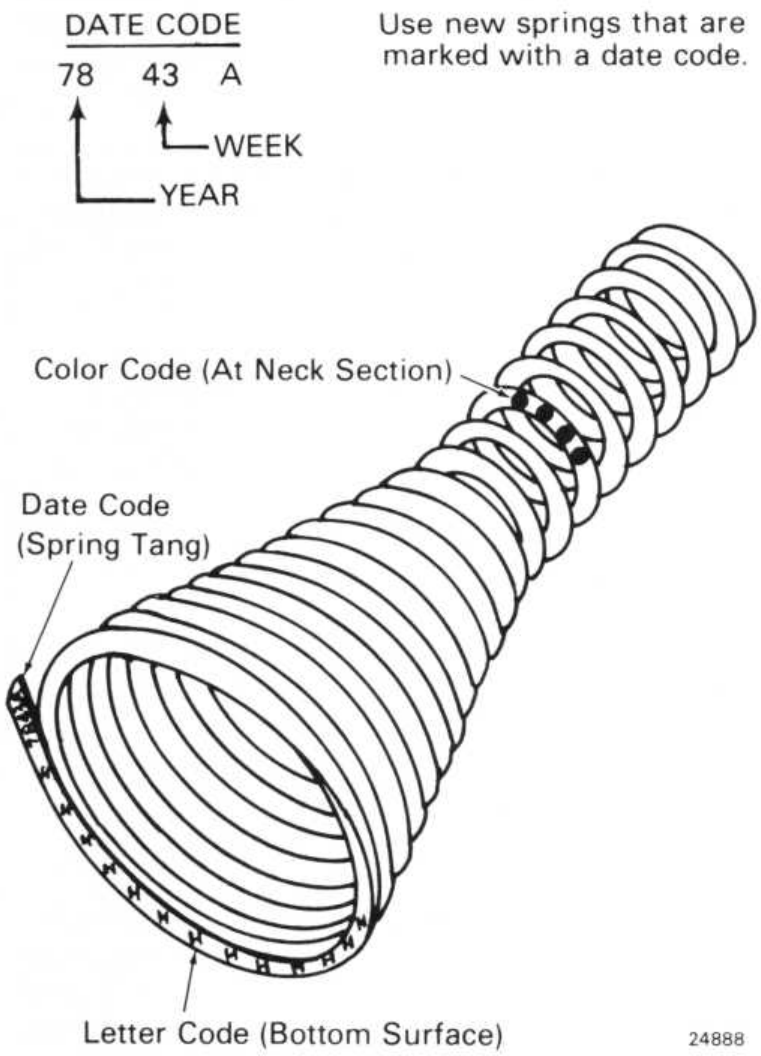


Fig.1 – Date Coded Speeder Spring

At the time of governor overhaul, replace any speeder spring marked with the letter code "H" or color coded "BLUE-RED-RED-RED" that does not have a date code.

Also replace any springs having a date code of 9 years prior to time of overhaul. When the speeder spring is replaced in a governor, stamp governor nameplate in the upper right-hand corner with the letters TC and the year of the replacement; for example, if the spring was replaced during the year 1980, the nameplate should be stamped TC80.

IMPROVED CYLINDER HEAD WATER OUTLET ELBOW SEALS

Effective October 1979, O-rings made of fluorocarbon rubber (Viton) are applied as standard water outlet elbow seals on cylinder head discharge elbows of all new and rebuilt EMD engines. The new O-ring 9317972, identified by its black color, is also available as a service replacement individually or in standard cylinder head and power assembly gasket kits. It replaces the brown colored silicone rubber O-ring 8413892 that had been applied on both single and double seal-groove discharge elbows since August 1968.

Double-groove discharge elbows, Fig. 2, were first introduced on 645 engines in January 1969. Prior to that time, single-groove elbows were standard on most 567 engines and some early 645 engines. Only Model 567E and all 645 engine crankcases have the necessary top deck thickness to accept the double-groove elbow, and should be so equipped to take full advantage of the improved sealing qualities of the Viton O-rings.

Fig.2 – Water Outlet Elbow Seals

Before installing discharge elbows with the new O-rings in a used crankcase, the water inlet holes in the case must be carefully cleaned to remove scale and corrosion. A bottle type wire brush tool and a slow speed air or electric drill are recommended for this purpose. As an alternate method, a hand operated 1.438″ ± .0005″ reamer may be used. However, expansion reamers, hones, or other such uncontrolled material removal devices should not be used as they will oversize the holes. Correct hole sizing is required to ensure the proper compressive fit of the O-ring seals in the discharge elbow grooves to prevent water leaks.

When the water inlet hole is smooth and clean of chatter marks, check for an oversize or out-of-round condition by measuring the bore at three positions in 2:00 o'clock increments, both at 1/2″

below top of hole (top deck side) and 1/4" above bottom of hole. Standard bore size is 1.438" ± .002" with a condemning limit of 1.450". Holes found to be at or beyond this limit will require weld build-up and remachining back to size.

Apply a light coat of EMD recommended silicone grease on the new O-rings to protect and retain them in the discharge elbow grooves during installation of cylinder head or power assembly in the crankcase.

Investigations have found that some reported discharge elbow seal leaks were caused by improper application of power assembly crabs and maintenance of crab nuts at a low torque value. This allowed "working" of power assembly in crankcase which resulted in accelerated elbow and O-ring seal wear. All new, replaced, or in service power assemblies should have crab nut tightness checked and retorqued at intervals specified in the applicable Scheduled Maintenance Program.

DISCONTINUANCE OF REPAIR SERVICE — CAB HEATER MOTOR 9093351 AND 9084343

Cab heater motor assembly 9093351, a replacement for cab heater motor assemblies 9084343 and 8484919, applicable to electric cab heater assemblies referenced in the below chart, are no longer considered economical for remanufacture advises EMD's supplier.

For this reason, EMD will no longer provide a "Repair and Return" service for the remanufacturing of cab heater motor assemblies 9093351, 9084343, or 8484919.

NOTE

Cab heater motor assembly 8484919 was previously discontinued, reference Pointer's article dated September 26, 1977 covering the same subject.

ELECTRIC CAB HEATER ASSEMBLY
REFERENCE CHART

Pt. No.	Application	Rating	Locomotive Usage
8473595 8473596	Right Side Left Side	3KW	GP15-1, GP38-2, GP39-2, GP40-2, GP40P-2, SD38-2, SDL39, SD40-2, SD40T-2
8479140	Right Side & Left Side	3KW	GP38-2, SD40-2, SD45-2, SD45T-2
8484029	Right Side & Left Side	3.75 KW	SDP40F, F40C
9080785	Right Side & Left Side	4.50 KW	SDP40F
9088917 9088918	Right Side Left Side	1.50/3.00/4.50 KW	GP40-2, SD40-2
9311975	Right Side & Left Side	4.50 KW	F40PH, F40PH-2
9320390 9320391	Right Side Left Side	2.25/3.75 KW	All road locomotives with clean cab phase II arrangement
9337525	Right Side & Left Side	2.25/3.75 KW	GP40-2, GP40X, SD40-2