ELECTRO-MOTIVE

MAINTENANCE INSTRUCTION

M.I. 9643
(9547)

MODERNIZATION RECOMMENDATION

UTILIZATION OF 645 POWER ASSEMBLIES IN 567C, 567CR, AND 567D3 ENGINES IN EXPORT LOCOMOTIVES

PURPOSE: Standardization of power assemblies in 645 and subject 567 engines, to reduce parts inventory.

NOTE

Electro-Motive does not recommend any change in engine power through application of 645 cubic inch power assemblies in place of the original 567, and no increase in power is implied.

APPLICATION:

8-567CR ENGINES	12-567C ENGINES	16-567C ENGINES	16-567D3 ENGINES
G-8, GA-8 GL-8U, GL-8W JL-8W	G-12, GR-12U GR-12W, GA-12C GA-12W, GS-12C	G-16U, G-16W	GT-16

Application of 645 power assemblies results in new engine model designations. This amounts to substituting "645" in place of "567" in the designations, i.e. 16-567C becomes 16-645C.

REFERENCE: Figs. 1, 2, 3, tables in this bulletin, and applicable Engine Maintenance Manual.

NEW MATERIAL REQUIRED: Refer to the following table for required parts.

567CR 8	567CR 12	567C 16	567D3 16	PART NO.	DESCRIPTION
8	12	16	16	8415993	Liner - 18 Port
8	12	16		8481489	Piston Asm. - W/Rings
			16	9516937	Piston Asm. - W/Rings
8	12	16	16	8453422	Piston Cooling Tube
16	24	32	32	181339	Bolt - Flange To Manifold
8	12	16	16	8479836	Seal Kit - Cylinder Head
8	12	16	16	9320844	Seal Kit - Cylinder Liner
8	12	16		5229510	Fuel Injector
8*	12*			5229500	Fuel Injector
			16	5229250	Fuel Injector
1		1		8285799	Governor Rack Stop Block
			16	8367800	Piston Carrier - Center Feed Oil Hole
					NOTE Carriers 8396056 And 8269840 May Be Used If Modified By Drilling A 1/2" Hole On The Vertical Centerline Through The Upper Pilot
			16	8361565	Carrier Insert Bearing Shell
2		2		120217	Washer - No. 10 Lock
2		2		8284048	Washer - Plain
2		2		147119	Screw - No. 10 - 32 x 1" Socket Head
		2	2	8350517	Camshaft Counterweight - Rear, R. & L. Bank
		1	1	8350516	Camshaft Counterweight - Front, L. Bank
		1	1	8350518	Overspeed Trip Asm. - Front, R. Bank
	1			8367950	Camshaft Counterweight - Rear, R. Bank
	1			8367951	Camshaft Counterweight - Rear, L. Bank
	1			8367949	Camshaft Counterweight - Front, L. Bank
	1			8383745	Overspeed Trip Asm. - Front, R. Bank
1				8371520	Camshaft Counterweight - Rear, L. Bank
1				8371521	Camshaft Counterweight - Rear, R. Bank
1				8371519	Camshaft Counterweight - Front, L. Bank
1				8371518	Overspeed Trip Asm. - Front, R. Bank

*Applicable to export engines operating at 800 RPM.

COST OF MATERIAL:

MODEL	APPROXIMATE COST
8-567CR	$ 10,750
12-567C	14,075
16-567C	18,550
16-567D3	22,600

These prices are for job estimating purposes only. Material will be billed at prices in effect at time of shipment. Material should be accumulated before locomotive is removed from service for modification.

Substantial savings can be realized by converting injectors presently in use as follows:

ENGINE TYPE	NO. OF CYLINDERS	OPERATING RPM	CONVERTED INJECTOR NO.
Blower-type With Spherical And Needle Valve Injectors	8, 12 8, 12, 16	800 835	5229500 (UTEX 9081163) 5229510 (UTEX 9081164)
Turbocharged With Needle Valve Injectors	16	835	5229310 (UTEX 8478051)

These conversions consist basically of application of a new "low sac" spray tip and calibration slide.

It is not considered economical to convert 567 injectors to the 645E3 injector 5229250 due to the difference in bushing bores, fuel passage size, and rack location in the body.

PROCEDURE

BLOWER TYPE ENGINES

Modifications of 8-567CR, 12-567C, and 16-567C engines involve replacement of cylinder assembly components and counterweights with part numbers listed under "New Material Required" for the respective engine. Reference to appropriate Engine Maintenance Manual is recommended.

The following throttle No. 8 rack settings are suggested:

INJECTOR USED IN MODIFICATION	PREVIOUS SETTINGS RACK	PREVIOUS SETTINGS POWER PISTON	RECOMMENDED SETTINGS RACK	RECOMMENDED SETTINGS POWER PISTON
5229500	.83	20/64	.81	19/64
5229500	.87	22/64	.85	21/64
5229500	1.00	28/64	.98	27/64
5229510	.83		.81	
5229510	.92		.90	
5229510	.96		.94	
5229510	1.04		1.03	

A governor rack stop block, Fig. 1, should be applied to 8 cylinder 567CR and 16 cylinder 567C blower-type engines to reduce overfueling of the engine. Overfueling is a major factor in piston ring breakage and valve blow. Application procedure is as follows, see Fig. 2.

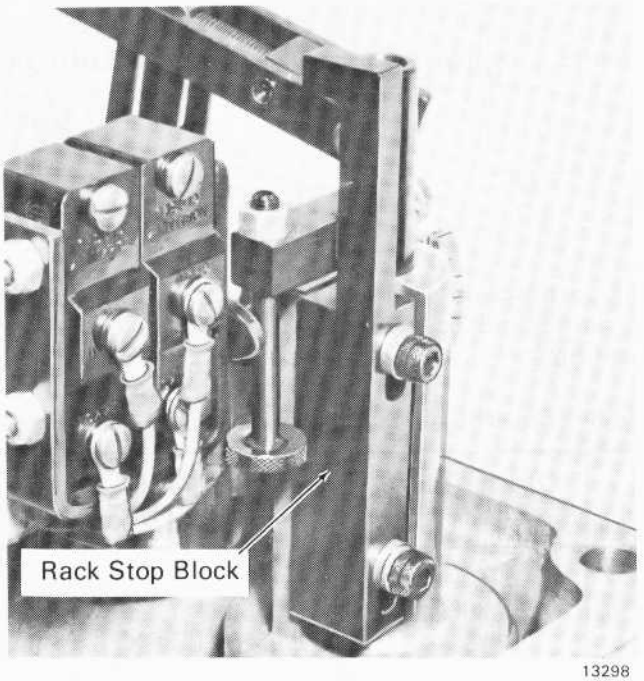

Fig.1 – Governor Rack Stop Block

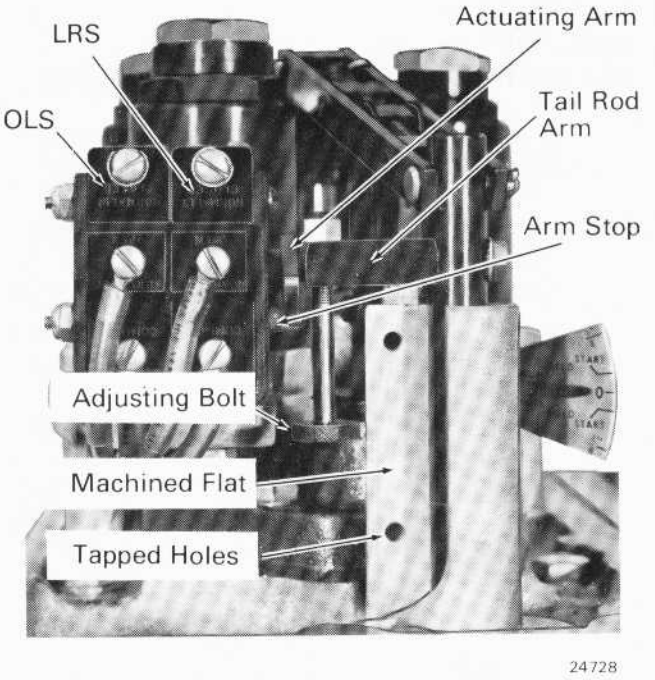

Fig.2 – Stop Block Mounting Details

1. Position stop block 8285799 on the machined flat of the power piston spring guard so that the right angle hook extends over the tail rod arm.

2. Insert the two socket head screws 147119 with washers 120217 and 8284048 through the slotted holes in the stop block, and screw them into the tapped holes in the power piston spring guard.

3. Using the injector control lever or a tail rod jack, position the power piston so that the terminal shaft scale is aligned with the pointer. (See table following.)

4. Slide the stop block down until the right angle hook rests firmly on the tail rod arm. Tighten screws.

5. Make sure LRS is correctly adjusted, as specified in the table following.

6. Adjust the OLS switch by raising the power piston tail rod until the proper setting on the terminal shaft scale aligns with the pointer. (See table following.)

7. Loosen the allen screw locknut, Fig. 3, on OLS lever, and turn screw to cause overriding solenoid to be energized.

ENGINE MODELS	RACK STOP	LRS	OLS
8-567CR	.75	.87	.79
16-567C	.79	.92	.83

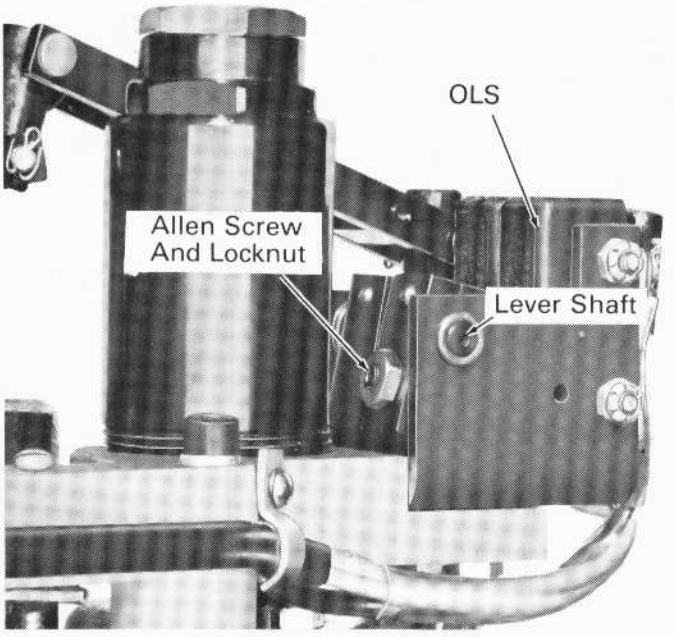

Fig.3 - OLS Switch Adjustment Points

TURBOCHARGED ENGINES

Conversion of the 16-567D3 engine involves replacement of cylinder assembly components and camshaft counterweights with part numbers listed under "New Material Required" for the respective engine. Reference to the appropriate Engine Maintenance Manual is recommended.

The following settings should be used:

Loco. HP - 2400 HP
RPM - 835
Rack Length (Full Load) - .98
Absolute Airbox Pressure - 55 psi
Fuel Limiter Rack - .99
Fuel Limiter Absolute Airbox Pressure - 48 psi