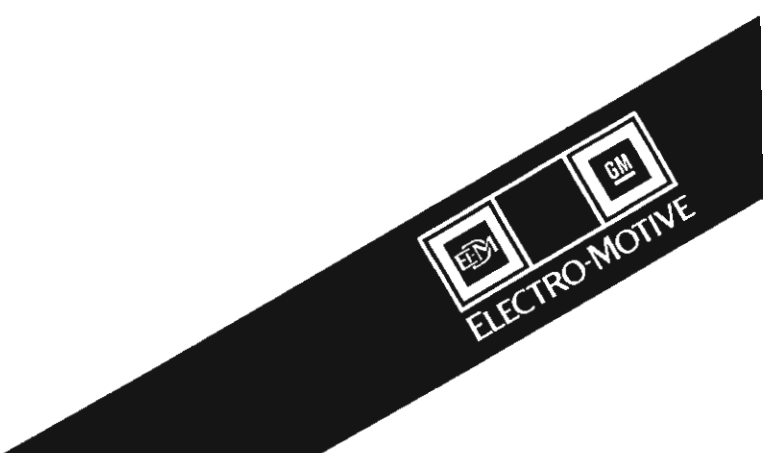
Name _____

ELECTRO-MOTIVE DIVISION

Service Training Center
Engine Class

HANDS-ON EXERCISE



NOTE: USE BACK FOR GUIDE

AIR BOX INSPECTION

CUSTOMER		LOCATION		DATE			
UNIT NO.		TYPE UNIT		MOS., MILES, OR HOURS			
ENGINE AIR FILTER TYPE				DATE LAST CHANGED			
LUBE OIL TYPE				DATE LAST CHANGED			
ENGINE S/N		REFERENCE DATA					

CYLINDER NO.	PISTON RINGS									LINERS							PISTONS					
	NUMBER 1 RING SIDE CLEARANCE	CLASS			#4 % SEATING	CONDITION				CARB. CUT.	VARNISH	STREAK	FRAMING	SCUFF/SCORE	PORT RES.	% H.M.R.	POLISH	VARNISH	DEPOSIT COLOR	SCUFF/SCORE	PATTERN	REMARKS/LEAD WIRE READINGS
		#1	#2	#3		CHIP	VARNISH	SCUFF	BROKEN													
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	TOTAL SIDE CLEARANCE BASED ON ____ ASMS.	DEPOSTIS	RIGHT BANK	LEFT BANK
	AVG. SIDE CLEARANCE	AIRBOX		
	AVERAGE SIDE WEAR	DUCTS		
	WEAR RATE, IN/	CORES		

CODE: H - HEAVY, M - MODERATE, L - LIGHT

INSPECTED BY: _____

WORK STATION #1

PROCEDURE

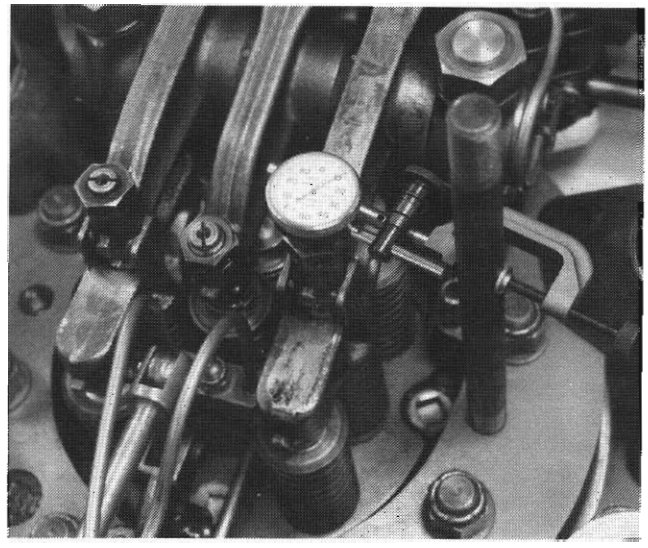
EXHAUST VALVE TIMING

STEP 1: Disable the engine and open the cylinder test valves.

REFERENCE DATA: Engine Maintenance Manual, "Camshaft Gear Train, Auxiliary Drive, and Camshaft Assemblies"

NOTE: The accuracy of the pointer is critical to this procedure. The pointer should be qualified before this procedure is performed.

STEP 2: Install a 3/4" x 10 N.C. cylinder liner stud into a cylinder head puller hole at either the 9 o'clock or 3 o'clock position. Position the dial indicator directly over the exhaust valve adjusting screw as illustrated below.



STEP 3: Bar the engine over by hand until the cylinder you are checking is at top dead center.

STEP 4: Preload the dial indicator one full revolution (about 0.100") and set the dial to zero.

STEP 5: Bar the engine over manually in the direction of rotation until the dial indicator reads 0.014", *negative*. Exhaust valve timing should fall within 104-110° *after top dead center of the cylinder being checked.*

NOTE: If 0.014" *is not* obtained on the dial indicator within 104-110° after top dead center (ATDC), this procedure is indicating a problem. If 0.014" is obtained prior to 104° ATDC, valve timing is too *early*. A 0.014" reading obtained after 110° ATDC indicates valve timing that is too *late*.

STEP 6: Record the exhaust valve timing for this cylinder.

_____ Top Dead Center

_____ Indicated Flywheel Degrees at 0.014" Negative

_____ Exhaust Valve Timing for this Cylinder

STEP 7: Is exhaust valve timing correct for this cylinder? If not, explain why.

WORK STATION #1

PROCEDURE

INJECTION TIMING

STEP 1: Disable the engine and open the cylinder test valves.

REFERENCE DATA: Engine Maintenance Manual, "Fuel System"

NOTE: The accuracy of the point is critical to his procedure. The pointer should be qualified before this procedure is performed.

STEP 2: Check to see that the overspeed trip has not been tripped and is in the *latched* position. If the overspeed trip has been *unlatched*, reset the mechanism and rotate the engine 1-2 revolutions before attempting to set injection timing.

STEP 3: Bar the engine over until the cylinder you are checking is at the flywheel degrees indicated on the injection timing plate.

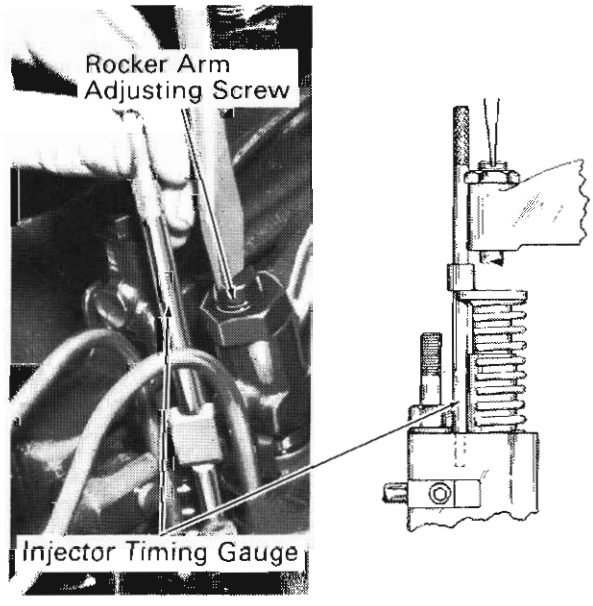
NOTE: Injection timing *is not* the same for all engines. Consult the proper engine maintenance manual if you are unsure or if the injection timing plate is missing from the side of your engine.

STEP 4: Insert the injector timing gauge into the hole located on the top, left side of the injector body.

STEP 5: Loosen the lock nut on the injector rocker arm adjusting screw and turn the adjusting screw until the shoulder of the gauge just passes over the injector follower guide.

STEP 6: Tighten the adjusting screw lock nut while holding the screw in place with the screwdriver.

NOTE: This adjustment should be performed on an engine that has reached operating temperature.



WORK STATION #2

PROCEDURE

CYLINDER LINER QUALIFICATION

STEP 1: Assemble the liner bore gauge. Place the bore gauge in the 9.0617″ mandrel (lock nut loose), and preload the dial indicator two full revolutions (.020). Remove the bore gauge and tighten the lock nut. Place the bore gauge back in the 9.0617″ mandrel and zero the dial indicator.

REFERENCE DATA: Engine Maintenance Manual, "Cylinder Liner"

STEP 2: Hang the locator strap into the liner, first parallel and then 90° in relationship to the crankshaft. Use the dial bore gauge to qualify the cylinder liner.

MEASUREMENTS	PARALLEL	90°
Top Limit of Ring Travel 2″ Below Top of Liner	_____	_____
Piston to Liner Clearance 6″ Below Top of Liner	_____	_____
Liner Bore 16″ Below Top of Liner	_____	_____

STEP 3: Calculate the piston to liner clearance by subtracting 9.050″ from your readings obtained at the 6″ position.

_____ _____

STEP 4: Assemble an inside micrometer and measure the port relief zone.

_____ _____

STEP 5: Measure the cylinder liner outside diameter (O.D.) at the upper pilot.

_____ _____

STEP 6: Measure the cylinder liner outside diameter (O.D.) at the lower pilot.

_____ _____

STEP 7: Does this cylinder liner qualify to be reused into an engine? If not, explain why.

WORK STATION #3

PROCEDURE

FORK ROD BORE QUALIFICATION

STEP 1: Disassemble the fork and blade rod assembly.

REFERENCE DATA: Engine Maintenance Manual, "Piston Assembly and Connecting Rods"

STEP 2: Reassemble the basket halves onto the fork rod and torque to the proper *qualification* specifications (lower than actual assembly into engine). It is important that the basket halves be properly matched to the fork rod in order to obtain proper measurements. It is best to use the fork rod *inner* counterbore as a guide in alignment of the basket halves.

STEP 3: Assemble the bore gauge selecting the proper adapter to fit the fork rod bore. Place the bore gauge in the 7.624″ master gauge ring (lock nut loose) and preload the dial indicator two full revolutions (.020″). Remove the bore gauge and tighten the lock nut. Place the bore gauge back into the 7.624″ master gauge ring and zero the dial indicator.

NOTE: The fork rod master gauge ring *is not* available from EMD but can easily be made by any machine shop.

STEP 4: Record three readings, 60° apart, from both sides of the fork rod bore.

NOTE: In order to standardize the qualification procedure, assume that the fork rod assembly was removed from a left-hand rotation engine.

GOVERNOR SIDE	FLYWHEEL SIDE	
_____	_____	
_____	_____	
_____	_____	
_____	_____	TOTAL
_____	_____	AVERAGE

STEP 5: Disassemble the fork rod assembly and then reassemble the fork and blade rod assembly *with the connecting rod bearing installed.*

STEP 6: Torque the basket halves to the proper *qualification* specification and record three readings, 60° apart, to determine crankpin to connecting rod clearance. Use an inside micrometer for this operation and assume that the crankpin journal outside diameter is 6.499″.

_____	
_____	
_____	
_____	TOTAL
_____	AVERAGE
_____	BEARING TO CRANKPIN CLEARANCE

STEP 7: Does this fork rod qualify to be reused into an engine? If not, explain why.

WORK STATION #4

PROCEDURE

FORK & BLADE ROD QUALIFICATION ON THE ROD CHECKING FIXTURE

STEP 1:

Place the gauge block standard on the rod checking fixture between the dial indicator and the top side of the dial indicator support block. Twist the dial indicator support rod so that the dial indicator comes in contact with the gauge block standard and is preloaded to its maximum point. Zero the dial indicator. The dial indicator is now reading exactly 23.00″.

REFERENCE DATA: Engine Maintenance Manual, "Piston Assembly & Connecting Rods"

STEP 2: Each connecting rod must be centered on the connecting rod checking fixture before attempting to qualify either connecting rod.

CENTERING THE CONNECTING ROD

Place the connecting rod onto the simulated connecting rod journal and visually center the rod in relationship to the center of the rod checking fixture. Tighten the two thumb screws against the sides of the connecting rod I-beam, maintaining this position. Now move the dial indicator onto the center of the connecting rod saddle and sweep the *width* of the saddle. You should notice that the dial indicator moves radically from side to side. Alternately loosen and tighten the two thumb screws until movement of the dial indicator stops. The connecting rod is now perfectly centered on the rod checking fixture.

MEASURING LENGTH

Recheck the zero on the dial indicator by placing the dial indicator back onto the gauge block. Move the dial indicator back onto the *very center* of the connecting rod saddle. If the dial indicator is reading a negative number, the connecting rod is shorter than 23.00″. If the dial indicator is reading a positive number, the connecting rod is longer than 23.00″.

MEASURING TWIST

Move the dial indicator to the edge of the saddle and run the dial indicator along the *length* of the saddle. This must be done on *both sides* of the saddle. The twist of the connecting rod is determined by comparing the lowest and highest readings obtained on the dial indicator. Each side is viewed separately and compared individually to the specification in the engine maintenance manual.

MEASURING PARALLELISM

Move the dial indicator in a "figure 8" pattern around the two piston pin bolt holes. Parallelism is determined by comparing the lowest and highest readings obtained on the dial indicator.

STEP 3: Qualify the *fork rod* on the connecting rod checking fixture and record your measurements.

LENGTH _____

PARALLELISM _____

TWIST _____

WORK STATION #5

PROCEDURE

PISTON PIN AND PISTON CARRIER QUALIFICATION

STEP 1: Using the special EMD piston snap ring removal tool, remove the piston carrier snap ring. *BE CAREFUL!*

REFERENCE DATA: Engine Maintenance Manual, "Piston Assembly & Connecting Rods"

STEP 2: Remove the carrier assembly from the piston.

STEP 3: As an assembly, remove the rocking style piston pin and piston pin insert bearing from the piston carrier.

STEP 4: Using various sized micrometers and a feeler gauge set, qualify the piston carrier assembly.

1. Carrier Top Pilot Diameter _____
2. Carrier Bottom Pilot Diameter _____
3. Carrier to Snap Ring Clearance _____

STEP 5: Using a one-inch micrometer, qualify the carrier thrust washer by measuring the thrust washer at four different locations, 90° apart.

#1 _____ #3 _____

#2 _____ #4 _____

STEP 6: Measure the wear step on the piston pin by placing a straight edge and feeler gauge across the two 7/8"-14 threaded bolt holes.

Wear Step _____

STEP 7: Visually check the surface finish of the piston pin and piston pin insert bearing.

Observation of Condition: Piston Pin _____

Insert Bearing _____

STEP 8: Refer to a copy of the "Service Training Pointers Reprint" to properly reassemble the piston pin and insert bearing into the carrier. When reinstalling the 1/4"-20 bolt and retainer, use a *new* locking clip. Use an inch pound torque wrench to obtain the final torque of the this bolt.

NOTE: Before installing the carrier back into the piston, allow the instructor to view the installation of the piston pin and locking clips.

STEP 9: Based upon your inspection of the above components, would you reuse any of the above components? If not, explain why.

WORK STATION #1

PROCEDURE

LEAD WIRE MEASUREMENT AND AIR BOX INSPECTIONS

STEP 1: Disable the engine and open the cylinder test valves.

REFERENCE DATA: Engine Maintenance Manual, "Cylinder Power Assembly"

STEP 2: Using a piston that is the same size as the one you are checking, position a piece of 1/8" lead wire over the top of the piston so that the lead wire conforms to the top of the piston. The wire should be cut away exactly 1/8" from the outside edge of the piston.

HELPFUL HINT: Conform the wire in a manner so as the center of the lead wire is inserted into the threaded portion of the piston removal hole.

STEP 3: Bar the engine over so that the piston to be inspected is just below the liner ports. Install the lead wire through a liner port and align the wire so that it is *parallel to the crankshaft.*

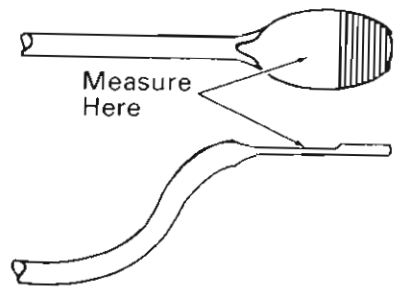
STEP 4: Bar the engine over one complete revolution to compress the lead wire.

STEP 5: Remove the lead wire. Using a one-inch micrometer, measure both ends of the lead wire.

SPECIFICATION: Minimum Clearance 0.020"
Maximum Clearance 0.068"

Maximum difference from side to side not to exceed 0.005".

Record your readings: _____ _____



NOTE: Lead wire readings should only be taken upon intitial installation of a new power assembly. The proper basis for power assembly removal should be piston ring face wear and #1 compression ring side clearance.

STEP 6: AIR BOX INSPECTION: Complete the enclosed worksheet.

REFERENCE DATA: Engine Maintenance Manual, "Troubleshooting Section", "Liner/ Piston Visual Inspection Guide" and "Piston Assembly and Connecting Rod Section", "Ring Wear Classification" chart.

NOTE: USE BACK FOR GUIDE

AIR BOX INSPECTION

CUSTOMER		LOCATION		DATE			
UNIT NO.		TYPE UNIT		MOS., MILES, OR HOURS			
ENGINE AIR FILTER TYPE				DATE LAST CHANGED			
LUBE OIL TYPE				DATE LAST CHANGED			
ENGINE S/N		REFERENCE DATA					

CYLINDER NO.	PISTON RINGS									LINERS							PISTONS					
	NUMBER 1 RING SIDE CLEARANCE	CLASS			#4 % SEATING	CONDITION				CARB. CUT.	VARNISH	STREAK	FRAMING	SCUFF/SCORE	PORT RES.	% H.M.R.	POLISH	VARNISH	DEPOSIT COLOR	SCUFF/SCORE	PATTERN	REMARKS/LEAD WIRE READINGS
		#1	#2	#3		CHIP	VARNISH	SCUFF	BROKEN													
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	TOTAL SIDE CLEARANCE BASED ON ____ ASMS.	DEPOSTIS	RIGHT BANK	LEFT BANK
	AVG. SIDE CLEARANCE	AIRBOX		
	AVERAGE SIDE WEAR	DUCTS		
	WEAR RATE, IN/	CORES		

CODE: H - HEAVY, M - MODERATE, L - LIGHT

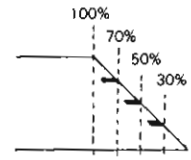
INSPECTED BY: _____

PISTON RINGS

#1 RING	RING SIDE CLEARANCE:	.005"	.006"	.007"	.008"	.009"	.010"	.011"	.012"	.013"			
	.014"	.015"	.016"	.017"	.018"	.019"	.020"	.021"	.022"	.023"	.024"	.025"	
	.026"	.027"	.028"	.029"	.030"	.031"	.032"	.033"	.034"	.035"	.036"	.037"	

RING CLASS	#1 RING	TYPE 0	TYPE 1	TYPE 2	TYPE 2A	TYPE 3	TYPE 4
	#2 RING	TYPE 0	TYPE 1	TYPE 2	TYPE 2A	TYPE 3	TYPE 4
	#3 RING	TYPE 0	TYPE 1	TYPE 2	TYPE 2A	TYPE 3	TYPE 4

% OF SEATING	#4 RING (645, 710)	30%	50%	70%	100%
	#3 RING (567)	30%	50%	70%	100%



RING CONDITION	CHIPS	YES	NO	WHICH ONES?	1	2	3	4
	VARNISH	YES	NO	WHICH ONES?	1	2	3	4
	SCUFFING	YES	NO	WHICH ONES?	1	2	3	4
	BROKEN	YES	NO	WHICH ONES?	1	2	3	4

CYLINDER LINER

Look for evidence of the following disorders.

CARBON CUTTING	YES	NO	IF YES, IS IT?	LIGHT	MODERATE	HEAVY				
VARNISH BUILDUP	YES	NO	IF YES, IS IT?	LIGHT	MODERATE	HEAVY				
LINER STREAKING	YES	NO	IF YES, IS IT?	LIGHT	MODERATE	HEAVY				
PORT FRAMING	YES	NO	IF YES, IS IT?	LIGHT	MODERATE	HEAVY				
LINER SCUFFING/SCORING	YES	NO	IF YES, IS IT?	LIGHT	MODERATE	HEAVY				
PORT RESTRICTION	YES	NO	IF YES, IS IT?	LIGHT	MODERATE	HEAVY				
% OF HONING MARKS REMOVED	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

PISTONS

PISTON POLISHING	YES	NO	IF YES, IS IT?	LIGHT	MODERATE	HEAVY				
PISTON DEPOSITS	YES	NO	IF YES, IS IT?	LIGHT	MODERATE	HEAVY				
PISTON SCUFFING/SCORING	YES	NO	IF YES, IS IT?	LIGHT	MODERATE	HEAVY				
DEPOSIT COLOR	DRY/BLACK		OILY/BLACK		WET/WHITISH		DRY/WHITISH			
CROWN PATTERN	CIRCULAR		STAR SHAPED		NONE					

AIR BOX DEPOSITS

GENERAL OVERVIEW	NONE	LIGHT	MODERATE	HEAVY	RIGHT BANK
OIL DEPOSITS	NONE	LIGHT	MODERATE	HEAVY	
CARBON DEPOSITS	NONE	LIGHT	MODERATE	HEAVY	
WATER DEPOSITS	NONE	LIGHT	MODERATE	HEAVY	
GENERAL OVERVIEW	NONE	LIGHT	MODERATE	HEAVY	LEFT BANK
OIL DEPOSITS	NONE	LIGHT	MODERATE	HEAVY	
CARBON DEPOSITS	NONE	LIGHT	MODERATE	HEAVY	
WATER DEPOSITS	NONE	LIGHT	MODERATE	HEAVY	

NOTE: USE BACK FOR GUIDE

AIR BOX INSPECTION

CUSTOMER		LOCATION		DATE			
UNIT NO.		TYPE UNIT		MOS., MILES, OR HOURS			
ENGINE AIR FILTER TYPE				DATE LAST CHANGED			
LUBE OIL TYPE				DATE LAST CHANGED			
ENGINE S/N		REFERENCE DATA					

CYLINDER NO.	PISTON RINGS									LINERS							PISTONS					
	NUMBER 1 RING SIDE CLEARANCE	CLASS			#4 % SEATING	CONDITION				CARB. CUT.	VARNISH	STREAK	FRAMING	SCUFF/SCORE	PORT RES.	% H.M.R.	POLISH	VARNISH	DEPOSIT COLOR	SCUFF/SCORE	PATTERN	REMARKS/LEAD WIRE READINGS
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	AVG. SIDE CLEARANCE	AIRBOX		
	AVERAGE SIDE WEAR	DUCTS		
	WEAR RATE, IN/	CORES		

CODE: H - HEAVY, M - MODERATE, L - LIGHT

INSPECTED BY: _____

WORK STATION #1

PROCEDURE

FUEL RACK ADJUSTMENT

STEP 1: Disable the engine and open the cylinder test valves.

REFERENCE DATA: Engine Maintenance Manual, "Fuel System"

STEP 2: Qualify the injector rack gauge by inserting the qualification block into the gauge body. The pointer should align with the center mark located on the top portion of the gauge scale.

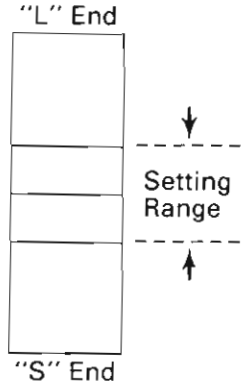
STEP 3: Before attempting to set the injector racks, check the injector linkage for binding, sticking, or excess wear.

NOTE: On governors equipped with a governor scale, it is important that the pointer aligns to the 1.96″ mark on the governor terminal shaft scale when the lay shaft is held manually in the zero fuel position.

STEP 4: Install the injector linkage setting jack and adjust the setting jack so that the pointer on the governor aligns with the 1.00″ mark on the governor terminal shaft scale.

NOTE: If the governor *does not* have an inch scale, use the special 3/8″ adapter provided with your rack gauge and lock the lay shaft to the full fuel position. You are now adjusting the fuel rack at the 5/8″ position.

STEP 5: Apply the rack gauge onto the fuel injector rack. The gauge should read directly in the center. A helpful hint is to support the rack gauges body on the bottom with your finger.



STEP 6: If the fuel rack is out of adjustment, loosen the lock nut on the adjusting link and turn the adjusting nut until the pointer is at the "long" (L) end of the scale, then reverse the pointer travel until it is within the setting range. This is done to take up all backlash in the same direction. Always recheck the adjustment after your final tightening.

NOTE: In the field, this procedure should be performed on an engine that has reached operating temperature *and* whenever a governor has been removed from an engine.

NOTE: USE BACK FOR GUIDE

AIR BOX INSPECTION

CUSTOMER		LOCATION		DATE	
UNIT NO.		TYPE UNIT		MOS., MILES, OR HOURS	
ENGINE AIR FILTER TYPE				DATE LAST CHANGED	
LUBE OIL TYPE				DATE LAST CHANGED	
ENGINE S/N		REFERENCE DATA			

	PISTON RINGS									LINERS							PISTONS					
		CLASS				CONDITION																
CYLINDER NO.	NUMBER 1 RING SIDE CLEARANCE	#1	#2	#3	#4 % SEATING	CHIP	VARNISH	SCUFF	BROKEN	CARB. CUT.	VARNISH	STREAK	FRAMING	SCUFF/SCORE	PORT RES.	% H.M.R.	POLISH	VARNISH	DEPOSIT COLOR	SCUFF/SCORE	PATTERN	REMARKS/LEAD WIRE READINGS
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	AVERAGE SIDE WEAR	DUCTS		
	WEAR RATE, IN/	CORES		

CODE: H - HEAVY, M - MODERATE, L - LIGHT

INSPECTED BY: _____

WORK STATION #1

PROCEDURE

EXHAUST VALVE ADJUSTMENT

STEP 1: Disable the engine and open the cylinder test valves.

REFERENCE DATA: Engine Maintenance Manual, "Cylinder Power Assembly"

NOTE: This adjustment can be done immediately after setting injector timing using the same flywheel degree as indicated on the weight ring.

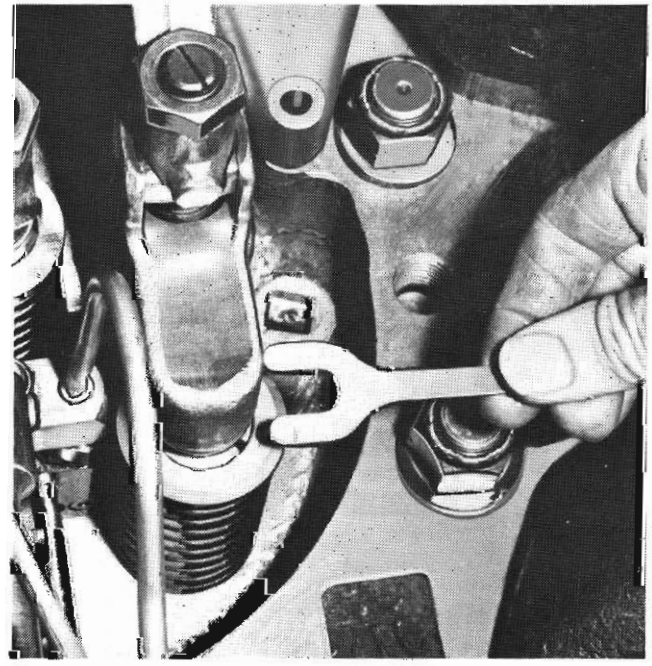
STEP 2: Loosen the lock nut on the exhaust valve rocker arm and back off the adjusting screw (counter-clockwise) until a 0.001" feeler gauge passes easily between the tip of the valve and the plunger of the hydraulic lash adjuster.

STEP 3: Tighten the adjusting screw (clockwise) onto the 0.001" feeler gauge until the feeler gauge is snug and drag can be detected as the feeler gauge is being removed. Upon removal of the feeler gauge, turn the adjusting screw an additional 1 and 1/2 turns. Tighten the lock nut while holding the adjustment with a screwdriver.

Tighten the adjusting screw (clockwise) onto the 0.001" feeler gauge until the feeler gauge is snug and drag can be detected as the feeler gauges is being removed. Upon removal of the feeler gauge, turn the adjusting screw an additional 1 and 1/2 turns. Tighten the lock nut while holding the adjustment with a screwdriver.

NOTE: Check the valve bridge spherical seat to be sure that it is spring loaded against the spherical seat of the cylinder head. If the valve bridge spring *is not* spring loaded, turn the rocker arm adjusting screw (clockwise) until no movement is felt on the valve bridge, and then turn the adjusting screw an additional 1/4 turn.

STEP 4: After running the engine until the engine lube oil reaches operating temperature, check the clearance between the hydraulic lash adjuster bodies and the tip of the valve stem. *This check should be made with the piston near top dead center.* If the clearance is less than minimum (1/16"), the cylinder head should be removed for reconditioning or rejection. This check is made using gauge part #8107788 and is shown in the illustration below.



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AIR BOX INSPECTION

CUSTOMER		LOCATION		DATE			
UNIT NO.		TYPE UNIT		MOS., MILES, OR HOURS			
ENGINE AIR FILTER TYPE				DATE LAST CHANGED			
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ENGINE S/N		REFERENCE DATA					

CYLINDER NO.	PISTON RINGS									LINERS							PISTONS					
	NUMBER 1 RING SIDE CLEARANCE	CLASS			#4 % SEATING	CONDITION				CARB. CUT.	VARNISH	STREAK	FRAMING	SCUFF/SCORE	PORT RES.	% H.M.R.	POLISH	VARNISH	DEPOSIT COLOR	SCUFF/SCORE	PATTERN	REMARKS/LEAD WIRE READINGS
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	TOTAL SIDE CLEARANCE BASED ON ____ ASMS.	DEPOSTIS	RIGHT BANK	LEFT BANK
	AVG. SIDE CLEARANCE	AIRBOX		
	AVERAGE SIDE WEAR	DUCTS		
	WEAR RATE, IN/	CORES		

CODE: H - HEAVY, M - MODERATE, L - LIGHT

INSPECTED BY: _____

NOTE: USE BACK FOR GUIDE

AIR BOX INSPECTION

CUSTOMER		LOCATION		DATE				
UNIT NO.		TYPE UNIT		MOS., MILES, OR HOURS				
ENGINE AIR FILTER TYPE				DATE LAST CHANGED				
LUBE OIL TYPE				DATE LAST CHANGED				
ENGINE S/N		REFERENCE DATA						

CYLINDER NO.	PISTON RINGS									LINERS							PISTONS					
	NUMBER 1 RING SIDE CLEARANCE	CLASS			#4 % SEATING	CONDITION				CARB. CUT.	VARNISH	STREAK	FRAMING	SCUFF/SCORE	PORT RES.	% H.M.R.	POLISH	VARNISH	DEPOSIT COLOR	SCUFF/SCORE	PATTERN	REMARKS/LEAD WIRE READINGS
		#1	#2	#3		CHIP	VARNISH	SCUFF	BROKEN													
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	TOTAL SIDE CLEARANCE BASED ON ____ ASMS.	DEPOSTIS	RIGHT BANK	LEFT BANK
	AVG. SIDE CLEARANCE	AIRBOX		
	AVERAGE SIDE WEAR	DUCTS		
	WEAR RATE, IN/	CORES		

CODE: H - HEAVY, M - MODERATE, L - LIGHT

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NOTE: USE BACK FOR GUIDE

AIR BOX INSPECTION

CUSTOMER		LOCATION		DATE				
UNIT NO.		TYPE UNIT		MOS., MILES, OR HOURS				
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CYLINDER NO.	PISTON RINGS									LINERS							PISTONS					
	NUMBER 1 RING SIDE CLEARANCE	CLASS			#4 % SEATING	CONDITION				CARB. CUT.	VARNISH	STREAK	FRAMING	SCUFF/SCORE	PORT RES.	% H.M.R.	POLISH	VARNISH	DEPOSIT COLOR	SCUFF/SCORE	PATTERN	REMARKS/LEAD WIRE READINGS
		#1	#2	#3		CHIP	VARNISH	SCUFF	BROKEN													
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	TOTAL SIDE CLEARANCE BASED ON _____ ASMS.	DEPOSTIS	RIGHT BANK	LEFT BANK
	AVG. SIDE CLEARANCE	AIRBOX		
	AVERAGE SIDE WEAR	DUCTS		
	WEAR RATE, IN/	CORES		

CODE: H - HEAVY, M - MODERATE, L - LIGHT

INSPECTED BY: _____

WORK STATION #4

PROCEDURE

FORK & BLADE ROD QUALIFICATION ON THE ROD CHECKING FIXTURE (Cont'd)

STEP 4: Qualify the fork rod tapped holes using the GO/HI plug gauge.

STEP 5: Qualify the *blade rod* on the connecting rod checking fixture.

LENTH _____ CLOSE IN _____

TWIST _____ OPEN OUT _____

PARALLELISM _____

STEP 6: Remove the blade rod from the connecting rod fixture and measure the thickness of the slipper foot shoulder using a one-inch *ball style micrometer.*

GOVERNOR SIDE _____ FLYWHEEL SIDE _____

STEP 7: Does the fork rod qualify on the connecting rod checking fixture? If not, explain why.

STEP 8: Does the blade rod qualify on the connecting rod checking fixture? If not, explain why.