

WISCONSIN ENGINES

6 TO 65.9 HORSEPOWER

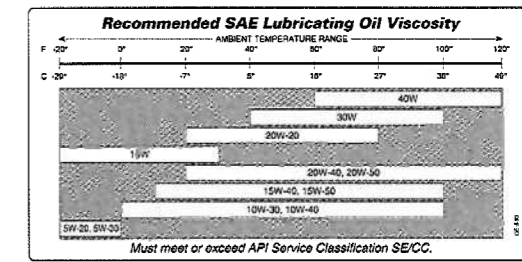
REPAIR SPECIFICATIONS

EVERY 4 TO 8 HOURS: CHECK AIR CLEANER & CLEAN OR REPLACE

EVERY 8 HOURS: CHECK CRANKCASE OIL LEVEL

EVERY 50 HOURS: DRAIN CRANKCASE AND REFILL WITH FRESH OIL

FOR GASOLINE ENGINES
USE ONLY **REGULAR GRADE** GASOLINE
(87 OCTANE MIN.)



NOTE: ENGINES WITH THE LETTER "D" SUFFIXED TO THE MODEL DESIGNATION HAVE LONG-LIFE EXHAUST VALVE AND SEAT, OTHERWISE IDENTICAL TO THE BASIC ENGINE MODEL.

ENGINE MODELS	STANDARD CYLINDER BORE	PISTON SKIRT TO BORE CLEARANCE	CRANKPIN DIAMETER	CONNECTING ROD TO CRANKPIN CLEARANCE	VALVE TAPPET CLEARANCE - COLD		BOLT TORQUE SPECIFICATIONS (FT. LBS.)										CRANKCASE OIL CAPACITY	RUNNING SPARK ADVANCE (See "Ignition System" Notes 1 - 4)	MAXIMUM ENGINE OPERATING R.P.M.
					INLET	EXHAUST	CON. ROD	CYL. BLOCK/CENTER MAIN TO C'CASE	CYL. HEAD	ENGINE BASE	GEAR COVER	MANIFOLD	MAIN BEARING PLATE	SPARK PLUG	FLYWHEEL	ROPE SHEAVE			
S7D, HS7D	3.0005 - 2.9995	.004 - .0045 CG ^a	1.3760 - 1.3755	.0007 - .0015	.006	.012	22	-	18	-	8	-	Stator Plate 8	30	-	10	2 PTS	15°	3600
S8D, HS8D TR10D, TRA10D TRA12D	3.1255 - 3.1245 3.5005 - 3.4995	.004 - .0045 CG ^a .0025 - .003 CG ^a	1.3760 - 1.3755	.0007 - .0015	.006	.012 .015	22	-	18	-	8	-	Stator Plate 8	30	-	10	2 PTS	18° 20°	3600
S10D S12D S14D	3.2505 - 3.2495 3.5005 - 3.4995 3.7505 - 3.7495	.0025 - .003 CG ^a .0025 - .004 CG ^a	1.4990 - 1.4984	.0005 - .0015 ^b	.007	.016	22	50	32	-	22	-	Stator Plate 18	30	-	10	2 QTS	18°	3600
ACN, HACN	2.625 - 2.624	.0025 - .0035 CG ^a .006 - .0065 CS ^a	1.001 - 1.000	.0007 - .002 .0003 - .0021 ^b	.008	.014	20	-	18	8	-	-	12	30	-	-	(ACN) - 2 PTS (HACN) - 1-3/4 PTS	17°	3600
AKN, BKN, HBKN	2.875 - 2.874	.0025 - .0035 CG ^a .006 - .0065 CS ^a	1.001 - 1.000	.0007 - .002 .0003 - .0021 ^b	.008	.014	20	-	18	8	-	-	12	30	-	-	(AKN) - 1-3/4 PTS (BKN) - 2 PTS (HBKN) - 1-3/4 PTS	17°	3600
AEH	3.0005 - 2.9995	.004 - .0045 SS ^a 3000 RPM and ABOVE .0065 - .007 SS ^a	1.126 - 1.125	.0007 - .002 .0011 - .0035 ^b	.008	.016	20	78	32	32	-	18	32	30	-	-	2-1/2 PTS	25°	3200
AEN, AENL HAENL	3.0005 - 2.9995	.003 - .0035 CG ^a .0045 - .005 SS ^a	1.126 - 1.255	.0007 - .002 .0011 - .003 ^b	.008	.016	20	-	32	9	-	9	22	30	-	-	AENL - 3 PTS HAENL - 2-1/2 PTS	20°	3600
AGND	3.5005 - 3.4995	.0035 CG ^a	1.751 - 1.750	.0013 - .002 .0012 - .0035 ^b	.008	.016	32	50	32	78	-	18	22	30	-	-	7 PTS	20°	3200
AHH	3.625 - 3.624	.0055 - .006 SS ^a	1.376 - 1.375	.0007 - .002	.008	.016	30	78	32	78	-	32	32	30	-	-	4-1/2 PTS	25°	2200
TE,TF (TE) 3.00 (TF) 3.250 - 3.249		.0032 - .0037 CG ^a	1.751 - 1.750	.0007 - .002	.011 - .013	.011 - .013	22 - 24						24 - 26				3-1/2 QTS	(TE, TF) 27°	(TE, TF, TH) 2600
TH,THD, THDM	3.250 - 3.249	.004 - .0045 SS ^a		.0012 - .0034 ^b	.008	.016	22 - 28	32 - 34	22 - 24	22 - 24	16 - 18	26	20 - 22	24 - 26			3-1/2 QTS	(TH, THD, THDM) 20°	(THD, THDM) 3600
TJD, W2-880	3.250 - 3.249	.0025 - .003 CG ^a	1.8764 - 1.8756	.0008 - .0029 ^b	.008	.016	22 - 28	45 - 50	22 - 24	22 - 24	16 - 18	15	20 - 22	25 - 30	95 - 110	-	3-1/2 QTS	20°	3600
VE4, VE4D	3.000 - 2.999	.004 - .0045 SS ^a	1.751 - 1.750	.0007 - .002 .0012 - .0034 ^b	.008	.016	28	50	24	9	18	18	30	30	-	-	3-1/2 QTS OIL FILTER 1/2 QT ^d	27°	2400
VF4, VF4D	3.250 - 3.249	.0035 - .004 CG ^a .004 - .0045 SS ^a	1.751 - 1.750	.0007 - .002 .0012 - .0034 ^b	.008	.016	28	50	24	9	18	18	30	30	-	-	3-1/2 QTS OIL FILTER 1/2 QT ^d	27°	2400
VG4D	3.499 - 3.498	.0037 - .0042 CG ^a .004 - .005 SS ^a	2.126 - 2.125	.0015 - .0028 .0013 - .0035 ^b	.008	.016	28 - 32	58 - 62	28 - 32	8 - 11	16 - 18	32 - 35	25 - 30	25 - 30	95 - 110	-	5 QTS	23°	2400
VH4, VH4D, VH4DM W4-1770, W41770E	3.250 - 3.249	.003 - .004 CG ^a	1.876 - 1.875	.0007 - .002 .0012 - .0033 ^b	.008	.016	22 - 28	45 - 50	22 - 24	8 - 11	16 - 18	16 - 18	25 - 30	25 - 30	95 - 110	-	3-1/2 QTS OIL FILTER 1/2 QT ^d	23°	2800 (W4-1770) 3000
VR4D	4.250 - 4.249	.006 - .0065 CG ^a .005 - .0055 SS ^a	2.7505 - 2.7500	.002 - .0028	.008	.016	45	110	32	20	20	30	30	30	-	-	8 QTS	20°	2200
V460D, V461D	3.499 - 3.498	.0025 - .003 CG ^a	2.1233 - 2.1238	.0005 - .0018 ^b	.008	.014	32	CENTER BRG HANGER 15 60 CAP (ROLLER BRG) 40	30	18	18	UPPER TO LOWER 15 TO CYL HEAD 25	32	22	-	-	6 QTS OIL FILTER 1 QT ^d	23°	3000
V465D, V465E	3.749 - 3.748	.0025 - .003 CG ^a	2.1233 - 2.1238	.0005 - .0018 ^b CENTER BRG SHELL .0013 - .0038	.008	.014	28 - 32	Center Brg ^c Hanger 74 - 76 Cap 32 - 35	Alternate In 3 Steps 8 - 10 18 - 20 27 - 30	8 - 11	16 - 18	Upper/Lower 13 - 15 to Cyl. Head 23 - 25	28 - 32	20 - 22	95 - 110	-	6 QTS OIL FILTER 1 QT ^d	23°	3000
W2-1230 W2-1235 W2-1250	3.750 ± .0005	.0025 - .0035 CG ^a	2.099 - 2.100	.0011 - .0036 ^b	.007	.020	32 - 36	Cyl. Block Nut 45 - 50 Capscrew 28 - 32	Studs 32 - 36 Capscrews 45 - 47	12 - 14	16 - 18	16 - 18	28 - 32	20 - 22	112-118	-	3-1/2 QTS OIL FILTER 1/2 QT ^d	6° BTDC at 1800 RPM or 20° BTDC at 3400 RPM	3600

FOOTNOTES

- ^a CG is Cam Ground; CS is Concentric Skirt; SS is Split Skirt
- ^b Shell Bearing to Crankpin Clearance (Vertical)
- ^c Engines built prior to serial No. 6089642 Center Brg Torque is 60 Ft-Lbs
- ^d Additional oil when replacing filter.

CRANKCASE, CRANKSHAFT AND MAIN BEARING

1. Cylinders Worn .005" or more over Standard Size, Rebore, Hone and Fit with Oversize Piston and Rings.
2. Crankshaft End Play: .002 to .005" (Cold), (W2-1230, W2-1235, W2-1250, .005 to .012)
3. W2-1230, W2-1235 & W2-1250 Main Bearing Clearance: .002 to .005" - Connecting Rod Side Clearance .009 to .018" - Piston Ring End Gap .010 to .020".
4. W4-1770 3rd Bearing Housing to Crankcase Torque 40-45 Foot Pounds.

COMMON SPECIFICATIONS FOR ALL MODELS

PISTONS

1. Piston Pin to Piston: .0000 to .0008" Tight (W2-1230, W2-1235 & W2-1250 = .0005 to .0008 Loose).
2. Piston Pin to Connecting Rod: .0005 to .001" (ACN, BKN, S7D, H8D, TR10D, TRA12D = .0002 to .0008) (W2-1230, W2-1235 & W2-1250 = .0006 to .0015 Tight).

IGNITION SYSTEM

1. Spark Advance Check for Distributor/Ignition Timers: Engine must be running at 2000 RPM or above.
2. Breaker Point Gap: Distributor = .020", Magneto = .015".
3. Timing for Models S7D, HS7D, S8D, S10D, S12D, S14D, TR10D, & TRA10D is set by adjusting breaker point gap, preferably with a continuity light or ohmmeter. For correct procedure see "TIMING" section in repair manuals.
4. Breakerless Ignition (not adjustable): standard on TRA12D, optional on S10D, S12D & S14D.
5. Spark Plug Gap = .030".

VALVES

1. Valve Face and Valve Seat Angle: 45°
2. VALVE STEM TO GUIDE CLEARANCE: .003 to .005" For All Models Except: ACN-BKN, V460D, V461D, V465D, VR4D = .002 to .004" EXHAUST ONLY - S7D, HS7D, S8D, HS8D, TR10D, TRA10D, TRA12D = .002 to .004" (W2-1230 = .003 to .005"). INLET ONLY - S7D, HS7D, S8D, HS8D, S10D, S12D, S14D, TR10D, TRA10D, TRA12D, W2-1230 = .001 to .003" When Clearance Becomes .002" Over High Limit, Replace Guides.

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