

Oil Filter

Some engines are equipped with an oil filter. Replace the oil filter every other oil change, in accordance with the "Oil Change Intervals" table. Always use a genuine Kohler replacement oil filter.

Refer to the "Periodic Maintenance" section for detailed oil checking and changing procedures.

Do not use gasoline left over from the previous season, to minimize gum deposits in your fuel system and to insure easy starting.

Do not add oil to the gasoline.

Do not overfill the fuel tank. Leave room for the fuel to expand.

FUEL RECOMMENDATIONS

WARNING: Explosive Fuel!



Gasoline is extremely flammable and its vapors can explode if ignited. Store gasoline only in approved containers, in well-ventilated, unoccupied buildings, away from sparks or flames. Do not fill the fuel tank while the engine is hot or running, since spilled fuel could ignite if it comes in contact with hot parts or sparks from ignition. Do not start the engine near spilled fuel. Never use gasoline as a cleaning agent.

Fuel Type

For best results, use only clean, fresh, unleaded gasoline with a pump sticker octane rating of 87 or higher. In countries using the Research method, it should be 90 octane minimum.

Unleaded gasoline is recommended, as it leaves less combustion chamber deposits. Leaded gasoline may be used in areas where unleaded is not available and exhaust emissions are not regulated. Be aware however, that the cylinder head will require more frequent service.

Gasoline/Alcohol blends

Gasohol (up to 10% ethyl alcohol, 90% unleaded gasoline by volume) is approved as a fuel for Kohler engines. Other gasoline/alcohol blends are not approved.

Gasoline/Ether blends

Methyl Tertiary Butyl Ether (MTBE) and unleaded gasoline blends (up to a maximum of 15% MTBE by volume) are approved as a fuel for Kohler engines. Other gasoline/ether blends are not approved.

General Recommendations

Purchase gasoline in small quantities and store in clean, approved containers. A container with a capacity of 2 gallons or less with a pouring spout is recommended. Such a container is easier to handle and helps eliminate spillage during refueling.

OVERALL DIMENSIONS

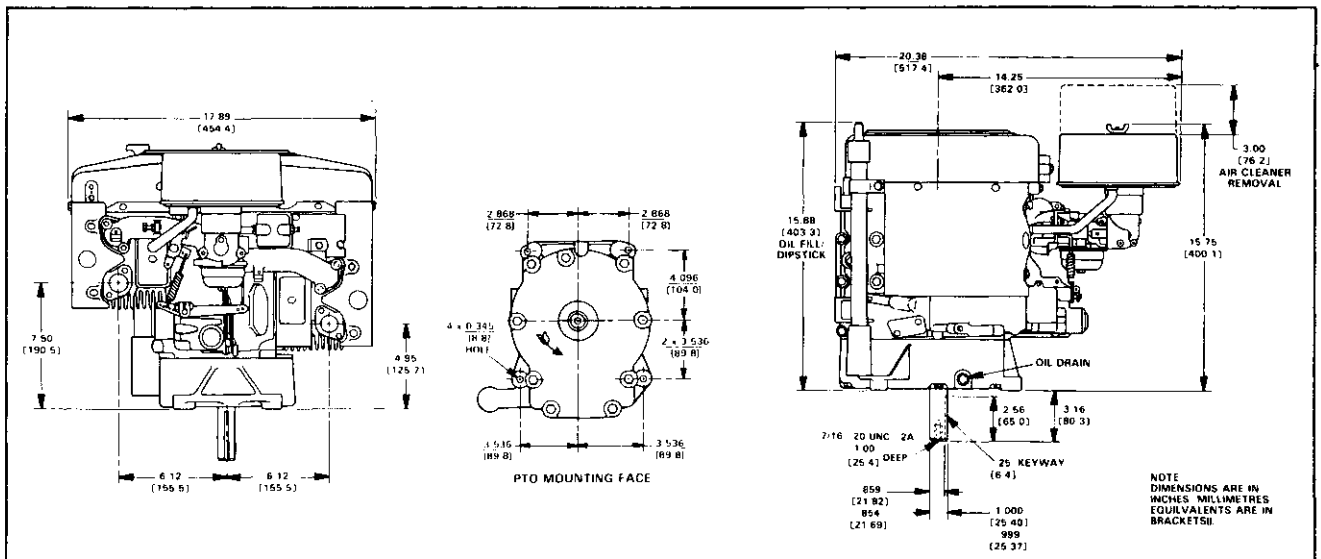


Figure 1-5. Overall Dimensions - Models MV16, MV18 and MV20.

STANDARD TORQUE VALUES¹

Bolts, Screws, Nuts, and Fasteners Assembled Into Cast Iron or Steel



Size	Grade 2	Grade 5 ³	Grade 8
#8-32	20 in. lb.	25 in. lb.	—
#10-24	32 in. lb.	40 in. lb.	—
#10-32	32 in. lb.	40 in. lb.	—
1/4-20	70 in. lb.	115 in. lb.	165 in. lb.
1/4-28	85 in. lb.	140 in. lb.	200 in. lb.
5/16-18	150 in. lb.	250 in. lb.	350 in. lb.
5/16-24	165 in. lb.	270 in. lb.	30 ft. lb.
3/8-16	260 in. lb.	35 ft. lb.	50 ft. lb.
3/8-24	300 in. lb.	40 ft. lb.	60 ft. lb.
7/16-14	35 ft. lb.	55 ft. lb.	80 ft. lb.
7/16-20	45 ft. lb.	75 ft. lb.	105 ft. lb.
1/2-13	50 ft. lb.	80 ft. lb.	115 ft. lb.
1/2-20	70 ft. lb.	105 ft. lb.	165 ft. lb.
9/16-12	75 ft. lb.	125 ft. lb.	175 ft. lb.
9/16-18	100 ft. lb.	165 ft. lb.	230 ft. lb.
5/8-11	110 ft. lb.	180 ft. lb.	260 ft. lb.
5/8-18	140 ft. lb.	230 ft. lb.	330 ft. lb.
3/4-10	150 ft. lb.	245 ft. lb.	350 ft. lb.
3/4-16	200 ft. lb.	325 ft. lb.	470 ft. lb.

Bolts, Screws, Nuts, and Fasteners Assembled Into Aluminum



Size	Grade 2	Grade 5	Grade 8
#8-32	20 in. lb.	20 in. lb.	20 in. lb.
#10-24	32 in. lb.	32 in. lb.	32 in. lb.
1/4-20	70 in. lb.	70 in. lb.	70 in. lb.
5/16-18	150 in. lb.	150 in. lb.	150 in. lb.

Oil Drain Plugs⁴

Size	Into Cast Iron Pans	Into Aluminum Pans
1/4"	150 in. lb.	100 in. lb.
3/8"	180 in. lb.	120 in. lb.
1/2"	20 ft. lb.	13 ft. lb.
3/4"	25 ft. lb.	16 ft. lb.
X-708-1 ⁵	20/25 ft. lb.	20/25 ft. lb.

Conversions

ft. lb. = in. lb. x 12
in. lb. = ft. lb. ÷ 12
kgm = ft. lb. x 0.1383
Nm. = ft. lb. x 1.3558

SPECIFICATIONS, TOLERANCES, AND SPECIAL TORQUE VALUES²

General	Model MV16	Model MV18	Model MV20
Horsepower (@ 3,600 rpm)	16	18	20
Displacement (cu. in.)	42.18	42.18	46.98
Bore	3.12	3.12	3.12
Stroke	2.75	2.75	3.06
Compression Ratio	5.8:1	6.0:1	6.0:1
Approx. Weight (lb.)	130	130	130
Approx. Oil Capacity* Engines Without Filter(U.S. Quarts)	1.75	1.75	1.75

*For best results, fill to "F" mark on dipstick as opposed to adding a given quantity of oil. Always check level on dipstick before adding more oil. On engines equipped with oil filter, an additional 1/2 U.S. pint of oil is required when oil filter is replaced.

	Model MV16	Model MV18	Model MV20
Angle of Operation - Maximum (At Full Oil Level; Intermittent Operation)			
Carb. Side Up	30°	30°	30°
Carb. Side Down	30°	30°	30°
#1 Cylinder Up	25°	25°	25°
#1 Cylinder Down	25°	25°	25°
Camshaft			
End Play .....	.003/.013	.003/.013	.003/.013
Camshaft to Camshaft Bearing Running Clearance .....	.0010/.0025	.0010/.0025	.0010/.0025
Carburetor			
Preliminary Idle Fuel Screw Setting (Turns)	1¼	1¼	1¼*
Float Level .....	.690/.720	.690/.720	.690/.720
Throttle Plate/Choke Plate Retaining Screw Torque (in. lb.)	8/12	8/12	8/12
Main Fuel Jet Torque (in. lb.)	12/16	12/16	12/16
Bowl Retaining Scw Torque (in. lb.)	45/55	45/55	45/55
Connecting Rod (Posi-Lock)			
New Service Rod Nut Torque (in. lb.) ^{4, 6}	140	140	140
Used Rod Nut Torque (in. lb.) ^{4, 6}	100	100	100
Rod to Crankpin Running Clearance - New .....	.0012/.0024	.0012/.0024	.0012/.0024
Rod to Crankpin Max. Wear Limit .....	.0029	.0029	.0029
Rod to Piston Pin Running Clearance - New .....	.0006/.0011	.0006/.0011	.0006/.0011
Rod Side Play on Crankpin .....	.005/.016	.005/.016	.005/.016
Crankcase/Cylinder Barrel			
Intake and Exhaust Manifold Fastener Torque (in. lb.)	150	150	150
Oil Pan Fastener Torque (in. lb.) ⁷	150	150	150
Cylinder Barrel Nut Torque (in. lb.) ⁷	200	200	200
Crankcase Nut Torque (in. lb.) ⁷	260	260	260
5/16" Crankcase Screw Torque (in. lb.) ⁷	200	200	200
3/8" Crankcase Screw Torque (in. lb.) ⁷	260	260	260
Crankshaft			
Crankshaft End Play .....	.002/.014	.002/.014	.002/.014
Main Bearing Surface Max. Wear Limit	1.7407	1.7407	1.7407
Sleeve Bearing Max. Out of Round .....	.0005	.0005	.0005
Sleeve Bearing Max. Taper .....	.001	.001	.001
New Sleeve Bearing Max. Running Clearance .....	.0049	.0049	.0049
Sleeve Bearing Running Clearance Max. Wear Limit .....	.0059	.0059	.0059
New Sleeve Bearing I.D. (installed)	1.7439/1.7461	1.7439/1.7461	1.7439/1.7461
Crankpin O.D. - New	1.3733/1.3738	1.3733/1.3738	1.4993/1.4998
Crankpin O.D. Max. Wear Limit	1.3728	1.3728	1.4988
Crankpin O.D. Max. Out of Round .....	.0005	.0005	.0005
Crankpin O.D. Max. Taper .....	.001	.001	.001
Cylinder Bore			
I.D. - New	3.1245/3.1255	3.1245/3.1255	3.1245/3.1255
I.D. Max. Wear Limit	3.128	3.128	3.128
I.D. Max. Out of Round .....	.002	.002	.002
I.D. Max. Taper .....	.0015	.0015	.0015

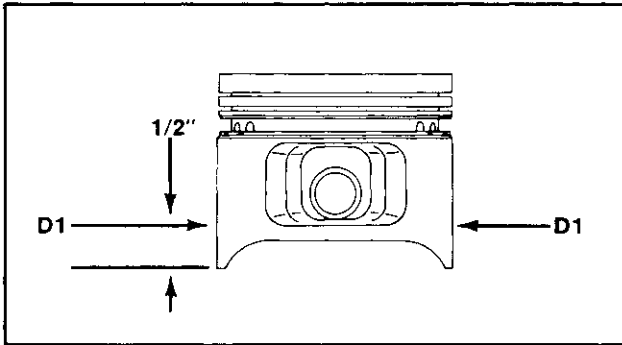
*1 turn for High Idle on Walbro Adjustable Jet Carburetor.

	Model MV16	Model MV18	Model MV20
Cylinder Head			
Cap Screw Torque (ft. lb.) ⁷	15/20	15/20	15/20
Max. Out of Flatness .....	.003	.003	.003
Fan/Flywheel			
Fan Fastener Torque (in. lb.)	115	115	115
Flywheel Fastener Torque (ft. lb.) ⁴	40	40	40
Fuel Pump			
Mounting Screw Torque (in. lb.)	40/45	40/45	40/45
Ignition			
Ignition Module to Magnet Air Gap .....	.008/.012	.008/.012	.008/.012
Spark Plug Type (Champion® or Equiv.)	RV15YC	RV15YC	RV15YC
Spark Plug Gap	0.025	0.025	0.025
Spark Plug Torque (ft. lb.)	10/15	10/15	10/15
Oil Fill/Oil Filter¹⁰			
Engine Mtd. Filter Adapter Fastener Torque (in. lb.)	125	125	125
Remote Oil Filter Cover Fastener Torque (in. lb.)	125	125	125
Remote Oil Line Fitting Nut Torque (in. lb.)	65/80	65/80	65/80
Remote Oil Line Reducing Connector Torque (in. lb.)	65/80	65/80	65/80
Remote Oil Line Flare Nut Torque (in. lb.)	100/120	100/120	100/120
Remote Oil Filter Adapter Fitting Torque (in. lb.)	90/130	90/130	90/130
Oil Filter Installation Torque (in. lb.)	50/80	50/80	50/80
Oil Filter Bypass Cover Fastener Torque (in. lb.)	125	125	125
Oil Pump			
Pump Shaft to Crankcase Running Clearance .....	.0010/.0026	.0010/.0026	.0010/.0026
Pump Drive Gear End Play .....	.010/.029	.010/.029	.010/.029
Piston and Piston Rings (Style "D" Pistons)			
Thrust Face O.D. @ D1 - New ⁹	3.1203/3.1210	3.1203/3.1210	3.1203/3.1210
Thrust Face O.D. @ D1 - Max. Wear Limit ⁹	3.1181	3.1181	3.1181
Thrust Face to Bore Clearance @ D1 - New ⁹ .....	.0035/.0052	.0035/.0052	.0035/.0052
Piston Ring End Gap - New ⁹ .....	.010/.023	.010/.023	.010/.023
Piston Ring End Gap - Used (Max.) ⁸ .....	.032	.032	.032
Piston Ring Side Clearance - Max. ....	.006	.006	.006
Piston Pin O.D. - New .....	.6247/.6249	.6247/.6249	.7499/.7501
Valves and Tappets			
Intake Valve to Tappet Clearance - Cold	See Page 3.6		
Exhaust Valve to Tappet Clearance - Cold	See Page 3.6		
Intake Valve Minimum Lift - Zero Lash .....	.274	.274	.274
Exhaust Valve Minimum Lift - Zero Lash .....	.274	.274	.274
Intake Valve Minimum Stem O.D. ....	.3103	.3103	.3103
Exhaust Valve Minimum Stem O.D. ....	.3088	.3088	.3088
Nominal Valve Seat Angle (Intake & Exhaust)	45° & 30°	45° & 30°	45° & 30°
Valve Guide Reamer Size .....	.3125	.3125	.3125
Intake Valve Guide I.D. Max. Wear Limit .....	.005	.005	.005
Exhaust Valve Guide I.D. Max. Wear Limit .....	.007	.007	.007

Notes:

1. Use standard torque values when specific values are not given. Standard values have a tolerance of $\pm 20\%$.
2. All dimensions are in inches unless otherwise specified.
3. Also applies to self-tapping screws.
4. Lubricate with oil at assembly.
5. 3/8-16 thread with hex head nut and fiber gasket.

-
6. Torque in increments to the value specified. Do not overtorque—loosen—and retorque hex nuts on Posi-Lock connecting rods.
 7. Refer to the "Reassembly" section for instructions and tightening sequence.
 8. Top and center compression rings.
 9. Measurements @ D1 on Style "D" pistons are made perpendicular to piston pin in the position shown.



10. Refer to the "Lubrication System" section for additional information.