

Universal

OPERATION AND MAINTENANCE MANUAL

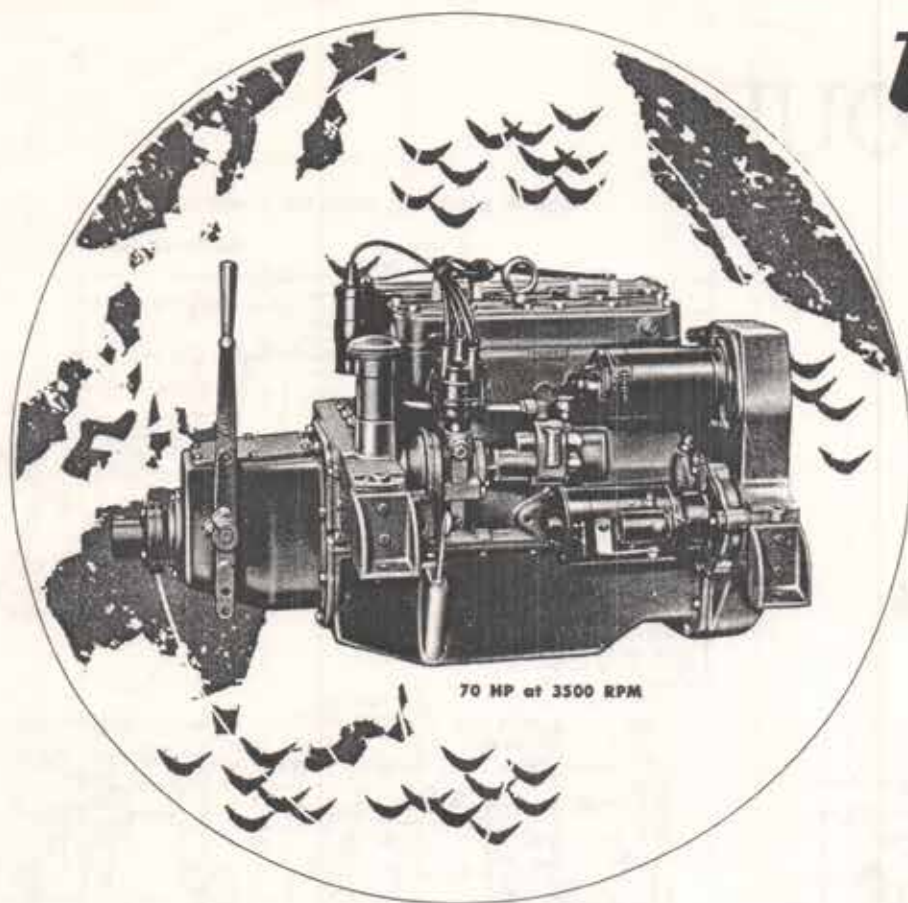
100% MARINE ENGINE
SINCE 1898 • OSHKOSH, WISCONSIN

UNIVERSAL MOTOR COMPANY •

Universal
of Oshkosh

UNIMITE FOUR

SMALL... FLASHY
DEPENDABLE POWER
THE FOUR WITH A
LITTLE MORE!



UNIMITE FOUR

General: L head type, 4 cylinder, 4 cycle, 3¼" bore, 4¼" stroke, 141 cubic inch displacement, 70 H.P. @ 3500 rpm.

Cylinders: Special alloy iron. Cylinder block and crankcase are cast in one piece. Water jacketed the full length of the bore.

Cylinder Head: Special alloy iron, with specially designed combustion chambers, ribbed for maximum heat dissipation. Detachable.

Connecting Rods: Drop-forged, heat treated steel. Precision shell replaceable insert bearings of the TRI-METAL type.

Crankshaft: Three bearing, drop-forged heat treated steel. Dynamically balanced. Crank pin and main bearing surfaces are TOCCO hardened.

Main Bearings: Three bearings of the precision shell replaceable insert type.

Lubrication: Full pressure lubrication. Oil pressure adjustment is located on outside of the engine.

Manifold: Exhaust and intake manifolds incorporated into one casting. Completely water jacketed and arranged for exhaust openings at either end. Removable exhaust outlet flange tapped for 2" I.P.S.

Water Pump: Gear driven bronze type pump, with helical cut pump gears. Reservoir type for quick priming. Equipped with packless water seal. . . . Water inlet tapped for ½" I.P.S. Rubber impeller pump available at slight additional cost.

Hand Sump Pump: Exclusive Universal built-in type for easy removal of oil.

Tachometer Connection: S.A.E. marine standard, running at one-half engine speed. Counter-clockwise rotation.

Carburetor: Zenith safety non-drip type updraft with upturned air horn, and fitted with Zenith B.M.I.N. approved type flame arrester and crankcase breather tube.

Electrical System: 12 volt system standard. Generator and starting motor fully enclosed marine type. Starter equipped with solenoid for remote starting. Distributor has full automatic advance. Shunt type generator equipped with automatic voltage regulator. Six volt system available at slight additional cost. 12 volt 40 or 60 ampere alternator available in place of regular generator.

Propeller Rotation: Right hand propellers for direct drive, reduction drive, and Aqua-Pak V-drive models.

Propeller Coupling: Standard — 1" direct drive, 1¼" reduction drive, ¾" Aqua-Pak V-drive 1:1 and 1.29:1, 1½" Aqua-Pak V-drive 1.67:1 and 2:1. Other sizes optional.

Reversing Gear: Oversize ball bearing type, pressure lubricated from metering hole in crankshaft. Ball bearing operating collar takes the load of the control linkage. Large radial and thrust ball bearing for propeller thrust. Reverse gear band with molded asbestos lining, unaffected by oil, provides longer life with less frequent adjustments.

Reduction Gears: Single step, internal helical cut gear and pinion type, mounted on ball bearings and pressure lubricated from the engine oil supply. Self-adjusting oil seal on the propeller coupling. Available in ratio of 2.04 to 1.

Standard Equipment: Propeller shaft coupling, rubber mountings, reverse gear lever, threaded exhaust flange, fuel pump with hand primer, built-in hand sump pump, lifting eye, crankcase breather, flame arrester, oil bayonet gauge, tachometer connection, instruction book.

Optional Equipment: (Available at slight additional cost) 3 unit or 5 unit instrument panel, power take-off pulley on flywheel, on-board spare parts kit, electric choke, water cooled exhaust elbow, oil filter, hand starting crank, tachometer drive connection, 40 or 60 ampere alternator in place of regular generator, rubber impeller water pump and automatic temperature control.

• Looking for blazing speed . . . flashing power . . . four cylinder economy? The Unimite Four is the engine for you! This little four cylinder, 141 cubic inch piston displacement marine engine packs 70 hardworking horsepower in less than 32 overall inches. You get real economy . . . big engine power . . . and Universal space saving advanced design.

The new Unimite Four has added refinements . . . new equipment options . . . features that are all Universal — like the built in hand sump pump. It is offered in direct drive, reduction drive and Aqua-Pak V-drive models . . . even shorty models for use with the popular inboard-outboard drives.

For runabouts, utilities, small cruisers and work boats, as well as in large auxiliaries, the Unimite Four is equally at home. Wherever there is need for an abundance of usable horsepower in capsule form it is the place for the Unimite Four. Modern . . . Sturdy . . . Economical. You choose wisely when you select the Unimite Four Marine Engine for your boat.

Models and Weights

Model	Code	Description	Net Weight	Domestic Shipping Weight	Export Shipping Weight
HF	UNEDA	Direct Drive	431	549	685
HFR	UNABO	Reduction Drive 2:1 Ratio	460	590	723
HF-VD	UNAPK	Aqua-Pak V-Drive	469	600	718
HF-B	UNOBI	Less reverse gear	355	470	594

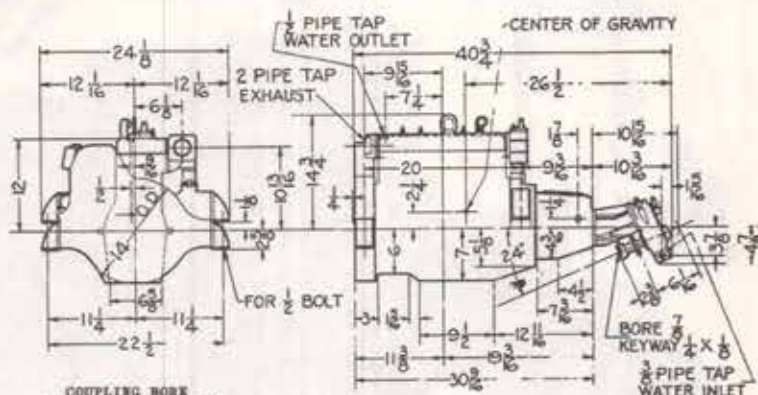
THE UNIMITE FOUR

INSTALLATION DIMENSIONS

Scale 1/2" = 1'

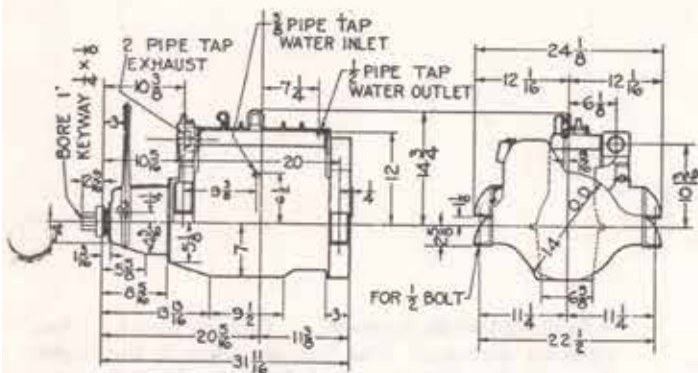
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V-DRIVE: RATIOS 1:1, 1.29:1, 1.67:1, AND 2:1

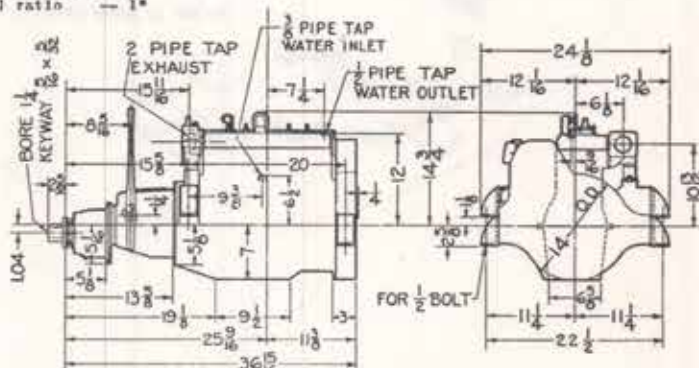


COUPLING BORE

1:1 ratio	7/8"
1.29:1 ratio	7/8"
1.67:1 ratio	1"
2:1 ratio	1"



DIRECT DRIVE
RIGID AND RUBBER MOUNTING



2:04 TO 1 REDUCTION DRIVE
RIGID AND RUBBER MOUNTING

The right is reserved to change specifications without incurring any obligation.

Propeller Data:

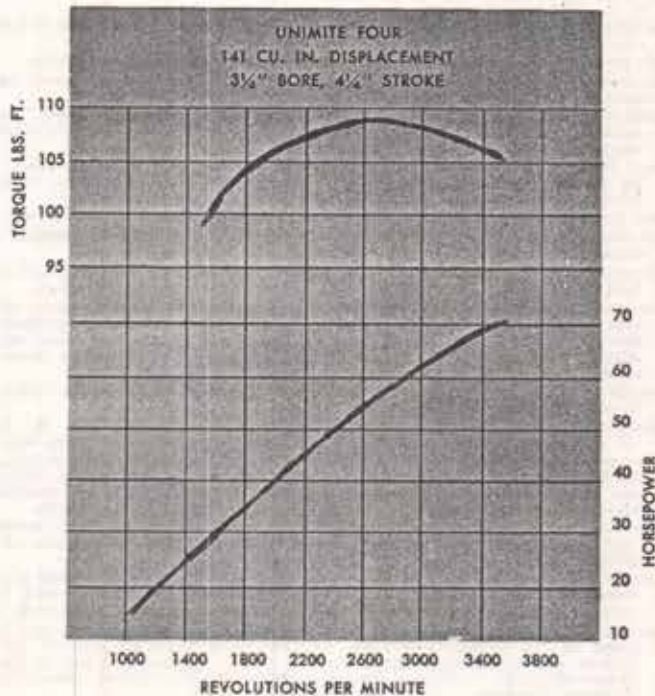
Type of Boat	Direct Drive	Reduction Drive (2:1 Ratio)
Light Boats	10 x 13	16 x 15
Heavy Boats	13 x 8	18 x 11
Auxiliaries	16 x 8 (2 blade)	18 x 13 (2 blade)

Propellers listed are suggested for average boats and not necessarily recommended for all hulls. If in doubt, write factory for specific recommendations.

Universal FAMOUS FOR
of Oshkosh MARINE ENGINES
SINCE 1898

One of the growing J. M. Nash Companies

OSHKOSH, WIS., U.S.A. 54902



GENERATORS AND STARTERS



AUTOLITE

MARINE CATALOG

MAKE AND MODEL	ORIGINAL GENERATOR OR ALTERNATOR	REGU-LATOR	BRUSH SET	BEARING C. E. HEAD (REAR)	ORIGINAL STARTER	SWITCH OR KIT	BRUSH SET
UNIVERSAL (Marine) Continued							
UJ (Atomic Four) (L.H. Rot.)	GAS-4193	9-11	11-21	64-16	MZ-4153	15-125	17-33
	GAS-4196	9-4	11-21	64-16	MZ-4153	15-125	17-33
Z Series (Super Six)							
(12V) (L.H. Rot.)	GDB-4807-2N	9-40	11-14	24-3	MAU-4027	15-60	17-2
(12V) (R.H. Rot.)	GDB-4806-2N	9-40	11-14	24-3	MAU-4026	15-60	17-2
(12V) (L.H. Rot.)	GHW-4803	8-137	11-11	24-5	MAU-4046	15-60	17-2
(12V) (R.H. Rot.)	GHW-4804	8-137	11-11	24-5	MAU-4047	15-60	17-2
Optional (6V) (L.H. Rot.)	GFA-4837-2	9-4	11-17	24-3	MAB-4119	15-125	17-1
Optional (6V) (R.H. Rot.)	GFA-4836-2	9-4	11-17	24-3	MAB-4109	15-125	17-1
Atomic Four (12V)	GJU-7204S	8-148	11-22	24-9	MBG-4129	N. A.	17-14
Blue Jacket Twin (6V) (L.H. Rot.)	GFA-4901-2	9-5	11-17	64-4	MAK-4026	15-125	17-4
Arrow, Bluefin, Bullet, Knight, Marlin, Tarpon (12V) (L.H. Rot.)	GEF-5001	8-130	11-27	24-5	MAU-4046	15-60	17-2
(12V) (R.H. Rot.)	GEF-5002	8-130	11-27	24-5	MAU-4047	15-60	17-2
Explorer Six, Master Six, Super Six (12V) (L.H. Rot.)	GHW-4803	8-137	11-11	24-5	MAU-4046	15-60	17-2
Little King (12V)	ALE-5202 (25)	8-418	11-47	(26)	-	-	-
Super Four (6V)	GFA-4902-2	9-5	11-17	64-4	MAW-4040	15-125	17-8
Unimite Four (6V)	GFA-4837-2	9-4	11-17	24-3	MZ-4135	15-125	17-33
Utility Four (6V)	GFA-4901-2	9-5	11-17	64-4	MZ-4135	15-125	17-33
(12V)	GJU-7204S	8-148	11-22	24-9	MBG-4131	15-60	17-14
WEST BEND							
25 HP (1961-62)	-	-	-	-	MDO-4004M	N. A.	17-40
25 HP (1963)	-	-	-	-	MDW-4005M	N. A.	17-40
40 HP (1961-62)	-	-	-	-	MDO-4004M	N. A.	17-40
40 HP (1963)	-	-	-	-	MDW-4005M	N. A.	17-40
80 HP (1961)	-	-	-	-	MDW-4004M (39)	N. A.	17-44
80 HP (1962)	-	-	-	-	MGA-4001	N. A.	17-44
80 HP (1963)	-	-	-	-	MDW-4005M (39)	N. A.	17-44

(25) Alternator-Positive Rectifier 35-467, Negative Rectifier 35-468.

(26) Rotor & Bearing Assy. 10-405.

(39) 63-37 Jack Shaft Assembly used.



AUTOLITE

MARINE CATALOG

MAKE AND MODEL	ORIGINAL DISTRIBUTOR	POINT SET		CONDENSER	CAP	ROTOR	IGNITION COIL
		2-PIECE	ASSEMBLED				
STAR (Marine)							
Emperor 4-25 (4 Cyl.)	IGW-4022	1-31	N. A.	2-35	3-14	4-12	5-8 ⁽²⁾
Emperor 4-55 (4 Cyl.)	IAY-4010	1-22	1-45	2-33	3-5	4-1	5-8 ⁽²⁾
Emperor 6-95, 6-125, 6-145 (6 Cyl.)	IGW-4124	1-31	N. A.	2-35	3-20	4-15	5-8 ⁽²⁾
Star Jeep (Willys) (4 Cyl.)	IGW-4129A-2	1-31	N. A.	2-35	3-21	4-15	5-8 ⁽²⁾
UNIVERSAL (Marine)							
AFTL (Twin)							
(L. H. Rot.) (2 Cyl.)	IGW-4163B	1-31	N. A.	2-35	3-15	4-12	5-8 ⁽¹⁾⁽¹⁰⁾
AMS (All American Six)							
(L. H. Rot.) (6 Cyl.)	IGW-4113D	1-31	N. A.	2-35	3-20	4-15	5-8 ⁽¹⁾⁽¹⁰⁾
BFA, BFS, FA Flexifour, BR (Racing)							
(L. H. Rot.) (4 Cyl.)	IGW-4116A	1-31	N. A.	2-35	3-21	4-15	5-8 ⁽¹⁾⁽¹⁰⁾
BN (Utility Four)							
(L. H. Rot.) (4 Cyl.)	IGW-4130A	1-31	N. A.	2-35	3-21	4-15	5-8 ⁽¹⁾⁽¹⁰⁾
HCS (Cruiser Six), LHS (Sea Lion Six)							
(L. H. Rot.) (6 Cyl.)	IGC-4287A	1-31	N. A.	2-34	3-9	4-8	5-10 ⁽¹⁾
(L. H. Rot.)	IGC-6002-2B	1-22	1-45	2-34	3-23	4-19	5-10 ⁽¹⁾
HF (Her. IXB)							
(L. H. Rot.) (4 Cyl.)	IGW-4152	1-31	N. A.	2-35	3-21	4-15	5-8 ⁽²⁾
(L. H. Rot.)	IGW-4152-B	1-31	N. A.	2-35	3-21	4-15	5-8 ⁽¹⁾⁽¹⁰⁾
LSG (Super Four)							
(L. H. Rot.) (4 Cyl.)	IGW-4116C	1-31	N. A.	2-35	3-21	4-15	5-8 ⁽¹⁾⁽¹⁰⁾
OK, OL Series							
(L. H. Rot.) (6 Cyl.)	IAY-4009-1A	1-22	1-45	2-33	3-3	4-1	5-8 ⁽¹⁾⁽⁹⁾⁽¹⁰⁾
(R. H. Rot.)	IAY-4009-1	1-22	1-45	2-33	3-3	4-1	5-8 ⁽¹⁾⁽⁹⁾⁽¹⁰⁾
UJ (Atomic Four)							
(L. H. Rot.) (4 Cyl.)	IGW-6003-2	1-31	N. A.	2-35	3-21	4-15	5-8 ⁽¹⁾⁽¹⁰⁾
Z (Super Six)							
(L. H. Rot.) (6 Cyl.)	IGC-4279	1-31	N. A.	2-34	3-9	4-8	5-10 ⁽¹⁾
(L. H. Rot.)	IGC-4279A	1-31	N. A.	2-34	3-9	4-8	5-10 ⁽¹⁾
(L. H. Rot.)	IAY-4009-1A	1-22	1-45	2-33	3-3	4-1	5-10 ⁽¹⁾
(R. H. Rot.)	IAY-4009-1	1-22	1-45	2-33	3-3	4-1	5-10 ⁽¹⁾⁽¹⁰⁾
Atomic Four (4 Cyl.)	IGW-6003-2D	1-31	N. A.	2-35	3-21	4-15	5-10 ⁽¹⁾⁽⁶⁾
Blue Jacket Twin (2 Cyl.)	IGW-4163B	1-31	N. A.	2-35	3-15	4-12	5-10 ⁽¹⁾⁽⁶⁾
Utility Four (4 Cyl.)	IGW-4130B	1-31	N. A.	2-35	3-21	4-15	5-10 ⁽¹⁾⁽⁶⁾
Unimite Four (4 Cyl.)	IGW-4152B	1-31	N. A.	2-35	3-21	4-15	5-10 ⁽¹⁾⁽⁶⁾

(1) 32-1 Coil Bracket used.

(6) 5-8 Coil used 6 Volt System.

(10) 5-8 Coil and 32-9 Coil Bracket used for 6 Volt Equipment.

(2) 32-9 Coil Bracket used.

(9) 12 Volt Use 5-10 Coil.

(10) 32-9 Coil Bracket may be required.

Marine
Engines
and Auxiliaries

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ADDRESSING THE ENGINE OIL DILEMMA

Are you confused by the designations SF, SE, SC, SB, SD and SA when you buy oil for your engine? The American Petroleum Institute has developed this grading system to help the consumer determine which oil is best suited for their engine by identifying the additives and protective qualities.

Unless your engine is at least 40 years old, grades SA and SB should not be used in your engine. SA designates straight mineral oil and SB contains some oxidizing inhibitors, yet these oils are still sold.

Grade SC is the same as SB, however, SC has some detergent additives and can be used in 1964-1967 model engines. SD grade oil has more detergent along with some anti-wear additives and can be used in 1968-1970 model engines.

SE grade oil was developed for sale in late 1970, containing good anti-wear additives, low temperature anti-sludge properties, high temperature stability and better detergent properties. SE can be used in 1971-1979 model engines.

SF oil meets all the requirements for all engines and should be used in 1980 and later model engines. With improved anti-wear, high and low temperature stability and rust and anti-corrosive properties, SF grade oil gives the best protection against wear in the smaller engines which work under higher loads.

Diesel combustion is dirtier than in gasoline engines. Grade CC or CD oil contains a higher level of detergents than SE or SF oil and should be used in your diesel engine.

Bargain brand oil containing the incorrect grade for your engine or having no rating at all is no bargain if it costs you an engine. When choosing an oil, look for the SF classification, since it meets the highest requirements for all gasoline engines.

Viscosity is a measure of oil's resistance to flow. Thick, slow flowing oils have high numbers; thin, free flowing oils have low numbers. Multi-grade oil (5W-40) have free flowing properties, light enough for easy cranking at low temperatures and heavy enough to perform at high temperatures. Oil suitable for low temperatures or winter use are marked with a W.



"Sir, there's a technician out here who would like to see you about a possible misprint in one of the service manuals."

