

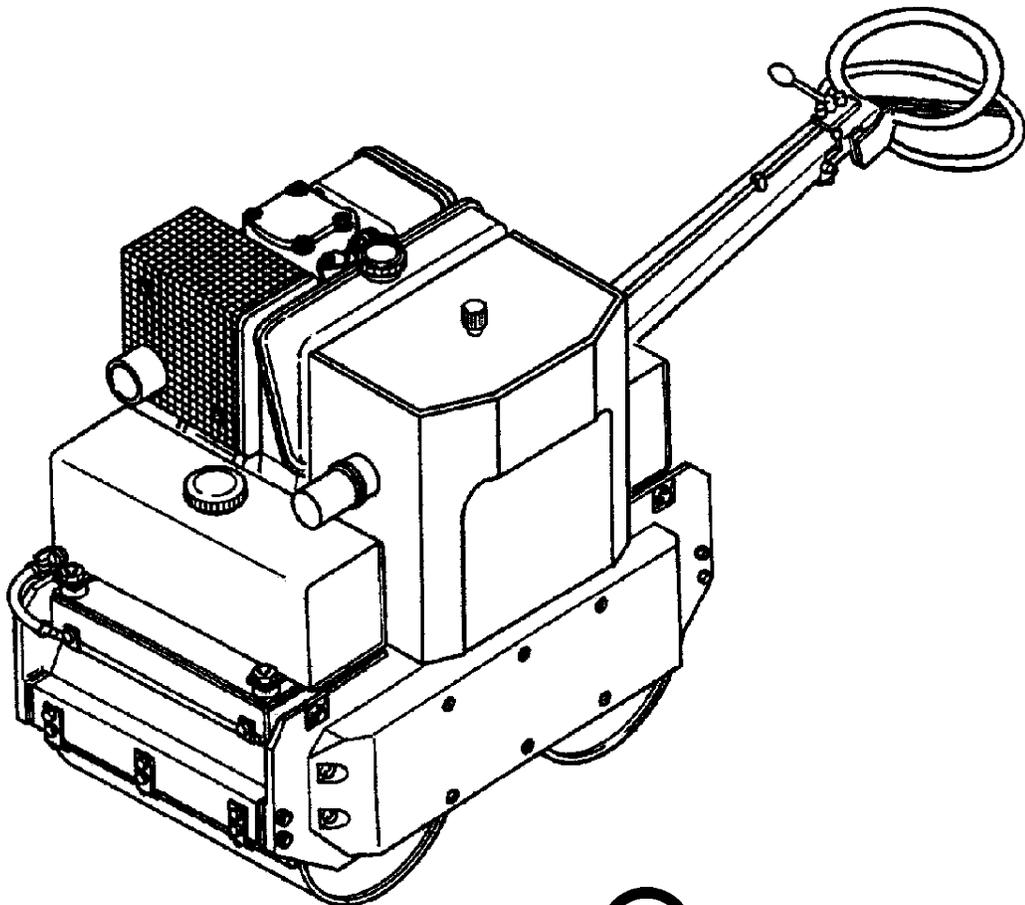


WALK-BEHIND ROLLER

SERVICE MANUAL SM31001

February 2000

Model 70B



DIN EN ISO 9001
Certificate No. 59557-01

Product: Vibromax Walk-Behind Roller Service Repair Workshop Manual SM31001

Full Download: <https://www.arepairmanual.com/downloads/vibromax-walk-behind>

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CALIFORNIA

Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

Sample of manual. Download All 72 pages at:

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SECTION ONE

GENERAL



These symbols mean ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED. The message that follows the symbol contains important information about safety. Carefully read the message. Make sure you fully understand the causes of possible injury or death.

IF THIS MACHINE IS USED BY AN EMPLOYEE, IS LOANED, OR RENTED, MAKE SURE THAT THE TWO INSTRUCTIONS BELOW ARE FOLLOWED.

BEFORE THE OPERATOR STARTS THE ENGINE:

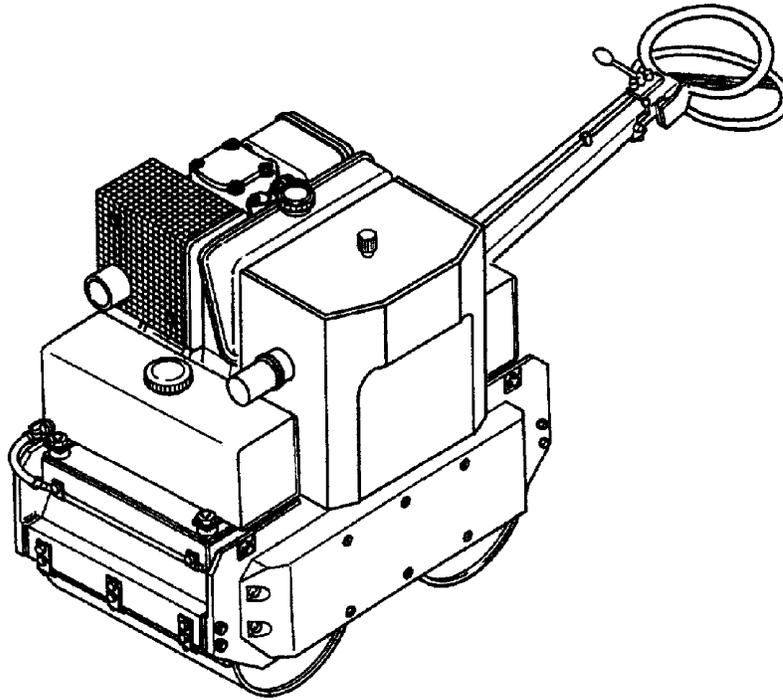
- GIVE INSTRUCTION TO THE OPERATOR ON SAFE AND CORRECT USE OF THE MACHINE.
- MAKE SURE THE OPERATOR READS AND UNDERSTANDS THE OPERATOR'S MANUAL FOR THIS MACHINE.



IMPROPER OPERATION OF THIS MACHINE CAN CAUSE INJURY OR DEATH!

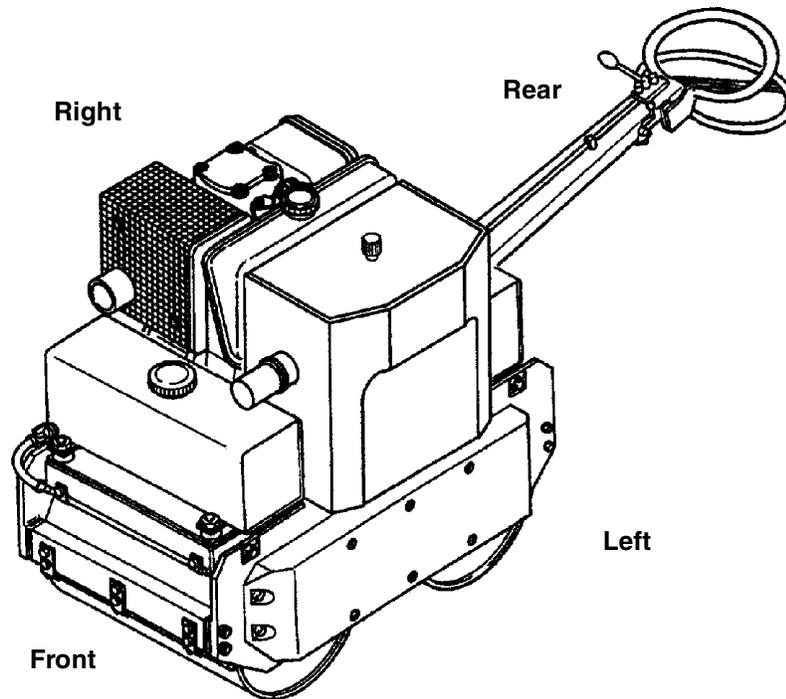
LEARN AND PRACTICE SAFE USE OF MACHINE CONTROLS IN A SAFE, CLEAR AREA BEFORE YOU OPERATE THIS MACHINE ON A JOB SITE!

IT IS YOUR RESPONSIBILITY TO OBSERVE PERTINENT LAWS AND REGULATIONS AND TO FOLLOW MANUFACTURER'S INSTRUCTIONS ON MACHINE OPERATION AND MAINTENANCE.

**MODEL W70B****ENGINE DATA**

Make	Hatz
Model	1D81S
Type	single cyl., air cooled, 4 stroke, diesel
Displacement	40.0 cubic inch (667 cc)
HP Rating	12.0 hp (8.9 kW) SAE net
Operating speed	2400 rpm
Starter type	Hand crank
Air cleaner type	Dry element
Fuel filter type	In-line Cartridge
Fuel consumption	0.52 gal/hr (2.0 liter/hr)

MACHINE DESCRIPTION



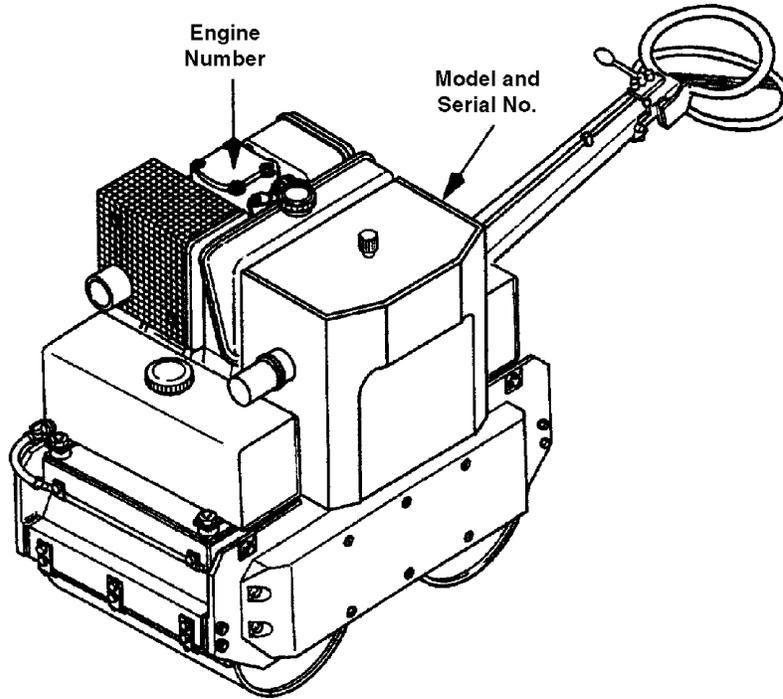
The walk-behind tandem rollers are designed on a modular basis and feature a uniform design and a common mode of operation.

The speed and direction controls allow for safe and easy operation.

These machines are equipped with diesel engines for greater torque at a lower fuel consumption rate.

Walk-behind rollers are larger and heavier than vibratory plates and are most often used on jobs that do not require the compaction forces found on the larger ride-on roller models.

MODEL 70B



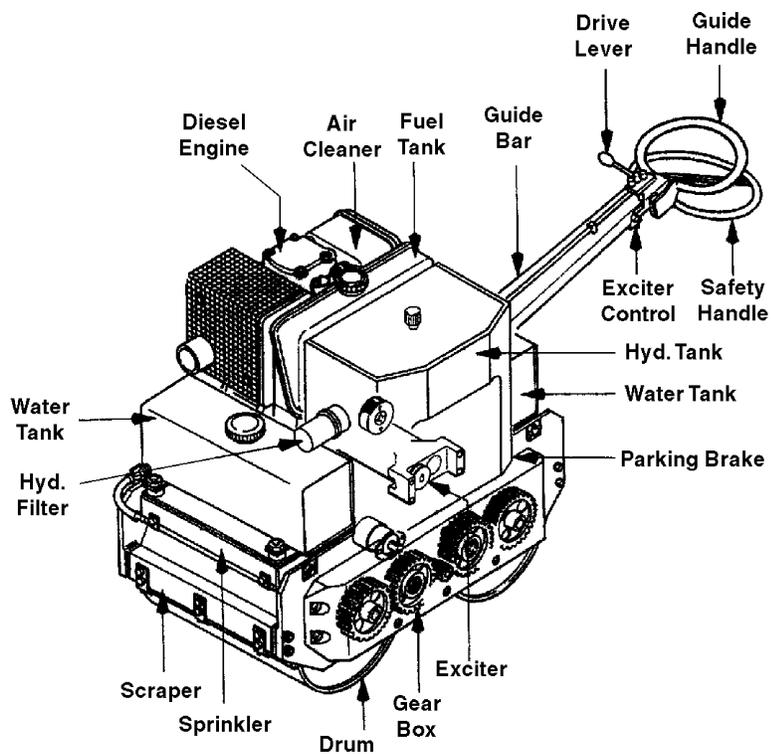
Enter the model number, serial number, and engine serial number in the spaces below. When ordering parts or requesting information on your machine, please have these numbers available when you contact your dealer.

Model:

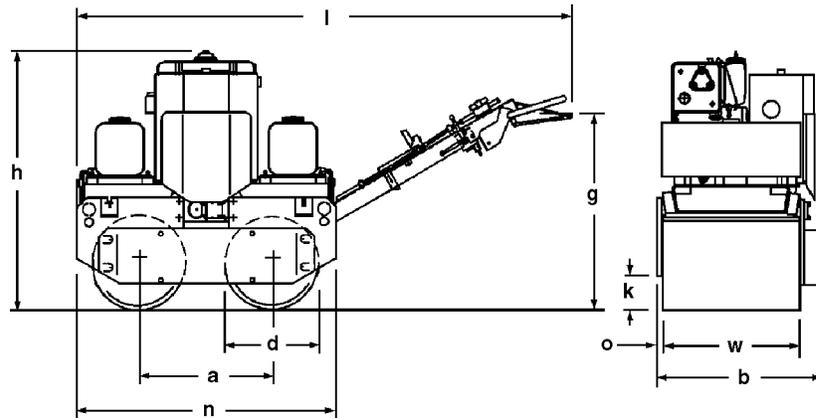
Serial No. (product identification - PIN)

Engine: make model serial no.

MODEL 70B



MODEL 70B DIMENSIONAL DATA



a	b	d	g	h	k	l	n	o	w
Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)
23.6 (600)	30.7 (780)	17.7 (450)	39.4 (1000)	47.6 (1210)	6.3 (160)	90.9 (2310)	48.0 (1220)	0.8 (20)	25.6 (650)

FLUID CAPACITIES

Fuel Tank	1.8 gallons	7.0 liters
Engine Oil	2.0 quarts	1.9 liters
Hydraulic Reservoir Oil	6.6 gallons	25 liters
Exciter Oil	1.10 quarts	1.0 liters
Sprinkler Water	9.2 gallons	35 liters (each, front & rear)

MODEL 70B OPERATING DATA**ENGINE**

Make and Model.....HATZ 1D81S
Displacement.....40.0 cu.in. (667cc)
SAE Net Horsepower 12.0@ 2400 rpm. (8.9kW@ 2400 rpm.)
Full Throttle Speed..... 2400 rpm.
Idle Speed 1000 to 1100 rpm.
Intake Valve Clearance (cold)..... 0.004 in. (0.10mm)
Exhaust Valve Clearance (cold) 0.004 in. (0.10mm)

WEIGHTS

Operating weight1763 lb. (800 kg)
Distribution (front).....793 lb. (360 kg)
Distribution (rear).....970 lb. (440 kg)

TRAVEL SPEED

Forward 0 to 3.0 mph (0 to 5.0 km/hr)
Reverse 0 to 1.5 mph (0 to 2.5 km/hr)

VIBRATION SYSTEM

Exciter frequency..... 3300 vpm (55 Hz)
Nominal Amplitude 0.017 in. (0.42mm)
Exciter Force 4496 lb. (20 kN)
Exciter Force/Drum Width 88 lb/in. (154 N/cm)
Compaction Depth.....13.8 in. (35 cm)

STANDARD TORQUE DATA

Where no special torque data is specified, the following torque figures should be applied. Threads should be lubricated with engine oil or grease. Loctite products also act as a lubricant.

STANDARD TORQUE SPECIFICATIONS +/- 10%

SIZE	GRADE 8.8		GRADE 10.9		GRADE 12.9	
	ft.-lbs	Nm	ft.-lbs	Nm	ft.-lbs	Nm
5mm	4	5.5	5.5	7.5	6.6	9
6mm	6.6	9	9.2	12.5	11	15
8mm	16.5	22.5	23	31.5	26.5	36
10mm	32	44	45	62	55	75
12mm	57	77.5	81	110	95	130
14mm	88	120	125	170	155	210
16mm	140	190	195	265	236	320
18mm	192	260	269	365	320	435
20mm	273	370	383	520	457	620
22mm	369	500	516	700	619	840
24mm	471	640	665	900	796	1080
27mm	702	950	996	1350	1195	1620
30mm	955	1300	1328	1800	1593	2160

NUTS FOR TUBES AND HOSES

DIAMETER & PITCH	NEWTONS/METER	POUNDS/FOOT
16MM X 1.5	20	14.5
18MM X 1.5	35	26
20MM X 1.5	45	33.2
24MM X 1.5	60	44

FITTINGS, CONNECTIONS AND PLUGS

DIAMETER & PITCH	NEWTONS/METER	POUNDS/FOOT
10MM X 1	20	14.5
12MM X 1.5	35	26
14MM X 1.5	45	33.2
16MM X 1.5	60	44
18MM X 1.5	70	51
22MM X 1.5	100	73
27MM X 2	200	147
33MM X 2	280	207
42MM X 2	380	281

FLANGES

DIAMETER & PITCH	NEWTONS/METER	POUNDS/FOOT
8MM X 1.5	28	21
10MM X 1.5	55	41
12MM X 1.75	90	67
14MM X 2	145	107
16MM X 2	230	170

METRIC/USA CONVERSIONS

METRIC UNITS	CHANGE TO	ARITHMETIC
millimeters (mm)	inches (in)	mm x .03937 = inches
bars	pound per sq. in. (psi)	bar x 14.22 = psi
kilograms (kg)	pounds (lb)	kg x 2.204 = pounds
kilowatts (kW)	horsepower (hp)	kW x 1.341 = horsepower
celsius (°C)	Fahrenheit (°F)	°C x 1.8 + 32 = °F
newton meters (Nm)	pounds feet (lb ft.)	Nm x .737 = lb ft.
newton meters (Nm)	pounds inch (lb in)	Nm x 8.85 = lb in
liters (L)	U.S. gallon	liters x .264 = gallons
liters (L)	U.S. quarts	liters x 1.056 = quarts
cubic centimeters (cm ³)	cubic inches (in ³)	cm ³ x .061 = in ³

DIESEL FUEL SPECIFICATION

If fuel is stored for a long time, foreign particles or water can collect in the fuel storage tank. Many engine problems are caused by contaminated fuel. Store fuel outside and keep the fuel as cool as possible. Drain water from the fuel storage tank at regular intervals.

NOTE: Paraffin crystals will start to form in fuel when the fuel temperature falls below the fuel's cloud point. These paraffin crystals will clog the fuel filter and cause the engine to stop or lose power. At ambient temperatures above 32°F (0°C) use #2 diesel fuel. At temperature below 32°F (0°C) use #1 diesel fuel.

Different brands of fuel can exhibit different properties. Make sure that the #2 diesel fuel you use meets the following minimum requirements.

MINIMUM REQUIREMENTS FOR #2 DIESEL FUEL:

Maximum cloud point	.....	-10°F (-23°C)
Maximum pour point	.....	42°F (6°C) below the lowest ambient air temperature at which the engine must start
Cetane number, min	.....	40 (45 to 55 in winter or at high altitude)
Max. sulphur content, by weight	.....	0.50%
Max. water content & sediment by volume	.....	0.05%
Max. ash content, by weight	.....	0.01%
Max. carbon residue (10% point)	.....	0.20%
Distillation temperature @ 90% point	.....	540 to 625°F (282-329°C)
Distillation temperature @ end point	.....	675°F (357°C)
Minimum flash point	.....	125°F (52°C)
Viscosity at 100°F (38°C)		
Centistokes	.....	2.0 to 4.3
Saybolt Universal Seconds (SUS)	.....	32 to 40
Copper strip test, 3 hours @ 212°F (100°C)	.....	No 3 ASTM
Minimum API gravity	.....	30

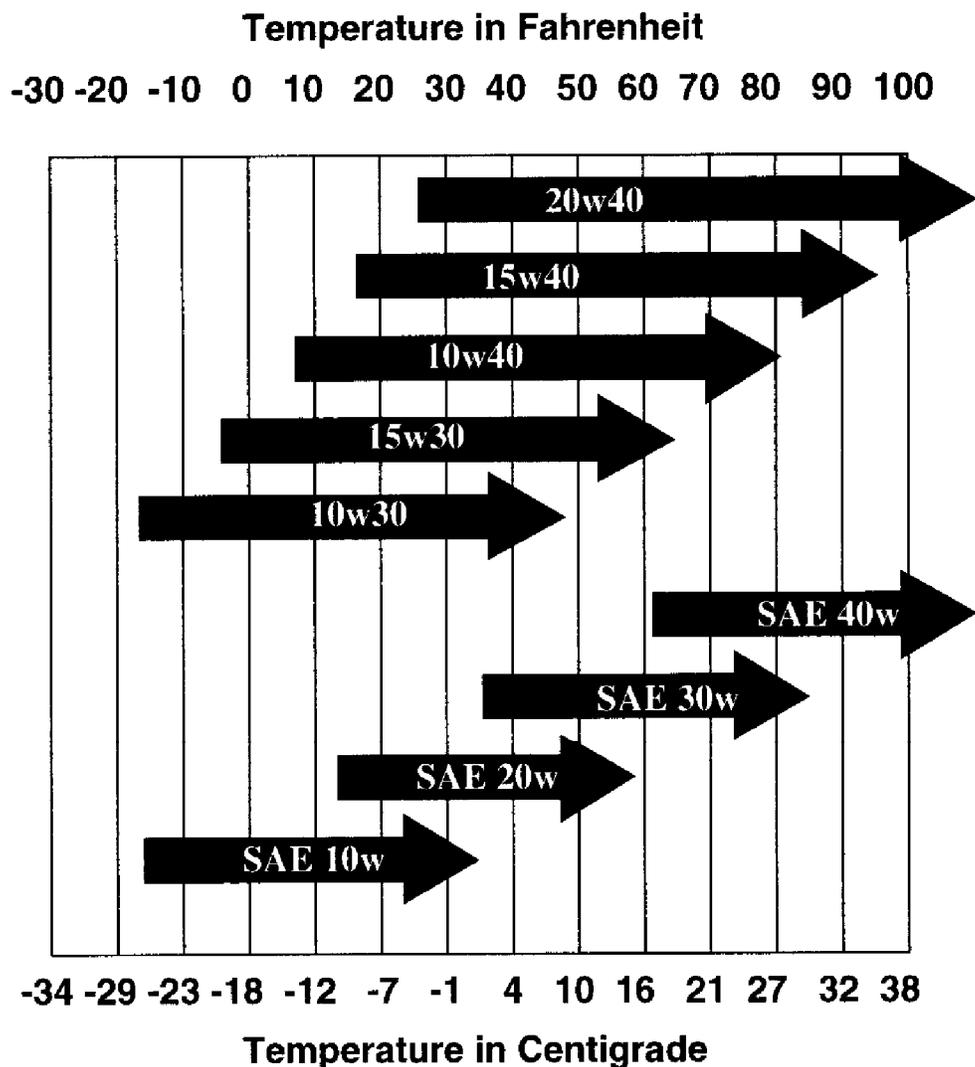
ENGINE OIL SPECIFICATION

Use multigrade or single grade engine oil with API engine oil service classification “CD”.

NOTE: DO NOT use performance additives or other oil additives in your engine crankcase.

See the chart below for recommended oil viscosity at the various ambient air temperature range

Engine Oil Viscosity Chart
Ambient Air Temperature Ranges



VIBRATORY SYSTEM OIL

Capacities: Model 70B 1.10 quart, 1.00 liter

Oil Type: API. CC/CD SAE 30 Engine Oil

The vibration oil on the model 70B is drained and filled through the plug located on the right side of the machine on the vibration shaft end cap. The left side of the machine has to be elevated to drain the vibration system oil.



Do not overfill the vibration system. An over full system consumes engine horsepower and causes the vibration system to run at a lower than normal speed.

DRIVE GEARS LUBRICATION

Lubricate the drive gears every 1000 hours with molydisulfide grease.

The gears are located under the gear cover on the left side of the machine. Remove the cover and clean the old grease off the gears with a cleaning solvent. Apply fresh grease and reinstall the gear cover.

HYDRAULIC SYSTEM OIL

Reservoir Capacities: Model 70B 6.6 gallons, 25.0 liter

Oil Type: cold weather HLP 46 DIN 51524/2
hot weather HLP 68 DIN 51524/2

Suggested:

Mobil DTE	25, 26, 27
Shell Tellus	OL 46, 68
Amoco Rykon	HD 46, 68
Texaco Rando	HD 46, 68

It is recommended that the hydraulic oil and filter be changed every 1000 hours. The filler cap breather and reservoir should also be cleaned at this time. It is best to drain the system after it has been running to insure removal of system contaminants.

Model 70B: The hydraulic oil can be drained by removing a return hose from the reservoir.

MACHINE STORAGE

If the machine is to be stored for more than 30 days, park the machine inside a building. If a building is not available, park the machine in a dry area on wood boards and cover the machine with a waterproof covering.

Preparation

- Drain the water tank and system.
- Wash the machine. Paint any areas where paint has been damaged.
- Add approximately 1.0 quart (1.0 liter) of diesel flushing oil to the fuel tank. Run the engine until the exhaust smoke is blue-white. Stop the engine and drain the fuel tank.
- Put one level teaspoon of Shell Oil Company VPI 260 crystals in the fuel tank.
- Change the engine oil and filter. Change the air filter oil.
- Remove or loosen the drive belt.
- Clean and lubricate the drive gears.
- Put a **DO NOT OPERATE** tag on the machine.

Removal from storage

- Change the fuel filter.
- Check the engine oil level.
- Install or tighten the drive belt.
- Fill the fuel tank.
- Remove the **DO NOT OPERATE** tag.
- Inject engine oil into the starting aid port on the rocker cover.
- Follow the instructions for starting the engine found in the operations section of this manual.

SAFETY

The information in this manual does not replace any safety rules and laws used in your area. Before operating this machine, learn the rules and laws for your area and make sure your machine has the correct equipment according to these rules and regulations. Before starting the engine study the operator's manual.

- Know the location and function of all machine controls.
- Clear the area of other persons before you start the engine.
- Check all controls in a safe area before you operate the machine.
- Understand the limits of the machine.
- Do not try to do too much too fast.
- Keep the machine under control at all times.

SPARK ARRESTER

NOTE: *Rules or laws in some areas may require that this machine be equipped with a spark arrester or spark arrester muffler. Check the rules or laws in your area.*

PERSONAL



Loose clothing and jewelry can cause an accident. Do not wear loose clothing or jewelry that can catch on controls, etc. Do wear safety shoes, hard hat, heavy gloves, etc. when required for your protection.

Know and understand the arrangements for movement of trucks, machines, and persons on your job site. Understand and follow the instructions of flagmen, road signs, or signals.



Check machine controls for proper operation prior to starting the machine.

A fire can cause injury or death. Always have a fire extinguisher on the job site near the machine. Make sure the fire extinguisher is serviced according to the manufacturer's instructions.

Holes, obstructions, debris, and other work area hazards can cause injury or death. Always walk-around and look for these and other hazards before you operate your machine in a new work area.

Lack of, or incomplete, machine inspection and maintenance can cause accidents. Always follow the instructions in operator's manual for machine inspection and maintenance.

Always wear the proper ear protection when operating this machine. Permanent hearing loss can result from extended exposure to loud noises.

The following decal is located on the guide bar. Check the decal daily. Clean or replace as needed.



MACHINE OPERATION



Dust, smoke, fog, etc. can decrease your vision and cause an accident. Always stop or slow the machine until you can clearly see your work area and the surrounding traffic.



Sparks from the electrical system or engine exhaust can cause a fire or explosion. Before you operate this machine in an area with flammable dust or vapors, use good ventilation to remove the flammable dust or vapors.

Engine exhaust fumes can cause injury or death. If you operate this machine in an enclosed area, use good ventilation to replace the exhaust fumes with fresh air.

The vibrations from this machine can cause the walls of a trench or high bank to collapse. Make sure the walls of the trench or bank are braced. If you do not follow these instructions, you can cause personal injury or death to persons working in these areas.



A machine out of control can cause injury or death. You must make a judgement if weather and earth conditions will permit safe operation on a hill, ramp, or rough ground. Adjust machine operation accordingly.

Operating this machine too close to High Voltage electrical lines can cause injury or death. Follow the guide lines listed below.

NOTE: IF THE CLEARANCES IN THE SPECIFICATIONS BELOW ARE LESS THAN THE CLEARANCES GIVEN IN THE RULES AND LAWS OF YOUR AREA, YOU MUST FOLLOW THE RULES AND LAWS OF YOUR AREA!

Table 1: Electrical Safety Rules

Cable Voltage	Minimum Clearance From Cable When Machine is Working	Minimum Clearance From Cable When Transporting Machine
50,000 volts or less	10 feet (3 meters)	4 feet (1.2 meters)
50,000 volts to 345,000 volts	10 feet (3m) plus 1/2 inch (13mm) for every 1000 volts over 50,000 volts	10 feet (3 meters)
345,000 volts to 750,000 volts	10 feet (3m) plus 1/2 inch (13mm) for every 1000 volts over 50,000 volts	16 feet (5 meters)

MAINTENANCE



Engine fuel is flammable and can cause a fire or an explosion. Do not fill the fuel tank or service the fuel system while the machine is running, or near an open flame, welding, burning cigars and cigarettes, etc.

Machine movement without an operator can cause injury or death. If you must service this machine with the engine running, have another person help you and follow the instructions in the machine manuals.

Improper service or repair can cause injury or death. If you do not understand the service procedures for this machine, see your Vibromax dealer.

Flammable cleaning solvents can cause injury or death. Use nonflammable cleaning solvents for cleaning purposes.

Missing shields, guards, or access panels can cause injury or death. Always install all shields, guards, or access panels before you start the engine.

Metal chips or debris can cause eye injury. Wear eye protection when you service this machine. If you use a hammer to drive hardened pins or for other service, use a hammer with a soft face (brass, plastic, etc.).

Unauthorized modifications to cast iron parts can cause injury or death. Welding can cause cast iron parts to break. Do not use welding to repair or attach items to cast iron parts on this machine.

Batteries produce explosive gases. Protect from and keep flames away. Ventilate when charging. Always wear eye protection when working near batteries. Do not wear jewelry or watch bands when working on batteries.

When you install a battery or use a booster battery, connect the negative ground cable last. When you remove a battery or booster battery, disconnect the negative ground cable first.

Never charge or jump a battery when the electrolyte is frozen. If you do not follow this instruction the battery can explode.



Unauthorized modifications to this machine can cause injury or death. Never make modifications to this machine without prior written approval from Vibromax.

SECTION TWO

ENGINE

ENGINE SPECIFICATIONS

Make and Model	HATZ 1D81S
Type	Four stroke, single cylinder, direct injection, diesel
Bore / Stroke	100mm / 85mm
Displacement.....	40.0 cu.in. (667cc)
Rotation	counter-clockwise
SAE Net Horsepower	12.0@ 2400 rpm. (8.9kW@ 2400 rpm.)
Full Throttle Speed.....	2400 rpm.
Idle Speed	1000 to 1100 rpm.
Injection pressure	3600 +115 psi (250 +8 bar)
Intake Valve Clearance (cold).....	0.004 in. (0.10mm)
Exhaust Valve Clearance (cold)	0.004 in. (0.10mm)
Oil capacity with oil filter	2 quarts (1.9 liters)
Net weight	201 lbs. (91kg)

RUN-IN PERIOD

The first 20 hours of operation are considered the machine's run-in period. During this time you are asked to follow some special guidelines. These guidelines should also be followed if the engine has been rebuilt or a new engine is installed.

- Read or review the operators manual.
- Take time to become acquainted with your machine controls.
- Operate the machine with normal loads.
- Keep the engine at normal operating temperatures.
- Do not run the engine at idle speed for long periods of time.
- Make additional walk-around inspections.
- Check your engine oil more often than normal.

After completion of the first 20 hours of operation do the following:

- Change the engine oil.
- Check the engine speed at idle and full throttle.
- Check valves for correct clearance.
- Check air cleaner connections and oil level in bowl.
- Check fuel system for leaks.
- Tighten all hose clamps.

During the machine warranty period the engine warranty is covered by Hatz Diesel.

Contact your Hatz Dealer for additional service information and materials.

DIESEL FUEL SPECIFICATION

If fuel is stored for a long time, foreign particles or water can collect in the fuel storage tank. Many engine problems are caused by contaminated fuel. Store fuel outside and keep the fuel as cool as possible. Drain water from the fuel storage tank at regular intervals.

NOTE: Paraffin crystals will start to form in fuel when the fuel temperature falls below the fuel's cloud point. These paraffin crystals will clog the fuel filter and cause the engine to stop or lose power. At ambient temperatures above 32°F (0°C) use #2 diesel fuel. At temperature below 32°F (0°C) use #1 diesel fuel.

Different brands of fuel can exhibit different properties. Make sure that the #2 diesel fuel you use meets the following minimum requirements.

MINIMUM REQUIREMENTS FOR #2 DIESEL FUEL:

Maximum cloud point	.....	-10°F (-23°C)
Maximum pour point	.....	42°F (6°C) below the lowest ambient air temperature at which the engine must start
Cetane number, min	.....	40 (45 to 55 in winter or at high altitude)
Max. sulphur content, by weight	.....	0.50%
Max. water content & sediment by volume	.....	0.05%
Max. ash content, by weight	.....	0.01%
Max. carbon residue (10% point)	.....	0.20%
Distillation temperature @ 90% point	.....	540 to 625°F (282-329°C)
Distillation temperature @ end point	.....	675°F (357°C)
Minimum flash point	.....	125°F (52°C)
Viscosity at 100°F (38°C)		
Centistokes	.....	2.0 to 4.3
Saybolt Universal Seconds (SUS)	.....	32 to 40
Copper strip test, 3 hours @ 212°F (100°C)	.....	No 3 ASTM
Minimum API gravity	.....	30

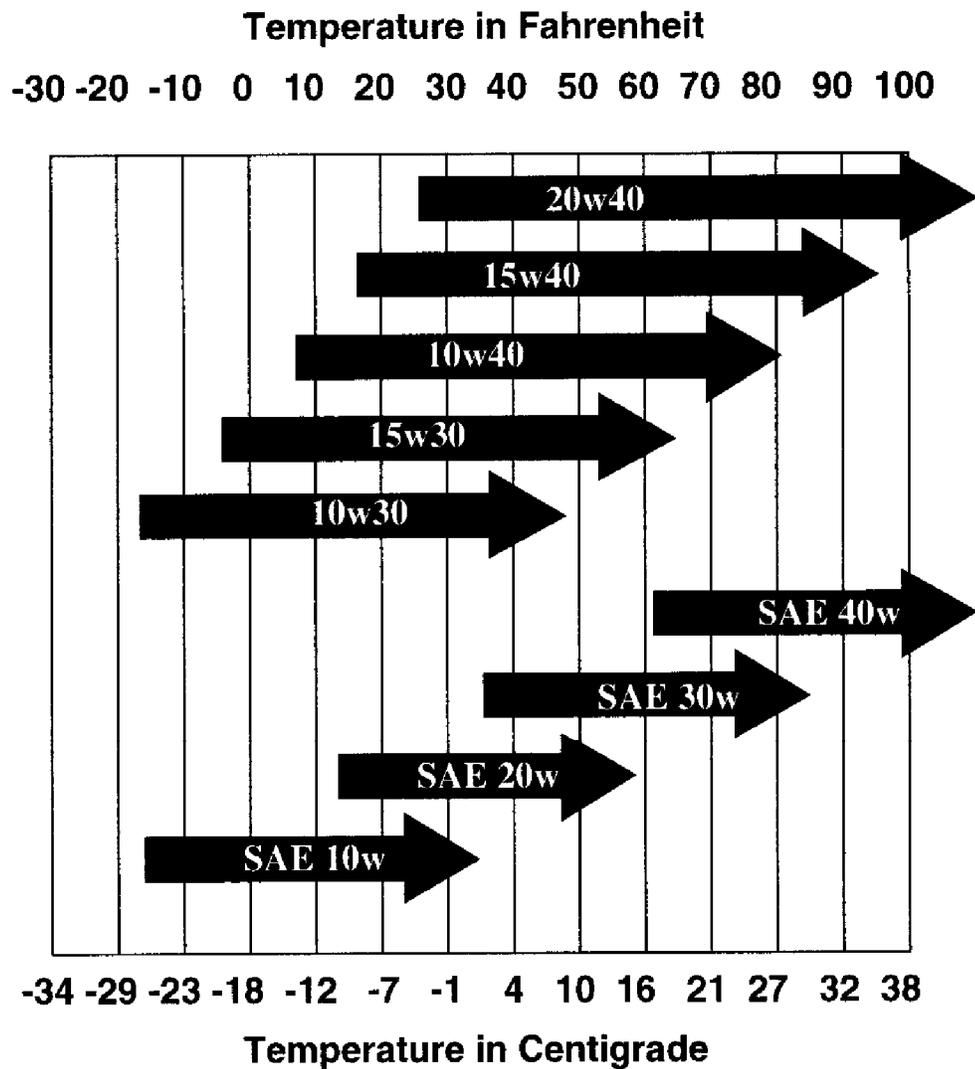
ENGINE OIL SPECIFICATION

Use multigrade or single grade engine oil with API engine oil service classification “CD”.

NOTE: DO NOT use performance additives or other oil additives in your engine crankcase.

See the chart below for recommended oil viscosity at the various ambient air temperature range

Engine Oil Viscosity Chart
Ambient Air Temperature Ranges



SECTION THREE

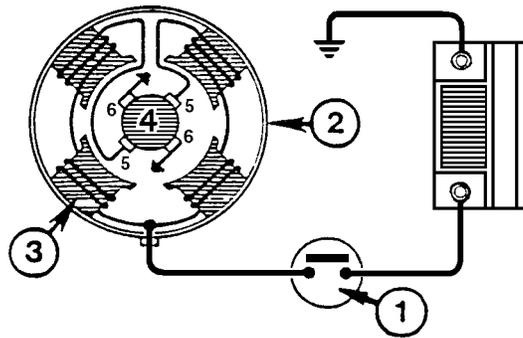
ELECTRICAL

ENGINE ELECTRICAL

The Vibromax Model 70B offers an electric starter option. This option includes a battery, starter, key switch, alternator, charge indicator light, engine oil pressure switch, and low oil pressure indicator light.

UNDERSTANDING STARTERS

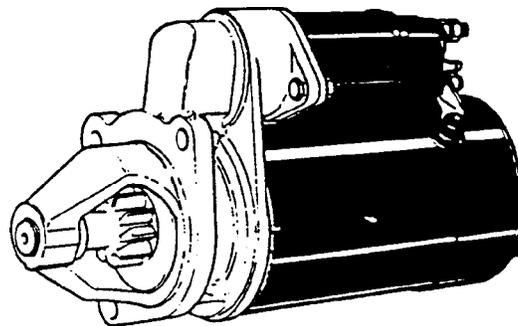
All starter motors function similarly and serve the same purpose on the engine.



A heavy cable connects the battery to a switch (1). When the switch is “ON”, current flows from the battery, through the switch and to the starter (2). Current flows through the field coils (3) and then to the armature (4) by means of insulated brushes (5). Current flows through the armature coils and the ground brushes (6) to ground.

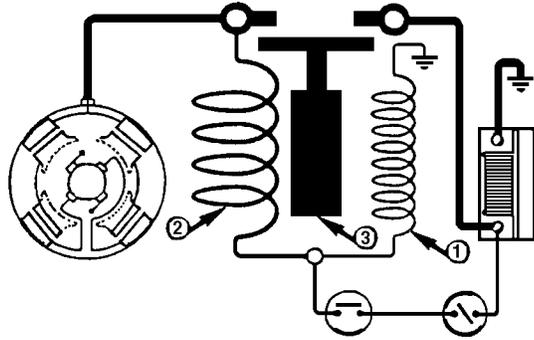
The current passing through the field and armature coils generates magnetic forces which oppose each other causing the armature to rotate.

Pre-engaged starters are used on most engines. They provide a positive engagement by not allowing full battery power to the starter motor until the drive pinion is fully engaged into the flywheel.



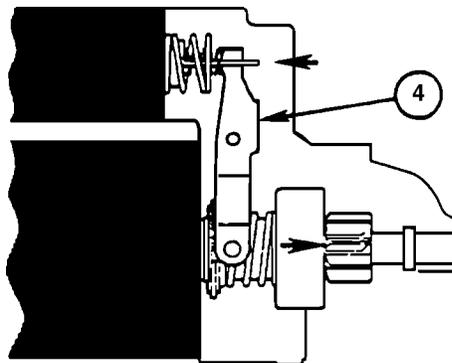
STARTER SOLENOID

A starter solenoid has two coils. They are the “hold-in coil” (1) which connects to ground, and the “closing coil” (2) which is connected to ground through the starter motor windings.



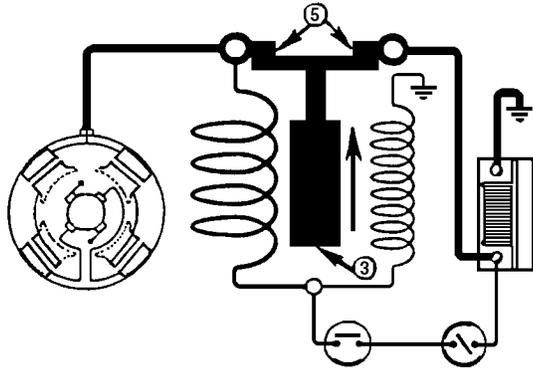
When the switch is “ON”, current passes through the hold-in coil (1), creating a magnetic field around the plunger (3). Current also passes through the closing coil (2), creating a second field.

The current that flows from the closing coil into the starter motor windings causes the motor to rotate slowly. The combined magnetic fields of the two coils causes the plunger to engage. This moves the arm (4) causing engagement of the drive pinion into the flywheel.



SM31001 - SECTION 3Full Download: <https://www.arepairmanual.com/downloads/vibromax-walk-behind>[-roller-service-repair-workshop-manual-sm31001/](https://www.arepairmanual.com/downloads/vibromax-walk-behind-roller-service-repair-workshop-manual-sm31001/)

When the plunger (3) moves to full stroke and the drive pinion is fully engaged, the solenoid contacts (5) are closed, allowing full power to the starter motor.

**70B STARTING CIRCUIT FUNCTION**

The key switch (S1) receives power from the battery (G1) at terminal #30. When the key switch is turned to the “ON” position (first position), power is connected to terminals #15/54, energizing all switch controlled components through a fuse (F1). The alternator indicator light (H1) and the oil pressure indicator light (H2) will illuminate, indicating the key switch is on but the engine is not running and there is no alternator output. The ground for alternator indicator light (H1) is through the regulator (V1).

To start the machine the key switch is turned to the start position (second position) providing a current path from the key switch (S1) terminal #50a to the starter motor (M1) terminal #50 on the starter solenoid. Note that the battery is connected to the starter motor (M1) at terminal #30. With current to the starter solenoid, contacts within the solenoid close the connection to the battery causing the starter to turn.

When the engine is started the key switch is turned back to the first position removing current to the starter. The alternator (G2) provides output current and the regulator (V1) provides 12 volts in place of ground. The alternator indicator light (H1) will extinguish as a result of having 12 volts on each side of the lamp. Engine oil pressure will rise when the engine is started. The oil pressure will open oil pressure switch (S2) removing the ground connection and extinguishing the oil pressure indicator light (H2).