

PARTS AND OPERATION MANUAL



PLASTER MORTAR PUMP

MODEL MG30T2D

MODEL MG30M2D

FIREPROOFING PUMP

MODEL MG30T3D

MODEL MG30M3D

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WARNING



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.

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MQ MAYCO MG-30 Mobile/Tag Units

Plaster/Fireproofing Pump

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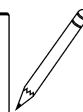
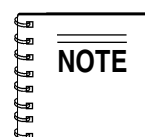
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HATZ 1B30 DIESEL ENGINE

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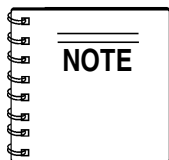


Specification and part number are subject to change without notice.

MG-30 PUMP — SAFETY MESSAGE ALERT SYMBOLS

FOR YOUR SAFETY AND THE SAFETY OF OTHERS!

Safety precautions should be followed at all times when operating this equipment. Failure to read and understand the Safety Messages and Operating Instructions could result in injury to yourself and others.



This Owner's Manual has been developed to provide complete instructions for the safe and efficient operation of the **Multiquip MAYCO MG30-M (Mobile Unit) and MG30-T (Tag Unit) plaster and fireproofing pump**. Refer to the engine manufacturers instructions for data relative to its safe operation.

Before using this pump, ensure that the operating individual has read and understands all instructions in this manual.

SAFETY MESSAGE ALERT SYMBOLS

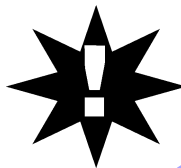
The three (3) Safety Messages shown below will inform you about potential hazards that could injure you or others. The Safety Messages specifically address the level of exposure to the operator, and are preceded by one of three words: **DANGER**,



DANGER: You **WILL** be **KILLED** or **SERIOUSLY** injured if you do not follow directions.



WARNING: You **CAN** be **KILLED** or **SERIOUSLY** injured if you do not follow directions.



CAUTION: You **CAN** be injured if you do not follow directions.

Potential hazards associated with operation of the pump will be referenced with Hazard Symbols which appear throughout this manual, and will be referenced in conjunction with Safety Message Alert Symbols.

HAZARD SYMBOLS



Lethal Exhaust Gases



Diesel engine exhaust gases contain poisonous carbon monoxide. This gas is colorless and odorless, and can cause death if inhaled. **NEVER** operate this equipment in a confined area or enclosed structure that does not provide ample free flow air.



Explosive Fuel



Diesel fuel is extremely flammable, and its vapors can cause an explosion if ignited. **DO NOT** start the engine near spilled fuel or combustible fluids. **DO NOT** fill the fuel tank while the engine is running or hot. **DO NOT** overfill tank, since spilled fuel could ignite if it comes into contact with hot engine parts or sparks from the ignition system. Store fuel in approved containers, in well-ventilated areas and away from sparks and flames. **NEVER** use fuel as a cleaning agent.



Burn Hazards



Engine components can generate extreme heat. To prevent burns, **DO NOT** touch these areas while the engine is running or immediately after operations. **NEVER** operate the engine with heat shields or heat guards removed.



Rotating Parts



NEVER operate equipment with covers, or guards removed. Keep **fingers, hands, hair** and clothing away from all moving parts to prevent injury.

MG-30 PUMP — SAFETY MESSAGE ALERT SYMBOLS



Accidental Starting



OFF

ALWAYS place the **ON/OFF** switch in the **OFF** position. **NEVER** perform maintenance on the unit with the ignition key in the **ON** position.



Respiratory Hazard



ALWAYS wear approved *respiratory* protection.



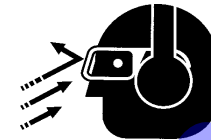
Over Speed Conditions



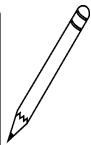
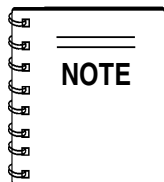
NEVER tamper with the factory settings of the engine governor or settings. Personal injury and damage to the engine or equipment can result if operating in speed ranges above maximum allowable.



Sight and Hearing hazard



ALWAYS wear approved *eye* and *hearing* protection.



This *pump*, other property, or the surrounding environment could be damaged if you do not follow instructions.



Equipment Damage Messages

Other important messages are provided throughout this manual to help prevent damage to your plaster and fireproofing pump, other property, or the surrounding environment.

MG-30 PUMP — RULES FOR SAFE OPERATION

CAUTION:



Failure to follow instructions in this manual may lead to serious injury or even **death!** This equipment is to be operated by trained and qualified personnel only! This equipment is for industrial use only.

The following safety guidelines should always be used when operating the MG30-M2D (Mobile Unit) and MG30-T2D (Tag Unit) plaster and fireproofing pump:

GENERAL SAFETY

- **DO NOT** operate or service this equipment before reading this entire manual.



- This equipment should not be operated by persons under 18 years of age.
- **NEVER** operate this equipment without proper protective clothing, shatterproof glasses, steel-toed boots and other protective devices required by the job.



- **NEVER** operate this equipment when not feeling well due to fatigue, illness or taking medicine.



- **NEVER** operate this equipment under the influence of drugs or alcohol.



- **ALWAYS** check the machine for loosened threads or bolts before starting.
- **ALWAYS** wear proper **respiratory** (mask), **hearing** and **eye** protection equipment when operating the pump.

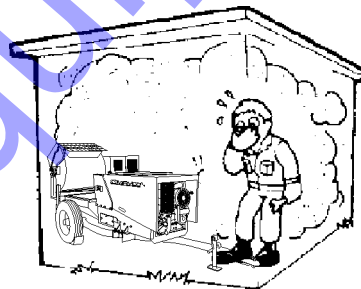


- Whenever necessary, replace nameplate, operation and safety decals when they become difficult read.
- Manufacture does not assume responsibility for any accident due to equipment modifications.
- **NEVER** use accessories or attachments, which are not recommended by Multiquip for this equipment. Damage to the equipment and/or injury to user may result.
- **NEVER** touch the hot exhaust manifold, muffler or cylinder. Allow these parts to cool before servicing engine or pump.



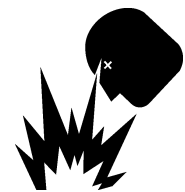
- **High Temperatures** – Allow the engine to cool before adding fuel or performing service and maintenance functions. Contact with **hot!** components can cause serious burns.

- The engine section of this pump requires an adequate free flow of cooling air. **NEVER** operate the pump in any enclosed or narrow area where free flow of the air is restricted. If the air flow is restricted it will cause serious damage to the pump or engine and may cause injury to people. Remember the pump's engine gives off **DEADLY** carbon monoxide gas.



- **ALWAYS** refuel in a well-ventilated area, away from sparks and open flames.

- **ALWAYS** use extreme caution when working with **flammable** liquids. When refueling, **stop the engine** and allow it to cool.



- **NEVER smoke** around or near the machine. Fire or explosion could result from **fuel vapors**, or if fuel is spilled on a **hot!** engine.



- **NEVER** operate the pump in an explosive atmosphere or near combustible materials. An explosion or fire could result causing severe **bodily harm or even death**.
- Topping-off to filler port is dangerous, as it tends to spill fuel.

MG-30 PUMP — RULES FOR SAFE OPERATION

- **ALWAYS** remove the *ignition key* when leaving the pump unattended.
- **ALWAYS** block the *wheels* on the unit when using on a slope.
- **ALWAYS** maintain this equipment in a safe operating condition at all times.
- **ALWAYS** stop the engine before servicing, adding fuel or oil.
- **NEVER** run engine without air filter. Severe engine damage may occur.
- **ALWAYS** be sure the operator is familiar with proper safety precautions and operation techniques before using pump.
- **ALWAYS** store equipment properly when it is not being used. Equipment should be stored in a clean, dry location out of the reach of children.
- **DO NOT** operate this equipment unless all guards and safety devices are attached and in place.
- **CAUTION** must be exercised while servicing this equipment. Rotating and moving parts can cause injury if contacted.
- Keep all *inexperienced* and *unauthorized* people away from the equipment at all times.
- Before start-up, check the hopper and remove all foreign matter and debris.
- **DO NOT** use worn or damaged hose couplings, inspect all hoses and couplings for wear. Replace any worn or defective hose or couplings immediately.
- Keep hands out of the hopper when the engine is running.
- **DO NOT** operate unit with the *hood open*.
- **DO NOT** disconnect hose couplings or nozzle while under pressure. Relieve pressure by manually activating pressure relief valve at manifold.
- Unauthorized equipment modifications will void all warranties.
- Check all fasteners periodically for tightness. Also check towing tongue bolt, lock nut and wheel lug nuts for wear.
- Test the *pump's ON/OFF* switch. The purpose of this test is to shut down the engine.
- Refer to the *Engine Owner's Manual* for engine technical questions or information recommended by Multiquip for this equipment. Damage to the equipment and or injury to user may result.

Transporting

- **ALWAYS** shutdown engine before transporting the pump.
- Tighten fuel tank cap securely and close fuel valve to prevent fuel from spilling.
- Drain fuel when transporting pump over long distances or bad roads.

Towing

- Before towing, check the hitch and secure the safety chain to the towing vehicle.
- When towing, an adequate safety chain must be fastened to the frame, refer to pages 44 and 45.
- Tow only with a vehicle and hitch rated to pull a 5,000 lbs. load.
- If unit is equipped with ball hitch coupler, use only 2" all steel ball rated for minimum of 5,000 lbs. Use 1" hardened steel pull pin, if not equipped with ball hitch.
- This equipment shall not be towed or operated by individuals who cannot read understand the signs, decals or operating instructions.
- When towing at night, **always** have rear tail lights **ON**.
- **DO NOT** tow unit with hopper full of material.
- **DO NOT** tow unit with hoses attached.
- **DO NOT** tow unit in excess of **45 MPH** on highways..

Maintenance Safety

- **NEVER** lubricate components or attempt service on a running pump .
- **ALWAYS** allow the pump a proper amount of time to cool before servicing.
- Keep the pump in proper running condition.
- Fix damage to the pump immediately and always replace broken parts.
- Dispose of hazardous waste properly. Examples of potentially hazardous waste are used motor oil, fuel and fuel filters.
- **DO NOT** use plastic containers to dispose of hazardous waste.

MG-30 PUMP — RULES FOR SAFE OPERATION

Emergencies

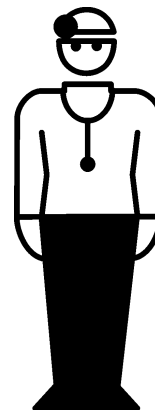
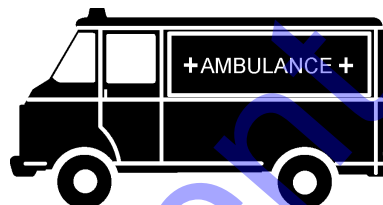
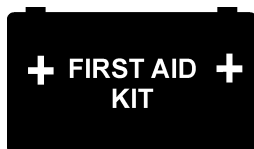
■ **ALWAYS** know the location of the nearest *fire extinguisher*.



■ In emergencies *always* know the location of the nearest phone or *keep a phone on the job site*. Also know the phone numbers of the nearest *ambulance*, *doctor* and *fire department*. This information will be invaluable in the case of an emergency.



■ **ALWAYS** know the location of the nearest *first aid kit*.



MG-30 PUMP — OPERATION AND SAFETY DECALS

Machine Safety Decals

The MG-30 mortar and plaster pump is equipped with a number of safety decals. These decals are provided for operator safety and maintenance information. Figure 1 below illustrates these decals as they appear on the machine. Should any of these decals become unreadable, replacements can be obtained from your dealer.



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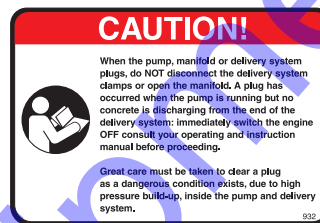
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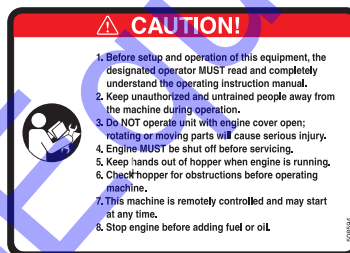
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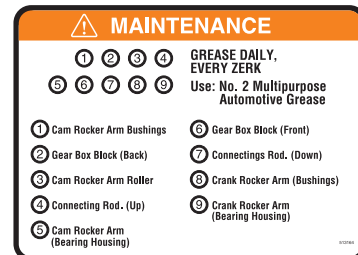
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MG30-M2D

P/N: EM513159



P/N: EM508594



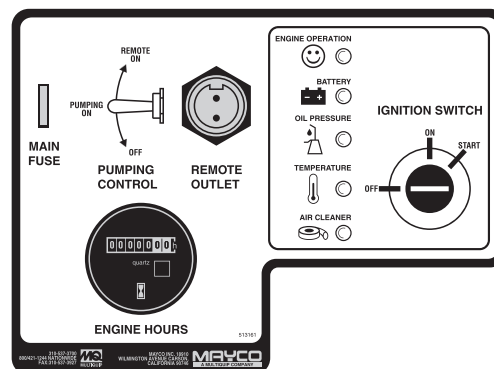
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MG30-T2D

P/N: EM513158



P/N: EM1009



P/N: EM513161

Figure 1. MG-30 Operation and Safety Decals (Pump Only)

MG-30 PUMP — OPERATION AND SAFETY DECALS

Machine Safety Decals

The Essick EM 120SM mortar and plaster mixer is equipped with a number of safety decals. These decals are provided for operator safety and maintenance information. Figure 2 below illustrates these decals as they appear on the mixer. Should any of these decals become unreadable, replacements can be obtained from your dealer.



P/N: DCL151



P/N: DCL160A



P/N: EM948630



P/N: EM948005



P/N: EM948012



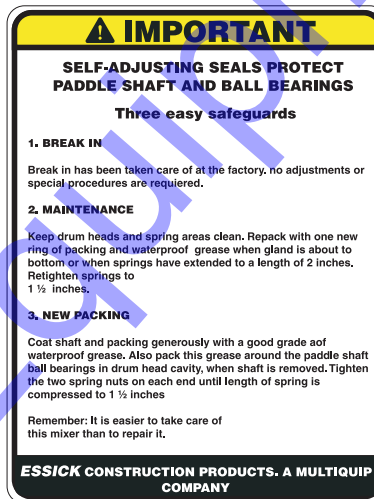
P/N: EM948013



P/N: EM510915



P/N: TBD



P/N: EM948121



P/N: 13118



P/N: EM513479

800-30-MAYCO

P/N: EM511709

Figure 2. MG-30 Operation and Safety Decals (Mixer Only)

MG-30 PUMP — SPECIFICATIONS

Table 1. Specifications (Pump)

Model- MG-30	Pumping Rate	Material Cylinder (Diameter x Stroke)	Pump Pressure	Manifold Outlet Dia.	Compressor 2-Cylinder Piston	Hopper Capacity	Fuel Capacity (No. 2 Diesel)
Plaster	6.5 cu. yds./hr.	3.50 x 6 in. (8.89 x 15.24 cm.)	1000 PSI	2 in. (5.08 cm.)	10 CFM@ 100 PSI	9 cu. ft. 255 (liters)	5.3 gal. (20 liters)
Fireproofing	9 cu. yds./hr.	3.75 x 8 in. (9.52 x 20.32 cm.)	1000 PSI	3 in. (7.62 cm.)	10 CFM@ 100 PSI	9 cu. ft. 255 (liters)	5.3 gal. (20 liters)

Table 2. Specifications (Mixer)

EM120S (Essick)	Bag Capacity	Drum Capacity	Engine	Drive	Dump Action	Discharge Height	Weight (less wheels)
	3.5 - 4.0	12 cu. ft. (340 liters)	Hatz Diesel Model 1B30	Mechanical	Manual	75 in. (191 cm.)	1,090 lbs. (494 kg.)

Table 3. Specifications (HATZ 2M41LZ Engine)

HATZ Diesel Model 2M41LZ	No. Cylinders	Bore x Stroke	Displacement	Idle Speed	Lube Oil Capacity Max/Min	Battery Type	Weight
	2	4.02 x 4.13 in. (102 x 105 mm.)	104.7 cu. in. (1.716 liters)	800 RPM's	5.8/3.2 qts. (5.5/3.0 liters)	12V 88/143 Ah	492 lbs. (223 kg.)

Table 4. Specifications (HATZ 1B30 Engine)

HATZ Diesel Model 1B30 Air-Cooled	No. Cylinders	Displacement	Idle Speed	Lube Oil Capacity	Type Air Cleaner	Starting Method	Weight
	1	347 cu. cm. (.347 liters)	800 RPM's	1.05 qts. (1 liters)	Dry Element	Recoil Start	83.77 lbs. (38 kg.)
Engine Oil Type	CCMC - D4 - D5 - PD@ or API - CD-CE - CF -CG or SHPD						
Type Fuel	EN 590 - DIN 51601 BS 2869 A1/A2-ASTM D 975-1D/2D						

MG-30 PUMP — DIMENSIONS (MG30-M2D MOBILE UNIT)

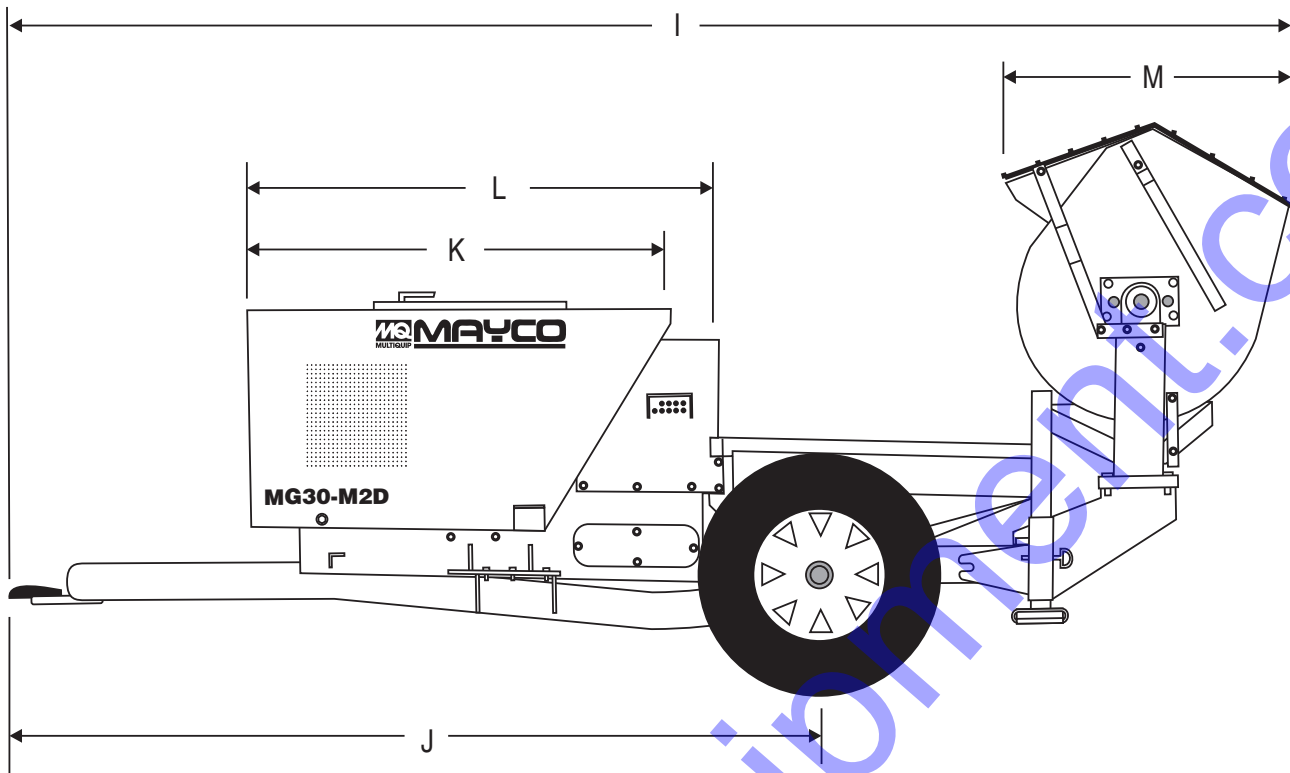


Table 5. Dimensions Mobil Unit	
REF.	DIMENSIONS
A	68.0 in. (1.72 meters)
B	90.0 in. (2.28 meters)
C	40.0 in. (1.01 meters)
D	42.0 in. (1.06 meters)
E	32.0 in. (.812 meters)
F	79.0 in. (2.00 meters)
G	58.0 in. (1.47 meters)
H	68.0 in. (1.72 meters)
I	171 in. (4.34 meters)
J	111 in. (2.81 meters)
K	54.0 in. (1.37 meters)
L	60.5 in. (1.53 meters)
M	38 in. (.965 meters)

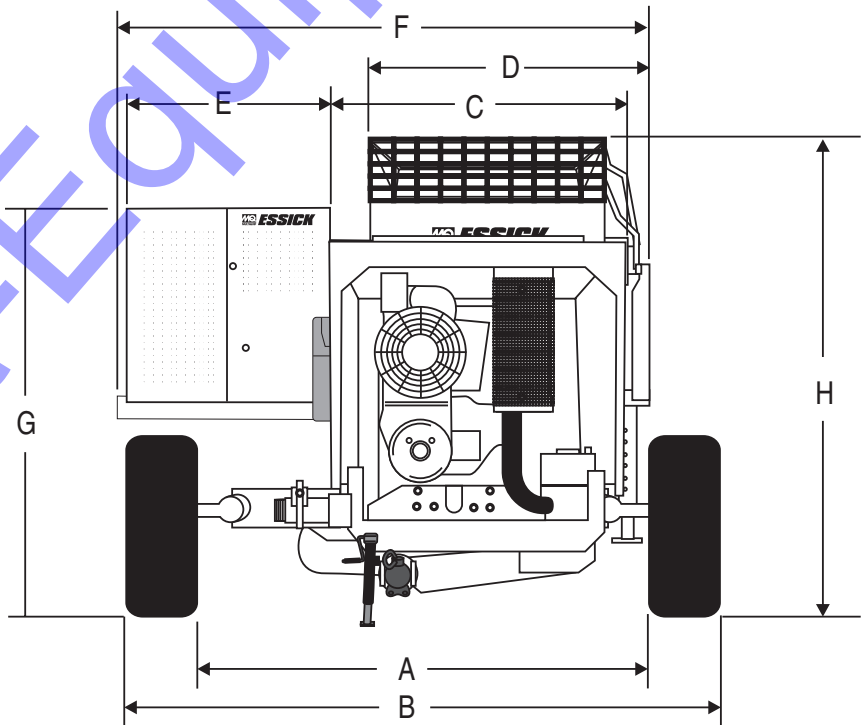


Figure 3. MG-30 (Mobil Unit Dimensions)

MG-30 PUMP — DIMENSIONS (MG30-TD2 TAG UNIT)

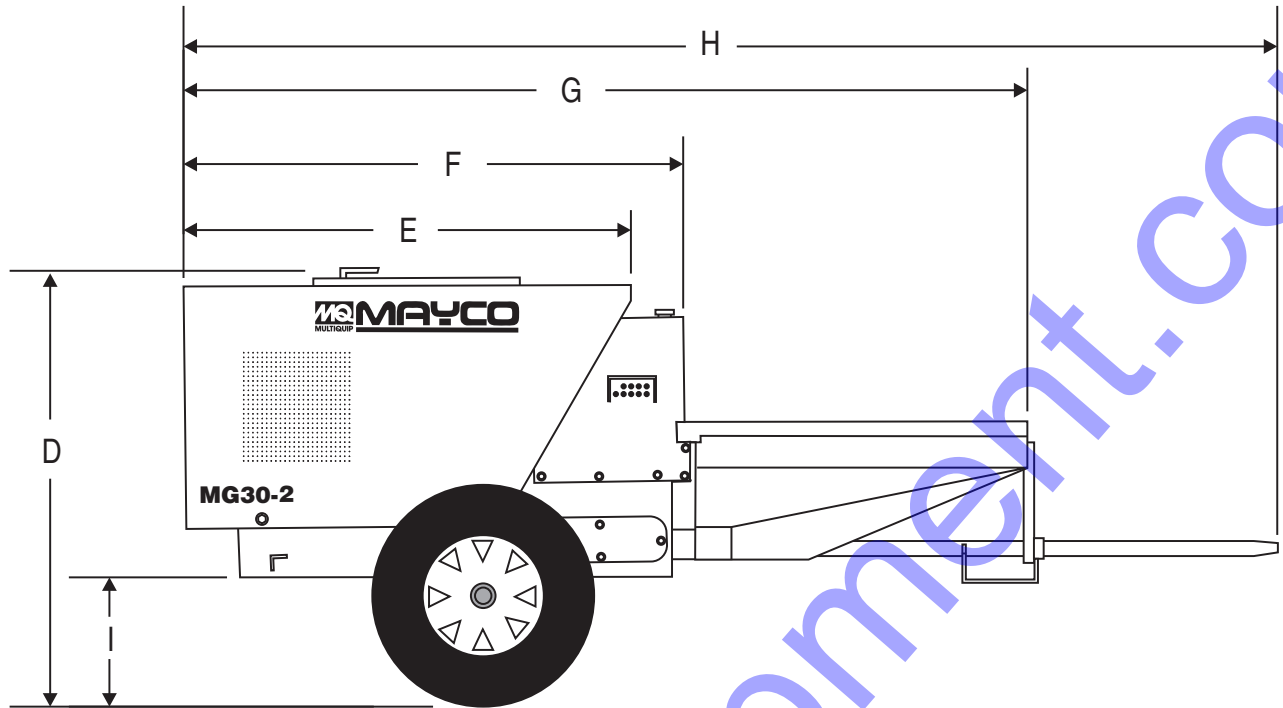


Table 6. Dimensions Tag Unit	
REF.	DIMENSIONS
A	43.0 in. (1.09 meters)
B	60.0 in. (1.52 meters)
C	34.5 in. (.876 meters)
D	46.5 in. (1.18 meters)
E	54.0 in. (1.37 meters)
F	60.5 in. (1.53 meters)
G	96.0 in. (2.43 meters)
H	120 in. (3.04 meters)
I	11.5 in. (.292 meters)

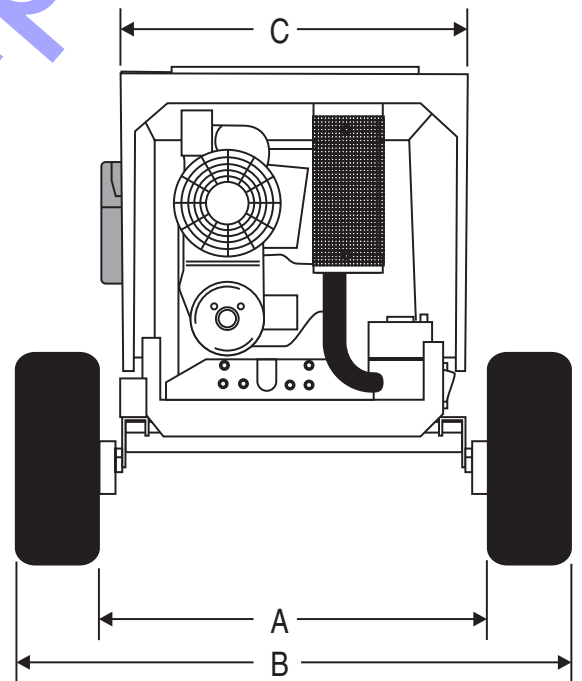


Figure 4. MG-30 (Tag Unit Dimensions)

MG-30 PUMP — GENERAL INFORMATION

General

The MAYCO Model MG30-M and MG30T plaster-mortar, fireproofing pumps are designed to pump material at a steady rate of flow. This is accomplished with two pistons. One piston does all the pumping; the other is a **slave piston**. The slave piston is a **compensation piston** and operates in a manner which causes the pulsating material from the pumping piston to be pumped at a steady rate of flow.

Your MAYCO pump has been serviced and test-run at the factory. Upon delivery and inspection the machine is ready for operation on the job.

This pump uses a 3-1/2 inch pumping piston and therefore develops a higher pressure than most concrete pumps. It is extremely critical that the pump drive components, pumping lines and components are of the finest quality and maintained in a manner to prevent accidents. Use only **high pressure** rated hoses and couplings.

The MG-30 has been assembled with a **pressure relief valve** installed at the discharge port on the manifold. **NEVER** pump materials unless this (pressure relief valve) mechanism is installed.

Normally, the 750 psi rated brass cap is used in plaster applications, whereas the 1,000 psi rated unit is used for higher pressure applications and fireproofing. The brass cap and ball should be removed and **cleaned daily**, or more often if necessary, to prevent material setting up around the ball.

If material hardens around the ball, it will not be effective as a relief valve when high pressure develops. Install ball discharge in downward position. Use the manual relief part of this valve to relieve line pressure before disconnecting material lines or hoses.

Power for the operation of this pump is supplied by a Hatz Model 2M41LZ, 35 H.P. diesel air-cooled engine. This engine transfers power through a V-belt to a totally enclosed speed reducer and also operates a twin-cylinder piston type air compressor.

The MG-30 is equipped with an **electrically controlled solenoid valve** and **gravity-feed piston oiler system**. The electrically controlled solenoid allows the operator to **start** and **stop** the pump remotely from the nozzle.

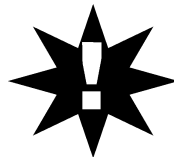
When the solenoid valve is energized (i.e. electric current is applied to the solenoid) the engine speed will increase to the pre-set governed speed, engaging the **centrifugal clutch** and pump. When the solenoid is de-energized, the engine speed will decrease, returning to idle, disengaging the centrifugal clutch and pump.

Located at the rear of the pump is the mixing unit. The drum batch capacity of this mixing unit is between 3.5 and 4.0 bags.

The mixer section of the pump can be powered by either a XX HP Honda gasoline engine, 8.0 HP Hatz diesel or 2.0 HP electric motor.

Due to the abrasive nature of the materials being pumped, some parts of the machine are likely to be worn from use more rapidly than others. It is therefore suggested that spare parts be kept in ready reserve at the job site to prevent downtime.

CAUTION :



If hoses or lines are **blocked** for any reason, or if lines are **kinked** when starting up or during pumping cycle, the pump pressure could straighten out the kink or force out the blockage.

The rapid surge of material could cause the lines to **whip** or move in a manner that could cause injury to personnel. When moving hoses from one job site application to another it is important to walk the entire system and **visually inspect** for any kinks or sharp bends in the hose, before starting or resuming the pumping operation.

The following definitions will help assist you in understanding common pump terminology.

Centrifugal Clutch

The centrifugal clutch is designed to slip when the engine speed drops due to overloading of the pump. This is a safety device to protect other parts of the machine from damage and to prevent a buildup of pressure in the material hose. Continued operation of the machine when the clutch is slipping will cause damage to the clutch. The clutch needs no adjustment or lubrication.

Pump Head Unit

The pump head unit consists of two pistons--one being the pumping piston and the other a compensating piston, driven by the cam and rocker arm principle.

The pump housing is equipped with inlet and outlet valve seats and two special hard rubber or steel balls. When the piston is retracted, the inlet valve seat opens for intake of material into the piston chamber; when the piston is extended, the inlet valve closes and the outlet valve opens, allowing material to be pumped. There are three sections to the pump head unit.

ALWAYS ASSEMBLE THESE SECTIONS PRIOR TO MOUNTING PUMP HEAD UNIT ON FRAME, MAKING SURE THE SEAL RINGS FIT UP AIRTIGHT.

Main Bearings

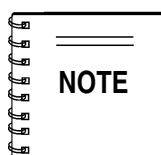
The two main crankshaft bearings are sealed bearings. These bearings should be greased about every two days of pump operation. Any good lithium base grease is acceptable. Too much grease cause the bearings to overheat.

Rocker Arm Shaft

The two rocker arms have bronze bearings. These bearings should be greased **every day** of operation.

Rod Ends

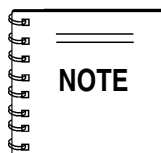
Each piston rod and connecting rod from the crankshaft has a roller bearing. Lubricate these four roller bearing daily with lithium base grease.



Daily lubrication of the roller bearings (except main bearing) will prevent any dirt and foreign matter from entering the bearings.

Cylinders

The cylinder walls do not wear to any degree. Care should be taken not to damage the surface on the ends of the cylinders as this will cause an air leak between the end of the cylinders and the pump housing.



NEVER! use *muriatic acid* to clean the pump. The cylinder bore is **chrome plated**. Muriatic acid will dissolve the chrome.

Pump Housing

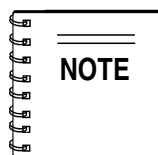
There are 3 sections to the pump housing, **hopper elbow**, **main housing** (center), and **crossover housing**. These 3 housings are held together with "T" slot bolts and are aligned to each other with guide rings on the flange surface.

Always assemble these 3 sections into a complete unit before placing it on the pump. It is important that when the pump housing unit is placed on the pump that all of the gaskets and o-rings are aligned properly with an air tight fit.

Rubber Check Ball

Rubber check balls (not steel) are used in **plaster** and **stucco** applications, because they form a water tight seal at the valve seat. This prevents the check valve from packing due to separation at the valve.

The rubber check balls are components of the pump that will wear quite **rapidly** and must be replace frequently. **Excessive high pressure** is the main cause of wear to the rubber check balls. The rubber check balls can last anywhere from a week to 2 or 3 days depending on the pumping pressure. Jamming the pump or running the pump at a very high pressure may split the rubber check balls.



When replacing either rubber check ball, **always** inspect the other ball for signs of wear. Make sure the o-rings and associated parts are clean and free of dirt when the rubber check valve is reassembled.

Steel Check Ball

Steel check balls are used in **fireproofing** applications, because they form a water tight seal at the valve seat. This prevents the check valve from packing due to separation at the valve.

Leather Piston Cup

The piston, which is held to the push rod by a nut, consists of several parts made of various materials with close tolerances, having as the center a **pre-lubricated leather piston cup**. This cup is in constant contact with the cylinder and the material and it wipes clean the cylinder on each stroke, thereby preventing damage to the cylinder. When the machine is shut down, the piston cups should be periodically inspected and replaced if frayed or damaged.

The leather piston cups will outwear the rubber balls. The leather piston cups as well as the rubber balls can be damaged prematurely if exposed to **excessive pump pressure** or jamming of the pump.

Leather Piston Lubrication

Due to the close tolerance of the piston to the cylinder, the piston is equipped with a felt ring to keep the cylinder constantly lubricated for increased life. The felt ring is lubricated through the oiler fitting and tubing installed at rear of piston.

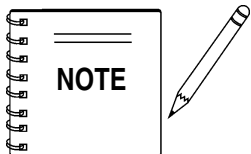
The oiler tank is mounted adjacent to the fuel tank. The **oil level should be checked regularly** during operation and tank filled, if necessary, with a good grade of S.A.E. 20W or 30W motor oil. Oiler tank capacity is 1.5 quarts (.709 liters).

With the engine running, open needle valve (located below oil tank) very slightly. Oil should flow for approximately 5 minutes before pumping material. This will allow oil to reach and penetrate the felt ring. Opening the valve too far will cause oil to flow excessively. Close the valve when the machine is not in use to prevent all the oil draining from the tank.

O-Rings

O-Rings have been installed at sealing points throughout the pump head unit. These O-rings act as seals and are very important for the efficiency of the machine. Great care should be taken when assembling or disassembling those parts where "O" rings have been installed. Always clean O-ring groove thoroughly grease O-ring before installing.

Inspection of **O-rings** should be made regularly. It should be done each time a part containing an O-ring has been disassembled. Carefully remove and check O-ring to see it is not chipped, broken, peeled or has any other signs of deformity. If any of these conditions exists, the O-ring should be replaced.



USE ONLY "O-RINGS" OBTAINED FROM THE FACTORY, as they are manufactured of a special hardened rubber to meet this specific application.

Valve Seats

The valve seats are a loose fit in the pump housing. There are no set screws holding them in place. When the valve seat has been worn to a point where a **new** rubber check ball strikes the bar in the valve seat (keeping the ball from seating properly), the valve seat should be replaced.

Sand Packs

Washed sand left in the material hose can cause a sand pack (clog) in the hose. When the material hose is washed out, make sure all of the loose sand is washed out of the hose. If loose sand is allowed to remain in the hose, the new material coming through the hose will push the sand ahead until it forms a clog in the hose.

Separation

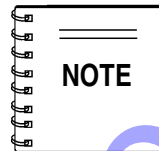
Separation in the pump or the material hose is caused by water being forced out of the material through a loose connection. Make sure that none of the gaskets or o-rings in the pumping system leak. Loose hose connections are one of the most common causes of separation.

Whenever water leaks out through a hose connection, the material will build up slowly. In an hour or so, depending on how bad the leak, a restriction will form at the connection causing the pump to work much harder to force the material through the restriction. This also slows down the output production of the pump. If this condition is not corrected, the pump will jam and stop.

Pump Overloading

If at any time the pump is jammed from separation or a sand pack in the hose, the clutch on the engine will slip. This will protect the moving mechanical parts of the pump from being overloaded and damaged. The capability allows the pump to shut itself down in the event an operator is not near pump if a sand pack or jam-up occurs.

When the drive belt is moved from the largest pulley on the clutch to the smallest, the output power of the pump is increased by a factor of three. So, when operating the pump at the lower speed, the RPM of the engine should also be reduced. This will allow the clutch to slip in the event of a separation or sand pack, and therefore will safeguard the hoses and the mechanical working parts of the pump from damage.



Operating the pump at lower speeds (placing the drive belt in either of the two pulley grooves next to the engine) will develop high pressure in the material hoses when the pumping of stiff materials is required. Make sure that all hoses are in good condition and that all connections are air tight. When using the lower pumping speeds, run the engine at a lower speed.

Leaks

Water can become separated from the material being pumped. This is usually caused by loose connections or damaged seals. When separation occurs, a restriction caused by a buildup of material around the leak forces the pump to work harder. As a result, pump output is lowered and eventually the pump will stop.

Hose and Fittings

Due to the high pressure which the machine is capable of producing we recommend the use of specially constructed MAYCO hose. This hose has been designed to withstand the pressures required to pump the material.

MAYCO hoses are available in 25 ft. and 50 ft. lengths. Each size is equipped with a male insert on each end.

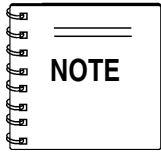
It is suggested to use all 2-inch (5.08 cm.) hose with the exception of the last 25 or 50 ft. This should be 1.5 inch (3.81 cm.) hose, to be used as a whipline.

Wheels

The machine is equipped with **pneumatic (air) type wheels**, rotating on tapered roller bearings. These bearings have been packed at the factory and need not be repacked for approximately 6 months, at which time they should be removed, cleaned and repacked with a good grade of wheel bearing grease.

MG-30 PUMP — GENERAL INFORMATION

Reducers and **unions** are available for connecting the various sizes of hose.



Connecting material hoses by means of any type of quick coupling device is **not** recommended because they generally do not have an adequate pressure rating and are hazardous.

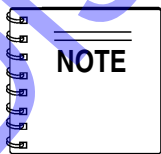
Air Compressor

Your plaster and mortar pump is equipped with a piston type **Quincy Air Compressor**, driven by V-belts from the engine. This air compressor supplies air to the nozzle for spraying of material.

Factors Affecting Hose Pressure

Stiffness of the mix is the most important factor affecting hose pressure. There are others, however, that can be equally important.

1. **Hose Length** – Pressure varies directly with the length of the hose. The pump must develop twice as much pressure with a 100-ft. length of hose as it does with a 50-ft. length.
2. **Hose Size** – The pressure required to pump material through a hose varies with the area of the hose. Thus, if the pressure required for a length of 2-inch diameter (5.08 cm.) hose is 300 pounds (136 Kg.), the pressure required for the same length of 1.5-inch diameter (3.81 cm.) hose would be over 500 pounds (227 Kg.) using the same pumping rate.
3. **Gypsum** – In using gypsum plaster a rich mix (such as 2:1) will take more pressure to pump than a leaner mix. In a 2:1 mix you will probably have to make your mix somewhat softer than a 3:1 mix.
4. **Binders** – Some binders for plaster take more pressure than others. A plaster using gypsum will require the most pressure. Portland Cement pumps quite easily with a minimum of pressure, as does clay or lime.
5. **Aggregates** – The most familiar types of aggregate are **sand, vermiculite, perlite** and **zonalite**. Each one of these has its own characteristics. As most sand absorbs very little water, it is the easiest with which to control the consistency of materials. **vermiculite** or **zonalite**, on the other hand, absorb considerably **more water** when pumped under pressure, as do most perlites. Therefore, in the latter cases, whether the binder is gypsum or **Portland Cement**, your mix must be somewhat softer.



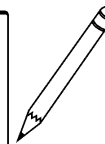
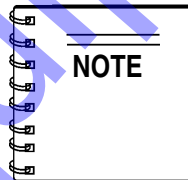
All materials being pumped become stiffer, when applied under pressure. Therefore, the mix at the machine must be softer than if it were taken from the mixer for hand application.

Effect of Hose Pressure On Height

When elevating a plaster containing gypsum and light weight aggregate add about one-half pound per square inch to the required horizontal pump pressure for every foot you elevate the nozzle above the Mayco Model MG-30 plastering unit. This additional pressure is generally not serious because you will probably be running between 1 and 2 lbs. per square inch per foot to overcome friction in the hose.

As an example, if you were using a 40 ft. (12 meters) hose with a pressure of 1-1/2 psi per foot or a total of 60 psi when plastering a wall, and you sprayed a 20 ft. (6 meters) ceiling, you would only increase the pressure 10 lbs. (4.53 Kg.) or have a total of 70 lbs. (32 Kg.) pump pressure. If you wanted to spray a 40 ft. (12 meters) ceiling and needed another 40 ft. (12 meters) of hose, your pump pressure would be:

First 40 feet @ 1-1/2 psi/ft.	60 psi
Second 40 feet @ 1-1/2 psi/ft.	60 psi
Elevation pressure 40 psi/2	20 psi
Total pump pressure	140 psi



Material hose, steel delivery line and couplings are available in various pressure ratings when **new**. **Age wear** and **tear** will **reduce** the above calculated pressure rating.

Nozzle

The MAYCO spray nozzle is constructed of a lightweight material. It has been designed with a removable cap for changing to various size orifices and is also equipped with an atomizer for variance in spray patterns.

The output from the spray nozzle can be controlled to supply a volume from zero to 4.5 cu. ft. per minute. Because of this considerable range in volume, the orifice in the nozzle must be changed to fit the desired volume in order to obtain a good pattern.

In most cases a 5/8-inch (1.58 cm.) orifice will give a good pattern in most browning or scratching applied to paperback wire. On metal lath you should use as large an orifice as possible and lower the air pressure. In most cases the air jet should be set back from the orifice 1/2 to 5/8 inch (1.27 to 1.58 cm.). You will find an air valve at the nozzle to control the air pressure.

MG-30 PUMP — GENERAL INFORMATION

To change from a fine texture to a heavy browning pattern, follow these steps:

1. Lower the air pressure.
2. Change to a larger size orifice.
3. Set the air jet farther back from the orifice.
4. Increase the volume of material.

To increase nozzle frequency and obtain small plaster globules, reverse the above procedure.

How the Nozzle Operates

With the machine running at a rate to brown 80 square yards 1/2" thick, you should use a 1/2-inch (1.27cm.) orifice and the distance from the air stem to the orifice would be 3/8-inch (.952 cm.). To scratch metal lath at the same pumping speed, you would set the air stem from 1/2 to 5/8-inch (1.27 to 1.58 cm.) from the orifice, and you would probably use a 5/8-inch (1.58 cm) orifice.

When adjusting the air pressure, it is desirable to get a good even pattern in the spray. If the air pressure is too high, the plaster will rebound from the wall. If the air pressure is too low, the spray pattern will be very narrow and plaster cannot be sprayed on evenly. Adjust air pressure at nozzle to obtain the desired pattern.

Since the operator feels little or no pulsation when running the Mayco Model MG30 plastering unit, it would appear that plaster comes from the nozzle in a steady stream. Actually, in operation, a globule of plaster comes from the nozzle and is then followed by a globule of compressed air.

The Mayco nozzle can be operated with as few as 50 plaster globules per second, or a frequency of 50 cycles per second, and as high as 1,000 cycles per second with the pump operating at a constant volume.

When the nozzle is emitting 50 plaster globules per second, each globule is 20 times the size of the plaster globules emitted when the nozzle is set for 1000 plaster globules per second. Here lies the basis for the various applications of the Mayco Model MG30.

For example, when a fine texture is desired, the nozzle should operate at a high frequency to break the plaster up into small particles. In scratching metal lath, it is desirable to produce large plaster globules that will adhere to the metal lath. Difference in frequency can be detected by the sound of the nozzle in operation. When the sound at the nozzle is high, almost at a scream like pitch, the frequency is high and the globule size is small.

ESSICK MIXER

The Essick Model EM120SM **plaster** and **mortar** mixer is shipped completely assembled and has been factory tested.

The drum batch capacity of these mixers is between 3.5 and 4.0 bags. With proper care, they will give continuous service year-after-year.

This mixer is powered by a **HATZ** Model 1B30, 8.0 HP **diesel** engine. The power from the engine is transmitted via a clutch/reduction assembly that is coupled directly to the paddle shaft. Therefore providing high mixer torque and eliminating V-belts .

BEFORE STARTING

Before starting the engine, read the engine owners manual and thoroughly understand the safety information.



OIL LEVELS

Be sure to check the oil levels in the engine and transmission before starting the mixer.

DIESEL ENGINE CARE

For care and operation of either **HATZ** diesel engine, refer to the engine manufacturer's operating instructions furnished with the engine. We recommend draining and refilling the engine crankcase at least every thirty hours of operation. Check the engine oil level daily.

MG-30 PUMP — APPLICATION

How It Works

The **Mayco Plaster Pump**, Model MG-30 designed to pump materials at a steady rate of flow. This is done by using two cylinders. The crank powered pumping cylinder does all of the pumping. The cam powered slave cylinder is a compensating cylinder and operates in a manner which causes the pulsating material from the pumping cylinder to be pumped at a steady rate of flow. The slave cylinder will not move until enough pressure is developed to produce this steady rate of flow.

As shown in Figure 5, the pumping cylinder retracts drawing the material past the ball A and filling the cylinder. The slave cylinder is pumping the material out to the nozzle and **causing ball B to seat** preventing the material from returning to the pumping cylinder intake.

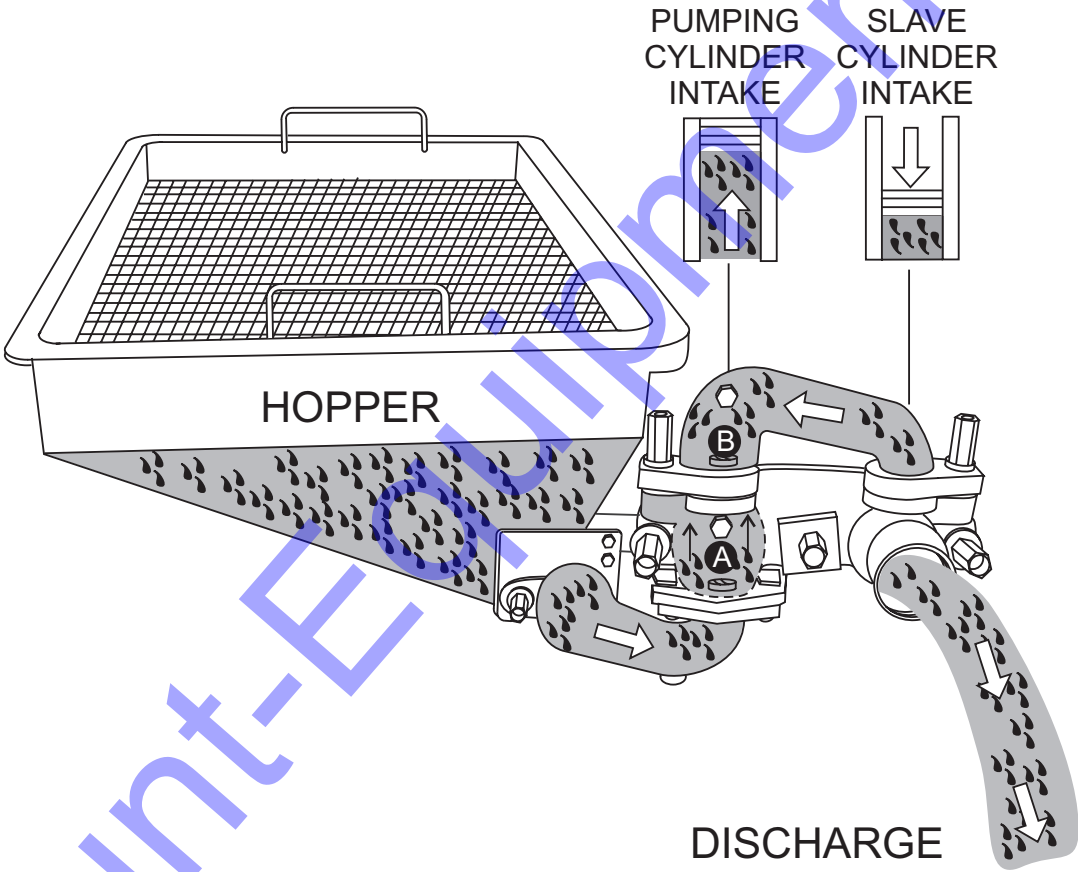
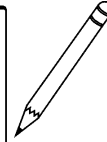
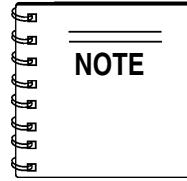


Figure 5. Pumping Cylinder (Discharge)

MG-30 PUMP — APPLICATION

The pumping cylinder (Figure 6) is forcing the material past ball B and out to the nozzle, also **seating ball A** so that the material will not flow back to the hopper. This action also fills the slave cylinder for the next stroke.



The slave piston will not move until enough pressure is developed to produce a steady rate of flow.

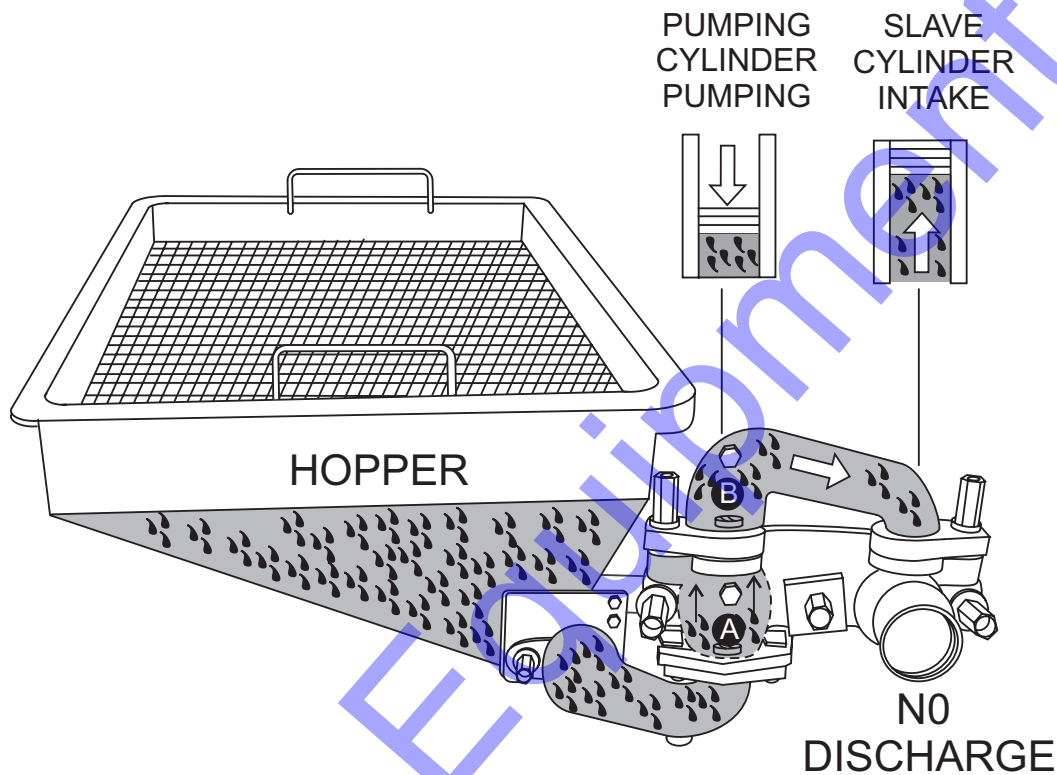


Figure 6. Pumping Cylinder (No Discharge)

Pressure Relief Valve (Automatic)

Purpose

To provide the capability that will **automatically** release the pressure in a material hose or line whenever the flow of material is restricted for any reason, causing unsafe pressure to build up in the hose or line.

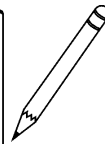
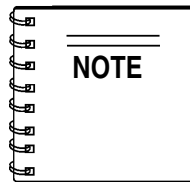
Safety Valve Placement (Automatic)

Place the automatic safety valve at the outlet side of the plaster pump, ahead of the hose connection. This automatic safety valve is to be used in conjunction with the manual release mechanism (**safety relief pressure plug**).

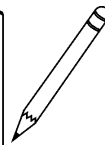
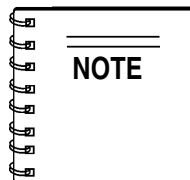
Theory of Operation

Located on the **bottom** of the **safety relief pressure valve** (Figure 7), is a pipe nipple with an opening which is sealed off with a rubber ball that is held against the opening with a **brass cap**.

It is the responsibility of the pump operator to ensure that the delivery hose and line system with all clamps and accessories have a higher pressure rating than the safety cap being used.



NEVER place the MG-30 into operation without a safety relief pressure valve with a manual release control installed on the pump discharge.



ALWAYS point the brass cap on the safety valve **downward**. This will prevent the ball from striking someone and possibly causing injury.

Suggestion:

DO NOT use a 1000 psi cap if your pumping requirement is less than 750 psi. **Always** use a cap that is rated less than the total system pressure.

The rubber ball will stay in place until an excessive amount of pressure occurs that will cause the ball to **blow** out through the opening (Figure 8) in the brass cap and release the pressure in the hose or line.

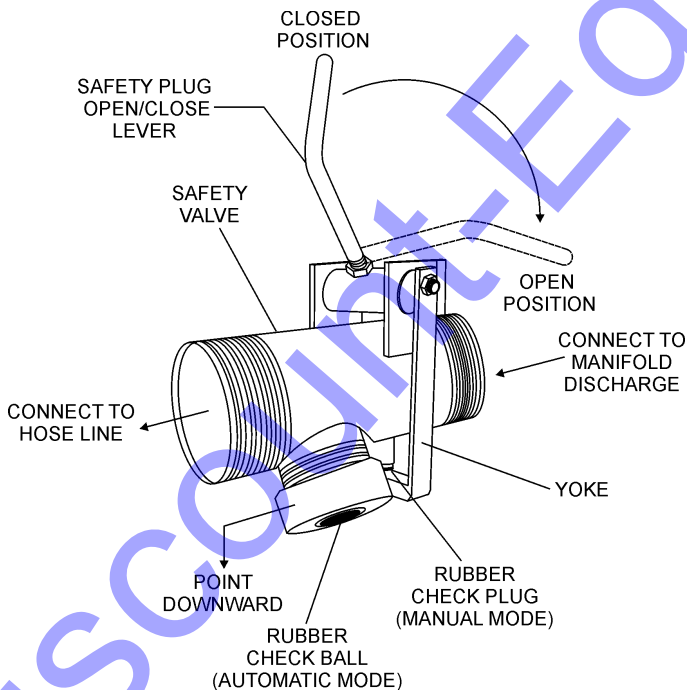


Figure 7. Safety Relief Pressure Valve (Automatic Mode)

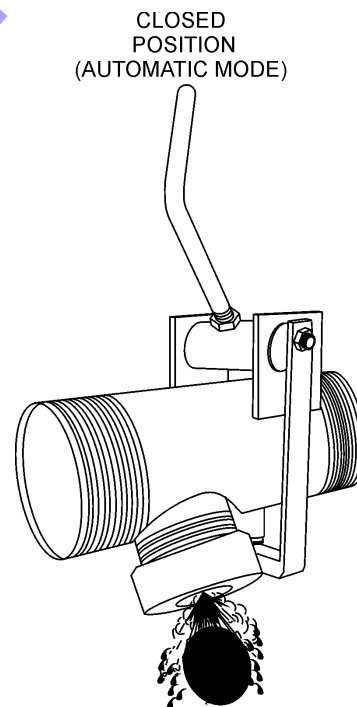


Figure 8. Safety Relief Pressure Valve (Rubber Check Ball Release)

Pressure Relief Plug (Manual Operation)

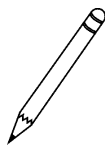
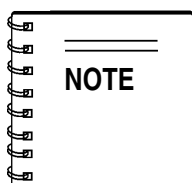
Purpose

To provide the capability that will **manually** release the pressure in a material hose or line whenever the flow of material is restricted for any reason, causing unsafe pressure to build up in the hose or line.

Safety Valve Placement (Manual)

Place the **safety relief pressure valve** (Figure 9) at the discharge side of the plaster pump, ahead of the hose connection. Located on the pressure relief valve is a **rubber pressure release plug** (manual activation), the plug is held in position by a steel clamp (**yoke**) and is activated by pulling the lever **downward** to release the pressure in the system.

This manual pressure release plug is to be used in conjunction with the automatic release mechanism (**rubber check ball**).



ALWAYS open the manual pressure release plug before disconnecting any part of the delivery hose, line or clamp system.

Anytime it is necessary to uncouple or remove any part of the delivery system, the manual pressure release plug must be opened to relieve pressure in the system.

Before activating the manual pressure release **plug** the operator **must** do the following:

1. Stop the engine.
2. Warn all workers and bystanders to stand at least 20 feet away from the pump and turn their heads away from the pressure relief safety valve.
3. The operator shall position himself/herself beside the pressure relief safety valve with his/hers back to the pump.
4. Wearing safety glasses, reach down with one hand, grasp the release lever on top of the safety valve.
5. Turn head away from the pressure release plug and lift lever **upwards** (open).
6. Remain facing away from the pressure relief valve until counting up to 20, slowly. By that time, the material ejecting under pressure will be slowly discharging. Work can resume only after the material has been discharged for a minimum of 20 seconds.
7. After correcting the problem that caused the excess pressure in the system line, close the safety plug by pushing the plug open/close lever **downward** (closed), and resume pumping.

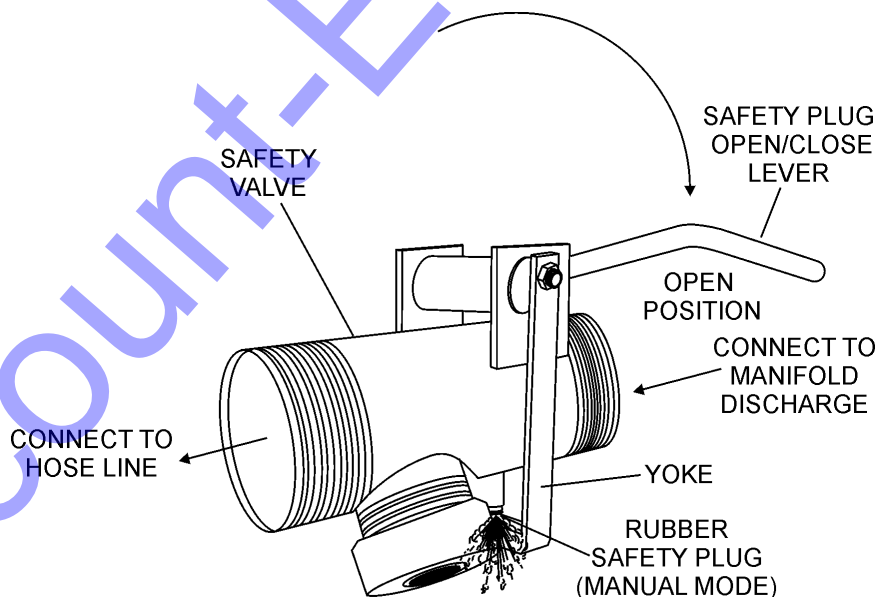


Figure 9. Rubber Safety Relief Pressure Plug

MG-30 PUMP — MIXER MAJOR COMPONENTS

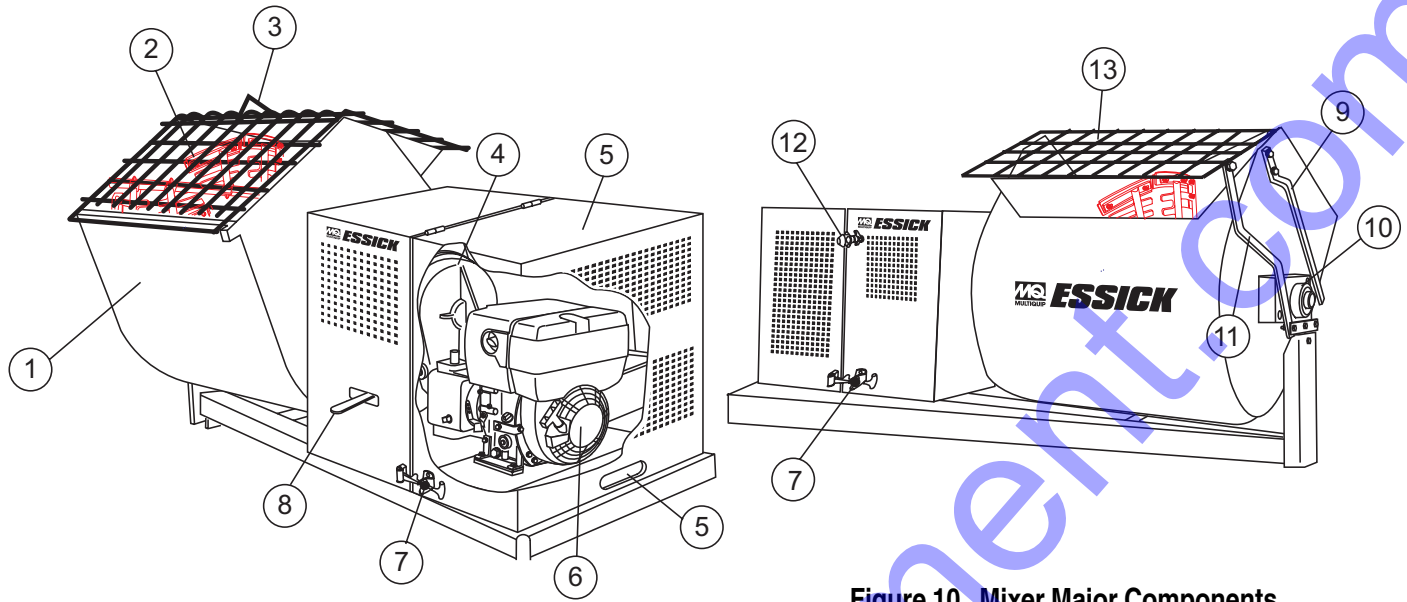


Figure 10. Mixer Major Components

Figure 10 illustrates the major components and controls of the mixer.

1. **Mixing Drum** — Made of **steel**. Mixing materials such as concrete, mortar, plaster are to be placed into this drum for mixing. Always clean the drum after each use. Drum capacity is 12 cu. ft.
2. **Mixing Paddles** — Used in the mixing of material. This unit uses four different types of paddles to provide a fast uniform mix.
3. **Bag Cutter**— This feature allows compound mixing bags to be opened easily, therefore allowing the contents of the bag to fall directly into the mixing drum. Bag capacity is 3.5 to 4 bags.
4. **Transmission** — Totally inclosed oil bath transmission.
5. **Engine Cover** — Lift this cover to gain access to the engine and transmission compartments.
6. **Engine** — The mixer unit is powered by a Hatz Model IB30, 8.5 HP **diesel** engine. See page 30 for engine component definitions.
7. **Engine Cover Grip** — Place hand inside grip then lift upwards to raise cover. When lifting of the cover is required make sure both rubber bunjee latches have been released.
8. **Rubber Latch** — Use this latch to secure the engine compartment cover.
8. **Clutch Lever** — Push the clutch lever **forward**, toward the tow (tongue) end of the mixer to engage clutch. Once clutch is engaged paddle shaft will rotate. To disengage clutch pull the clutch **backwards** towards the engine.
9. **Dump Handle** — Pull this handle downward to dump the contents of the drum. Push the handle upward to return the drum to its vertical position.
10. **Pivot Point/Zerk Fitting** — There is, on each end of the mixing drum a zerk grease fitting. These fittings lubricate the dumping mechanism. Lubricate both fittings at least twice a week.
11. **Safety Grill Lock Handle** — To prevent injury to hands and arms, the safety grill should **ALWAYS** be locked when the mixing of plaster or mortar is required. Also when transporting the mixer the safety grill should be locked. The safety grill should only be un-locked when cleaning of the blades and drum is required.
12. **Safety Grill** — Provided for operator safety. This safety grill is designed to keep hands and solid objects out of the mixing drum when in use. This grill should be closed at all times when pump is in use. **DO NOT** remove the grill or grill opening bar. Keep the grill clean by washing it down daily.

MG-30 PUMP — MG30 M2D MAJOR COMPONENTS

Figure 11 illustrates the major components and controls of the MG-30 (Mobil Unit).

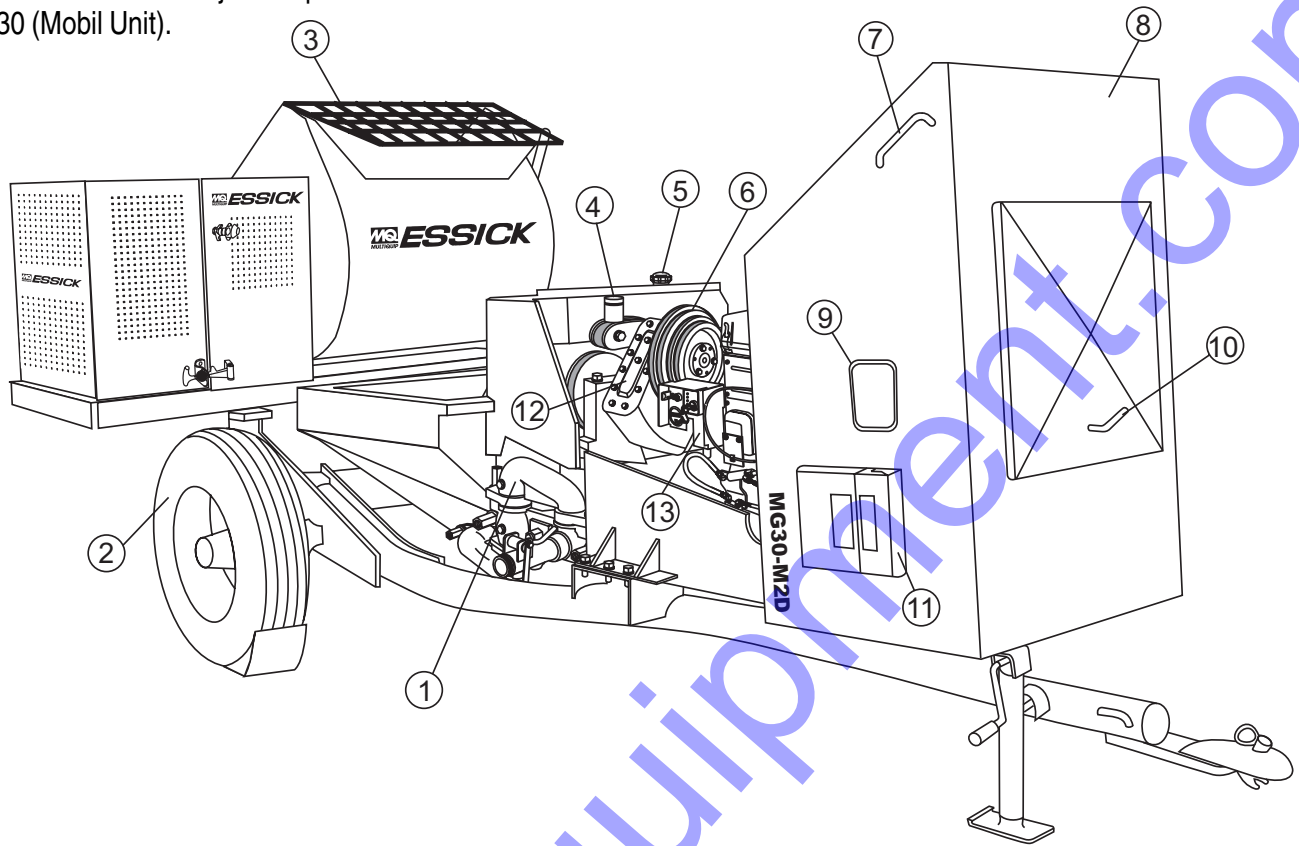
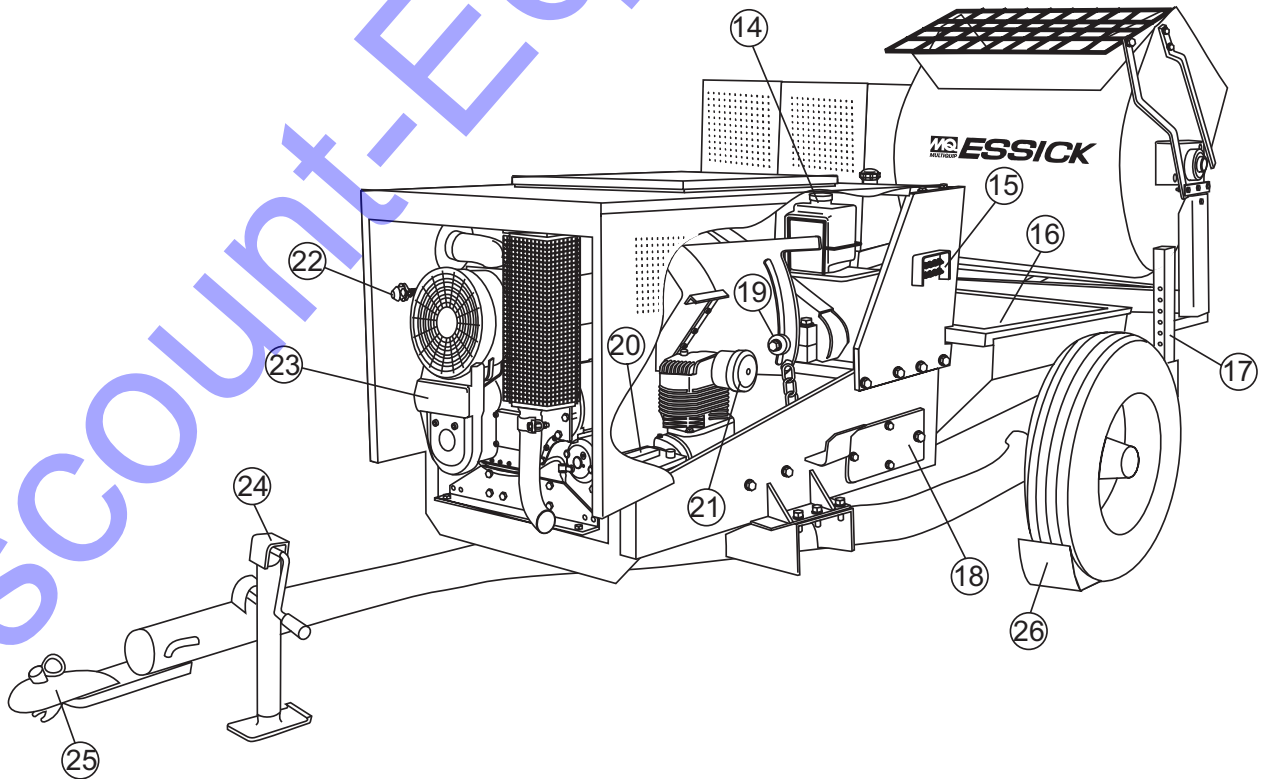


Figure 11. MG-30 Major Components



MG-30 PUMP — MG30-M2D MAJOR COMPOUNDS

1. **Manifold** — Cast steel manifold, 2 in. (5.08 cm.) for plaster, 3 inch (7.62 cm.) for fireproofing. This manifold is designed with a **manual pressure relief valve** and an **automatic safety pressure relief valve** rated between 700-1000 PSI.
2. **Tires** — This trailer uses two ST205-750 x14C type tires. Tire inflation pressure is the most important factor in tire life. Pressure should be checked to **50 psi cold** before operation. **DO NOT** bleed air from tires when they are hot. Check inflation pressure weekly during use to insure the maximum tire life and tread wear.
3. **Mixer** — This unit uses a "**Essick**" mechanical 12 ft³ **mortar and plaster mixer**. See page 27 for mixer component definitions.
4. **Oiler** — Cam bearing oiler. Fill with SAE 20 or 30 wt. motor oil. Lubricates cam surface.
5. **Fuel Gauge/Fuel Cap** — Read the top of this cap to determine if the fuel level is low. If fuel level is low, remove cap to add #2 diesel fuel.
6. **Gear Reduction Pulley** — This is an adjustable 4-groove pulley. Select the pulley speed that fits your pumping requirement.
7. **Compartment Hood Lift Handles** — There are two compartment hood lift handles located on each side of the hood. Grip handle and pull upwards to lift hood.
8. **Compartment Hood** — This hood encloses the engine, compressor, gear reduction pulley, reduction gearbox, battery, control box and other associated components required to operate the pump. **NEVER!** operate the pump with the hood in the up position.
9. **View Access Window** — This opening allows the user to start the unit and have access to the control box without lifting the compartment hood.
10. **Access Cover/Handle** — Turn this handle clockwise to release latch, then lift upwards. When this cover is in the open position it will provide a more free flow of air to help keep the engine and associated components cool.
11. **Documentation Box** — Contains information regarding the pump and mixer.
12. **Speed Reduction Gearbox** — A constant-mesh type and total enclosed gearbox with all gears immersed in oil. Fill with **SAE 90 wt.** motor oil. **ALWAYS** keep gearbox oil at proper operating level.
13. **Engine Control Box** — Contains the engine ignition switch, operation switch, engine status LED's (5), hour meter, remote control connector and 25 amp fuse.
14. **Piston Oiler Tank**— Fill this tank to the "**FULL**" level for normal operating conditions. Check regularly. Fill with SAE 30 wt. type motor oil. Oiler tank capacity is 1-1/2 quarts (1.14 liters).
15. **Lubrication Port Panel** — Central grease panel. All lubrication points can be accessed via this panel. Allows lubrication of all bearings without lifting the hood.
16. **Hopper** — This unit uses a galvanized hopper which can hold up to 12.0 cu. ft. (340 liters) of mix. **NEVER** put hands or any other parts of you body into the hopper.
17. **Mixer End Jack Stand** – Use this jack stand to level and support the pump.
18. **Lubrication Box Access Cover** – There are four access covers on the pump. Remove these doors to gain access to drive and piston assemblies when maintenance is required.
19. **Gear Reduction Adjustment Bolt** – Loosen this bolt to pivot the gearbox assembly upwards or downwards. This will allow for the placement of the V-belt on one of the four pulley grooves.
20. **Battery** – This unit uses a +12 VDC type battery. **ALWAYS** use gloves and eye protection when handling the battery.
21. **Air Compressor** – This unit uses a piston type **Quincy Air Compressor**, driven by V-belts from the engine. This air compressor supplies air to the nozzle for spraying of material. The compressor has an output of 10 CFM @ 100 psi. A weekly check should be made of the crankcase oil level to make sure it is at the **full mark**, or at least between the two marks on the dipstick.
To place the engine in idle, press the top button inward all the way.
22. **Throttle Control Knob** – This is a variable speed type control. Turning the throttle lock (CCW) left unlocks the throttle allowing the throttle control cable to be pulled out to the desired position. Once the desired throttle position (speed) has been achieved, turning the throttle lock to the (CW) right locks it in place. Use the fine tune adjustment knob to fine tune the engine rpm's.
To place the engine in idle, press the top button inward all the way.
23. **Engine** – This unit uses a **HATZ** Model 2M4LZ, 35 HP air cooled diesel engine. See page 31 for engine component definitions.
24. **Tow End Jack Stand** – Use this jack stand to level and support the pump.
25. **Tow Hitch Coupler** – Requires a 2-inch ball hitch or a pin. Capable of towing 5,000 lbs.
26. **Chock Blocks** – Place these blocks (not included as part of your concrete pump package) under each wheel to prevent rolling or when parked on a slope.

MG-30 PUMP — HATZ 8.5 HP ENGINE COMPONENTS

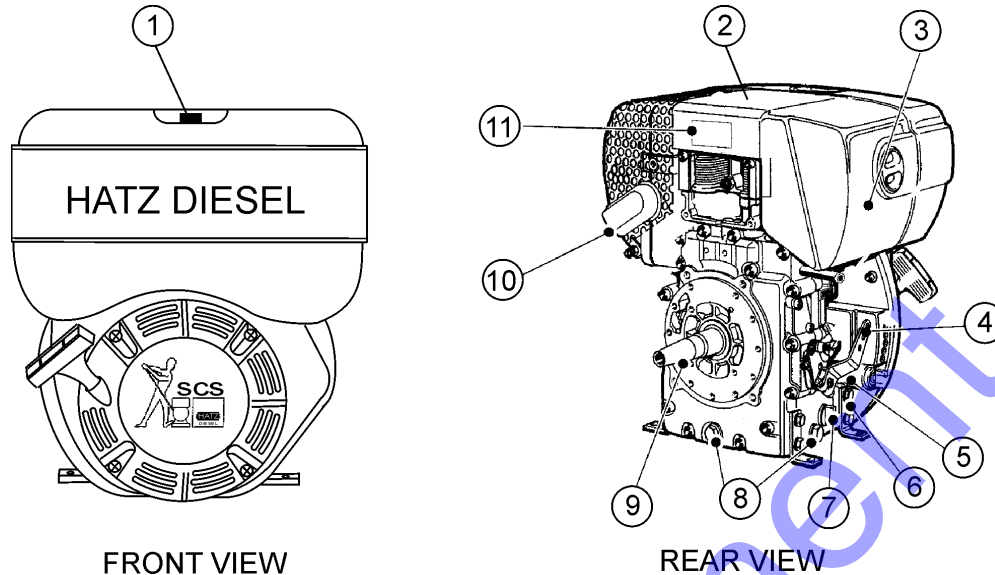


Figure 12. Hatz Model 1B30 8.5 HP Diesel Engine

INITIAL SERVICING

The *mixer's* engine (Figure 12) must be checked for proper lubrication and filled with fuel prior to operation. Refer to the manufacturers Engine manual for instructions & details of operation and servicing.

1. **Fuel Filler Cap/Fuel Tank** – Pull this latch to add *diesel* fuel to the tank. After refueling, always make sure the fuel cap is latched properly. **DO NOT** over fill. For additional information refer to engine owner's manual.



WARNING

Adding fuel to the tank should be accomplished only when the engine is **stopped** and has had an opportunity to cool down. In the event of a fuel spill,

DO NOT attempt to start the engine until the fuel residue has been completely wiped up, and the area surrounding the engine is dry.

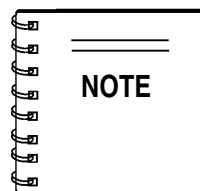
2. **Engine Lifting Straps/Cover** – Remove the air cleaner cover, then lift this cover (the one with decals on it) to gain access to the engine lifting straps.
3. **Air Cleaner/Cover** – Prevents dirt and other debris from entering the fuel system. Remove wing-nut on side of air filter cover to gain access to filter element.
4. **Speed Control Lever** – This lever is connected to the throttle control which is located on the side of the engine compartment cover. Use this lever to control engine speed.
5. **Dip Stick** – Remove dipstick to determine if the engine oil level is low. If low add oil as specified in Table 4, page 14.

6. **Engine Motor Mounts** – Attach these engine mounts to the mixer frame. Tighten securely.
7. **Oil Filter** – Remove this bolt to gain access (internal) to the engine oil filter. Service the oil filter as recommended in the maintenance section of this manual.
8. **Oil Drain Plugs** – There are two oil drain plugs, one is underneath the flywheel, the other on the side of the engine. Remove these plugs to drain engine oil from the engine crankcase.
9. **Crankshaft** – Connect this shaft to the input of the transmission.
10. **Muffler** – Used to reduce noise and emissions.
11. **Nameplate** – Contains information about the engine.



WARNING

Engine components can generate extreme heat. To prevent burns, **DO NOT** touch these areas while the engine is running or immediately after operating. **NEVER** operate the engine with the muffler removed.



Operating the engine without an air filter, with a damaged air filter, or a filter in need of replacement will allow dirt to enter the engine, causing rapid engine wear.

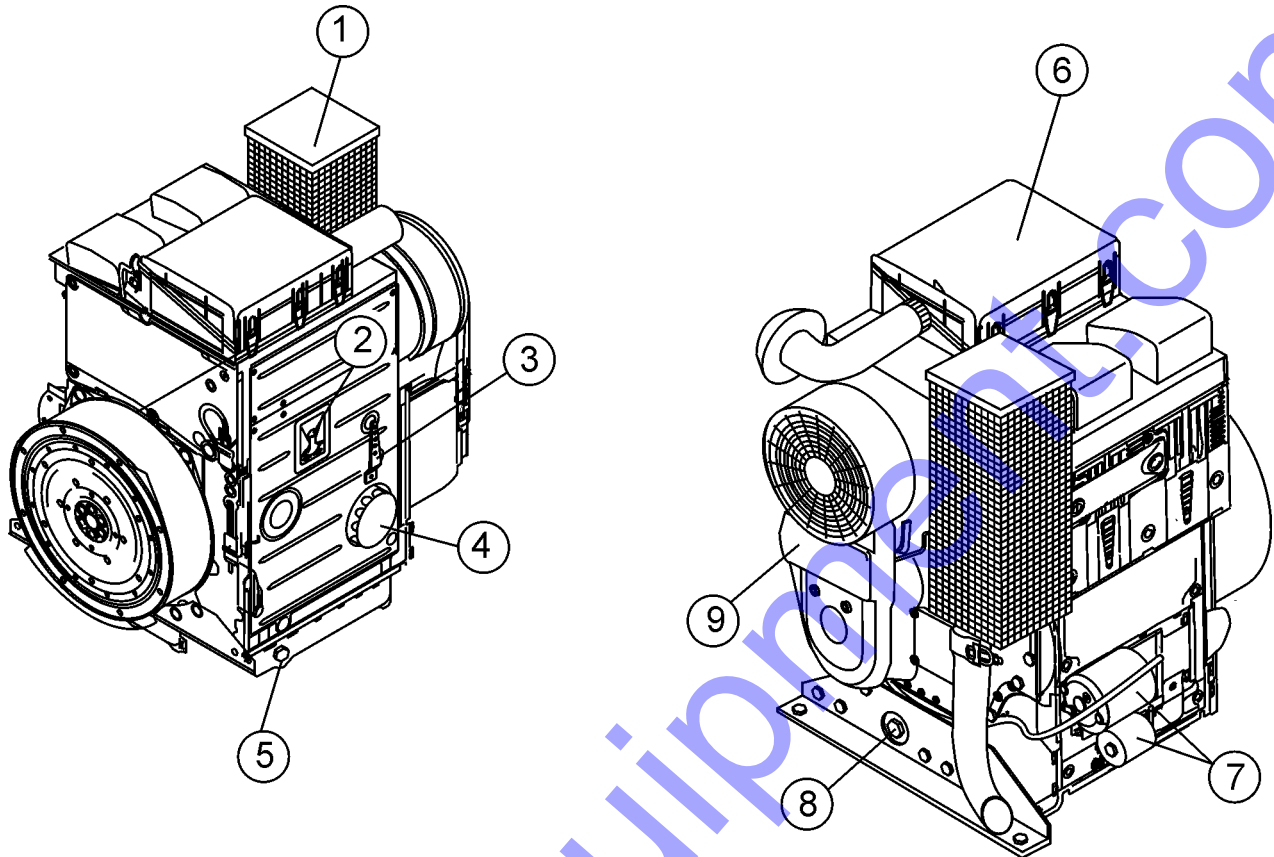


Figure 13. Hatz Model 2M41LZ 35 HP Diesel Engine

INITIAL SERVICING

The *pump's* engine (Figure 13) must be checked for proper lubrication and filled with fuel prior to operation. Refer to the manufacturers Engine manual for instructions & details of operation and servicing.

1. **Muffler** – Used to reduce noise and emissions. **NEVER** touch the muffler while it is hot! Serious burns can result. **NEVER** operate the engine with the muffler removed.
2. **Dip Stick** – Remove dipstick to determine if the engine oil level is low. If low add oil as specified in Table 8, page 37.
3. **Speed Control Lever** – This lever is connected to the throttle control which is located on the side of the engine compartment cover. Use this lever to control engine speed.
4. **Oil Filter** – Prevents dirt and other debris from entering the engine. Service the oil filter as recommended in the maintenance section of this manual.
5. **Side Oil Drain Plug** – Remove this plug to drain engine oil from the engine crankcase. For best results drain engine oil when oil is warm.
6. **Air Filter/Cover** – Prevents dirt and other debris from entering the fuel system. Release the latches on the side of the air filter cover to gain access to filter element.
7. **Starter/Solenoid** – This engine uses a 12 VDC , 2.7kW (3.7 HP) starter motor with solenoid.
8. **Front Oil Drain Plug** – Remove this plug to drain engine oil from the engine crankcase. For best results drain engine oil when oil is warm.
9. **V-Belt Cover** – Remove this cover to gain access to the V-belt. When replacing V-belt , use only recommended type V-belt.

MG-30 PUMP — PRE-INSPECTION (MIXER)

Blade Check

Adjust paddles as shown in Figure 14. Make sure paddle blades are adjusted correctly before using mixer. Replace all **defective** or **damaged** blades immediately.

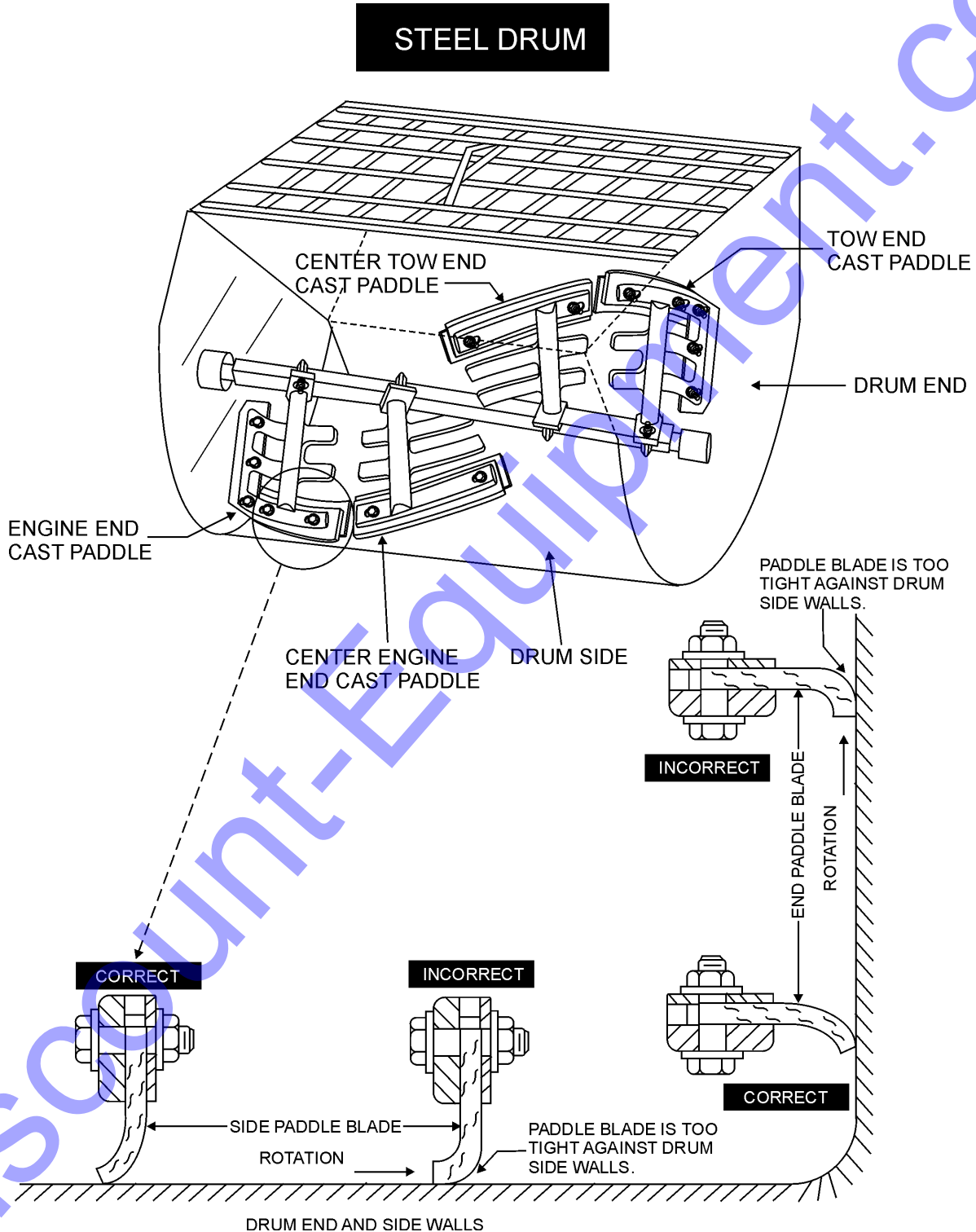
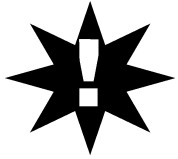


Figure 14. Paddle Blade Adjustment, Steel Drum

MG-30 PUMP — PRE-INSPECTION (MIXER)

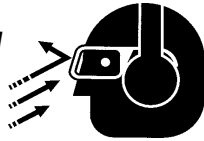
CAUTION



NEVER operate the mixer in a confined area or enclosed area structure that does not provide ample *free flow of air*.



ALWAYS wear approved *eye* and *hearing* protection before operating the mixer.



NEVER place hands or feet inside the mixing drum. **ALWAYS** make sure the *safety grill* on the mixer is locked while the engine is running. **ALWAYS** shut-down the engine before performing any kind of maintenance service on the mixer.



Before Starting

1. Read safety instructions at the beginning of manual.
2. Clean the *entire mixer*, removing dirt and dust, particularly the engine cooling air inlet, and air filter.
3. Check the *air filter* for dirt and dust. If air filter is dirty, replace air filter with a new one as required.
4. Check fastening nuts and bolts for tightness.



See Figure 12, page 30 for the location of any control or component referenced in this section.

FUEL

1. Lift the fuel cap latch located on top of the fuel tank then look inside the tank and determine if the mixer's engine fuel is low. If fuel is low, fill with **#2 diesel fuel** (Figure 15). See Table 4 for other types of recommended fuel.

CAUTION:



Handle fuel safely. Motor fuels are highly *flammable* and can be dangerous if mishandled. **DO NOT smoke** while refueling. **DO NOT** attempt to refuel mixer if the engine is hot or running. **ALWAYS** allow engine to *cool* before refueling.

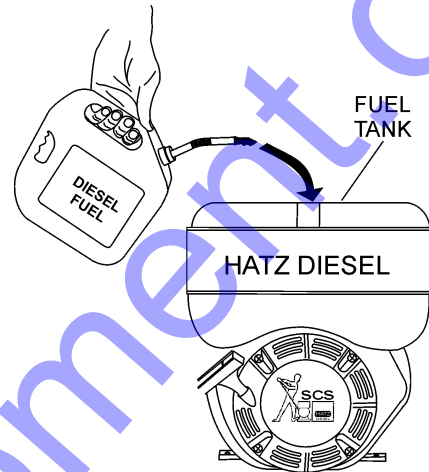


Figure 15. Adding Diesel Fuel

ENGINE OIL

1. Remove the engine oil dipstick from its holder (Figure 16).

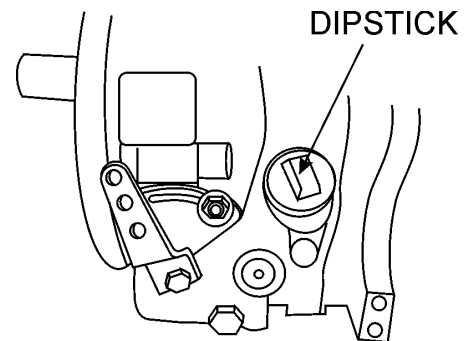
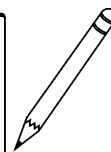
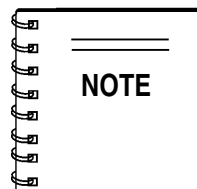


Figure 16. Oil Filler Port/Dipstick



Reference manufacturer engine manual for specific servicing instructions.

MG-30 PUMP — PRE-INSPECTION (MIXER)

- Determine if the mixer engine oil is low (Figure 17), add correct amount of engine oil to bring oil level to a normal safe level. See Table 7 for recommended oil type.

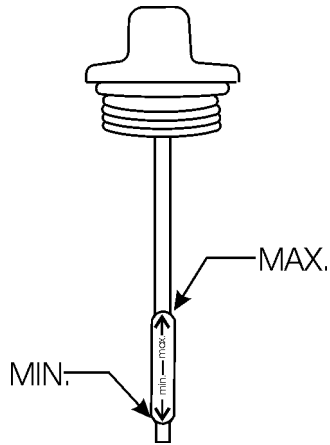


Figure 17. Dipstick (Mixer Engine)

Table 7. Motor Oil Grade

Season	Temperature	Grade of Motor Oil (higher than MS class)
Summer	25° C (77° F) or Higher	SAE 10W-30
Spring Fall	25° C (77° F) ~10° C (50° F)	SAE 10W-30/20
Winter	0° C (32° F) Or Lower	SAE 10W-10 SAE 5W

ZERK GREASE FITTINGS

- Check the zerk grease fittings at each end of the mixing drum (Figure 18). These grease fittings lubricate the dumping mechanism. If the dumping handle is stiff or hard to move lubricate these fittings.

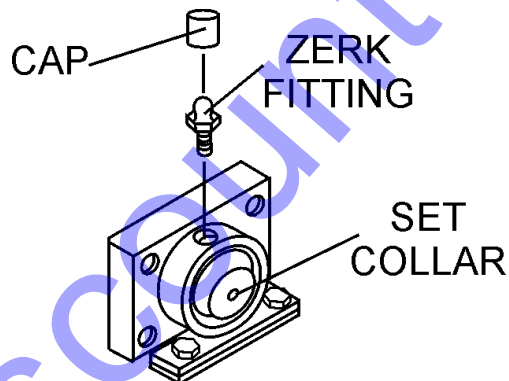


Figure 18. Zerk Fittings (Bearings)

LUBRICANTS

CLUTCH OIL

- Remove the clutch **oil level plug** (Figure 19). If oil begins to seep out as the plug is being removed, then it can be assumed that the clutch oil is at the proper operating level.
- If oil does not seep out as the oil level plug is being removed, then remove the **clutch oil fill plug** and fill with SAE 30 engine oil to the proper operating level.

GEAR REDUCTION OIL (TRANSMISSION)

- Remove the **transmission oil level plug** (Figure 19). If oil begins to seep out as the plug is being removed, then it can be assumed that the transmission oil is at the proper operating level.
- If oil does not seep out as the oil level plug is being removed, then remove the **transmission oil fill plug** and fill with **SAE 90** transmission oil to the proper operating level.

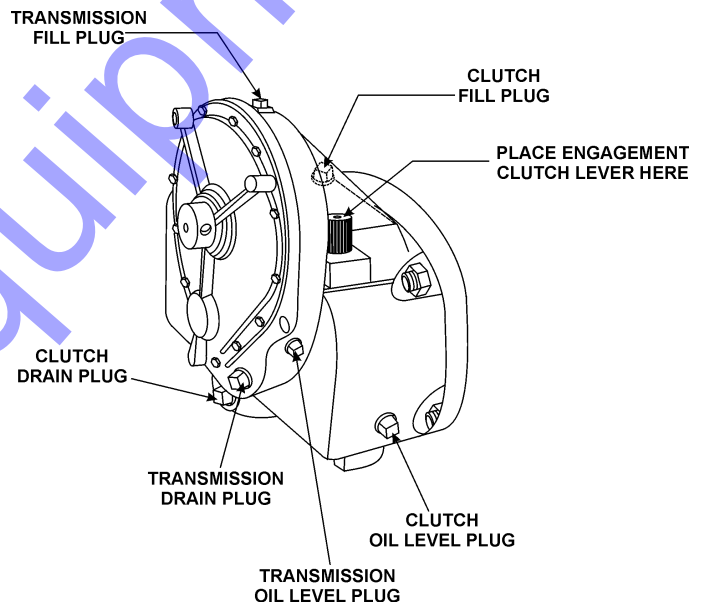


Figure 19. Transmission/Clutch Lubrication

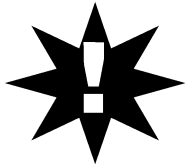
MG-30 PUMP — INITIAL START-UP (MIXER MOBIL ONLY)

This section is intended to assist the operator with the initial start-up of the **ESSICK** Model EM120SM mixer. It is extremely important that this section be read carefully before attempting to use the mixer in the field. The mixer unit is **not available** on the TAG unit.

DO NOT use your mixer until this section has been read and thoroughly understood.



CAUTION:



Failure to understand the operation of the **ESSICK** Model EM120SM mixer could result in severe damage to the mixer or personal injury.

STARTING THE ENGINE

The following steps outline the procedure for starting the **mixer's engine**.

1. Make sure the **clutch engagement lever** (Figure 22) is in the dis-engage position (lever is pointing towards the **engine end**).
2. **PUSH** the "RED" button (Figure 20) on the throttle control and pull the round black knob about halfway out. Make sure that the throttle lock knob has been dis-engaged.

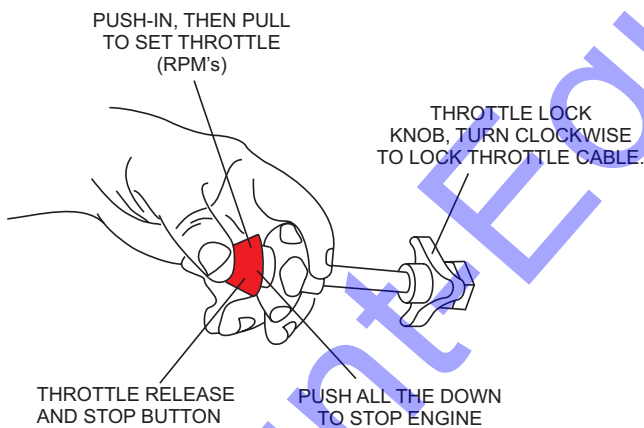


Figure 20. Throttle Control Knob (Mixer)

3. **Pull** the **starter grip** (Figure 21) lightly until you feel resistance, then pull briskly. Return the starter grip gently.

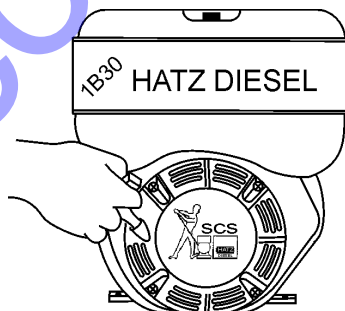


Figure 21. Starter Grip

4. **Push** the clutch engagement lever forward (Figure 22), toward the **tow end** of the mixer. When engine starts adjust throttle lever so that paddle shaft inside mixer rotates between 30 - 40 RPM's. The number of RPM's will vary depending on the load.

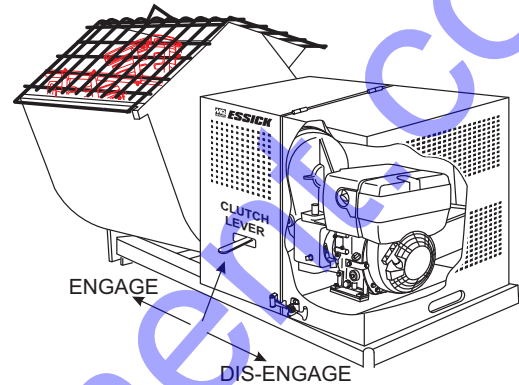
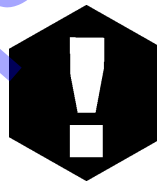


Figure 22. Clutch Engagement Lever

MIXING

1. The paddle shaft inside the drum should be rotating at this time.
2. Lift the mixing bag compound onto the steel grate over the bag cutter and let the contents fall into the drum.
3. Add water, and mix compound to desired consistency,

WARNING:



Be sure to stand clear of the **dump handle** when the mixer is operational. Any binding of material between the mixer blades and the drum will cause the drum and dump handle to suddenly move upwards, thus causing bodily harm.

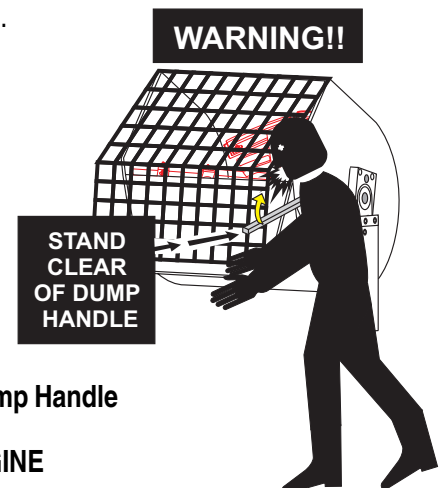


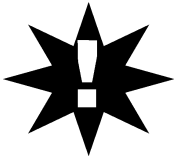
Figure 23. Mixer Dump Handle

STOPPING THE ENGINE

1. Place the clutch engagement lever in the dis-engage position (lever is pointing towards the **engine end**).
2. **PUSH** the "RED" throttle button halfway in (idle speed). Allow the engine to cool for 3-5 minutes.
3. **PUSH** the "RED" throttle button all the way in, this will stop the engine.

MG-30 PUMP — PRE-INSPECTION (PUMP)

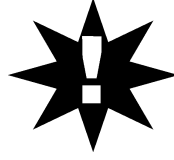
CAUTION



NEVER operate the pump in a confined area or enclosed area structure that does not provide ample **free flow of air**.

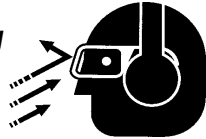


CAUTION:



Handle fuel safely. Diesel fuel is highly **flammable** and can be dangerous if mishandled. **DO NOT smoke** while refueling. **DO NOT** attempt to refuel mixer if the engine is hot or running. **ALWAYS** allow engine to **cool** before refueling.

ALWAYS wear approved **eye** and **hearing** protection before operating the pump.



NEVER place hands or feet inside the **hopper**. **ALWAYS** make while the engine is running. **ALWAYS** shut-down the engine before performing any kind of maintenance service on the pump.

NEVER operate the pumps's engine with the engine hood removed. The possibility exists of **hands**, **long hair**, and **clothing** becoming entangled with the V-belt, causing injury and bodily harm.



Before Starting

1. Read safety instructions at the beginning of manual.
2. Clean the **entire pump**, removing dirt and dust, particularly the engine cooling air inlet, and air filter.
3. Check the **air filter** for dirt and dust. If air filter is dirty, replace air filter with a new one as required.
4. Check fastening nuts and bolts for tightness.



See Figure 11 on page 28 for the location of any control or component referenced in this section.

FUEL CHECK

1. Read the fuel gauge (Figure 24) on top of the fuel tank to determine if the pump's engine fuel is low. If fuel is low, fill with **#2 diesel fuel** (Figure 25).

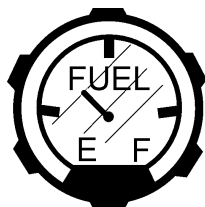


Figure 24. Fuel Gauge (Pump)

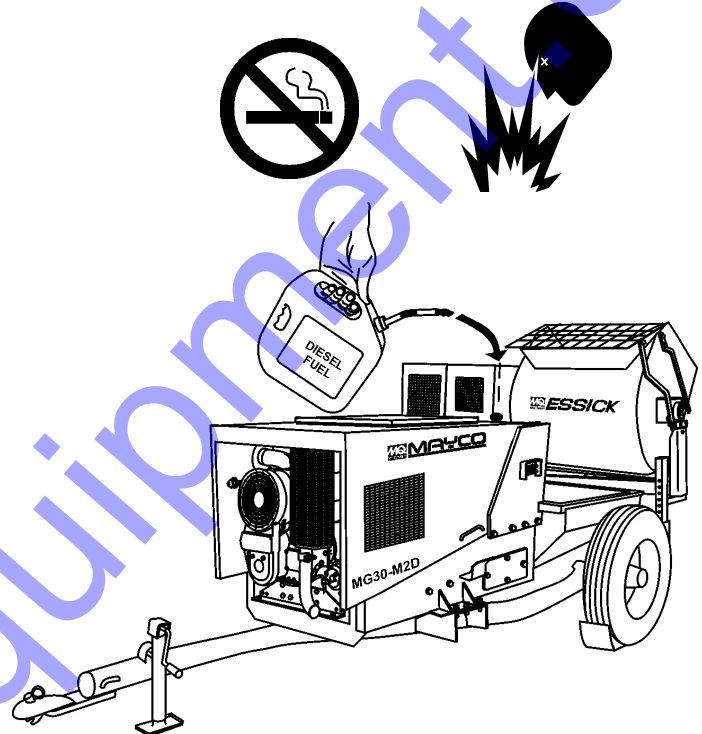


Figure 25. Adding Diesel Fuel

ENGINE OIL CHECK

1. Remove the engine oil dipstick from its holder (Figure 26).

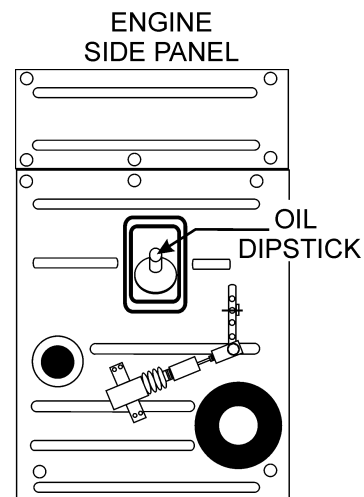


Figure 26. Engine Oil Dipstick

MG-30 PUMP — PRE-INSPECTION (PUMP)

1. Make sure pump/engine is placed on level ground.
2. Pull the engine oil dipstick (Figure 27) from its holder.

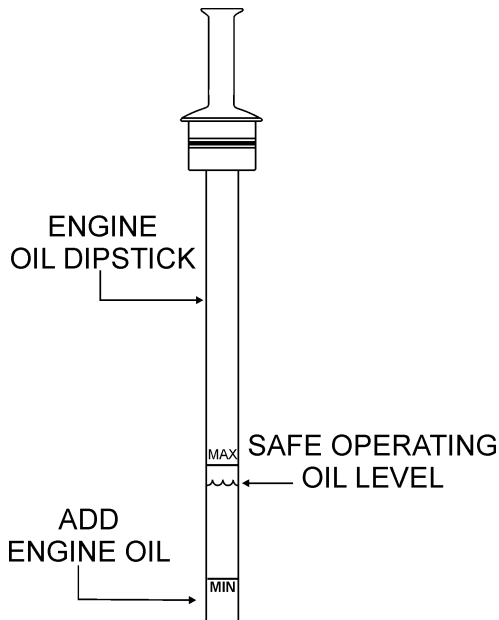


Figure 27. Dipstick (Pump Engine)

3. Verify that oil level (Figure 27) is maintained between the two notches on the dipstick.
4. If the pump's engine oil is low, fill engine crankcase with lubricating oil through filler hole, but **DO NOT** overfill.
5. The oil listed in Table 8 is recommended to ensure better engine performance. Use class CD or higher grade motor oil.

Table 8. Oil Selection Chart	
OIL: SAE	
°F	°C
122	50
104	40
86	30
68	20
50	10
32	0
-14	-10
-4	-20
-22	-30
-40	-40

CAM OILER FELT PADS

1. Remove the cam oiler cap and flat washer as shown in Figure 28.

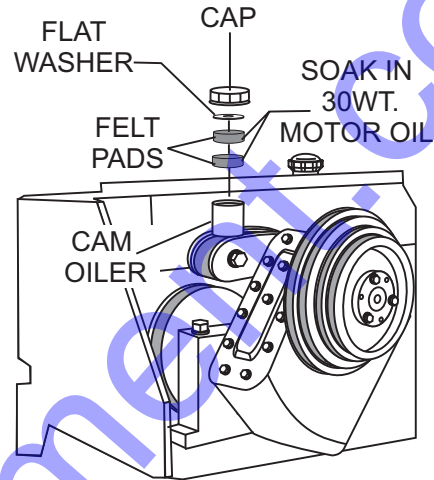


Figure 28. Cam Oiler (Pads)

2. Inspect the two felt pads that lay inside the cam oiler. The pads should be saturated with 30 wt. motor oil. If pads are dry saturate with 30 wt. motor oil.
3. Insert pads back into oiler and place flat washer on top and tighten oiler cap securely.

COMPRESSOR OIL CHECK

1. Remove the air compressor oil dipstick (Figure 29) from its holder.

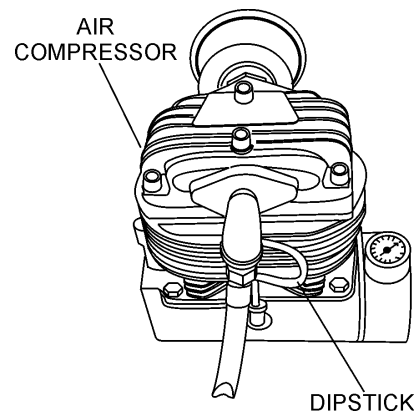
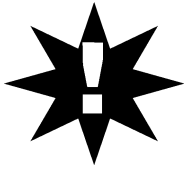


Figure 29. Dipstick Location (Air Compressor)

2. Determine if the air compressor oil level is low (Figure 30), add correct amount of oil to bring oil level to a normal safe level. The compressor's crankcase capacity is 1.5 pints (.709 liters). See Table 7 for recommended oil type.

MG-30 PUMP — PRE-INSPECTION (PUMP)

CAUTION



NEVER let the air compressor oil level fall below the **lower mark**. For normal operation, the oil level should be to the **full mark** or at least between the two marks on the dipstick. Fill with recommended type oil as listed in Table 7.

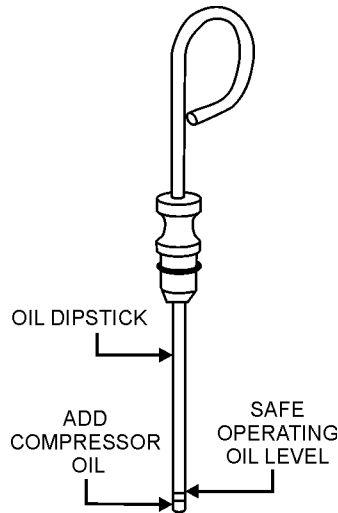


Figure 30. Compressor Dipstick (Oil Levels)

SPEED REDUCER OIL CHECK

When checking the oil level of the **speed reducer** unit, it is best to have the speed reducer placed in an upright position (vertical). Perform the following steps when checking the oil level of the speed reducer unit:

1. Release the adjustment plate retaining chain (Figure 31) that secures the speed reducer to the pump frame, then remove the adjustment bolt from the slider cavity.

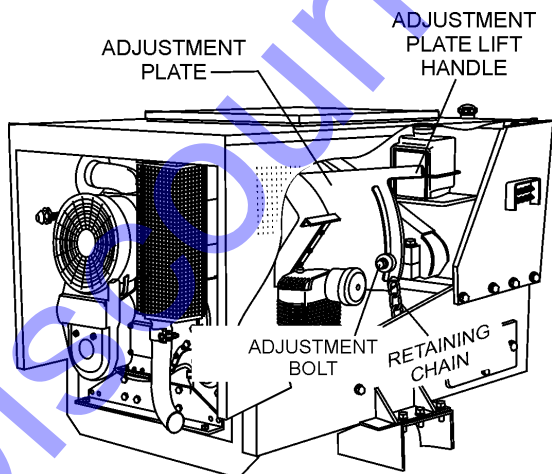


Figure 31. Speed Reducer (Hardware)

2. Raise the speed reducer adjustment lift handle slightly to remove the V-belt from the 4-groove pulley.
3. Next, raise the lift handle all the way upwards until the speed reducer unit is sitting in a vertical position. Lock unit in this position.
4. There are 2 plugs (Figure 32) located on the metal cover of the speed reducer unit.
5. Remove the bottom most plug (**weep hole**) from the unit. If oil begins to seep out as the plug is being removed, it can be assumed that the oil level is correct.
6. If oil does not begin to flow as the plug is being removed, then it can be assumed that the unit requires oil.
7. Remove the oil fill plug and add SAE 90 wt. motor oil. **DO NOT** over fill.

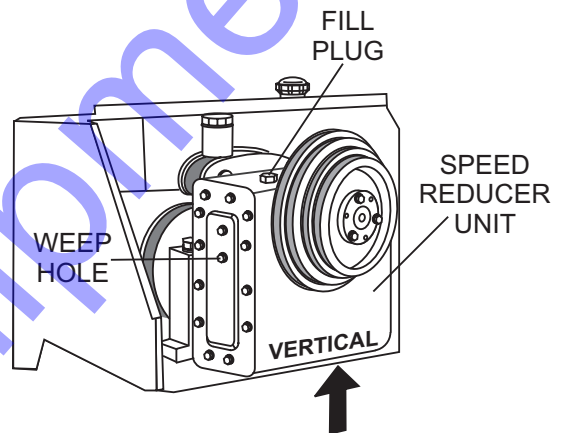


Figure 32. Speed reducer Unit (Vertical Position)

8. Reinstall oil fill plug and make sure weep hole plug has been tighten securely.
9. Place speed reducer unit into desired operating position, reinstall V-belt, insert adjustment bolt and secure safety chain.

PISTON OILER TANK CHECK

1. Fill the piston oiler tank (Figure 33) to the "**FULL**" level for normal operating conditions. Check regularly. Fill with SAE 30 wt. type motor oil. The oiler tank capacity is 1.5 quarts (1.14 liters). Turn flow valve to the **CLOSED** position when filling oiler tank.

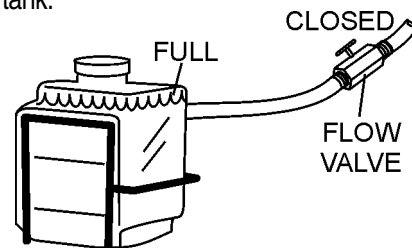


Figure 33. Piston Oiler Tank

MG-30 PUMP — PRE-INSPECTION (PUMP)

V-BELT CHECK

1. Visually inspect the both the air compressor and speed reduction gearbox V-belts for cracks, fraying, wear or oiliness.
2. Make sure V-belt does not the bottom the pulley groove.
3. Check the **air compressor** V-belt tension (Figure 34) by pushing midway through the two pulleys. The V-belt deflection should be between .250 to .375 inches (6.35 to 9.52 mm).
4. Check the **speed reduction gearbox** V-belt tension (Figure 34) by pushing midway through the two pulleys. The V-belt deflection should be between .375 to .500 inches (9.52 to 12.72 mm).

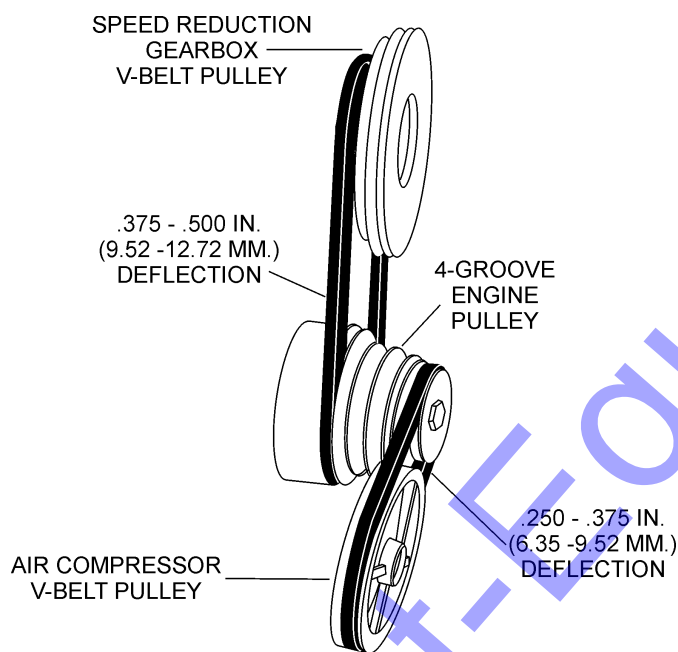


Figure 34. V-Belt Check

BATTERY CHECK

Battery Check

A 12-volt DC battery (Figure 35) is shipped dry, and will require a proper electrolyte level for operation.

ALWAYS be sure that the battery cables are properly connected to the battery terminals as shown below. Generally the **RED** cable will be connected to the positive terminal of the battery, and the **BLACK** cable will be connected to the negative terminal of the battery.

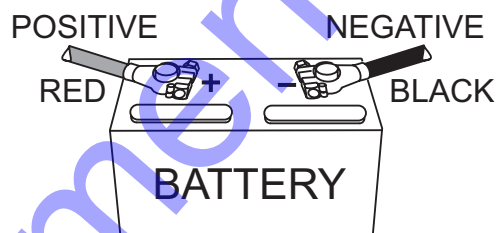


Figure 35. Battery Check

WARNING :



If the battery cables are connected incorrectly, electrical damage will occur causing damage to the pump's electrical circuits. Pay close attention to the polarity of the battery when connecting the battery.

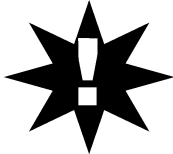
MG-30 PUMP — INITIAL START-UP (PUMP)

This section is intended to assist the operator with the initial start-up of the MG-30 plaster mortar pump. It is extremely important that this section be read carefully before attempting to use the pump in the field.

DO NOT use your pump until this section has been read and is thoroughly understood.



CAUTION:



Failure to understand the operation of the Mayco plaster mortar pump could result in severe damage to the pump or personal injury.

HOSE CONNECTIONS

1. Connect pressure relief valve to pump outlet with ball pointing downward.
2. Connect the material hose.
2. When using 2-inch hose, it is always attached to the relief valve.
3. Make sure that all hose connections are watertight. Check hose for kinks, make sure that it lays flat.
4. Make sure that there are no leaky connections around the pump head and hose.
5. Connect air compressor hose line and nozzle.

STARTING THE ENGINE

The following steps outline the procedure for starting the *pump's engine*.

1. Inspect piston cups, balls and other parts of the piston head before starting engine. Make sure all piston head components are in good working condition and are not worn. Replace any worn parts immediately.
2. Open the *piston oiler valve* (Figure 36) slightly. Verify that oil is flowing through the lines, but not excessively. **DO NOT** start pump for at least 5 minutes.

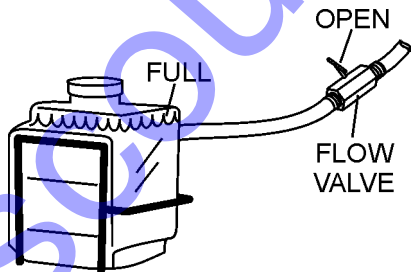


Figure 36. Piston Oiler Valve (Open)

3. **PUSH** the "RED" button (Figure 37) on the throttle control and pull the round black knob about halfway out. Make sure that the throttle lock knob has been dis-engaged.

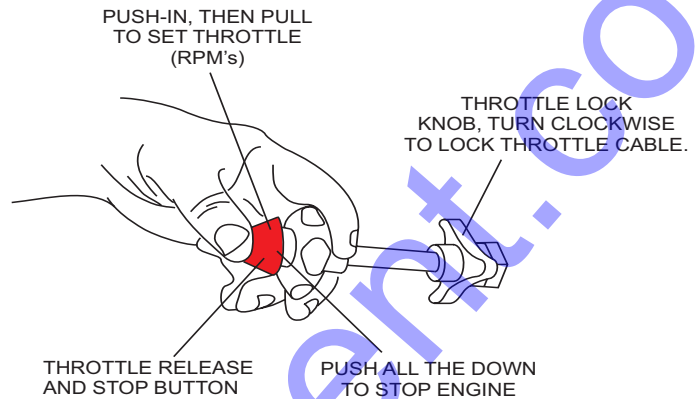


Figure 37. Throttle Control Knob (Mixer)

4. Place the pump control switch (Figure 38) on the control panel in the center position (no pumping).

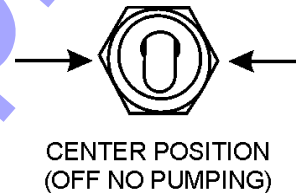


Figure 38. Pumping Control Switch Center Position (No Pumping)

5. Insert ignition key into ignition switch (Figure 39) and turn key clockwise to the **START** position. Once engine starts, release key.

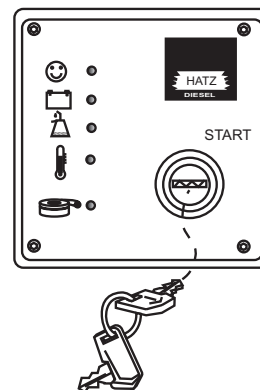


Figure 39. Engine Status/Ignition Console

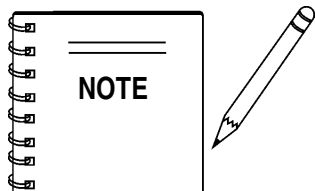
6. Except for the "*Happy Face*" status LED, verify that all other engine status LED's are **OFF**.

MG-30 PUMP — INITIAL START-UP/OPERATION

Engine Status LED's Definitions.

- "**Happy Face**" status LED. This LED when lit indicates that the engine and associated components are functioning correctly.
- "**Battery**" status LED. This LED when lit indicates that the battery charging system is not working correctly. If this LED remains **ON**, stop the engine and correct the problem.
- "**Oil Pressure**" status LED. This LED when lit indicates that the Oil pressure is low. If this LED remains **ON**, stop the engine and correct the problem.
- "**Water Temperature**" status LED. This LED when lit indicates that the Water temperature is too high. If this LED remains **ON**, stop the engine and correct the problem.
- "**Air Filter**" status LED. This LED when lit indicates that the air filter is dirty and is not functioning correctly. If this LED remains **ON**, stop the engine and correct the problem.

7. Let engine run at idling speed for approximately 5 minutes.
8. Lubricate the pump head and hose by filling the hopper **half full with clean water**. The purpose of lubricating the pump head and hose, is that dry surfaces remove water, which causes the hose to pack.



If hoses have not been thoroughly cleaned out, it is suggested that they be cleaned now to remove any accumulation of dried sand etc. which could cause plugging of hose when material is pumped (see **Cleaning Procedure**).

9. Place the pump control switch (Figure 40) on the control panel in the **down** position (pumping).

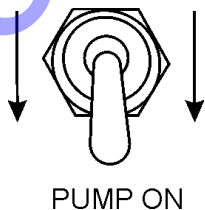
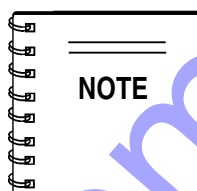


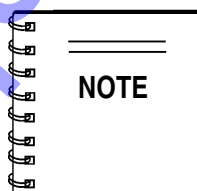
Figure 40. Pumping Control Switch
Down Position (Pumping)

10. Permit water to be pumped out until it reaches a level just above hopper inlet throat.
11. Grab dump handle on mixer and dump contents of mixing drum into hopper. **DO NOT STOP MACHINE UNTIL MATERIAL HAS REACHED END OF HOSE - OTHERWISE THIS MAY CAUSE SEPARATION OF MATERIAL, WHICH COULD CLOG UP PUMP AND HOSE.**
12. If the pump is allowed to suck air at any time, an air block can develop and the machine will not pump. The air block can be relieved by opening the pressure release valve until material flows from the valve.



Compensator (cam-actuated) piston will not normally move when pumping water, as material back-pressure is required to return piston to engage cam.

13. Place the pump control switch in the center position to stop pumping. Install spray nozzle.
14. The plaster and motor pump is now ready to operational.



It is suggested that the "**Hose Connections**" and "**Starting the Engine**" sections be carefully read. In addition the hose and fittings should be checked daily prior to starting the pump. It is also important that periodic inspections be made during operation. This preventive maintenance will save hours of un-necessary maintenance and down time at the job site.

MG-30 PUMP — REMOTE OPERATION

REMOTE PUMP OPERATION

The remote operation of the pump is identical to the manual operation of the pump, except that the pump can be controlled by a **25-100** ft. cable.

The following steps outline the procedure for operating the pump remotely.

1. Following the steps as outlined in the "**Hose Connections**" and "**Starting the Engine**".
2. Place the pump control switch (Figure 41) on the control panel in the center position (no pumping).

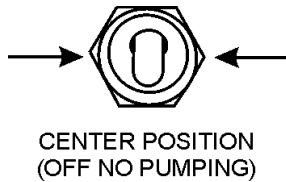


Figure 41. Pumping Switch (No Pumping)

3. Plug the remote cable (Figure 42) into the remote receptacle on the control panel. Tighten securely.
4. Place the pump control switch on the control panel (Figure 42) in the **up** position (remote pumping).

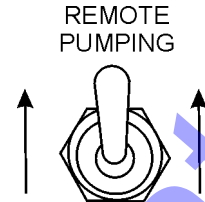


Figure 42. Pumping Control Switch Up Position (Remote Pumping)

5. To **begin** pumping remotely, place the pumping control switch (Figure 43) on the hand held remote unit to the **ON** position.
6. To **stop** pumping remotely, place the pumping control switch (Figure 43) on the hand held remote unit to the **OFF** position.

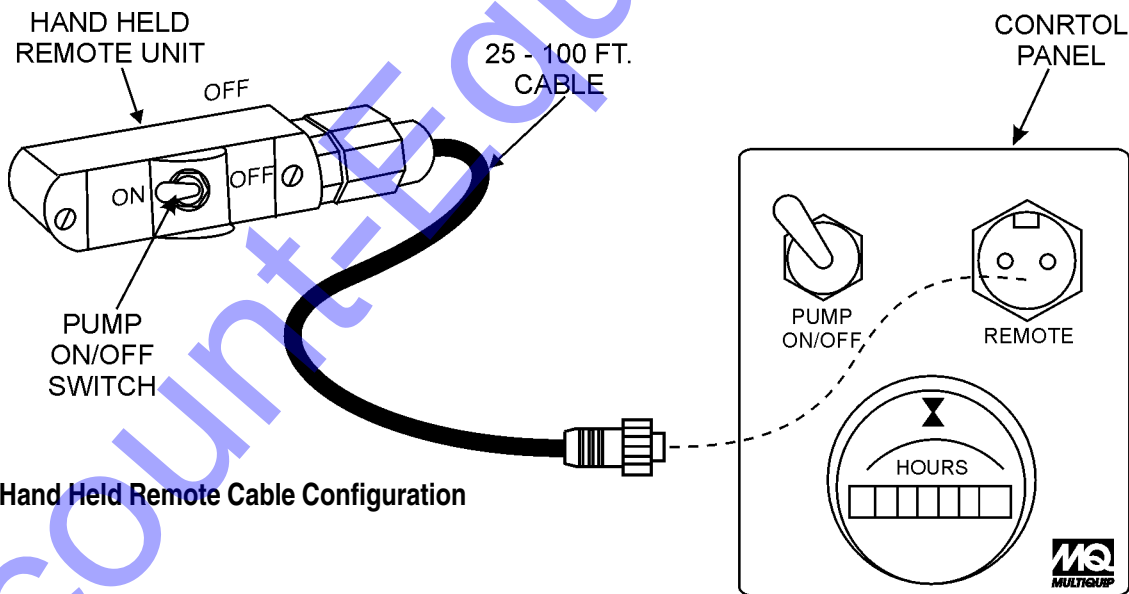
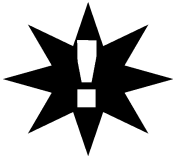


Figure 43. Hand Held Remote Cable Configuration

Towing Safety Precautions

CAUTION :



- Check with your county or state safety towing regulations department before towing your **pump**.

To reduce the possibility of an accident while transporting the pump on public roads, always make sure that the trailer and the towing vehicle are in good operating condition and both units are mechanically sound.

The following list of suggestions should be used when towing the pump :

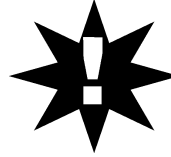
- Make sure that the hitch and coupling of the towing vehicle are rated equal to, or greater than the trailer "gross vehicle weight rating" (GVWR).
- **ALWAYS** inspect the hitch and coupling for wear. **NEVER** tow the pump with defective hitches, couplings, chains etc.
- **CHECK** the tire air pressure on both the towing vehicle and the trailer. Also check the tire tread wear on both vehicles.
- **ALWAYS** make sure the trailer section of the pump is equipped with a "**Safety Chain**".
- **ALWAYS** attach the pump's safety chain to the frame of the towing vehicle.
- **ALWAYS** make sure that the vehicle directional, backup, brake, and trailer lights are connected properly and are working properly.
- Remember in most cases the maximum speed unless otherwise posted for highway towing is **55 MPH**, however before towing your pump, check your local state, and county vehicle towing requirements. Recommended off-road towing is not to exceed **10 MPH** or less depending on type of terrain.
- Place *chocked blocks* underneath wheel to prevent **rolling**, while parked.
- Inflate tires to correct pressure, inspect tires for cuts, and excessive wear. See Table 9 (Tire Wear Troubleshooting).
- Check wheel mounting lug nuts with a **torque wrench**. Torque wheel lug nuts as described in the "**Lug Nut Torque Requirements**", Table 10.
- Check tightness of suspension hardware (nuts and bolts).

- Avoid sudden stops and starts. This can cause skidding, or jackknifing. Smooth, gradual starts and stops will improve gas mileage.

- Avoid sharp turns to prevent rolling.

- **DO NOT** transport pump with fuel in the fuel tank.

CAUTION :



If the trailer coupler is deformed, replace entire coupler. **NEVER** tow the pump with a defective trailer coupler. There exist the possibility of the trailer separating from the towing vehicle.

Mixer Trailer Vehicle Connection

1. Check the vehicle hitch ball, and trailer coupler for signs of wear or damage. Replace any parts that are worn or damaged before towing.
2. Use only the 2-inch ball diameter with a towing capability of 5,000 lbs. (2,268 kg) as indicated on the trailer's coupler. Use of any other ball diameter will create an extremely dangerous condition which can result in separation of the coupler and ball or ball failure.
3. Be sure the coupler is secured to the hitch ball and the lock lever is down (locked).
4. Attach safety chains as shown in Figures 43 and 44. Remember to **cross** the safety chains underneath the pump frame.
5. After towing for about 50 miles recheck the entire towing system for tightness.

Recommended Maintenance

1. Smear ball socket and clamp face with chassis grease. Periodically oil pivot points and wear surfaces of coupler with SAE 30 W motor oil.
2. When parking or storing the pump, keep the coupler off the ground so dirt and other debris will not build up in the ball socket.

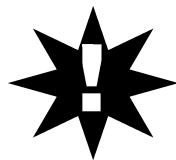
MG-30 PUMP — TOWING GUIDELINES

Towing Instructions (Mobil Unit)

Before attempting to tow this pump, check the following:

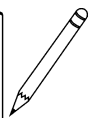
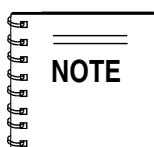
1. **ALWAYS** close the fuel shut-off valve on the pump and mixer before towing the pump to prevent possible fuel leakage into the engine crankcase.
2. Securely attach the pump's towing coupler to the towing vehicle's hitch as shown in Figure 44.
3. Attach both safety chains so that they cross underneath the pump frame as shown in Figure 44.

CAUTION:

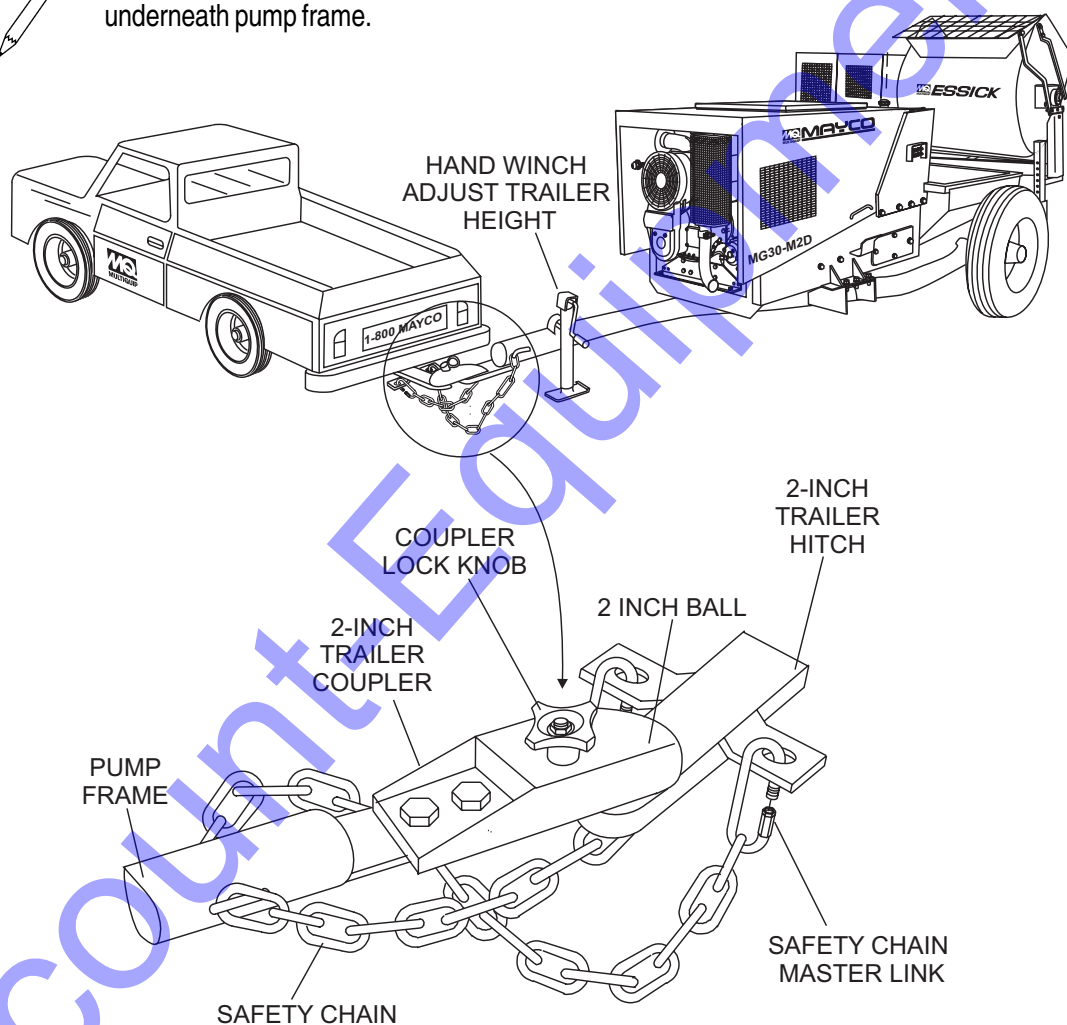


DO NOT tow the pump unless the mixing drum and hopper are **completely empty**.

4. Make certain the wheel lug nuts and axle mounting hardware are tight.
5. Check the tire pressure and overall condition of the tires.
6. **ALWAYS** make sure the **dump handle** and **grill** are locked in place before towing.



Be sure to **always cross** safety chain underneath pump frame.



IMPORTANT!

CROSS BOTH SAFETY CHAINS

Figure 44. Pump Safety Chain and Coupler (Mobil Unit)

Towing Instructions (Tag Unit)

Before attempting to tow this pump, check the following:

1. **ALWAYS** close the fuel shut-off valve on the pump's engine before towing the pump to prevent possible fuel leakage into the engine crankcase.
2. Securely attach the tag unit's towing coupler to the towing vehicle's hitch as shown in Figure 45.
3. Attach the safety chain to the pump frame and towing vehicle as shown in Figure 45.

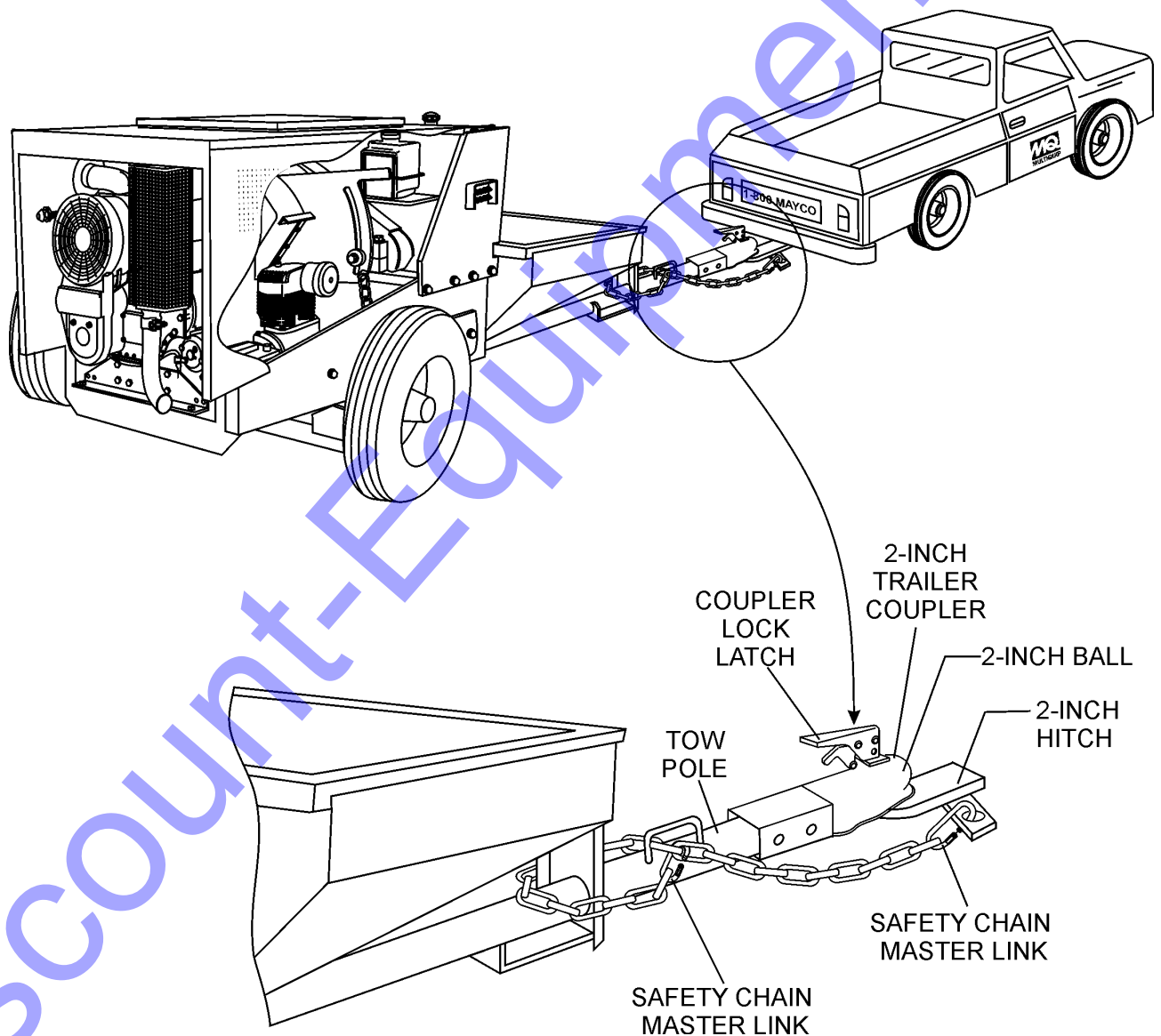


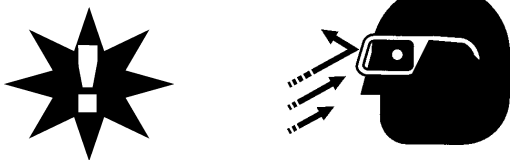
Figure 45. Pump Safety Chain and Coupler (Tag Unit)

MG-30 PUMP — TRAILER SAFETY GUIDELINES

Tires/Wheels/Lug Nuts

Tires and wheels are a very important and critical components of the trailer. When specifying or replacing the trailer wheels it is important the wheels, tires, and axle are properly matched.

CAUTION :









DO NOT attempt to repair or modify a wheel. **DO NOT** install an inter-tube to correct a leak through the rim. If the rim is cracked, the air pressure in the inter-tube may cause pieces of the rim to explode (break-off) with great force and can cause serious eye or bodily injury.

Tires Wear/Inflation

Tire inflation pressure is the most important factor in tire life. Pressure should be checked cold before operation. **DO NOT** bleed air from tires when they are **hot!** Check inflation pressure weekly during use to insure the maximum tire life and tread wear.

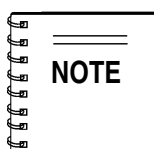
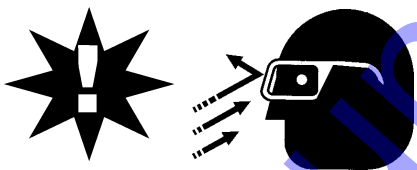
Table 9 (Tire Wear Troubleshooting) will help pinpoint the causes and solutions of tire wear problems.

TABLE 9. TIRE WEAR TROUBLESHOOTING		
WEAR PATTERN	CAUSE	SOLUTION
 Center Wear	Over Inflation	Adjust pressure to particular load per tire manufacturer.
 Edge Wear	Under Inflation	Adjust pressure to particular load per tire manufacturer.
 Side Wear	Loss of chamber or overloading.	Make sure load does not exceed axle rating. Align wheels.
 Toe Wear	Incorrect toe-in	Align wheels.
 Cupping	Out-of balance	Check bearing adjustment and balance tires.
 Flat Spots	Wheel lockup & tire skidding.	Avoid sudden stops when possible and adjust brakes.

Suspension (Tag Unit)

The torsion bar suspension (**Tag unit only**) and associated hardware (Figure 45) should be visually inspected every 6,000 miles for signs of excessive wear, elongation of bolt holes, and loosening of fasteners. Replace all damaged parts immediately.

CAUTION :



ALWAYS wear **safety glasses** when removing or installing force fitted parts. Failure to comply may result in serious injury.

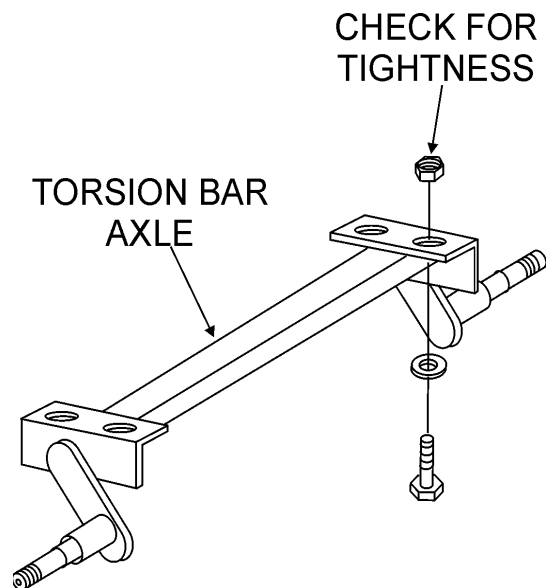


Figure 46. Tag Unit Suspension Components

MG-30 PUMP — TRAILER SAFETY GUIDELINES

Lug Nut Torque Requirements

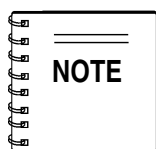
It is extremely important to apply and maintain proper wheel mounting torque on the trailer. Be sure to use only the fasteners matched to the cone angle of the wheel. Proper procedure for attachment of the wheels is as follows:

1. Start all wheel lug nuts by hand.
2. Torque all lug nuts in sequence. See Figure 47. **DO NOT** torque the wheel lug nuts all the way down. Tighten each lug nut in 3 separate passes as defined by Table 10.

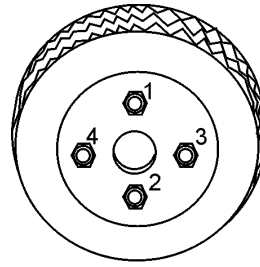
Table 10. Tire Torque Requirements

Wheel Size	First Pass FT-LBS	Second Pass FT-LBS	Third Pass FT-LBS
12"	20-25	35-40	50-65
13"	20-25	35-40	50-65
14"	20-25	50-60	90-120
15"	20-25	50-60	90-120
16"	20-25	50-60	90-120

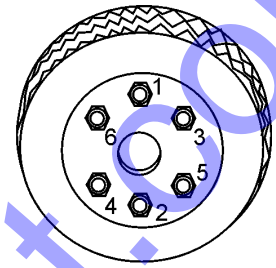
3. After first road use, retorque all lug nuts in sequence. Check all wheel lug nuts periodically.



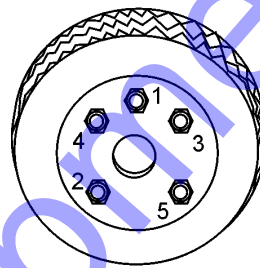
NEVER! use an pneumatic air gun to tighten wheel lug nuts.



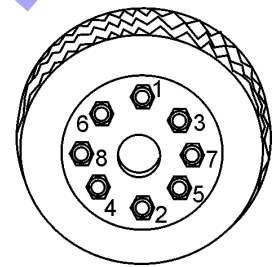
4-LUG NUTS



6-LUG NUTS



5-LUG NUTS



8-LUG NUTS

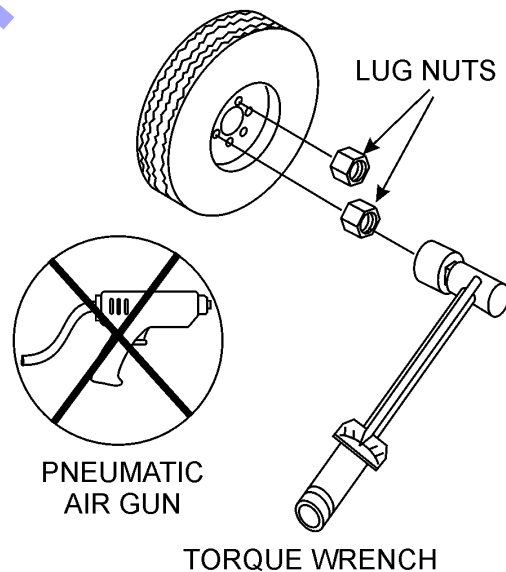
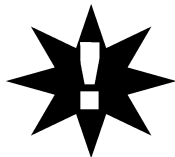


Figure 47. Wheel Lug Nuts Tightening Sequence

SHAFT SEALS

CAUTION:

IMPORTANT -DRUM HEAD SEAL CARE



Grease seals every **40 hours** of operation using any grade #1 lithium base grease. Apply grease until visible inside of mixing tub (over grease). This will purge seal system of contamination.

GEAR/CLUTCH REDUCTION ASSEMBLY LUBRICATION

The gear/clutch reduction assembly has two separate compartments. Each of which must be filled with its proper lubricant and checked at regular intervals.

The **clutch compartment** should be filled with a good grade of number 30 SAE engine oil which can be poured through the filler hole located just above the clutch inspection door on the opposite side of the transmission. Fill the clutch compartment with 30 SAE engine oil until it overflows the oil level plug located on the shifter side of the clutch compartment. Check this oil level every two or three months and add oil as required. Drain and refill once a year.

The **reduction gear, upper compartment** should be filled with number 90 SAE oil, as used in automobile transmissions. The filler plug is at the top of the reduction gear case and the oil level plug is on the same side of the case as the clutch lever. Fill the reduction gear compartment with 90 SAE transmission oil until it overflows the oil level plug. Check this oil level every two or three months and add oil as required. Drain and refill once a year.

PADDLE SHAFT BEARINGS

The paddle shaft in the MQ ESSICK EM120SM mixer rotates in sealed ball bearings, which require no additional lubrication as they are packed and sealed at the factory.

There is, on each end of the mixing drum, a zerk grease fitting (pivot point). Grease these fittings once a week as they lubricate the dumping mechanism of the mixing drum. **Failure** to lubricate the zerk grease fittings once a week will cause the dumping mechanism to stiffen, making the mixer hard to dump.

HARDWARE

Check all hardware on the mixer before starting. Periodically inspect all hardware. Loose hardware can contribute to early component failure and poor performance. Use Table 11 (Torque Chart) as a general guideline and keep all hardware tight.

Table 11. Torque Chart

Hardware Diameter	Torque
5-16"- 18 (7.94 mm)	24 ft/lbs. (117 kgf/m ²)
3/8"- 24 (9.53 mm)	37 ft/lbs. (180 kgf/m ²)
1/2"- 13 (12.70 mm)	39 ft/lbs. (190 kgf/m ²)
1/2"- 13 (12.70 mm) Grade 8	90 ft/lbs. (439 kgf/m ²)

ENGINE OIL

1. If mixer's engine oil is low, fill engine crankcase with lubricating oil through filler hole, but **DO NOT** overfill.
2. The oil listed in Table 7 is recommended to ensure better engine performance. Use class CD or higher grade motor oil.

AIR CLEANER (DRYTYPE)

1. Change the air cleaner every 500 hours. See Figure 12 for location of air cleaner.

FUEL FILTER/FUEL TANK

1. Change the fuel filter every 500 hours.
2. Siphon water out of fuel tank once a year.

CLEANING

ALWAYS make sure engine is **OFF** before cleaning the inside of the drum. **NEVER** put hands, fingers or arms inside mixing drum when engine is **ON**.

NEVER pour or spray water over engine.

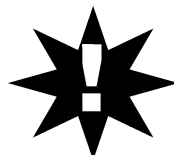
For consistent performance, long life and high quality mixing, thoroughly clean the mixer inside and out at the end of each day's operation. To prevent lumps of dried mortar from forming and contamination of future batches, **DO NOT** allow a buildup of materials to form on the blades or anywhere inside the drum.

Clutch Adjustment Mechanical 12 CF Mixer

If the rotating mixing paddles appear to be losing rotational speed, it may be necessary to adjust the clutch. For optimum performance Multiquip recommends 35-55 lbs. applied pressure to the hand clutch lever. After the first initial operating hours (8) check the clutch for proper engagement pressure.

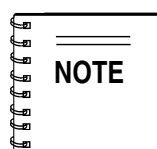
Clutch Adjustment Procedure

CAUTION:



ALWAYS stop the engine before attempting this procedure.

1. To gain access to the " Gear Reduction Compartment" remove the four 9/16-inch hex head bolts that secure the hood to the engine and remove engine hood.
2. Drain the clutch compartment oil (Figure 19) by removing the magnetic 3/8 plug located at the bottom of the Gear Reduction Assembly.



The Gear Reduction Compartment consist of two compartments, a lower and upper. The **lower** compartment houses the clutch, the **upper** compartment contains the actual gear reduction. Remember each compartment requires a different type of lubricating oil.

3. To gain access to the "**clutch Inspection door**" remove the six 1/2-inch cap screws (Figure 48)and lock washers that secure the clutch inspection door. Remove door and gasket.

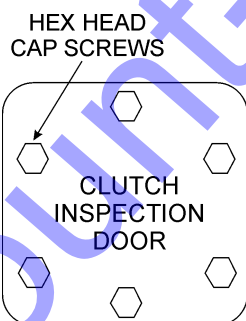


Figure 48. Clutch Inspection Door

4. Check that the clutch is disengaged by pulling the shifter lever towards the engine end of the mixer.
5. Refer to Figure 48 for steps 5A through 5F:

- A. Rotate the clutch using the recoil starter until the **adjustment lock** (Figure 49) P/N EM934040 is visible. Using a flat blade screwdriver loosen the adjustment bolt just enough to release the adjustment lock.
- B. Using a punch, rotate the **adjusting ring** P/N EM 934045 one notch at a time in the counter-clockwise direction until a firm 35 to 55 lbs. pressure is felt when engaging the clutch lever (the lever should snap into the engaged position).

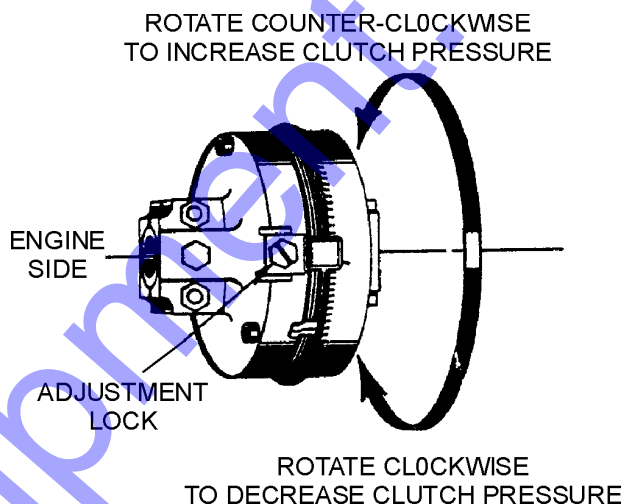
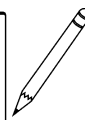
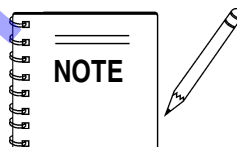
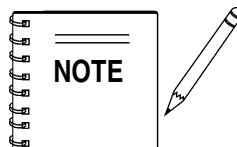


Figure 49. Clutch Adjustment Lock Location



If the clutch cannot be adjusted, it may be necessary to inspect or replace the clutch.

- C. When the clutch has been satisfactorily adjusted reinstall the **adjustment lock** P/N EM 934040 and tighten lock bolt.
- D. Reinstall the **clutch Inspection door** using the six 1/2-inch cap screws and lock washers, and also check that the gasket is not worn or broken.
- E. When the clutch has been satisfactorily adjusted reinstall the **adjustment lock** P/N EM 934040 and tighten lock bolt.
- F. Remove the 3/8-inch square head pipe plug located on the lower clutch compartment. Refill the clutch compartment with 2-1/4 quarts of SAE 30 motor oil to the level of the plug. When done reinstall plug.
- G. Start engine, check for proper clutch engagement and inspect for any oil leaks.



Any questions regarding the above procedure please contact the Multiquip Service Department.

MG-30 PUMP — MAINTENANCE (PUMP)

CLEANING THE PUMP

When changing from one material to another, or when shutting down the machine for a period of time, or at the end of the working day, the machine should be washed out and the hoses cleaned to prevent the material from setting and causing difficulties when operation is resumed. **FOLLOWING IS A SUGGESTED PROCEDURE FOR CLEANING THE MACHINE AND HOSES:**

1. Dump all material from the **mixer** into the hopper and pump material from hopper. Scrape down the sides of the hopper to clean off as much material as possible. Shut off pump; open pressure release valve to relieve hose pressure and disconnect material hose from machine.
2. Add **15 to 20 gallons** of water to the hopper. Start the pump and flush water through the pump to remove all material and sand from the pump. Shut off pump; insert a wet sponge into the open end of the material hose and connect the hose to the pump.
3. Add **15 to 20 gallons** of water to the hopper. Remove the nozzle from the end of the hose, start the pump, and force the sponge through the hose. The sponge scrubs down the inside of the hose and acts as a divider between the water and the material. It prevents the water from channeling through the hose, removing the cement or gypsum while leaving a portion of the sand still in the hose. Sand or any other material left in the hose will cause the hose to pack up when next used.
4. Repeat Steps 2 and 3 until no additional material is flushed from the hose. Avoid dumping the dirty water produced by cleaning the mixer into the pump hopper. The sand can settle out and clog the pump.
5. Wash and wire-brush nozzle and oil it. Clean screen and hose down machine with water.
6. Spray entire machine with regular motor oil. This will assist you in keeping it clean.

ENGINE (Hatz Model 2M41LZ Diesel)

The Model MG30-2 is equipped with a Model 2M41LZ, 35 H.P. air-cooled diesel engine. For information concerning the procedure in checking, removing, cleaning, etc. of the various engine parts or any other information on the engine not contained herein, refer to the engine manufacturer's instruction manual.

CRANKCASE

1. The crankcase oil should be **CHECKED EVERY 8 HOURS** of operation.
2. The old oil should be **DRAINED** and **FRESH OIL ADDED** after **EVERY 40 HOURS** of operation. To drain oil, remove plug located on engine base. Drain engine crankcase oil when oil is warm it will flow more freely.

AIR CLEANER

1. The air cleaner, mounted on the side of the engine, is an essential engine component. It filters the air entering the carburetor. Depending on the conditions under which the engine is operated, servicing of the air cleaner will vary from a **few days** of operation in comparatively clean conditions to **twice a day** in dusty conditions.

FUEL STRAINER

1. The fuel strainer is very necessary in preventing sediment, dirt and water from entering the carburetor. This strainer is equipped with a glass bowl and should be inspected at least **once a week** and cleaned if dirt or water is present.

AIR COMPRESSOR

1. A **weekly** check should be made of the compressor's crankcase oil level to make sure it is at the **full** mark, or at least between the two marks on the dipstick (Figure 29). **NEVER** allow the oil to fall below the **lower** mark. (Refer to Table 7) for proper oil recommendation.) Crankcase oil capacity is 1.5 pints (.709 liters)
2. The oil should be completely changed approximately, **every 30 days; sooner** if oil becomes dirty or diluted. The crankcase should be thoroughly cleaned with each oil change. Refer to the Quincy Compressor Maintenance Manual for further information concerning lubrication, adjustment and maintenance of the air compressor.
3. An air filter has been installed on the air compressor. This filter should be checked and cleaned **WEEKLY** under normal conditions. If extremely dusty conditions prevail, it is advisable to clean the air filter at least once a day.
4. To clean air filter, soak sponge element in solvent and let it dry out; then dip element in clean oil, permit oil to drip off and reinstall on unit.

MG-30 PUMP — MAINTENANCE (PUMP)

Figure 50 show the pump maintenance points, see Table 12 below for maintenance intervals.

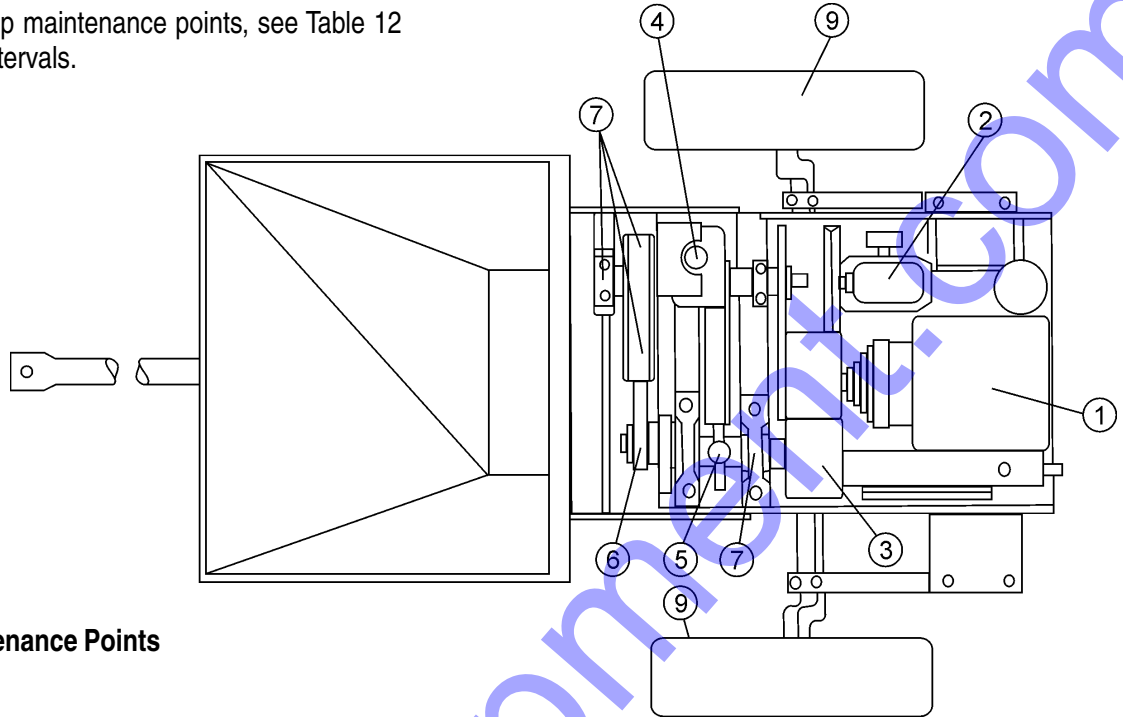


Figure 50. Pump Maintenance Points

Table 12. Pump Maintenance Intervals

REF.	Description	Lubricant Change Interval	Amount Of Lubricant	Type Lubricant	Remarks
1	Engine Crankcase	Every 40 Hours	5.8 - 3.2 qts. (5.5 - 3.0 liter)	See Table 8	Check Daily.
2	Compressor	Every 30 Days	1.5 pints (.709 liters)	See Table 7	Check Daily.
3	Speed Reducer	Every 6.0 Months	Fill to correct operating Oil Level	SAE 90	Check weekly with reducer in a vertical position.
4	Piston Oiler	Twice a Day	Fill Tank	SAE 30	Close flow valve when filling.
5	Cam Oiler	Check Every Day	Soak Felt	SAE 30	Adjust felt Screw as required.
6	Connecting Rod	Check Daily	1-Shot	No.2 multi-purpose automotive grease or equivalent.	Flush to prevent dirt and corrosion.
7	Push rod, rocker arm, shaft and bearings.	Check Daily	1-Shot	No.2 multi-purpose automotive grease or equivalent.	Flush to prevent dirt and corrosion.
8	Wheels	Every 6.0 months	As required	Wheel bearing grease.	Re-pack as required.
9	"O"-Rings (All)	Before installation	As required.	No.2 multi-purpose automotive grease or equivalent.	Coat O-Ring to prevent pinching.

MG-30 PUMP — MAINTENANCE (PUMP)

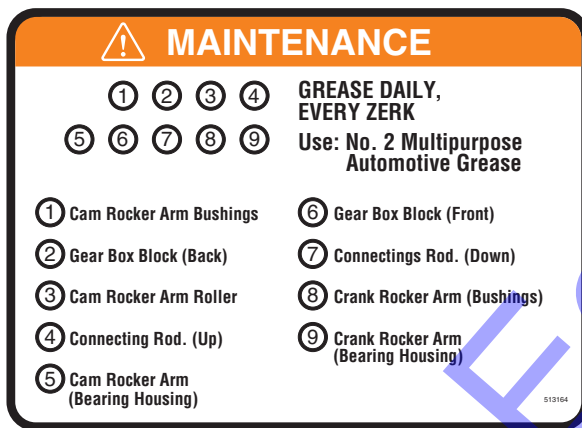
SPEED REDUCER UNIT

The speed reducer unit is of a constant-mesh type and totally enclosed, with all gears running in oil. **CHECK THE OIL LEVEL EVERY WEEK.**

The speed reducer should be completely drained every 6 months. Refill with a good grade of S.A.E. 30 Oil. **CAUTION: KEEP OIL AT THE PROPER LEVEL.** Too much oil will cause overheating and too little oil will cause gear failure. When the adding of oil to the speed reducer is required. Reference the "**Speed Reducer Oil Check**" section on page 38.

LUBRICATION PANEL

Located on the side of the pump is a lubrication panel (Figure 51). Grease **all ports daily** with two to three shots of #2 multi-purpose automotive grease. Over-greasing any bearing will not damage the machine.



LUBRICATION LINES

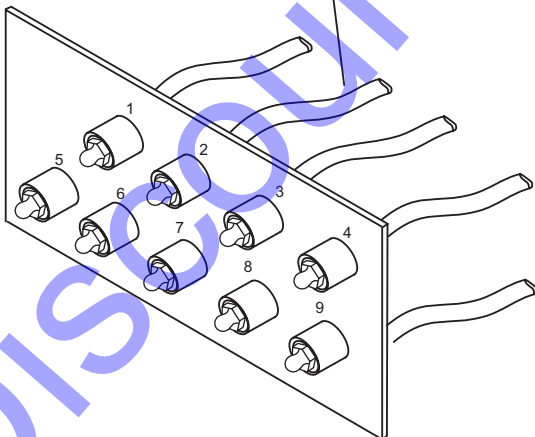


Figure 51. Lubrication Panel

BATTERY MAINTENANCE

Mishandling of the battery shortens the service life of the battery and adds to maintenance cost. When handling the battery do the following:

- Be careful not to let the battery electrolyte come in contact with your body or clothing.
- Always wear **eye protection** and **rubber gloves**, since the battery contains sulfuric acid which burns skin and eats through clothing.
- Always check the battery **terminals** periodically to ensure that they are in good condition.
- Use wire brush or sand paper to clean the battery terminals.
- Always check battery for cracks or any other damage. If white pattern appears inside the battery or paste has accumulated at the bottom, replace the battery.
- If the pump will not be in operation for a long period of time, store in cool dry place and check the battery charge level every month to maintain the performance of the battery.

CAUTION:

Wear **safety glasses** or **face mask**, **protective clothes**, and **rubber gloves** when working with battery.



- Check the battery regularly and make sure that each electrolyte level is to the bottom of the vent well (Figure 52). If necessary add only distilled water in a well-ventilated area.

BATTERY ELECTROLYTE LEVEL

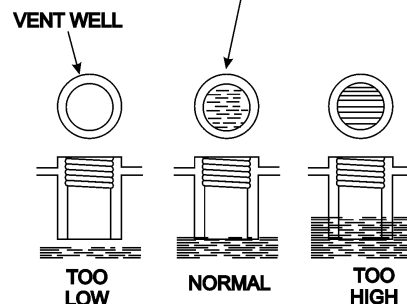
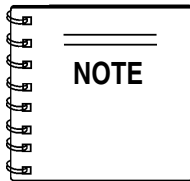


Figure 52. Battery Electrolyte Levels

RUBBER CHECK BALL

The brass cap and rubber ball should be removed and all parts **cleaned daily**. Setup of materials will have an affect on the pressure rating of the brass cap, causing the rubber ball to **eject** at an incorrect pressure.



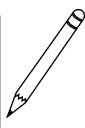
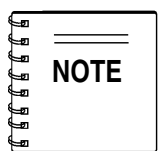
Failure to properly maintain this pressure relief valve will create a dangerous situation of over pressurizing the pump and delivery.

Inspect the rubber relief ball *every day* before reassembling it back into the valve. The **ball is subject to wear and possible age hardening**.

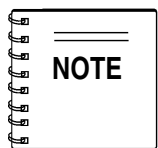
If the ball is cracked, has flat spots due to wear, pieces broken off of it or out of round, **replace** the rubber ball **immediately**.

To check the rubber ball for age hardening, conduct the "**bounce**" inspection test.

1. Hold the rubber ball in hand 5 feet above a concrete floor.
2. Drop the ball (**DO NOT** throw the ball downward), simply release the ball from your hand.
3. First bounce must be 18-inches minimum.



Replace the rubber ball **immediately** if it does not pass **visual inspection** or the bounce test. **DO NOT** use a rubber ball that is defective or worn. When ordering replacement rubber ball use Mayco P/N EM400581



When replacing either the **rubber** or **steel** check ball, remember that there is another check ball that should be inspected for wear or damage. **Always** check **both** check balls. Make sure all gasket parts are clean when they are reassembled.

Rubber Check Plug

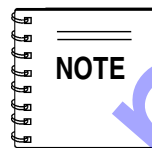
The rubber safety plug should be removed and **cleaned daily**. Replace this plug if it is defective or worn. See manifold assembly in this manual when ordering replacement rubber plug.

LEATHER PISTON CUPS

The leather piston cups out wear the rubber balls. The leather cups as well as the rubber balls can have premature wear if exposed to excessive pumping pressures or jamming of the pump.

The leather cups are a natural wear component and will require periodic replacement. The life of the leather cups depends on many factors, proper lubrication, oil cleanliness, abrasiveness of sand and material.

When the leather cup on the pump side is damaged, it may suck air on the suction stroke instead of a full charge of material from the hopper. When this condition occurs, material flow will decrease.



To ensure **maximum cup** life, the oil in the reservoir **must be** maintained at the proper level. In addition the lubrication box must be cleaned periodically. There are two clean-out ports located at the

bottom of the lubrication box. Any questions regarding the lubrication clean-out procedure, contact the **MAYCO Service Department**.

As the leather cups wear, fine cement particles will accumulate in the bottom of the librication box. Once the cement past reaches 1-inch in height, it is recommended that the lubrication box be drained (flushed) and cleaned

CHANGING THE LEATHER PISTON CUPS

1. Run the piston to the end of its stroke.
2. Remove pump unit.
3. Loosen piston rod nut.
4. Rock piston assembly by hand turning drive belt.
5. Pull cylinder out exposing piston assembly.
6. Remove piston nut.
7. Slide piston assembly off piston rod.
8. Check all washers for damage.
9. Replace any component that shows is worn or is damaged.
10. Check neoprene leather cup expander.
11. Check leather cup and saturate with oil before replacing.
12. Check both felt cam oiler pads for oil saturation, If dry saturate each pad with SAE 30 motor oil.
13. Reinstall piston parts in the reverse order that they were dis-assembled. Make sure that the piston oiler hose is at the top of the piston and remains there while the piston rod nut is being tighten.
14. Remember lubrication of the piston depends on gravity flow from the oil reservoir to the cam oiler pads.

MG-30 PUMP — TROUBLESHOOTING (ENGINE)

Practically all breakdowns can be prevented by proper handling and maintenance inspections, but in the event of a breakdown, please take a remedial action following the

diagnosis based on the Engine Troubleshooting (Table 13) information shown below and on the proceeding page. If the problem cannot be remedied, please leave the unit just as it is and consult our company's business office or service plant.

TABLE 13. ENGINE TROUBLESHOOTING

SYMPTOM	POSSIBLE PROBLEM	SOLUTION
Engine will not start or start is delayed, although engine can be turned over.	Speed control lever is in "STOP" position?	Set speed control lever to "START" position.
	No fuel reaching injection pump?	Add fuel. Check entire fuel system.
	Defective fuel pump?	Replace fuel pump.
	Fuel filter clogged?	Replace fuel filter and clean tank.
	Faulty fuel supply line?	Replace or repair fuel line.
	Compression too low?	Check piston, cylinder and valves. Adjust or repair per engine repair manual.
	Fuel injector not working correctly?	Repair or replace injector in accordance with engine repair manual.
	Oil pressure too low?	Check engine oil pressure.
	Low starting temperature limit exceeded	Comply with cold starting instructions and proper oil viscosity.
At low temperatures engine will not start.	Fuel separates has inadequate resistance to low temperatures?	Check whether clear (not turbid) fuel emerges from the fuel line (detach from injection pump). If the fuel is turbid or separated, warm up the engine or drain the complete fuel supply system. Refuel with winter grade diesel fuel.
	Engine oil too thick?	Refill engine crankcase with correct type of oil for winter environment.
Engine fires but stops soon as starter is switched off.	Throttle lever in STOP position?	Reposition throttle lever to RUN position.
	Fuel filter blocked?	Replace fuel filter.
	Fuel supply blocked?	Check the entire fuel system.
Engine stops by itself during normal operation.	Fuel tank empty?	Add fuel.
	Fuel filter blocked?	Replace fuel filter.

MG-30 PUMP — TROUBLESHOOTING (ENGINE/MIXER)

TABLE 13. ENGINE TROUBLESHOOTING (CONTINUED)

SYMPTOM	POSSIBLE PROBLEM	SOLUTION
Low engine power, output and speed.	Fuel tank empty?	Replace fuel filter.
	Fuel filter clogged?	Replace fuel filter.
	Fuel tank venting is inadequate?	Ensure that tank is adequately vented.
	Speed control lever does not remain in selected position?	See engine manual for corrective action.
	Engine oil level too full?	Correct engine oil level?
Low engine power output and low speed, black exhaust smoke.	Air filter blocked?	Clean or replace air filter.
	Incorrect valve clearances?	Adjust valves per engine specification.
	Malfunction at injector?	See engine manual.

Practically all mixer breakdowns can be prevented by proper handling and maintenance inspections, but in the event of a breakdown, please take a remedial action following the diagnosis based on the Mixer Troubleshooting (Table 14) information shown below and on the proceeding page. If the problem cannot be remedied, please leave the unit just as it is and consult our company's business office or service plant.

TABLE 14. MIXER TROUBLESHOOTING

SYMPTOM	POSSIBLE PROBLEM	SOLUTION
Blades will not rotate.	Broken connector pin?	Replace connector pin. Use P/N 963157 when ordering.
	Defective or mis-adjusted clutch?	Adjust or replace clutch.
Material leaking from drum ends.	Worn or defective paddle shaft seals?	Adjust or replace seals.
Drum difficult to discharge (tilt)	Defective or worn drum support brackets?	Apply grease to bracket or replace.
	Blades adjusted too tight.	Adjust blades until they almost touch side walls of drum.

MG-30 PUMP — TROUBLESHOOTING (PUMP)

TABLE 15. PUMP TROUBLESHOOTING

SYMPTOM	POSSIBLE PROBLEM	SOLUTION
Volume production of pump slows down.	Defective balls and valve seat?	Inspect leather or steel balls for wear or damage. Also inspect valve seat, replace balls or valve seat if necessary.
	Air leak?	Inspect O-rings. and leather cup.
	Material too stiff to pump.?	Check material mix (consistency).
Safety pressure relief valve ball blows out!	Clog in hose line?	Inspect material hose line for clog. Remove clog. Check entire delivery system. Check and inspect rubber check ball for signs of wear, replace if necessary.
No material is being discharged from center outlet manifold.	Broken drive belt?	Replace drive belt.
	Has pump lost its prime?	Inspect hopper for material, fill hopper if empty.
	Defective leather or steel balls or valve seat?	Inspect or replace.
	Material clog?	Inspect manifold for obstruction, clear obstruction.
	Air leak?	Inspect or replace O-rings.
Centrifugal clutch slips or smokes.	Engine RPM set incorrectly?	Adjust engine RPM to correct setting.
	Material pack (clog)?	Inspect obstruction in delivery system, clear obstruction.
	Worn clutch lining?	Inspect lining for wear, replace if necessary.
No air pressure (air compressor)	Defective or worn V-belt?	Inspect or replace air compressor V-belt.
	Material pack (clog) in air delivery lines or orifice	Inspect delivery line and nozzle for material obstruction, clear obstruction.
Low air pressure (air compressor)	Defective or worn V-belt?	Inspect or replace air compressor V-belt
	Dirty air filter?	Clean or replace air filter.
	Material pack (clog) in air delivery lines or orifice	Inspect delivery line and nozzle for material obstruction, clear obstruction.
Compensator arm knocks against cam or sticks.	Low back pressure?	Inspect delivery hose for correct size and length.
	Are piston leather cups lubricated?	Inspect leather cups for proper lubrication.
Lubrication Box overflows or splashes excessive oil.	Lubrication box full?	Inspect lubrication box for proper oil level, drain if necessary. Inspect leather cups for wear.

MG-30 PUMP — WIRING DIAGRAM

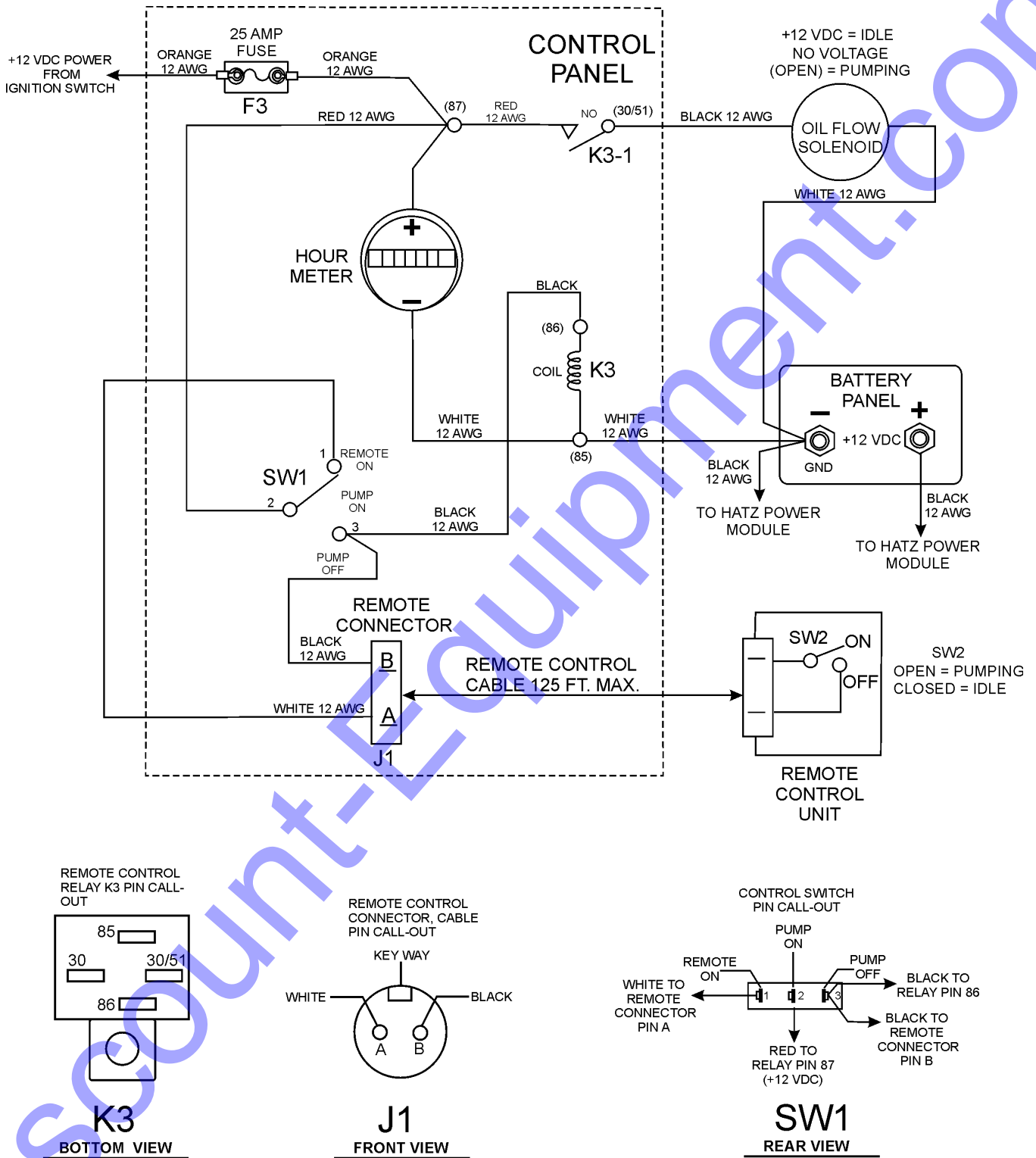


Figure 52. Control Panel/Remote Cable Wiring Diagram

MG-30 PUMP — WIRING DIAGRAM

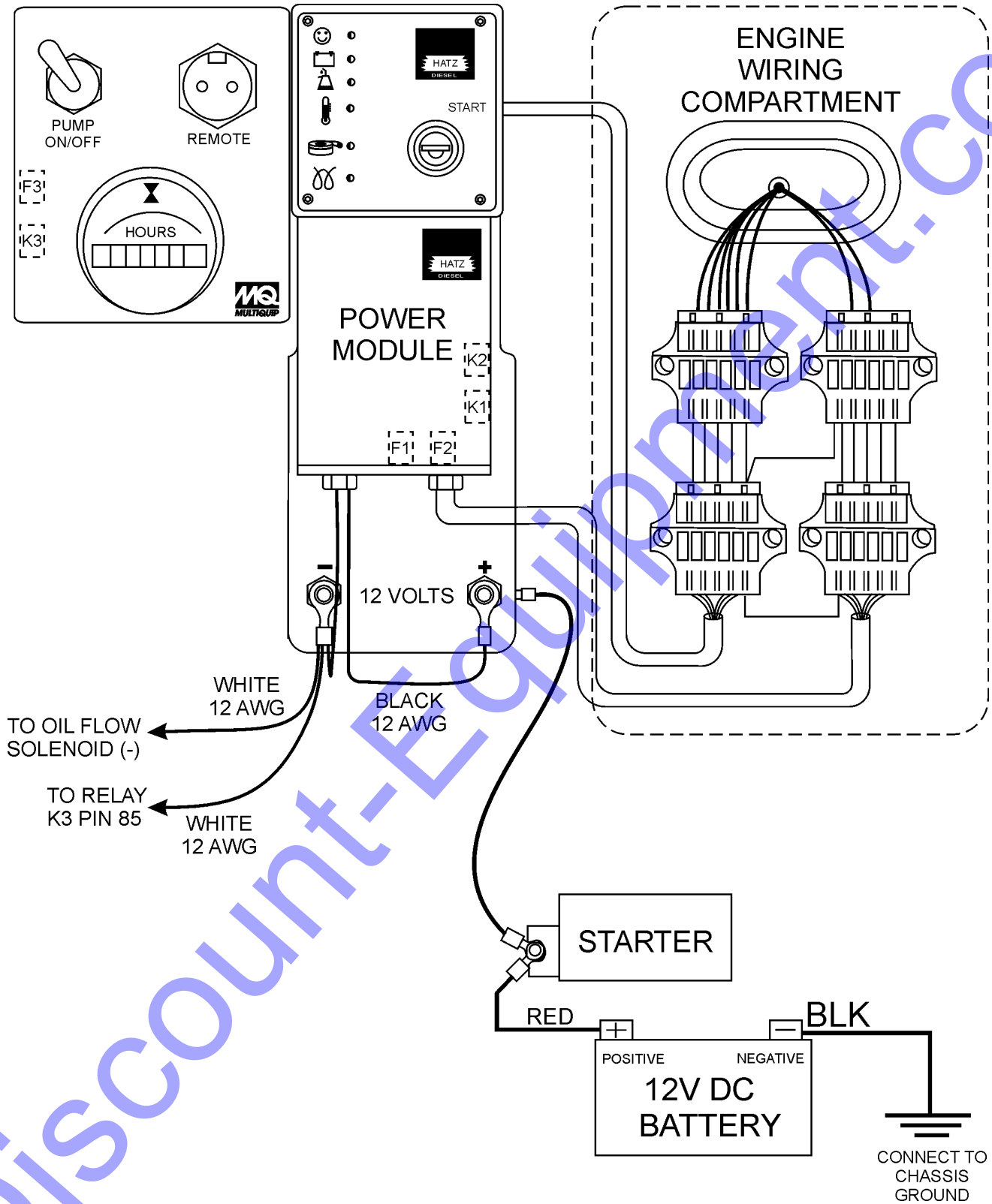


Figure 53. Electrical System Diagram

MG-30 PUMP — POWER MODULE LAYOUT

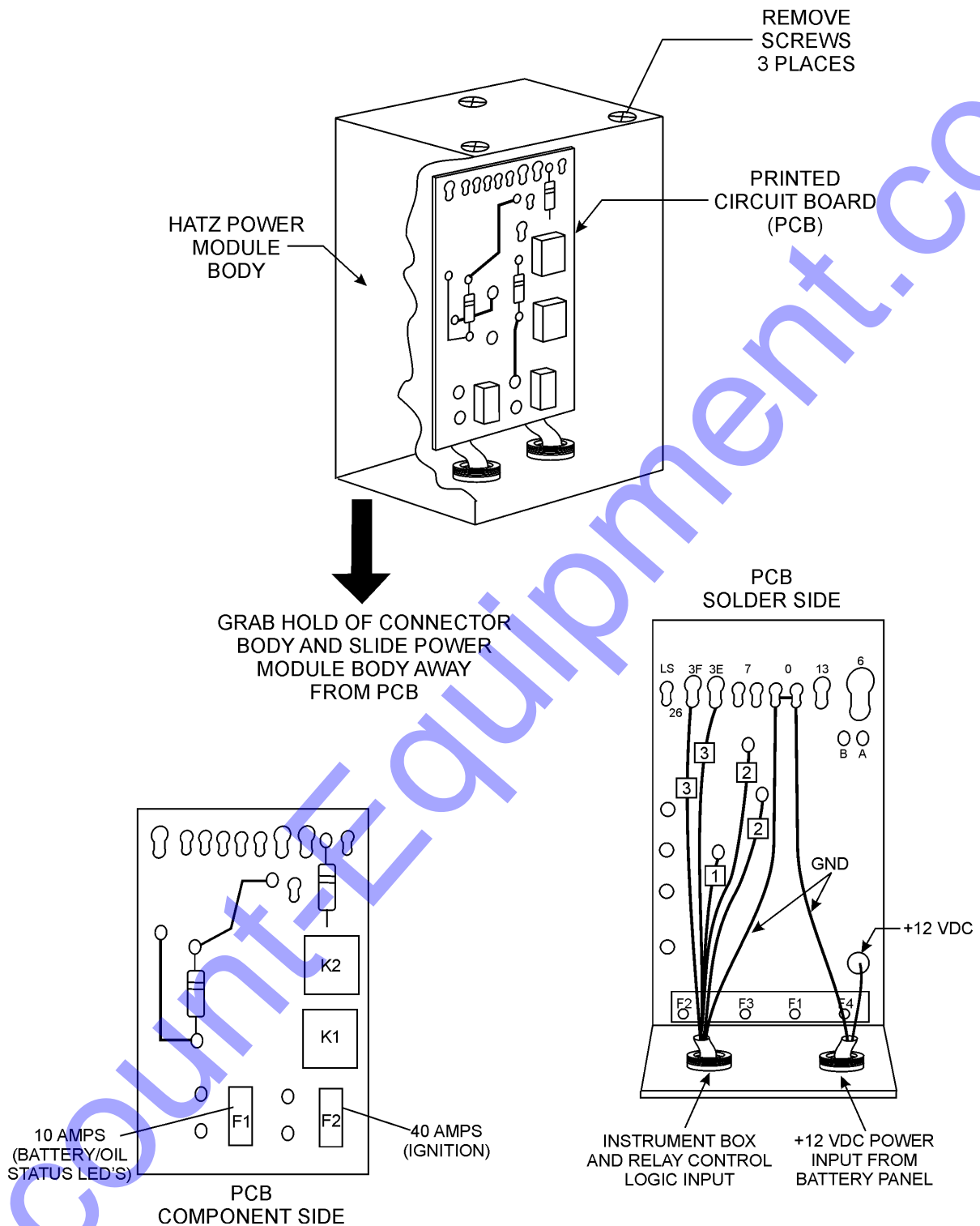


Figure 54. Power Module layout

EXPLANATION OF CODE IN REMARKS COLUMN

How to read the marks and remarks used in this parts book.

Section 1: Items Found In the “Remarks” Column

Serial Numbers-Where indicated, this indicates a serial number range (inclusive) where a particular part is used.

Model Number-Where indicated, this shows that the corresponding part is utilized only with this specific model number or model number variant.

Section 2: Items Found In the “Remarks” Column

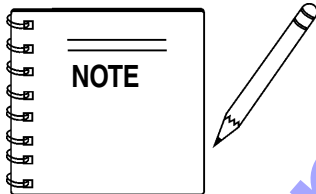
Serial Numbers-Where indicated, this indicates a serial number range (inclusive) where a particular part is used.

Model Number-Where indicated, this shows that the corresponding part is utilized only with this specific model number or model number variant.

Section 3: Items Found In the “Items Number” Column

All parts with same symbol in the number column, *, \$, #, +, %, or ■, belong to the same assembly or kit.

Note: If more than one of the same reference number is listed, the last one listed indicates newest (or latest) part available.



The contents of this parts catalog are subject to change without notice.

MG-30 PUMP — SUGGESTED SPARE PARTS

ESSICK 120SM MIXER 1 TO 3 UNITS WITH HATZ 1B30 DIESEL ENGINE EM-120SM 1 TO 3 UNITS

Qty.	P/N	Description
1	EM200293	PADDLE ARM TOW SIDE
1	EM200294	PADDLE ARM CENTER TOW SIDE
1	EM200295	PADDLE ARM CENTER ENGINE SIDE
1	EM200296	PADDLE ARM ENGINE SIDE
3	EM200863	RUBBER BLADE KIT (STEEL DRUM)
2	EM200297	U-BOLT
2	EM200268	J-BOLT
2	EM902153	BEARING, PADDLE SHAFT
3	EM963157	CONNECTOR BOLT
1	EM934041	CLUTCH, DRIVEN MEMBER
12	EM200301	PACKING RINGS
4	EM200286	CARRIAGE BOLT
4	EM200794	ADJUSTMENT SPRING
4	EM200285	GLAND
2	EM200303	RING FOLLOWER
2	50449200	GLOW PLUGS
3	50426000	FILAMENT, AIR FILTER
3	01635200	FUEL FILTER
3	50404900	KEYS, IGNITION
1	50268600	TEMP SWITCH
1	50469100	OIL PRESSURE SWITCH

MG-30 PUMP (MOBILE AND TAG) 1 TO 3 UNITS WITH HATZ 2M41LZ DIESEL ENGINE

Qty.	P/N	Description
4	EM402581	QUARTER ROUND SEAL
6	EM402580	O-RING
2	EM914312	SEAL HOPPER
2	EM400296	PLUG, SAFETY PRESSURE RELEASE
4	EM915003	O-RING
4	EM400581	BLACK BALL PRESSURE RELEASE
2	EM402421	OILER PLATE
2	EM402439	STUD
2	EM900227	V-BELT TRANSMISSION
1	EM900082	V-BELT AIR COMPRESSOR
2	EM400668	CAP, NOZZLE
2	EM400687	1/2" ORIFICE
2	EM400688	9/16" ORIFICE
2	EM400689	5/8" ORIFICE
3	40065300	OIL FILTER
3	5031700	PREFILTER, FUEL
3	50251500	FUEL FILTER
3	50345700	FUEL FILTER
3	00952900	ELEMENT, AIR FILTER
1	50141500	V-BELT
2	50163900	GLOW PLUGS
1	40021300	OIL PRESSURE SWITCH
1	50268600	TEMP SWITCH

PLASTER/MORTAR

MODEL MG30-2 (2-INCH OUTLET) USED ON CYLINDER DIAMETER OF 3.50" 1 TO 3 UNITS

Qty.	P/N	Description
2	EM402394	BACKUP WASHER
4	EM402393	LEATHER CUP
4	EM402395	FELT RING
4	EM402392	WASHER
4	EM402390	RUBBER EXPANDER WASHER
2	EM402391	EXPANDER INSERT
2	EM402389	COMPRESSION WASHER
4	EM400581	BLACK BALL
2	EM402402	VALVE SEAT W/PIN
2	EM402415	SLEEVE
2	EM966089	CAP SCREW

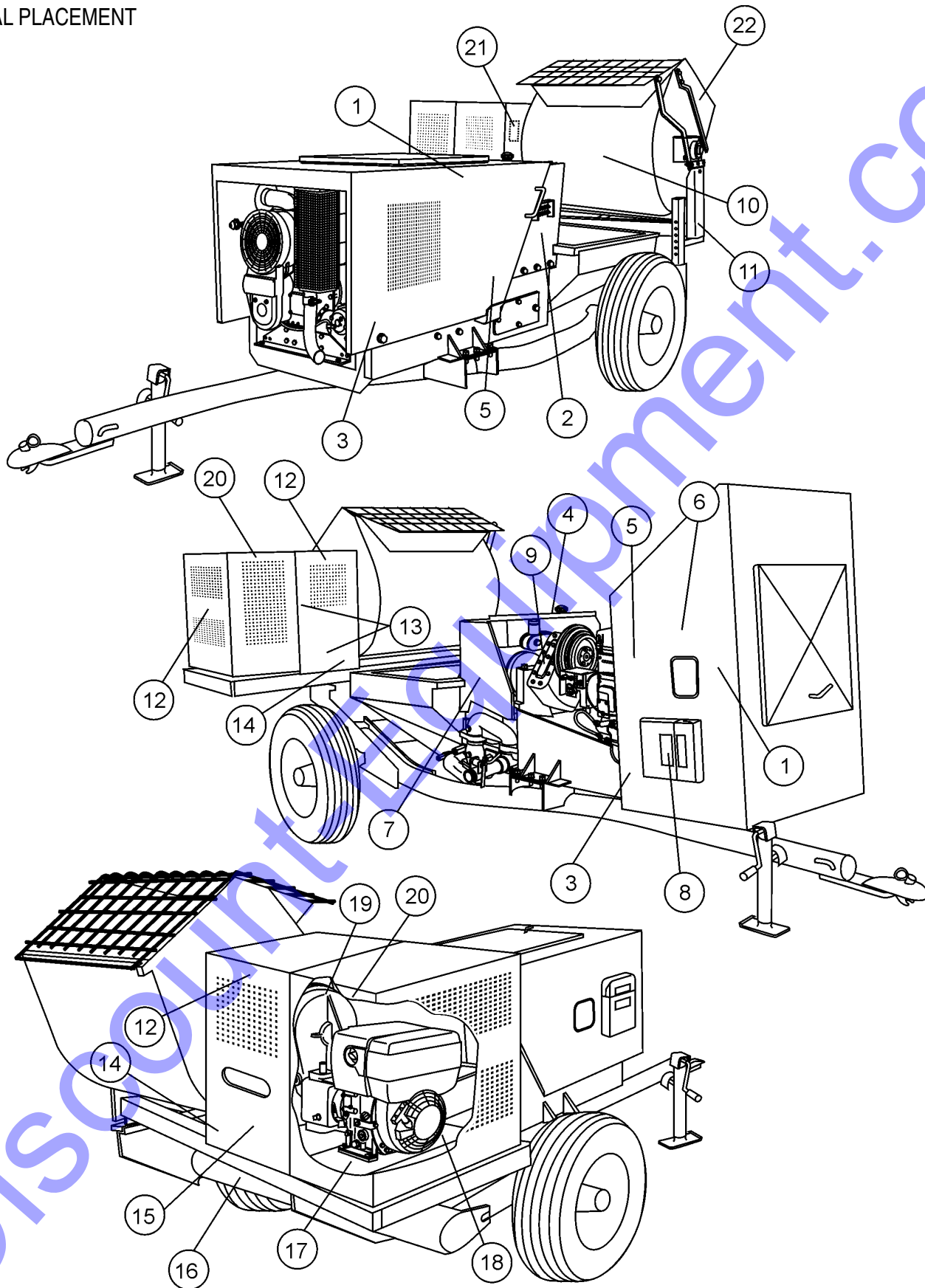
FIREPROOFING

MODEL MG30-3 (3-INCH OUTLET) USED ON CYLINDER DIAMETER OF 3.75" 1 TO 3 UNITS

Qty.	P/N	Description
4	EM403004	BACKUP WASHER
4	EM403005	LEATHER CUP
4	EM403002	FELT RING
4	EM402390	RUBBER EXPANDER WASHER
4	EM403007	EXPANDER WASHER
4	EM403008	COMPRESSION WASHER
4	EM400581	BALL STEEL
4	EM402995	VALVE SEAT W/O PIN

MG-30 PUMP — DECAL PLACEMENT

DECAL PLACEMENT



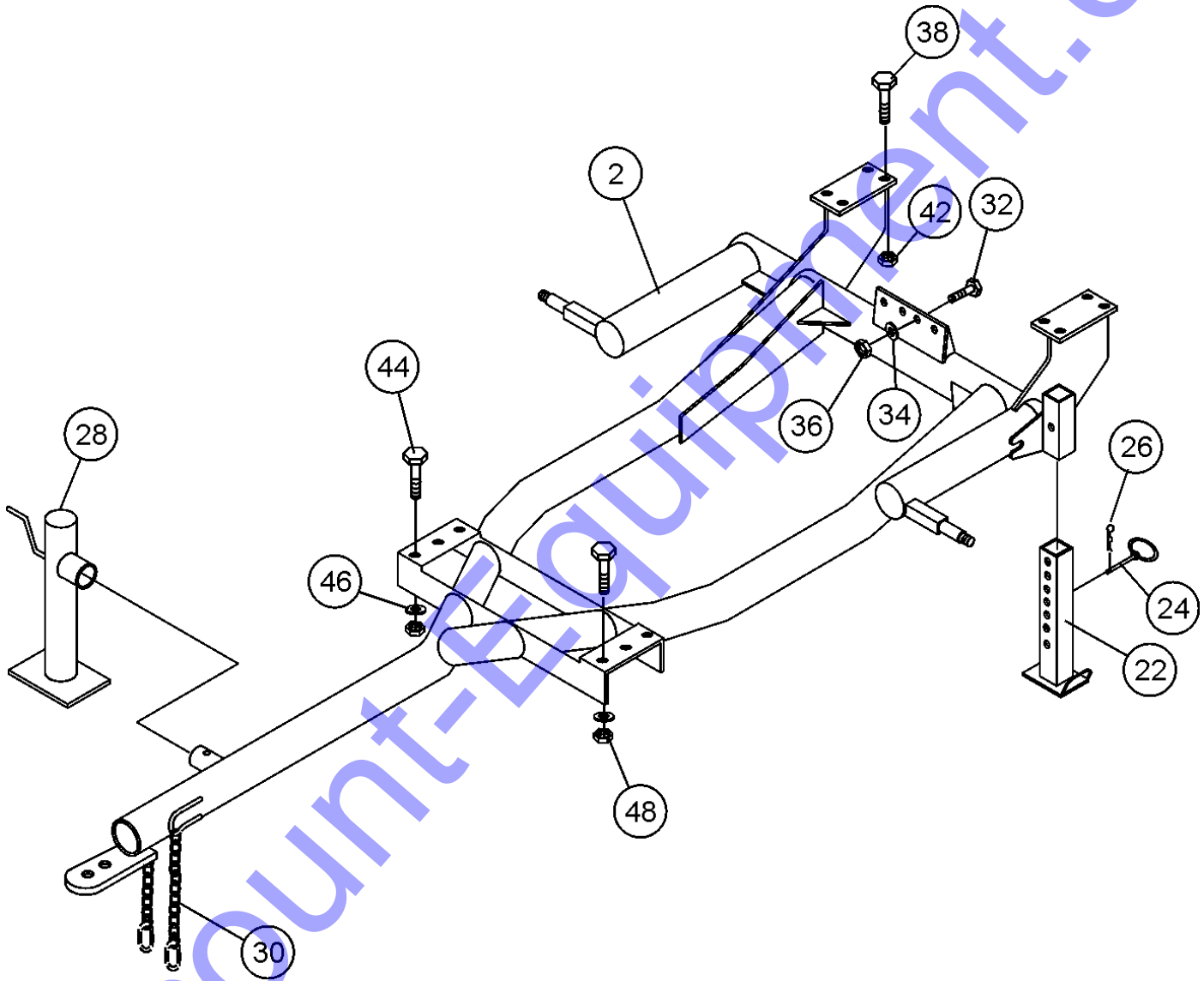
MG-30 PUMP — DECAL PLACEMENT

PLACEMENT

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	EM1028	DECAL, MQ MAYCO	2	
2	EM513164	DECAL, GREASE DAILY	1	
3	EM513159	DECAL, MG30-M2D	2	MOBILE UNIT ONLY
3	EM513158	DECAL, MG30-T2D	2	TAG UNIT ONLY
4	EM995	DECAL, USE DESIEL FUEL ONLY	1	
5	EM508594	DECAL, CAUTION - READ MANUAL	2	
6	EM513161	DECAL, CONTROL BOX	1	
7	EM932	DECAL, CAUTION - MANIFOLD	1	
8	34536	DECAL, OWNERS MANUAL	1	
9	EM507607	DECAL, CAUTION- ADD OIL	1	
10*	EM510915	DECAL, MQ ESSICK LARGE	1	
11*	13118	DECAL, POWDER COATED	1	MOBILE UNIT ONLY
12*	TBD	DECAL, MQ ESSICK SMALL	3	MOBILE UNIT ONLY
13*	EM948630	DECAL, PUSH TO STOP	2	MOBILE UNIT ONLY
14*	DCL151	DECAL, INSPECT BEFORE TOWING	2	MOBILE UNIT ONLY
15*	EM948501	DECAL, ESSIC SAFTEY	1	MOBILE UNIT ONLY
16*	EM511709	DECAL, 800-30-MAYCO	1	MOBILE UNIT ONLY
17*	EM948005	DECAL, ENGINE OIL FILLER	1	MOBILE UNIT ONLY
18*	EM948012	DECAL, CLUTCH OIL FILLER	1	MOBILE UNIT ONLY
19*	EM948013	DECAL, TRANSMISSION OIL FILLER	1	MOBILE UNIT ONLY
20*	DCL160A	DECAL, WARNING - CRUSH/CUT HAZ.	2	MOBILE UNIT ONLY
21*	EM948121	DECAL, IMPORTANT - PADDLE SHAFT	1	MOBILE UNIT ONLY
			PLACE ON INSIDE OF CABINET
22*	513479	DECAL, WARNING - SAFTEY GRATE	1	MOBILE UNIT ONLY

MG-30 PUMP — FRAME ASSY.

FRAME ASSY.



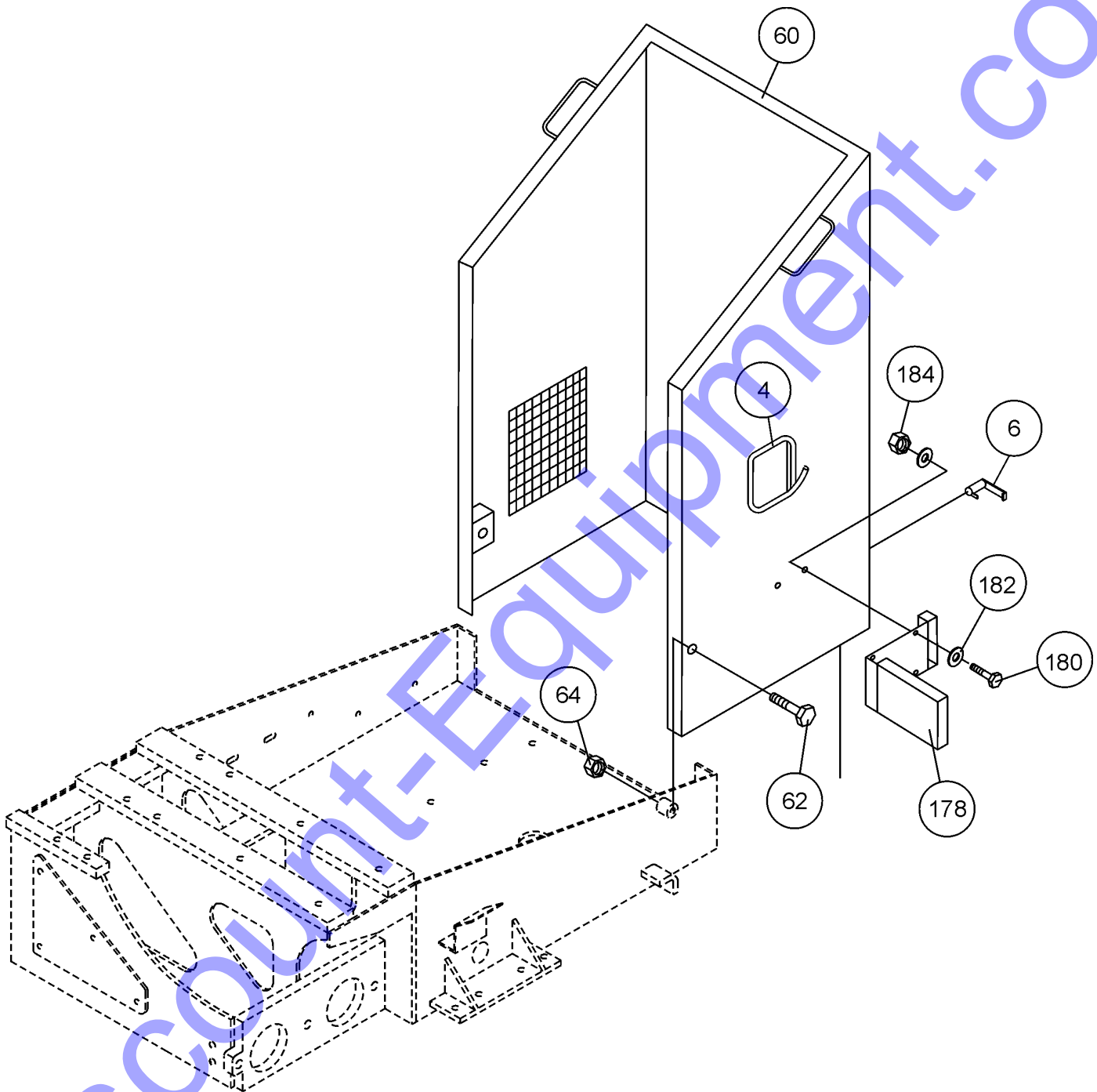
MG-30 PUMP — FRAME ASSY.

FRAME ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
2	EM402975	TRAILER FRAME	1	
22	EM70186	JACK STAND, REAR	1	
24	EM744	PIN ASSEMBLY - 1/2" X 4"	1	
26	EM745	COTTER PIN	1	
28	EM25610	JACK STAND	1	
30	EM01005	CONNECTOR LINKS	2	
32	492394	HEX HEAD BOLT, 1/2 X 1-1/2	4	
34	492600	WASHER	4	
36	492584	HEX HEAD NUT 1/2 IN	4	
38	EM963105	HEX HEAD BOLT 1/2 X 2	8	
42	492584	HEX HEAD NUT 1/2 IN	8	
44	EM492455	HEX HEAD BOLT 1/2 IN X 1-1/2 IN	6	
46	EM621	WASHER 1/2	6	
48	492584	HEX HEAD NUT 1/2 IN	6	

MG-30 PUMP — HOOD ASSY.

HOOD ASSY.

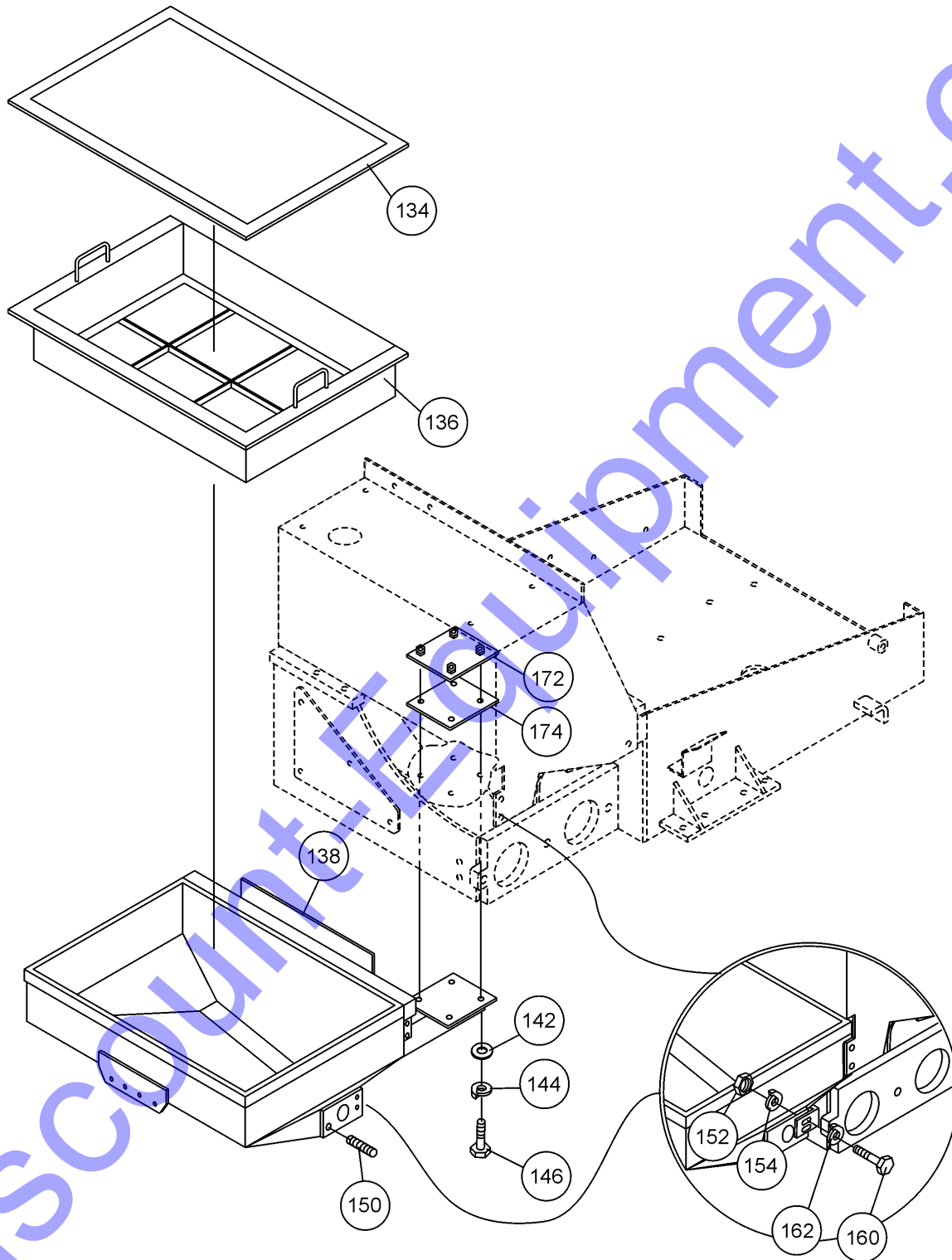


HOOD ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
4	EM505831	GASKET	1	
6	EM508659	LOCKING HANDLE	1	
60	EM510830	HOUSING - MG 30	1	
62	EM492399	HEX BOLT - 1/2 - 3 IN	2	
64	492584	HEX NUT - 1/2 IN	2	
178	29057	MANUAL HOLDER	1	
180	492356	HEX BOLT - 1/4 X 3/4 IN	2	
182	492596	FLAT WASHER - 1/4 IN	4	
184	492581	HEX NUT - 1/4 IN	2	

MG-30 PUMP — HOPPER ASSY.

HOPPER ASSY.



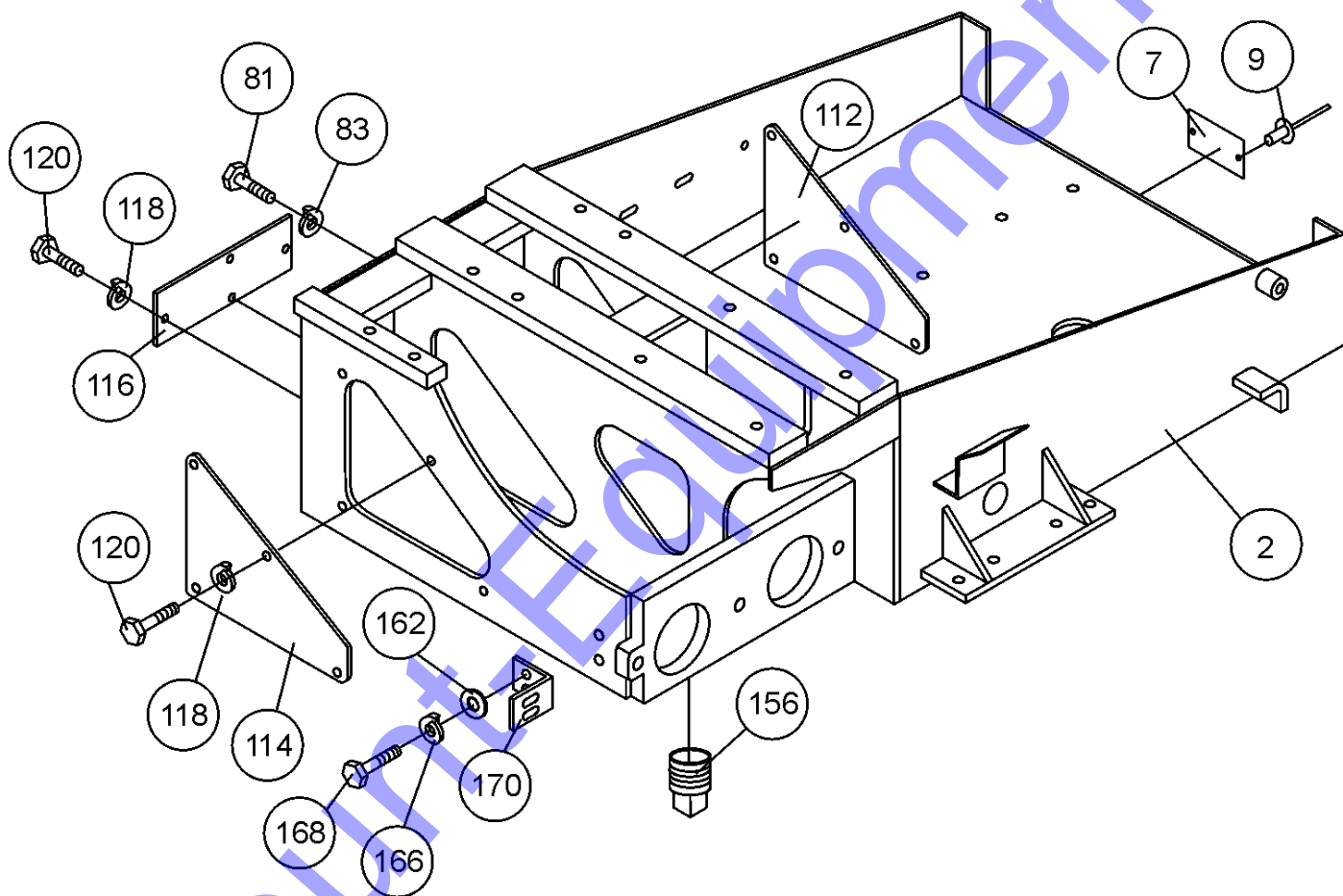
MG-30 PUMP — HOPPER ASSY.

HOPPER ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
134	EM402521	HOPPER SCREEN	1	
136	EM402519	HOPPER SCREEN FRAME	1	
138	EM402495	HOPPER	1	
142	EM621	WASHER - 1/2 IN	4	
144	6109180	LOCK WASHER - 1/2 IN	4	
146	EM963105	HEX BOLT - 1/2 X 2 IN	4	
148	EM963057	HEX BOLT - 3/8 X 1-1/8 IN	2	
150	EM402422	STUD - 3/4 X 2-1/8 IN	1	
152	1456	HEX NUT - 3/8 IN	2	
154	0166 A	LOCK WASHER - 3/8 IN	2	
160	EM963057	HEX BOLT - 3/8 X 1-1/2 IN	2	
172	EM513149	ANCORING PLATE W/ NUT	1	
174	EM513151	SEAL PLATE	1	

MG-30 PUMP — CHASSIS ASSY.

CHASSIS ASSY.



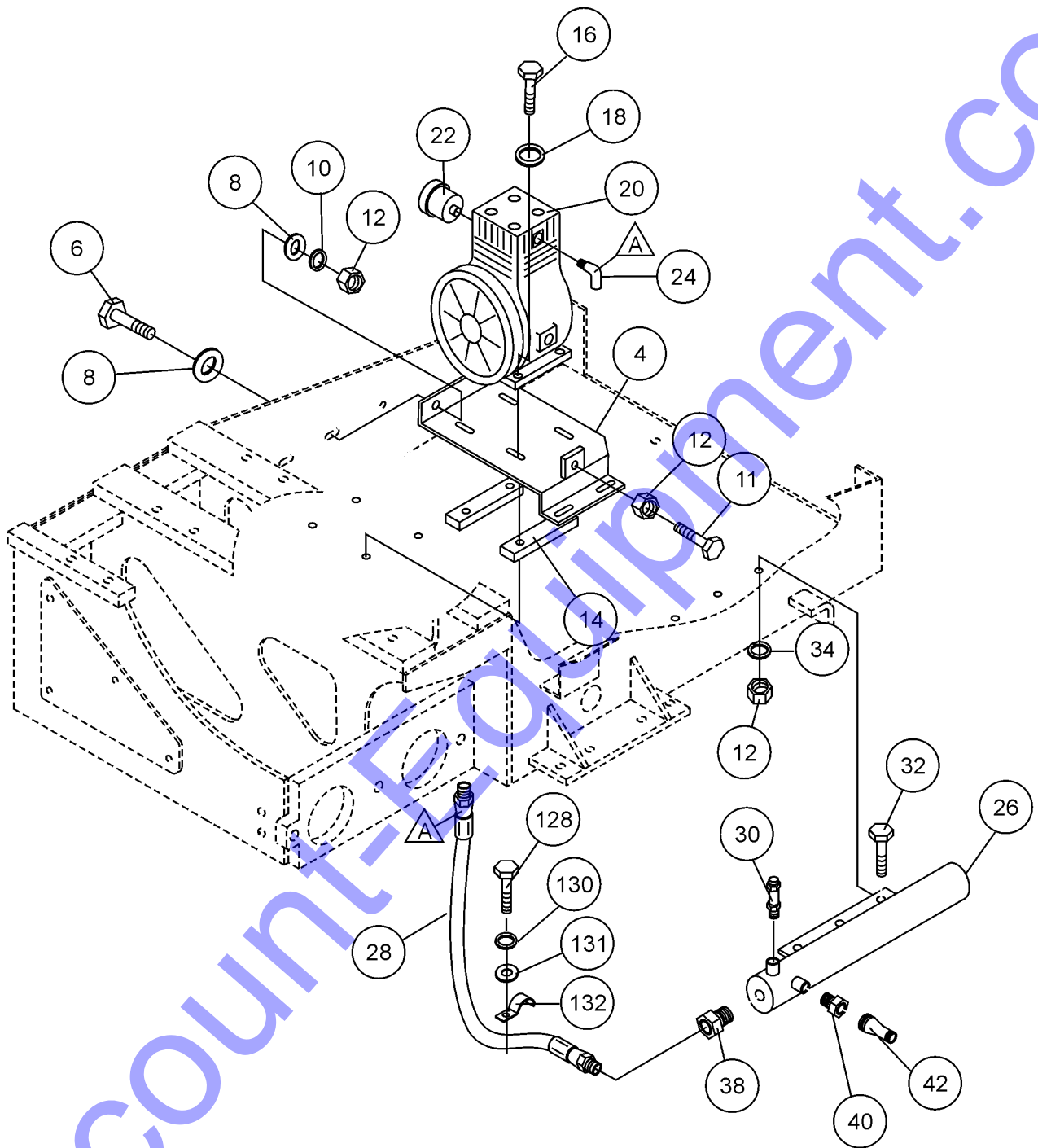
MG-30 PUMP — CHASSIS ASSY.

CHASSIS ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
2	EM402447	FRAME - MG30	1	
7		PLATE - SERIAL NO.	1	ORDER FROM MQ PARTS DEPT. WITH MODEL AND SERIAL NO.
9	491757	POP RIVETS	2	
81	EM963692	HEX BOLT - 1/2 X 1-1/8 IN	3	
83	6109180	LOCK WASHER 1/2 IN	3	
112	EM511044	PLATE - SMALL	1	
114	EM511042	PLATE FRONT	1	
116	EM511046	PLATE	1	
118	0166A	LOCK WASHER - 3/8 IN	12	
120	492309	HEX BOLT - 3/8 X 3/4 IN	12	
156	507895	PLUG - 2-1/2 IN	1	
162	3019092	WASHER - 3/8 IN	6	
164	EM969013	HEX NUT - 3/8 IN	2	
168	EM963610	HEX BOLT - 3/8 X 1 IN	2	
170	EM402515	MOUNTING BRACKET	1	

MG-30 PUMP — COMPRESSOR ASSY.

COMPRESSOR ASSY.



NOTES:
△ HOSE CONNECTION

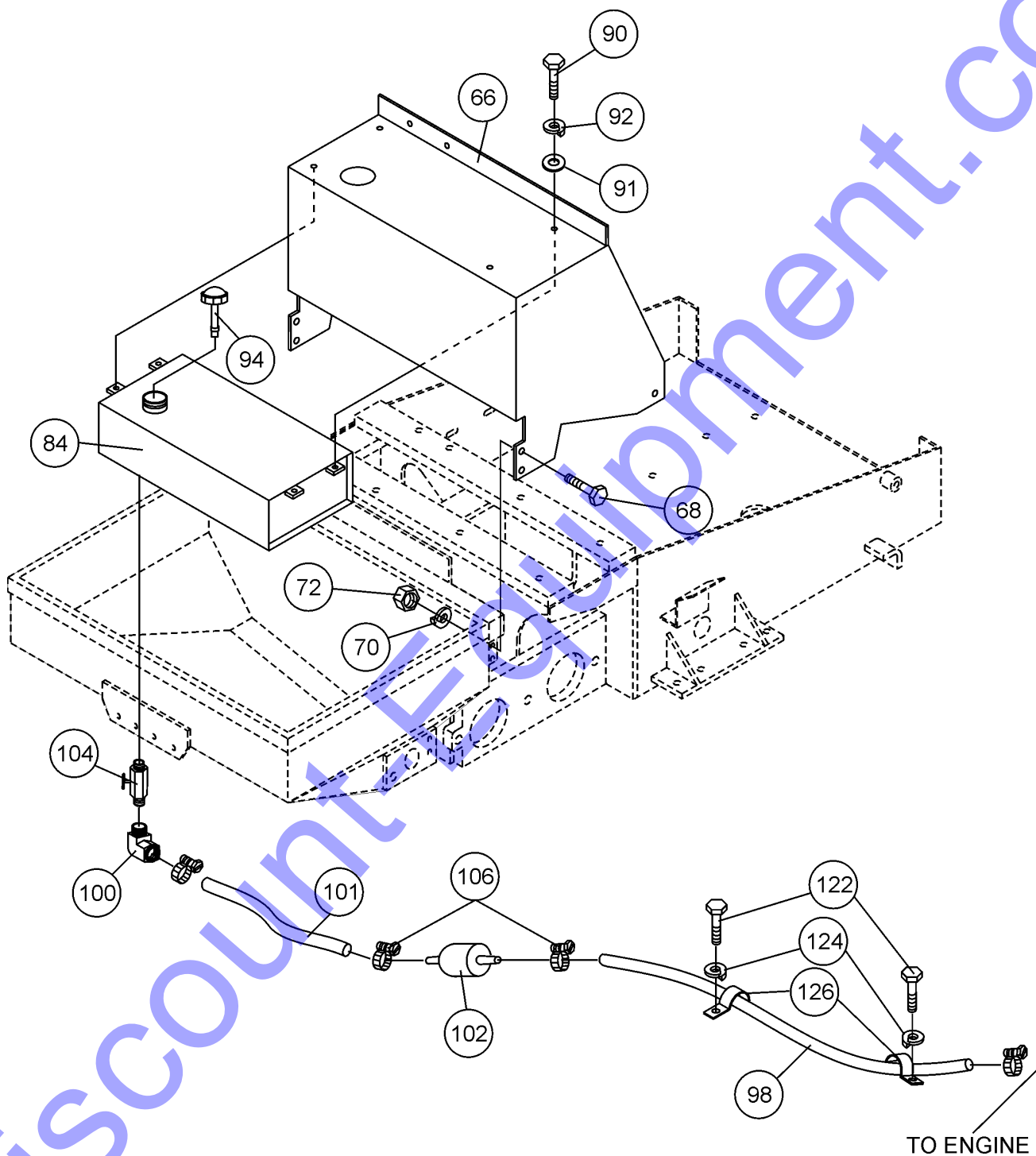
MG-30 PUMP — COMPRESSOR ASSY.

COMPRESSOR ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
4	EM510827	COMPRESSOR BASE	1	
6	EM963059	HEX BOLT - 3/8 X 1 - 1/4 IN	4	
8	3019092	WASHER - 3/8 IN	8	
10	0166 A	LOCK WASHER - 3/8 IN	4	
11	492486	ADJUSTING BOLT - 3/8 X 1 - 3/8 IN	1	
12	1456	HEX NUT - 3/8 IN	8	
14	510707	BOLTING BAR	2	
16	492365	HEX BOLT - 5/16 X 1 - 1/4 IN	4	
18	EM923343	LOCK WASHER - 5/16 IN	4	
20	EM958171	COMPRESSOR, AIR	1	
22	EM958033	AIR FILTER	1	
24	EM911058	ELBOW 90°	1	
26	EM402489	AIR TANK	1	
28	EM508695	AIR HOSE	1	
30	EM913116	SAFETY VALVE	1	
32	EM963610	BOLT HEX - 3/8 X 1 IN	3	
34	0166 A	LOCK WASHER - 3/8 IN	3	
38	EM491260	ELBOW ADAPTER MALE - 90°	1	
40	512609	ADAPTER REDUCER FEMALE	1	1/8" TO 5/16"
42	EM947032	QUICK-CONNECT SIGET - MALE	1	
128	492356	HEX BOLT - 1/4 X 3/4 IN	1	
130	2101402	LOCK WASHER - 1/4 IN	1	
131	492596	WASHER - 1/4 IN	2	
132	351104770	BRACKET - 3/4 IN	1	

MG-30 PUMP — FUEL TANK ASSY.

FUEL TANK ASSY.



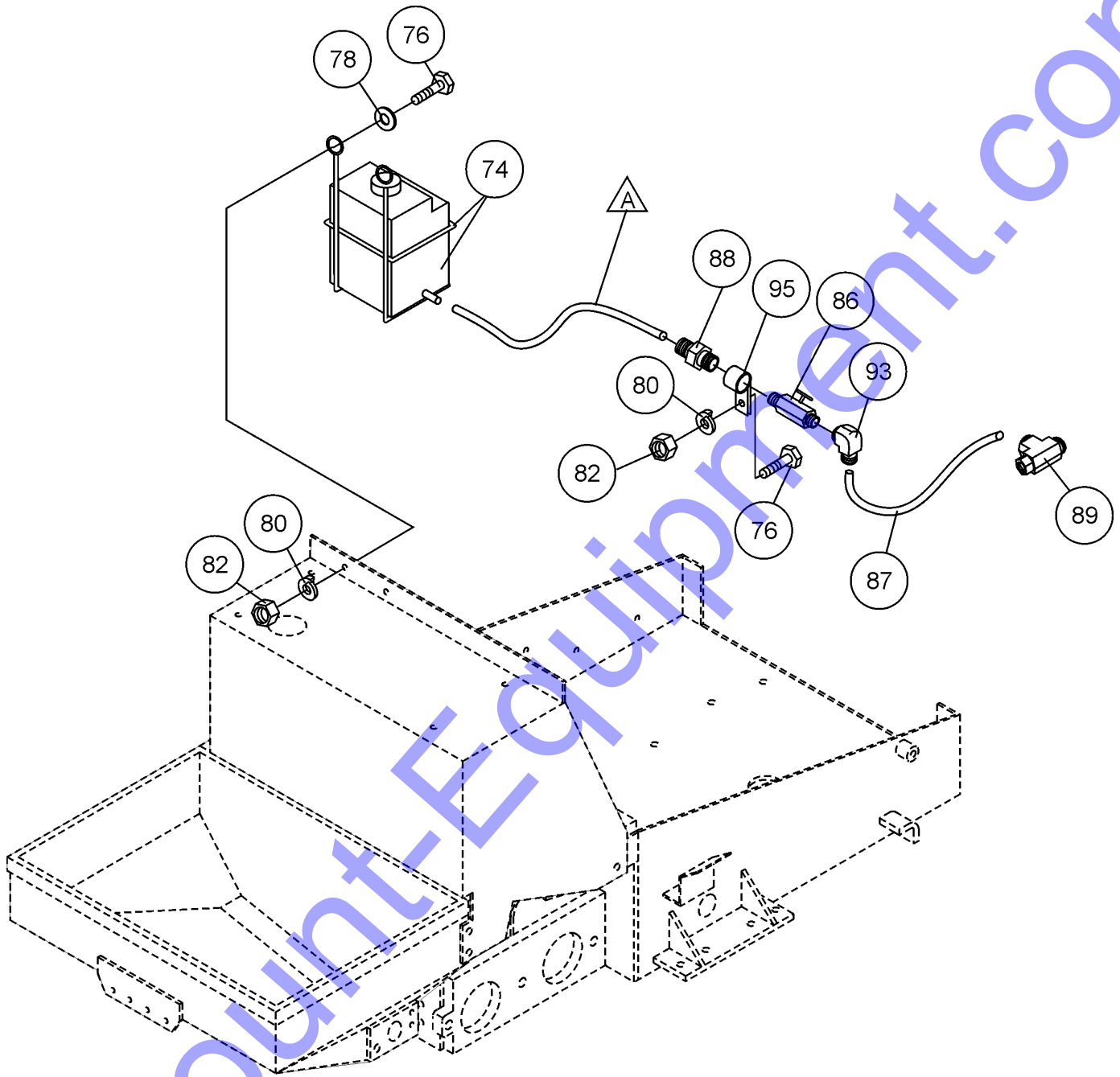
MG-30 PUMP — FUEL TANK ASSY.

FUEL TANK ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
66	EM402532	BONNET	1	
68	EM963692	HEX BOLT 1/2 X 1 - 1/8 IN	5	
70	6109180	LOCK WASHER 1/2 IN	5	
72	6109160	HEX NUT 1/2 IN	5	
84	EM402494	FUEL TANK, W/CAP	1	INCLUDES ITEMS W/*
90	EM963610	HEX BOLT 3/8 X 1 IN	4	
91	3019092	WASHER - 3/8 IN	4	
92	0166 A	LOCK WASHER - 3/8 IN	4	
94*	19340	FUEL TANK CAP W /GAUGE	1	
98	EM20427	TUBING	1	
100	EM20426	ELBOW 90° - 1/8 IN	1	
101	EM20427	TUBING	1	
102	EM20763	FUEL FILTER	1	
104	EM20421	VALVE, SHUT-OFF	1	
106	506208	CLAMP - 1/4 IN	3	
122	492356	HEXBOLT - 1/4 X 3/4 IN	2	
124	2101402	LOCK WASHER - 1/4 IN	2	
126	EM503081	BRACKET - 1/4 IN	2	

MG-30 PUMP — PISTON OILER TANK ASSY.

PISTON OILER TANK ASSY.



 ITEM INCLUDED WITH OIL TANK

MG-30 PUMP — PISTON OILER TANK ASSY.

PISTON OILER TANK ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
74	310555	OIL TANK W/ BRACKETS	1	
76	492356	HEX BOLT - 1/4 X 3/4 IN	4	
78	492596	WASHER 1/4 IN	2	
80	2101402	LOCK WASHER 1/4 IN	4	
82	492561	HEX NUT 1/4 IN	2	
86	512722	VALVE, SHUT-OFF	1	
87	EM20415	TUBING	1	
88	512731	MALE CONNECTOR REDUCER	1	1/8 TO 5/16
89	512721	TEE CONNETOR	1	
93	EM20426	ELBOW 90°	1	
95	513116	BRACKET - 1/2 IN	1	
99	492561	HEX NUT - 1/4 IN	2	

MG-30 PUMP — ROCKER ARM ASSY.

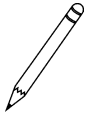
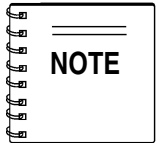
ROCKER ARM ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	EM505490	FITTING 45° - 1/8 TO 7/16 IN	2	
2	EM402982	CAM ROCKER	1	
4	EM402456	OILER FELT	2	
6	EM607	WASHER - 1/2 IN	1	
8	EM20349	OIL CAP	1	
14	512613	HEX BOLT - 1 X 5 IN	3	
16	EM603	LOCK WASHER - 1 IN	3	
18	EM417	HEX NUT - 1 IN	3	
20	EM20339	ROCKER ARM SHAFT	1	
22	EM402464	CRANK ROCKER ARM W/ BUSHING	1	
23	EM505489	CONNECTOR - 1/8 IN TO 7/16 IN	1	
25	EM505491	ELBOW 45° - 1/8 IN TO 7/16 IN	1	
28	505124	HEX BOLT 3/4" X 5" G5	4	
30	492628	LOCK WASHER - 3/4 IN	6	
32	EM20344	GREASING BOLT	1	
36	EM20347	BEARING SPACER	2	
38	EM903092	BEARING ASSEMBLY	1	
40	EM402434	BEARING BUSHING	1	
95	EM505489	CONNECTOR MALE	1	
97	EM514328	SP CONECTING ROD	1	
98	EM903176	BEARING	1	
99	EM702	SCREW ALLEN HEAD 3/8-16 X 3/4"	1	
100	EM20336	O-RING	2	
102	EM402996	SEAL PLATE	1	
104	EM402997	SEAL PLATE	1	
106	EM104	HEX BOLT - 5/8 X 2 IN	1	
114	EM20816	O-RING	2	
115	EM903162	CONE BEARING	2	
116	EM903163	BEARING CUP	1	
117	EM20813	SPACER	1	
118	EM20814	BEARING BUSHING	1	
157	512854	WASHER - 5/8 IN	1	
158	EM402461	BUSHINGS	4	
180	EM402457	BLOCK	3	

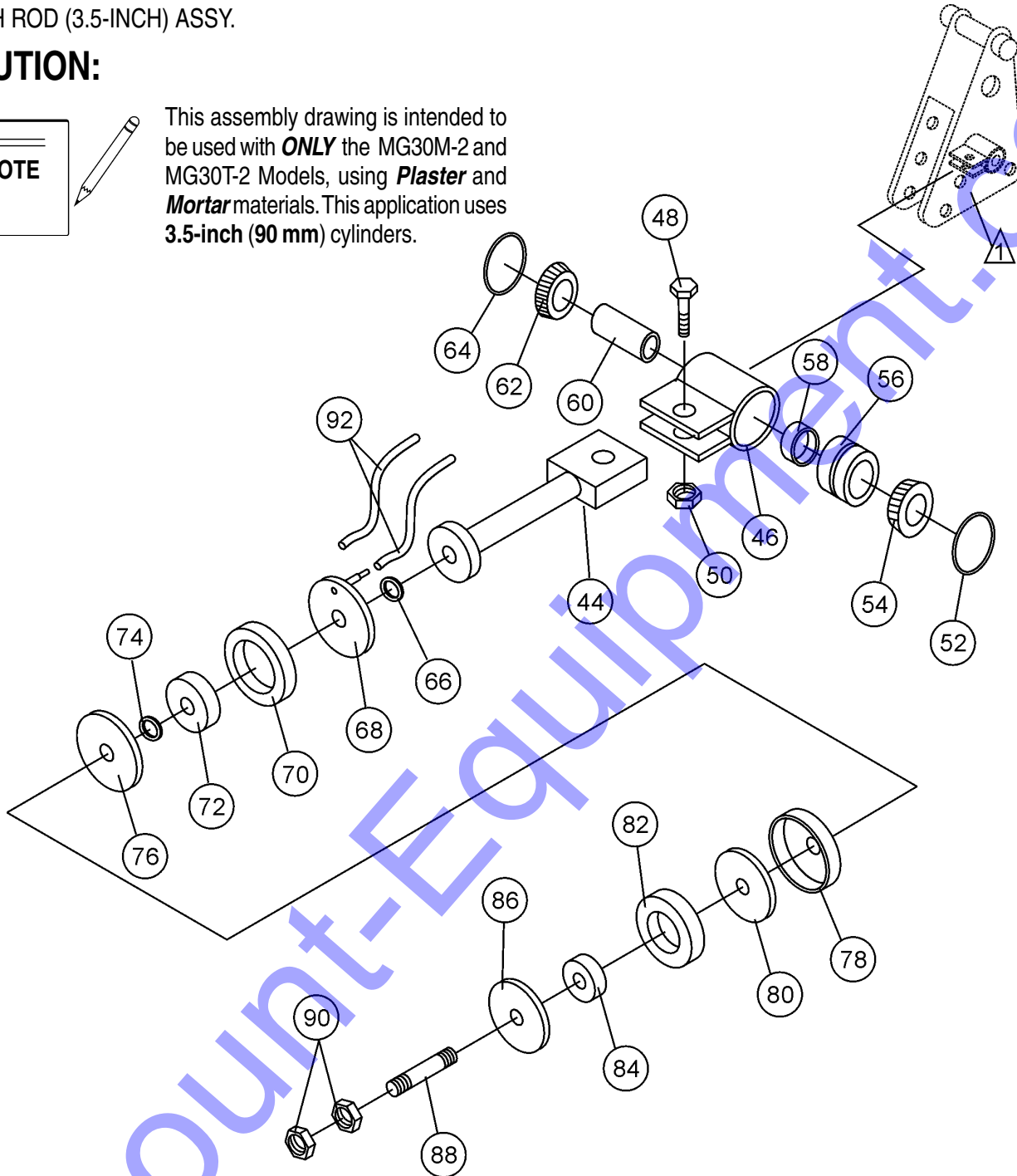
MG-30 PUMP — PUSH ROD (3.5-INCH) ASSY.

PUSH ROD (3.5-INCH) ASSY.

CAUTION:



This assembly drawing is intended to be used with **ONLY** the MG30M-2 and MG30T-2 Models, using **Plaster** and **Mortar** materials. This application uses **3.5-inch (90 mm)** cylinders.



NOTES:

PRE-HEAT BEFORE ASSEMBLING



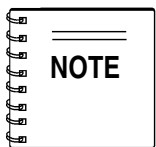
REFER TO ROCKER ARM ASSEMBLY PAGES 78-79.

MG-30 PUMP — PUSH ROD (3.5-INCH) ASSY.

PUSH ROD (3.5-INCH) ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
44	EM402437	PUSH ROD	2	
46	EM402441	BEARING HOUSING	2	
48	EM492421	HEX BOLT - 3/4 X 3 - 1/2 IN	2	
50	EM969038	HEX NUT - 3/4 IN	2	
52	EM20816	O-RING	2	
54	EM903162	BEARING CONE	2	
56	EM903163	BEARING CUP	2	
58	EM20813	BEARING SPACER	2	
60	EM20814	BEARING BUSHING	2	
62	EM903162	BEARING CONE	2	
64	EM20816	O-RING	2	
66	EM491056	O-RING	2	
68	EM402421	FELT OILER PLATE	2	
70	EM402395	FELT WASHER	2	
72	EM402396	SPACER	2	
74	EM491056	O-RING	2	
76	EM402394	BACK- UP WASHER	2	
78	EM402393	LEATHER CUP	2	
80	EM402392	CUP WASHER	2	
82	EM402390	EXPANDER WASHER	2	
84	EM402391	EXPANDER INSERT	2	
86	EM402389	COMPRESION WASHER	2	
88	EM402439	STUD - 1/2 X 3 - 5/16 IN	2	
90	6109160	HEX NUT - 1/2 IN	4	
92	EM20415	TUBING - 3/16 IN x 5'	2	

CAUTION:

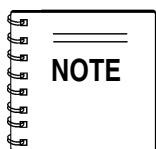


This parts list is intended to be used with **ONLY** the MG30M-2 and MG30T-2 Models, using **Plaster** and **Mortar** materials. This application uses **3.5-inch (90 mm)** cylinders.

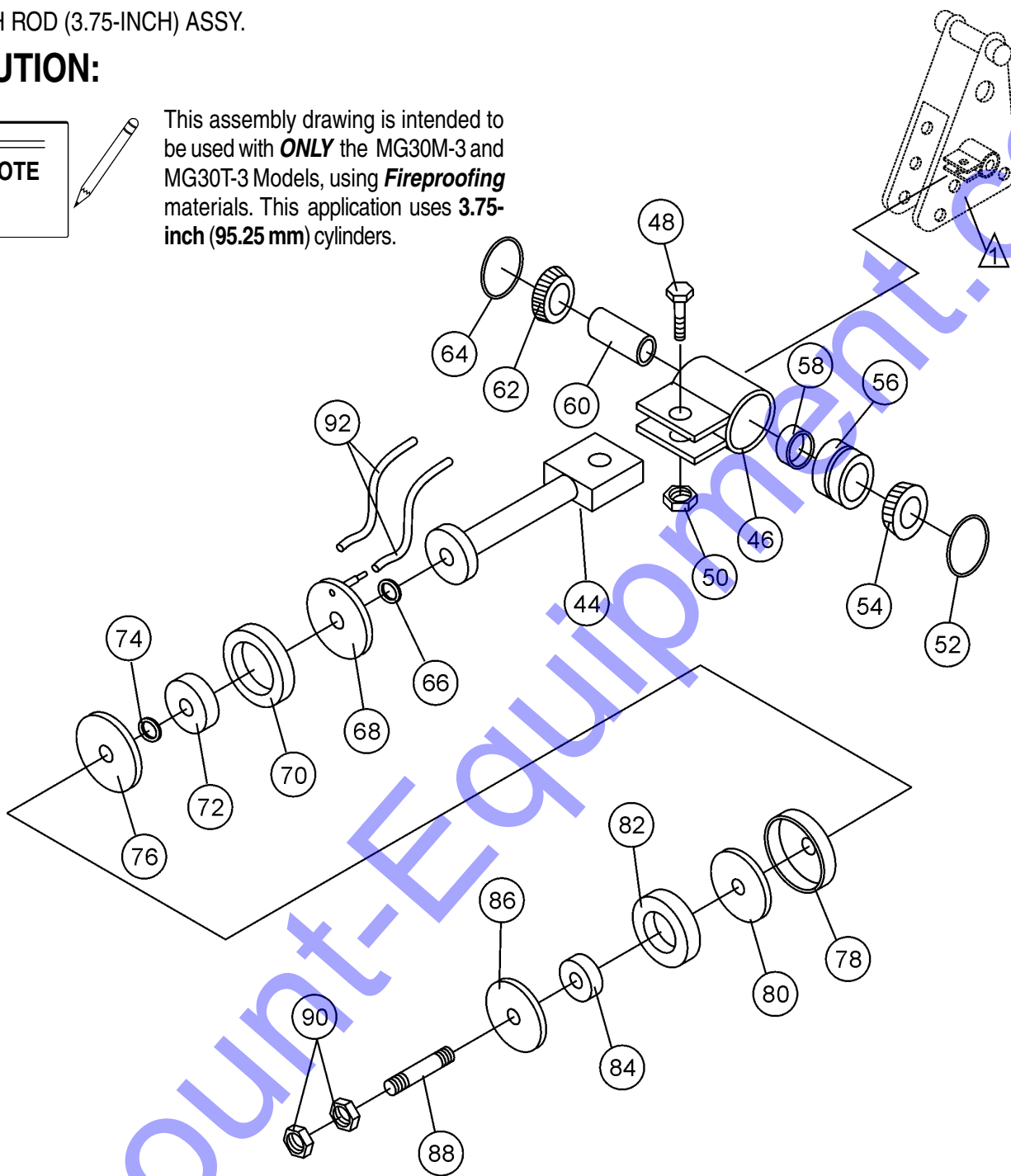
MG-30 PUMP — PUSH ROD (3.75-INCH) ASSY.

PUSH ROD (3.75-INCH) ASSY.

CAUTION:



This assembly drawing is intended to be used with **ONLY** the MG30M-3 and MG30T-3 Models, using **Fireproofing** materials. This application uses **3.75-inch (95.25 mm)** cylinders.



NOTES:

PRE-HEAT BEFORE ASSEMBLING



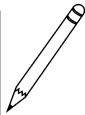
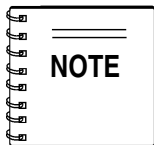
REFER TO ROCKER ARM ASSEMBLY PAGES 78-79.

MG-30 PUMP — PUSH ROD (3.75-INCH) ASSY.

PUSH ROD (3.75-INCH) ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
44	EM402437	PUSH ROD	2	
46	EM402441	BEARING HOUSING	2	
48	EM492421	HEX BOLT - 3/4 X 3 - 1/2 IN	2	
50	EM969038	HEX NUT - 3/4 IN	2	
52	EM20816	O-RING	2	
54	EM903162	BEARING CONE	2	
56	EM903163	BEARING CUP	2	
58	EM20813	BEARING SPACER	2	
60	EM20814	BEARING BUSHING	2	
62	EM903162	BEARING CONE	2	
64	EM20816	O-RING	2	
66	EM491056	O-RING	2	
68	EM402421	FELT OILER PLATE	2	
70	EM403002	FELT WASHER	2	
72	EM402396	SPACER	2	
74	EM915003	O-RING	2	
76	EM403004	BACK- UP WASHER	2	
78	EM403005	LEATHER CUP	2	
80	EM403006	CUP WASHER	2	
82	EM403007	EXPANDER WASHER	2	
84	EM402391	EXPANDER INSERT	2	
86	EM403008	COMPRESION WASHER	2	
88	EM402439	STUD - 1/2 X 3 - 5/16 IN	2	
90	EM968003	HEX NUT - 1/2 IN	4	
92	EM20415	TUBING - 3/16 IN x 5'	2	

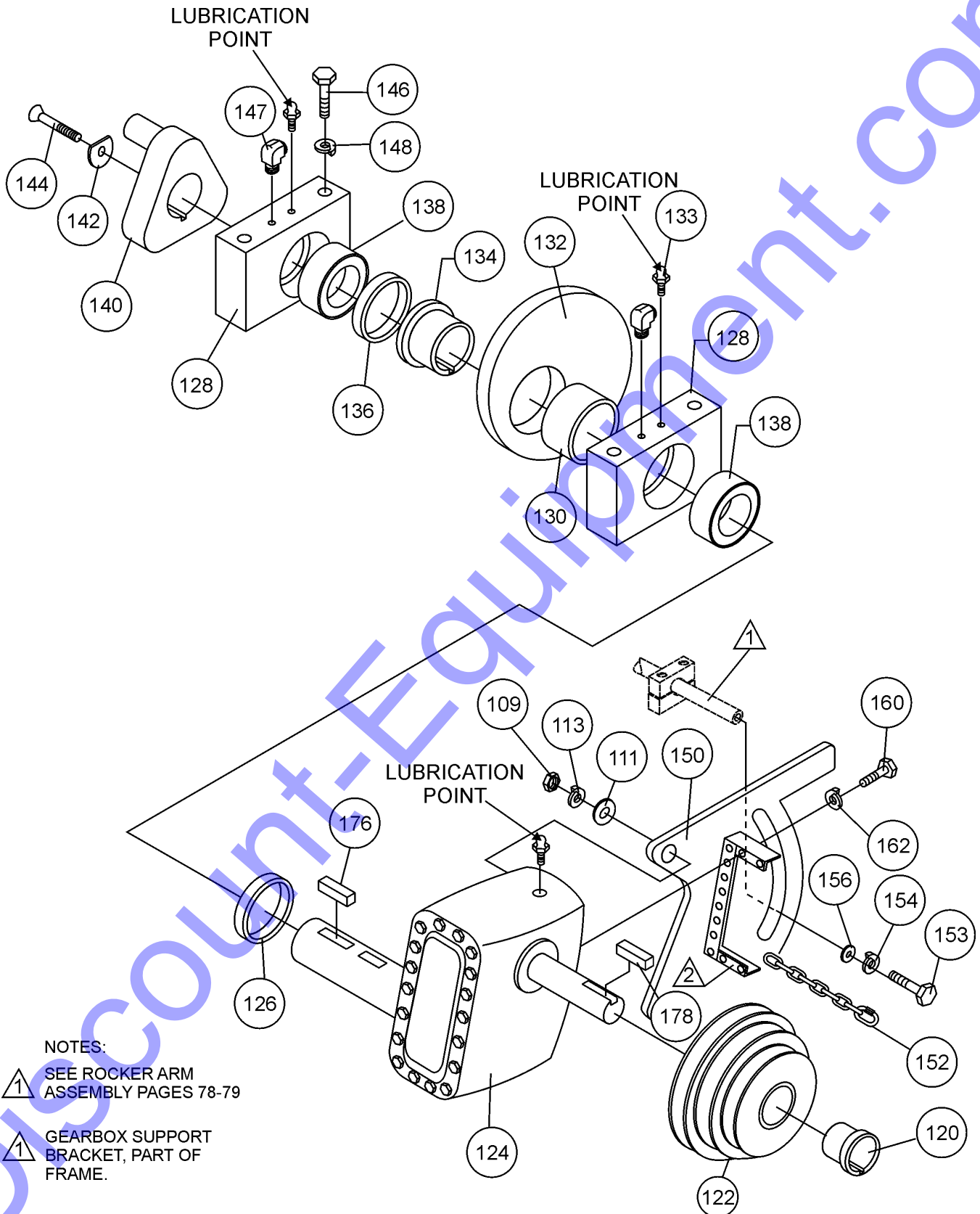
CAUTION:



This parts list is intended to be used with **ONLY** the MG30M-3 and MG30T-3 Models, using **Fireproofing** materials. This application uses **3.5-inch (90 mm)** cylinders.

MG-30 PUMP — CRANKSHAFT AND GEAR BOX ASSY.

CRANKSHAFT AND GEAR BOX ASSY.



NOTES:

⚠ SEE ROCKER ARM ASSEMBLY PAGES 78-79

⚠ GEARBOX SUPPORT BRACKET, PART OF FRAME.

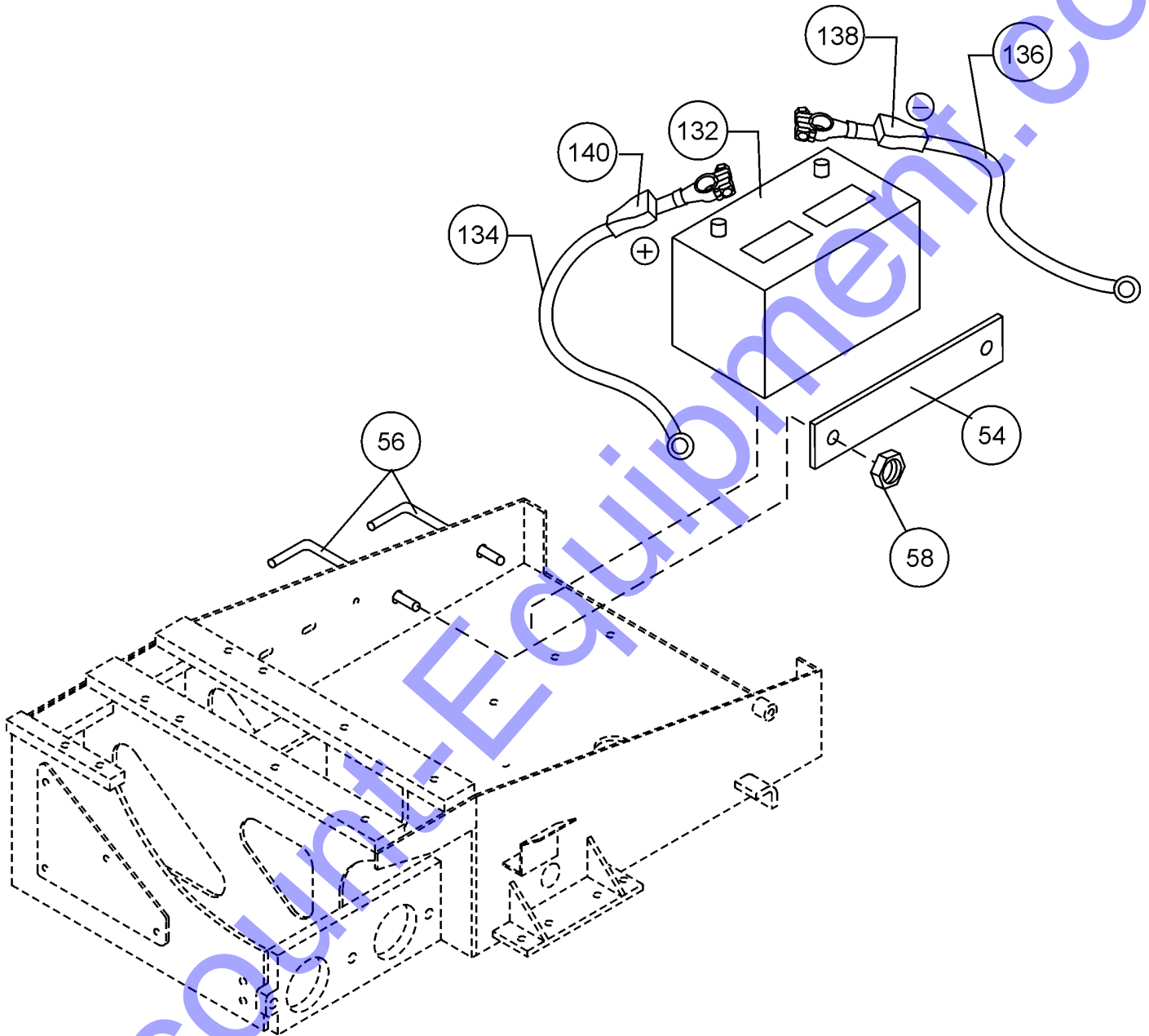
MG-30 PUMP — CRANKSHAFT AND GEAR BOX ASSY.

CRANKSHAFT AND GEAR BOX ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
109	EM492570	HEX NUT - 5/8 IN	1	
110	EM417	HEXNUT - 1 IN	1	
111	EM505882	WASHER - 5/8	1	
112	EM402998	ADAPTER SLEEVE	1	
113	EM492627	LOCK WASHER - 5/8 IN	1	
120	EM901331	BUSHING	1	
122	EM400090	STEP PULLEY	1	
124	EM931000	GEAR BOX	1	
126	EM510847	SPACER - 3 IN , 9MM	1	
128	EM20324-1	BLOCK BEARING	2	
130	EM510846	SPACER - 3 IN , 47.5 MM	1	
132	EM20301	CAM	1	
133	EM702	SCREW ALLEN HEAD 3/8-16 X 3/4	2	
134	EM20303	BUSHING	1	
136	EM510845	SPACER - 3 IN , 12 MM	1	
138	EM20324-2	BEARING	2	
140	EM402412	CRANK	1	
142	EM402413	TENSION WASHER W /SLOT	1	
144	EM512618	ALLEN BOLT - 1/2 X 2 IN	1	
146	EM505122	HEX BOLT - 3/4 X 8 - 1/2 IN	4	
147	EM505490	ELBOW 45°	2	
148	EM492628	LOCK WASHER - 1 IN	4	
150	EM20306	BELT TIGHTENER	1	
152	EM509947	MASTER LINK W/CHAIN	1	
153	EM503982	HEX BOLT- 5/8 X 2 IN	1	
154	EM923348	LOCK WASHER - 5/8 IN	1	
156	EM402459	GROOVE WASHER	1	
160	EM492363	HEX BOLT - 5/16 X 3/4 IN	8	
162	EM492623	LOCK WASHER - 5/16	8	
176	EM513233	KEY - 3/4 X 5/8 X 1 - 3/4 IN	2	
178	EM513232	KEY - 3/8 IN X 65 MM	1	

MG-30 PUMP — BATTERY ASSY.

BATTERY ASSY.



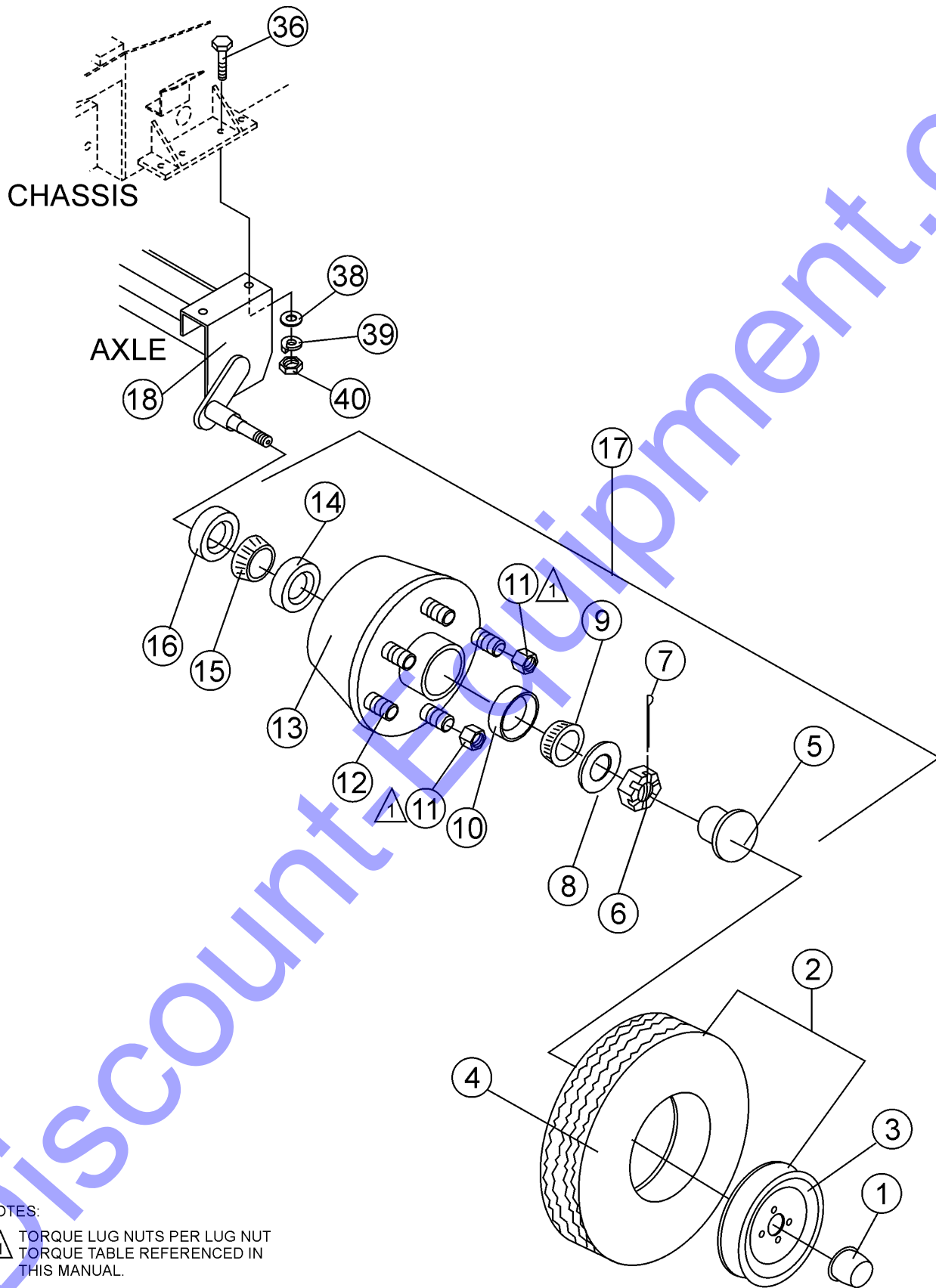
BATTERY ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
54	EM510708	BATTERY CLAMP	1	
56	EM510844	SUPPORT ROD	1	
58	EM969079	HEX NUT - 1/4 IN	1	
132	507590	BATTERY - 12 V	1	
134	EM505297	BATTERY TERMINAL CABLE - POS.	1	
136	EM20720	BATTERY TERMINAL CABLE - NEG.	1	
138	505624	BATTERY TERMINAL COVER - BLACK	1	
140	506266	BATTERY TERMINAL COVER - RED	1	

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MG-30 PUMP—TAG UNIT AXLE ASSY.

TAG UNIT AXLE ASSY.



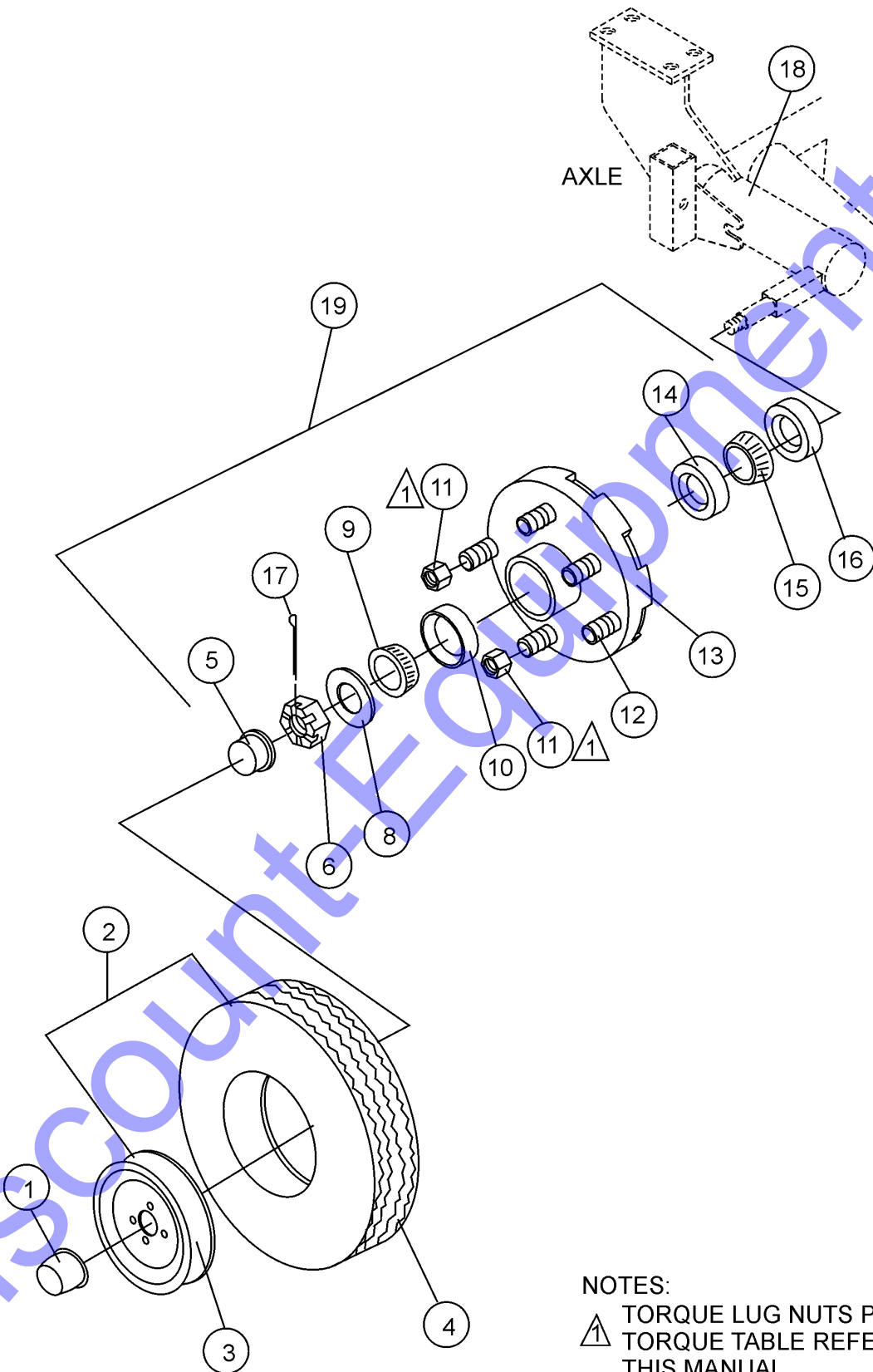
MG-30 PUMP—TAG UNIT AXLE ASSY.

TAG UNIT AXLE ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	EM26518	CAP 14" CHROME	2	
2	EM26615A	TIRE ASSY.....	2	INCLUDES ITEMS W/*
3*	EM20602	WHEEL	2	CANNOT BE PURCHASED SEPARATELY
4*	EM20603	TIRE	2	CANNOT BE PURCHASED SEPARATELY
5#\$	EM26306	DUST COVER	2	
6#\$	EM968481	CASTLE NUT	2	
7	EM705	PIN, COTTER 3/16X1 1/2	2	
8#\$	EM26329	WASHER	2	
9#\$	EM903113	OUTER BEARING	2	
10#\$	EM903012	OUTER CUP	2	
11#\$	EM26519	NUT	12	
12#\$	EM20612	STUD	12	
13#\$	EM26300	HUB	2	
14#\$	EM903169	INNER CUP	2	
15#\$	EM903168	INNER BEARING	2	
16#\$	EM26305	GREASE SEAL	2	
17\$	EM20601	HUB ASSEMBLY	2	INCLUDES ITEMS W/#
18	EM14600	AXLE	1	
18	EM14600A	AXLE WITH HUB INSTALLED	1	INCLUDES ITEMS W/\$

MG-30 PUMP — MOBILE UNIT AXLE ASSY.

MOBLE UNIT AXLE ASSY.



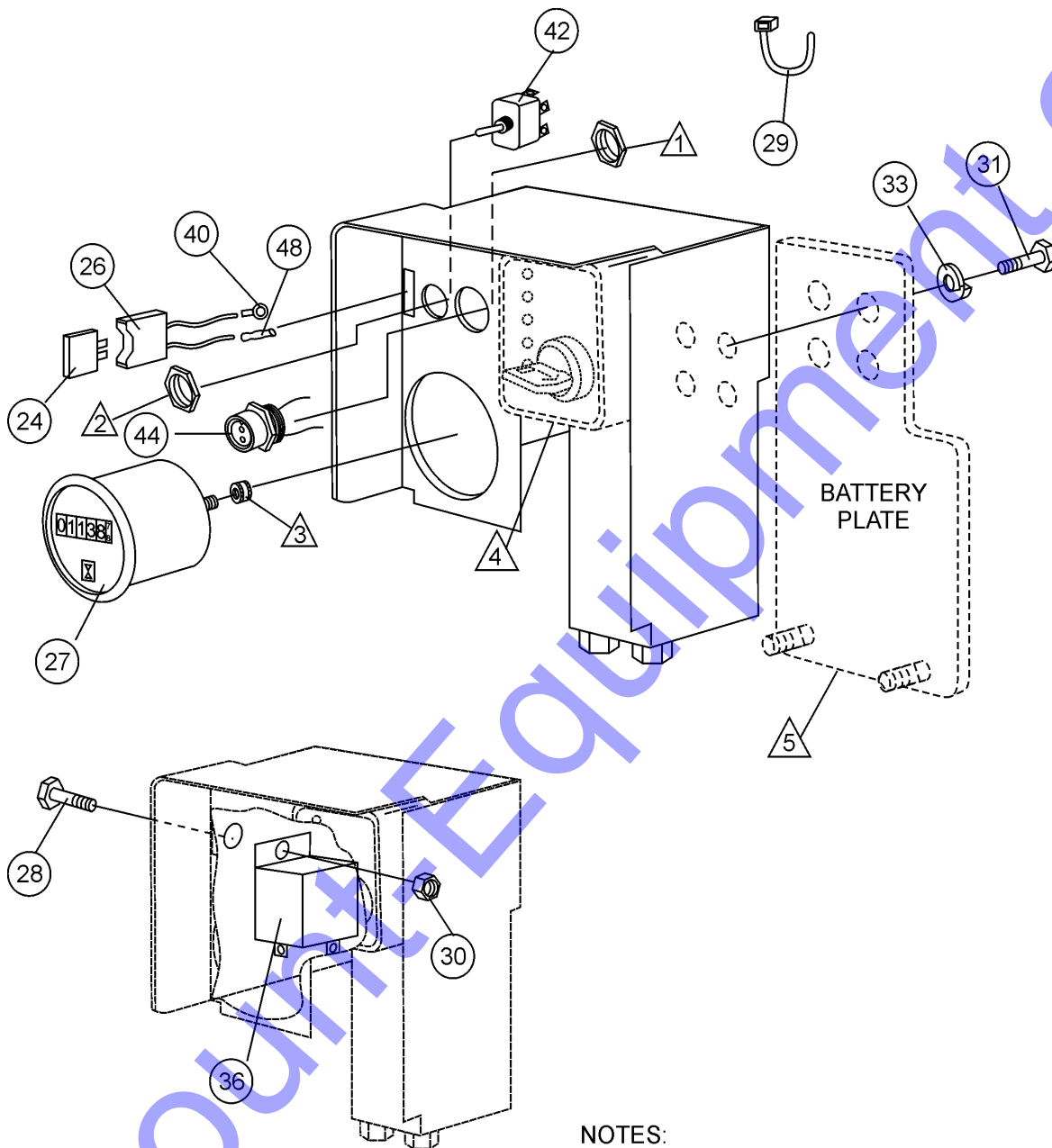
MG-30 PUMP — MOBILE UNIT AXLE ASSY.

MOBLE UNIT AXLE ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	EM26520	CAP 15" CHROME	2	
2	EM26615	TIRE ASSY.....	2	INCLUDES ITEMS W/*
3*		WHEEL	2	CANNOT BE PURCHASED SEPARATELY
4*		TIRE	2	CANNOT BE PURCHASED SEPARATELY
5#	EM941307	DUST CAP	2	
6#\$		CASTLE NUT	2	INCLUDES ITEMS W/\$
8#\$		WASHER	2	CANNOT BE PURCHASED SEPARATELY
9#	EM941309	OUTER BEARING	2	
10#	EM941315	OUTER CUP	2	
11#	EM941314	NUT	12	
12#	EM941315	STUD	12	
13#		HUB	2	CANNOT BE PURCHASED SEPARATELY
14#	EM941310	INNER CUP	2	
15#	EM941312	INNER BEARING	2	
16#	EM941311	GREASE SEAL	2	
17#\$		PIN, COTTER 3/16X1 1/2.....	2	CANNOT BE PURCHASED SEPARATELY
18	TBD	AXLE	1	CONTACT MULTQUIP PARTS DEPT.
19	EM512906	HUB ASSEMBLY	2	INCLUDES ITEMS W/#

MG-30 PUMP — CONTROL BOX ASSY.

CONTROL BOX ASSY.



NOTES:

- ① INCLUDED WITH ITEM 44,
REMOTE OUTLET PLUG P/N EM26789.
- ② INCLUDED WITH ITEM 42,
PUMPING CONTROL SWITCH P/N EM40711.
- ③ INCLUDED WITH ITEM 27,
HOUR METER P/N EM963003.
- ④ IGNITION BOX INCLUDED WITH ENGINE.
- ⑤ BATTERY PLATE INCLUDED WITH ENGINE.

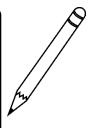
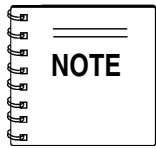
MG-30 PUMP — CONTROL BOX ASSY.

CONTROL BOX ASSY.

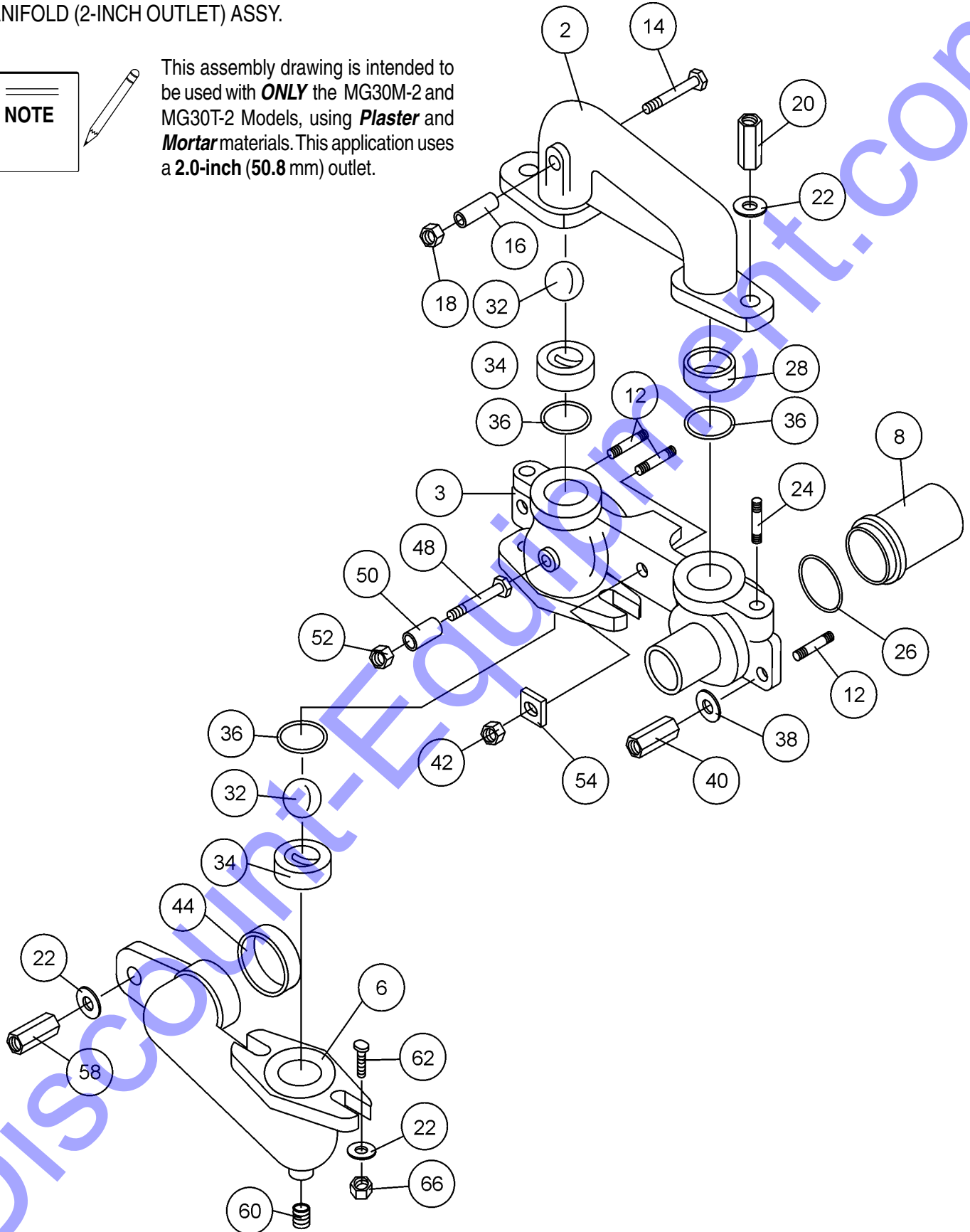
<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
24	508632	FUSE, 25 AMP	1	
26	EM98066	FUSE HOLDER	1	
27	EM18706	HOURMETER	1	
28	EM963003	HEX BOLT - 1/4 X 3/4 IN	1	
29	504505	CABLE TIE WRAP	3	
30	EM969079	HEX NUT - 1/4 IN	1	
31	EM506599	HEX BOLT - 6MM X 15	3	
32	EM512644	INSTRUMENT PANEL	1	
33	2101402	LOCK WASHER - 1/4 IN	1	
36	EM16710	RELAY	1	
40	EM491897	TERMINAL - BLUE 3/16 LOOP	1	
42	EM40711	SWITCH	1	
44	EM26789	RECEPTICAL FEMALE	1	
46	EM491879	STAR NUT FOR RECEPTICAL	1	
48	EM508242	CONNECTOR	1	

MG-30 PUMP — MANIFOLD (2-INCH OUTLET) ASSY.

MANIFOLD (2-INCH OUTLET) ASSY.



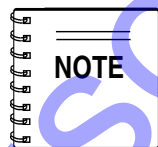
This assembly drawing is intended to be used with **ONLY** the MG30M-2 and MG30T-2 Models, using **Plaster** and **Mortar** materials. This application uses a **2.0-inch (50.8 mm)** outlet.



MG-30 PUMP — MANIFOLD (2-INCH OUTLET) ASSY.

MANIFOLD (2-INCH OUTLET) ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
2	EM402385	CONNECTING MANIFOLD	1	
3	EM402383	PUMP MANIFOLD 2-INCH 45 OUTLET	1	(TAG UNIT)
3	EM402382	PUMP MANIFOLD 2 -INCH STR. OUTLET . 1	1	(MOBILE UNIT)
6	EM402388	HOPPER ELBOW	1	
8	EM403408	MATERIAL CYLINDER 3.5" DIA	2	STANDARD
12	EM402977	STUD - 1 X 5-1/2 IN	3	
14	EM503111	CAP SCREW 1/2 X 4 - 1/2 IN	1	
16	EM402473	SLEEVE FOR FIREPROOF KIT	1	
18	EM492584	HEX NUT 1/2 IN	1	
20	EM968002	HEX NUT 3/4 IN	2	
22	EM619	WASHER 3/4 IN	5	
24	EM510849	STUD - 3/4 X 3 IN	2	
26	EM402581	QUARTER ROUND SEAL	2	
28	EM402418	CONNECTING RING	1	
32	EM400581	RUBBER BALL	2	
34	EM402402	VALVE SEAT WITH PIN	2	
36	EM402580	SPECIAL O - RING	3	
38	EM512914	WASHER - 1 IN	2	
40	EM968020	HEX NUT - 1 IN	2	
42	EM512612	HEX NUT - 1 IN	1	
44	EM914312	SEAL	1	
48	EM492399	CAP SCREW - 1/2 X 3 IN	1	
50	EM402415	SLEEVE SHORT	1	
52	EM492584	HEX NUT - 1/2 IN	1	
54	EM402986	SQUARE WASHER - 1 IN	1	
58	EM968002	HEX NUT - 3/4 IN	1	
60	EM505988	PIPE PLUG - 1 IN	1	
62	EM966207	"T" SLOT BOLT - 1/2 IN X 2 - 1/4 IN	2	
66	EM492556	HEX NUT - 1/2 IN	2	

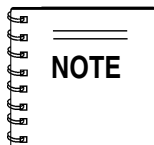


NOTE

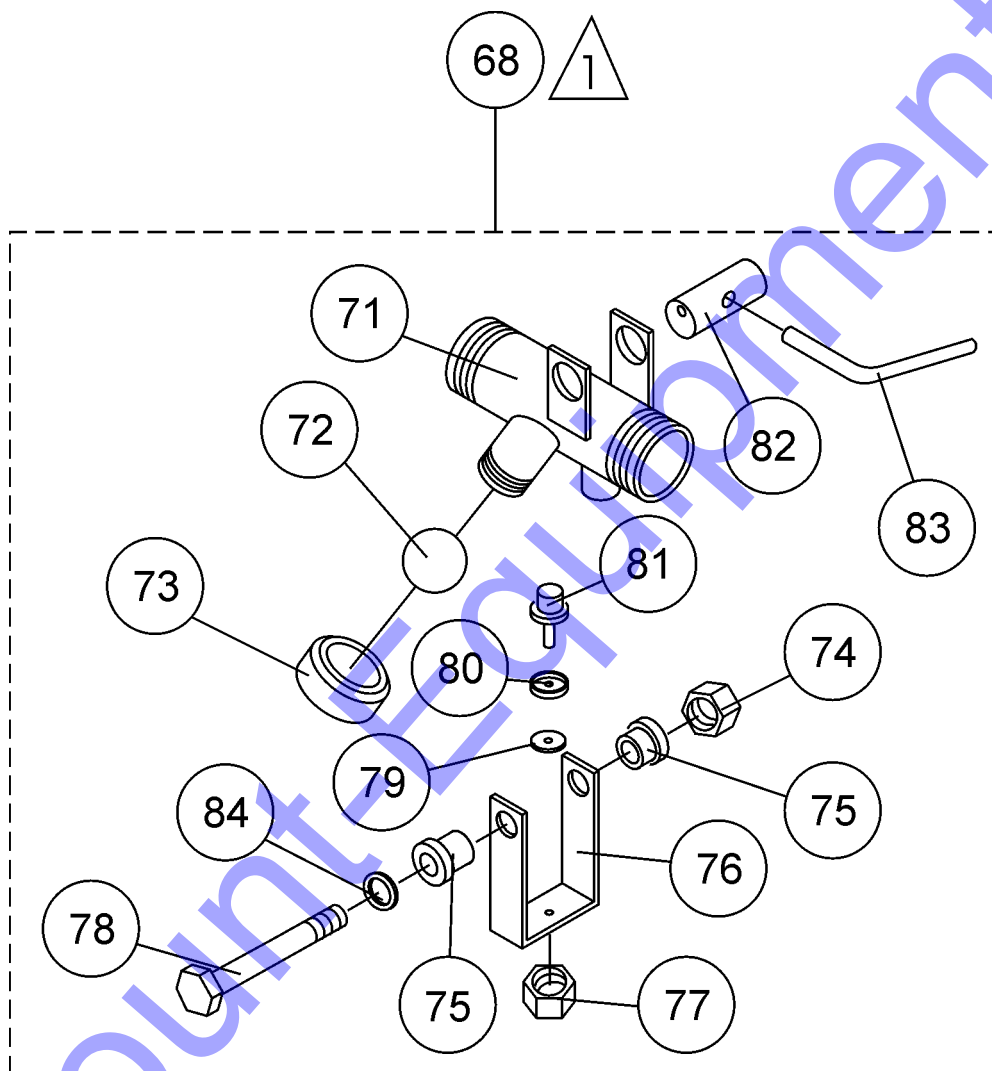
This parts list is intended to be used with **ONLY** the MG30M-2 and MG30T-2 Models, using **Plaster** and **Mortar** materials. This application uses a **2.0-inch (50.8 mm)** outlet.

MG-30 PUMP — PRESSURE RELIEF VALVE (2-INCH OUTLET) ASSY.

PRESSURE RELIEF VALVE (2-INCH OUTLET) ASSY.



This assembly drawing is intended to be used with **ONLY** the MG30M-2 and MG30T-2 Models, using **Plaster** and **Mortar** materials. This application uses a **2.0-inch (50.8 mm)** outlet.



NOTES:

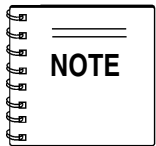


COMPLETE PRESSURE VALVE ASSEMBLY, ITEM 68, P/N 20800 INCLUDES ALL ITEMS WITHIN OUTLINE.

MG-30 PUMP — PRESSURE RELIEF VALVE (2-INCH OUTLET) ASSY.

PRESSURE RELIEF VALVE (2-INCH OUTLET) ASSY.

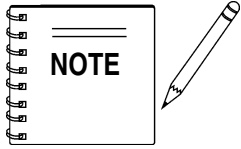
NO.	PART NO.	PART NAME	QTY.	REMARKS
68	EM20800	PRESSURE RELIEF - 2 IN	1	INCLUDES ITEMS ITEMS W/*
71*	EM20800	BODY ASSEMBLY 2 IN	1	
72*	EM400581	RUBBER BALL	1	
73*	EM402527	WORKING PRESSURE CAP 700#	1	
73*	EM402528	WORKING PRESSURE CAP 1000#	1	
74*	EM969079	LOCK NUT	1	
75*	EM906065	BUSHING	2	
76*	EM20807	CLAMPING YOKE 2 IN	1	
77*	EM969079	LOCK NUT	1	
78*	EM963518	CAP SCREW 2 IN	1	
79*	EM400714	SHIM WASHER	1	
80*	EM400458	CAP	1	
81*	EM20806	SAFTEY PLUG	1	
82*	EM20803	CAM 2 IN	1	
83*	EM20805	CAM LEVER	1	
84*	TBD	WASHER	1	



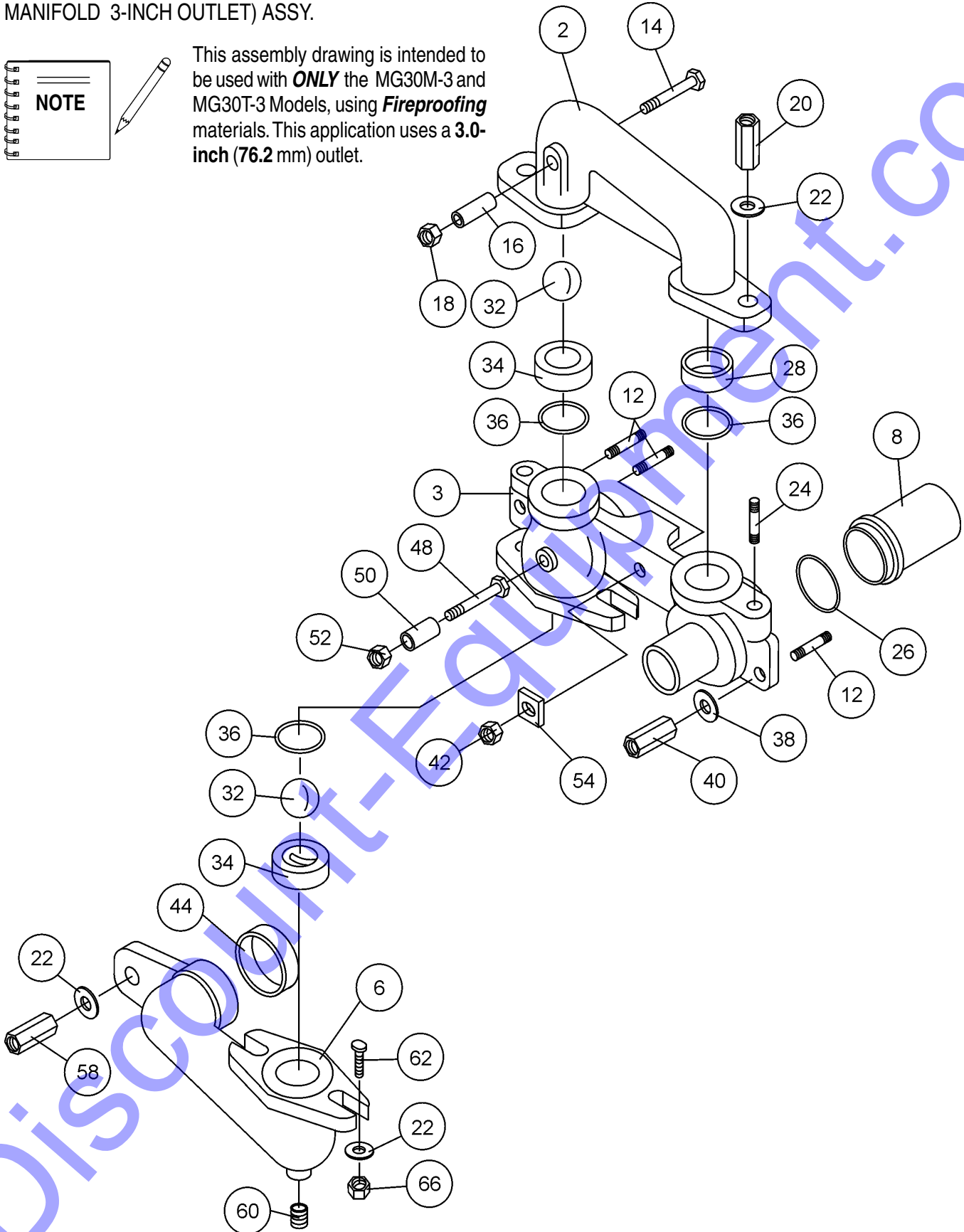
This parts list is intended to be used with **ONLY** the MG30M-2 and MG30T-2 Models, using **Plaster** and **Mortar** materials. This application uses a **2.0-inch (50.8 mm)** outlet.

MG-30 PUMP — MANIFOLD (3-INCH OUTLET) ASSY.

MANIFOLD 3-INCH OUTLET) ASSY.



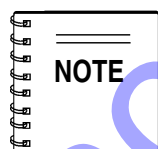
This assembly drawing is intended to be used with **ONLY** the MG30M-3 and MG30T-3 Models, using **Fireproofing** materials. This application uses a **3.0-inch (76.2 mm)** outlet.



MG-30 PUMP — MANIFOLD (3-INCH OUTLET) ASSY.

MANIFOLD (3-INCH OUTLET) ASSY.

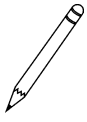
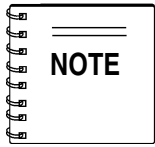
<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
2	EM402385	CONNECTING MANIFOLD	1	
3	EM402774	PUMP MANIFOLD 3-INCH 45 OUTLET	1	(TAG UNIT)
3	EM402775	PUMP MANIFOLD 3 -INCH STR. OUTLET ..	1	(MOBIL UNIT)
6	EM402388	HOPPER ELBOW	1	
8	EM403000	MATERIAL CYLINDER 3.75" DIA	2	HIGH VOLUME
12	EM402977	STUD - 1 X 5-1/2 IN	3	
14	EM503111	CAP SCREW 1/2 X 4 - 1/2 IN	1	
16	EM402473	SLEEVE FOR FIREPROOF KIT	1	
18	EM492584	HEX NUT 1/2 IN	1	
20	EM968002	HEX NUT 3/4 IN	2	
22	EM619	WASHER 3/4 IN	6	
24	EM510849	STUD - 3/4 X 3 IN	2	
26	EM402581	QUARTER ROUND SEAL	2	
28	EM402418	CONNECTING RING	1	
32	EM402579	STEEL BALL	2	
34	EM402995	VALVE SEAT WITHOUT PIN	2	
36	EM402580	SPECIAL O-RING	3	
38	EM512914	WASHER - 1 IN	2	
40	EM968020	HEX NUT - 1 IN	2	
42	EM512612	HEX NUT - 1 IN	1	
44	EM914312	SEAL	1	
48	EM492399	CAP SCREW - 1/2 X 3 IN	1	
50	EM402415	SLEEVE SHORT	1	
52	EM492584	HEX NUT - 1/2 IN	1	
54	EM402986	SQUARE WASHER - 1 IN	1	
58	EM968002	HEX NUT - 3/4 IN	1	
60	EM505988	PIPE PLUG - 1 IN	1	
62	EM966207	"T" SLOT BOLT - 1/2 IN X 2 - 1/4 IN	2	
66	6109160	HEX NUT - 1/2 IN	2	



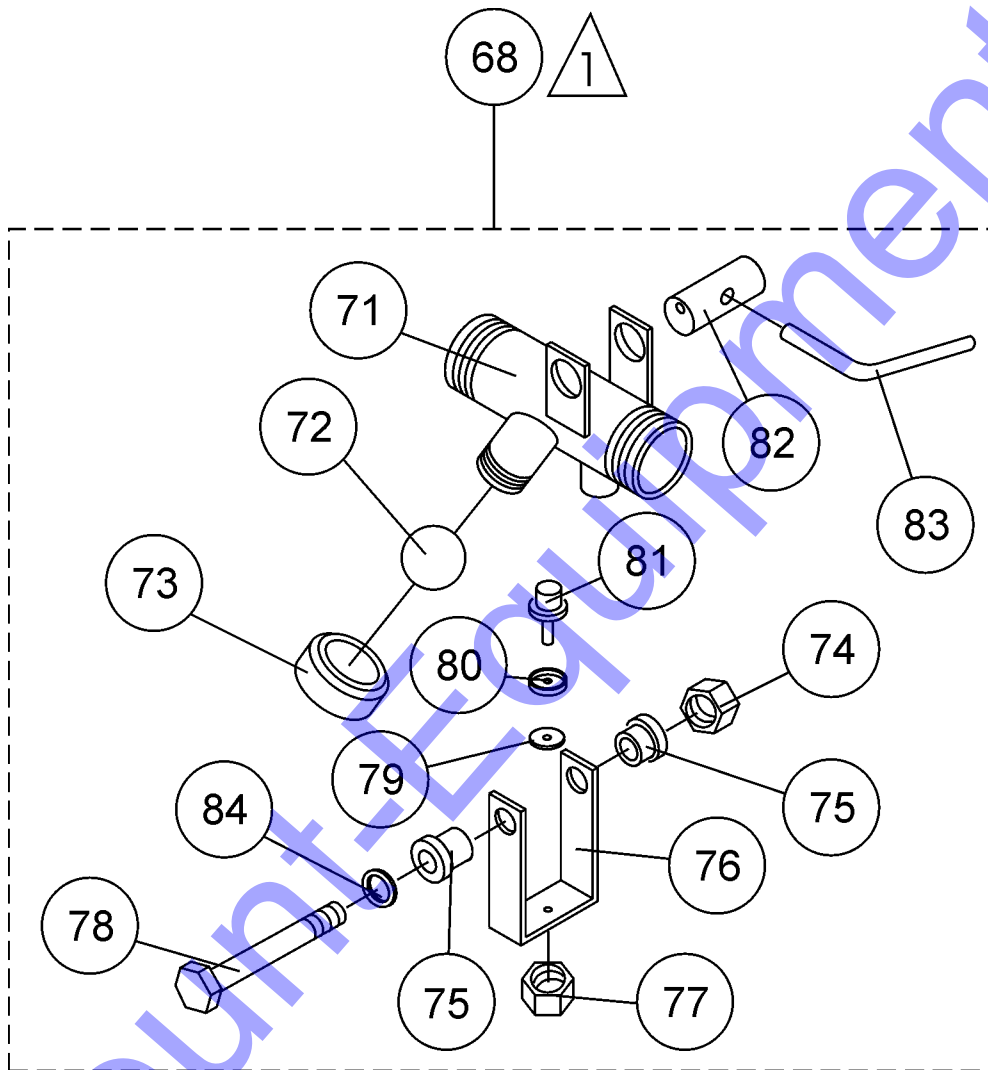
This parts list is intended to be used with **ONLY** the MG30M-3 and MG30T-3 Models, using **Fireproofing** materials. This application uses a **3.0-inch (76.2 mm)** outlet.

MG-30 PUMP — PRESSURE RELIEF VALVE (3-INCH OUTLET) ASSY.

PRESSURE RELIEF VALVE (3-INCH OUTLET) ASSY.



This assembly drawing is intended to be used with **ONLY** the MG30M-2 and MG30T-2 Models, using **Fireproofing** materials. This application uses a **3.0-inch (76.2 mm)** outlet.



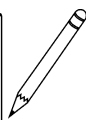
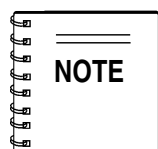
NOTES:

- △ COMPLETE PRESSURE VALVE ASSEMBLY, ITEM 68, P/N EM23414 INCLUDES ALL ITEMS WITHIN OUTLINE.

MG-30 PUMP — MANIFOLD (3-INCH OUTLET) ASSY.

PRESSURE RELIEF VALVE (3-INCH OUTLET) ASSY.

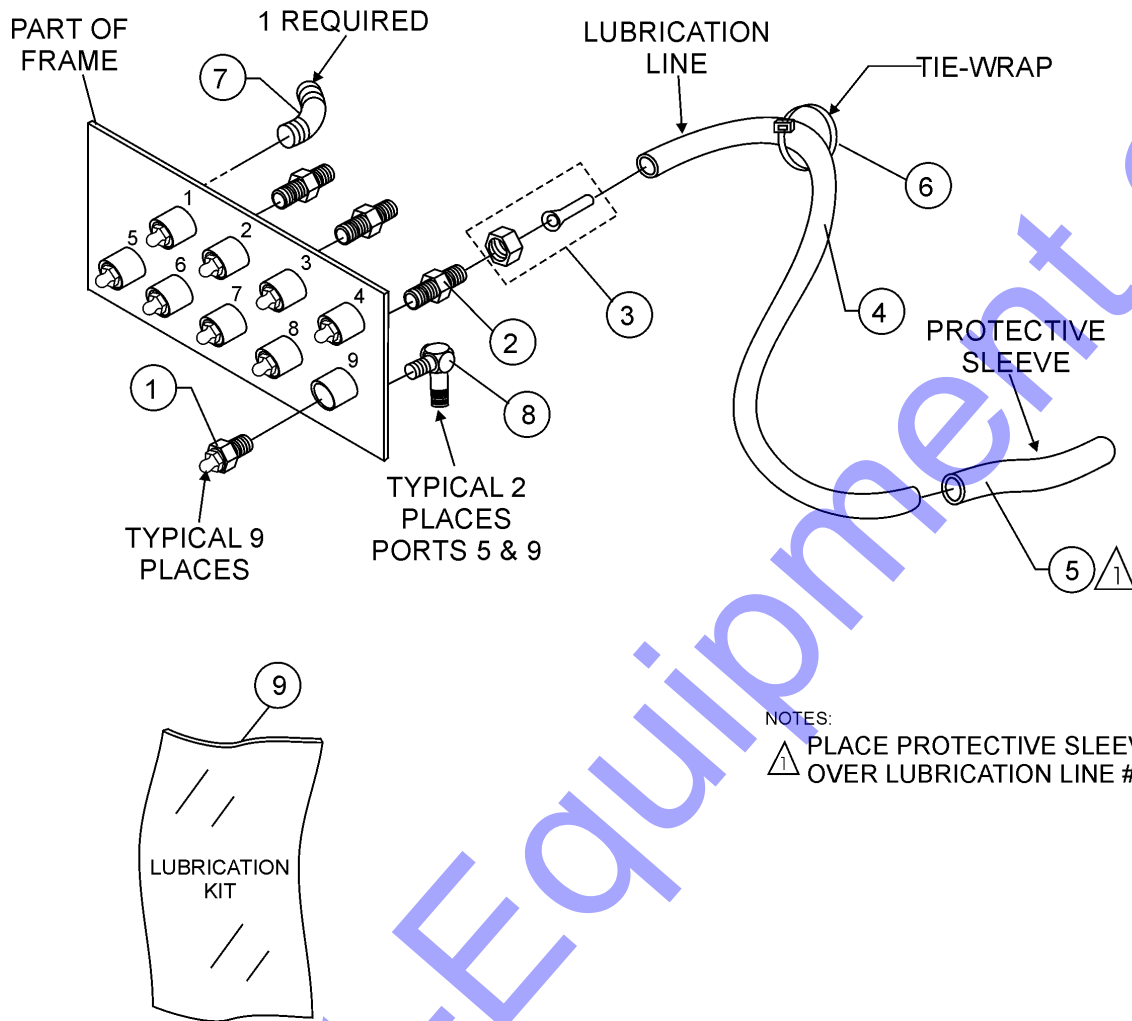
NO.	PART NO.	PART NAME	QTY.	REMARKS
68	EM23414	PRESSURE RELIEF - 3 IN	1	INCLUDES ITEMS ITEMS W/*
71*	EM23809	BODY ASSEMBLY 3 IN	1	
72*	EM400581	RUBBER BALL	1	
73*	EM402527	WORKING PRESSURE CAP 700#	1	
73*	EM402528	WORKING PRESSURE CAP 1000#	1	
74*	EM906065	LOCK NUT	1	
75*	EM906065	BUSHING	2	
76*	EM402747	CLAMPING YOKE 3 IN	1	
77*	EM969079	LOCK NUT	1	
78*	EM963698	CAP SCREW 3 IN	1	
79*	EM400714	SHIM WASHER	1	
80*	EM400458	CAP	1	
81*	EM20806	SAFTEY PLUG	1	
82*	EM402748	CAM 3 IN	1	
83*	EM20805	CAM LEVER	1	
84*	TBD	WASHER	1	



This parts list is intended to be used with **ONLY** the MG30M-3 and MG30T-3 Models, using **Fireproofing** materials. This application uses a **3.0-inch (76.2 mm)** outlet.

MG-30 PUMP — LUBRICATION PANEL ASSY.

LUBRICATION PANEL ASSY.



NOTES:
 △ PLACE PROTECTIVE SLEEVE OVER LUBRICATION LINE #9.

<u>POSITION</u>	<u>LOCATION</u>	<u>LENGTH OF LINES</u>
1	CAM ROCKER BUSHINGS	11 IN. (28.0 CM.)
2	GEARBOX BLOCK (BACK)	28 IN. (71.1 CM.)
3	CAM ROCKER ARM ROLLER	27 IN. (68.7 CM.)
4	CONNECTING ROD (UP)	40 IN. (102 CM.)
5	CAM ROCKER ARM (BEARING HOUSING)	35 IN. (88.9 CM.)
6	GEARBOX BLOCK (FRONT)	29 IN. (73.6 CM.)
7	CONNECTING ROD (DOWN)	40 IN. (102 CM.)
8	CRANK ROCKER ARM (BUSHINGS)	10 IN. (25.4 CM.)
9	CRANK ROCKER ARM (BEARING HOUSING)	29 IN. (73.6 CM.)
..... TOTAL LENGTH OF LINES REQUIRED		249 IN. (632.4 CM.)

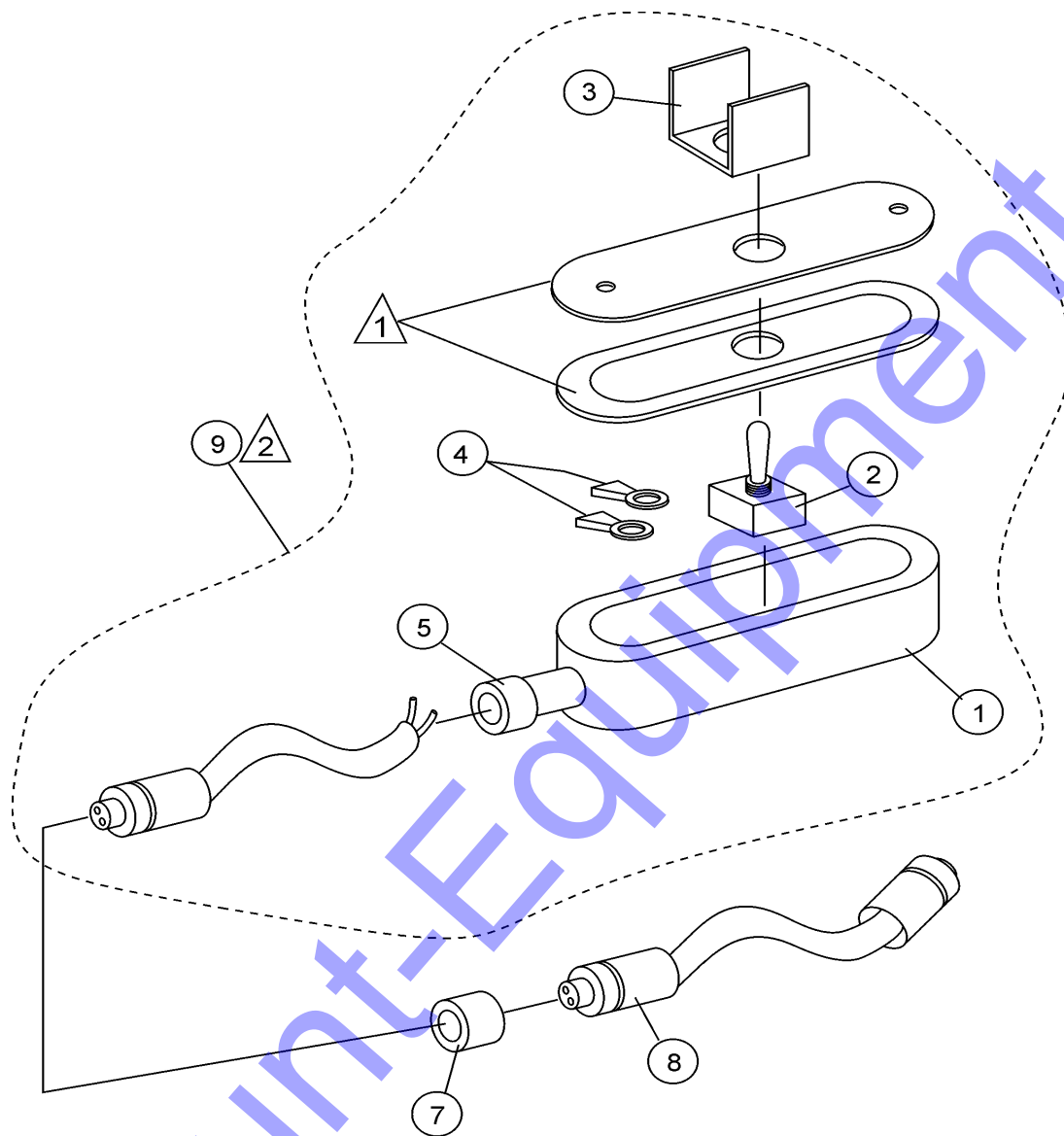
MG-30 PUMP — LUBRICATION PANEL ASSY.

LUBRICATION PANEL ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1*	EM916001	FITTING, GREASE 1/8" NPT	14	
2*	EM505489	STRAIGHT FITTING 1/8" NPT	13	
3*	505534	COUPLING W/NUT 1/8" NPT	14	
4*	EM505516	PLASTIC HOSE LINE 1/4" DIA.	AR	1FT=1PC
5*	EM490531	PROTECTIVE SLEEVE 3/8" (HOSE)	AR	1FT=1PC
6*	EM491028	TIE-WRAP 2.5 x 95 MM	AR	
7*	EM505490	FITTING, 45 DEGREE ELBOW	1	
8	TBD	FITTING, 90 DEGREE ELBOW	1	
9	EM512659	KIT, LUBRICATION	1	INCLUDES ITEMS W/*

MG-30 PUMP — REMOTE CONTROL CABLE ASSY.

REMOTE CONTROL CABLE ASSY.



- NOTES:
- △ 1 INCLUDED WITH ITEM 1.
 - △ 2 COMPLETE CORD ASSY. P/N EM26788 INCLUDES ITEMS WITHIN DASHED LINE.

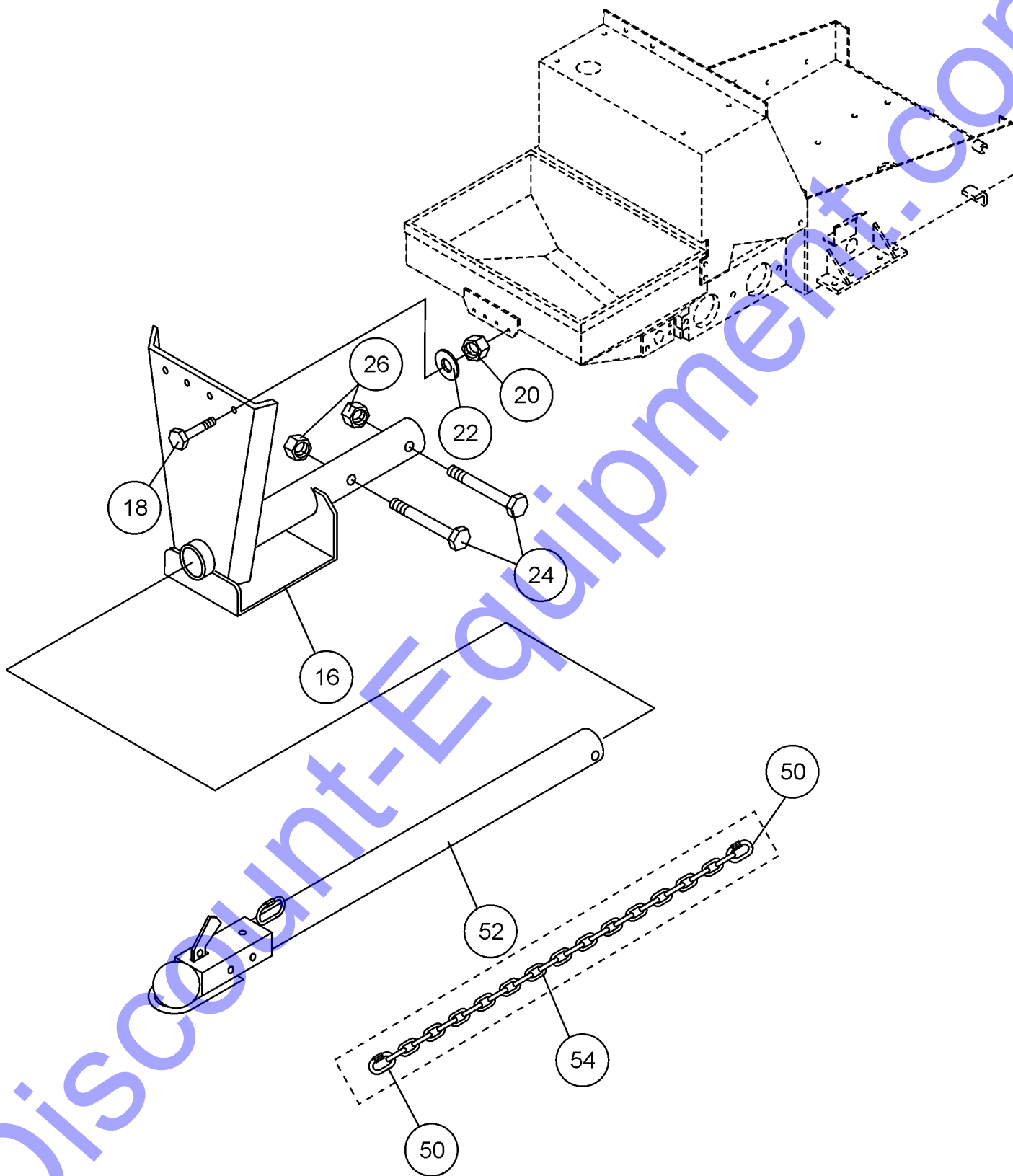
MG-30 PUMP — REMOTE CONTROL CABLE ASSY.

REMOTE CONTROL CABLE ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1*	EM16753	JUNCTION BOX	1	
2*	EM16754	SWITCH, MICRO	1	
3*	EM16756	GUARD SWITCH - ALUMINUM	1	
4*	EM491897	CONNECTOR, 3/16 RING	2	
5*	EM26791	GRIP CORD SEAL	1	
6*	EM26790	CORD 25' MX P/E	1	
7	EM26793	ADAPTER CORD GRIP 1/2"	1	
8	EM26792	ADAPTER CORD 100 FT.	1	
9	EM26788	COMPLETE CORD ASSY 25 FT	1	INCLUDES ITEMS W/*

MG-30 PUMP — TAG UNIT TRAILER ASSY.

TAG UNIT TRAILER ASSY.



MG-30 PUMP — TAG UNIT TRAILER ASSY.

TAG UNIT TRAILER ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
16	EM402510	HOPPER SUPPORT	1	
18	EM963692	HEX BOLT - 1/2 -13X1-1/2	4	
20	492584	HEX NUT - 1/2 IN	4	
22	492600	FLAT WASHER 1/2 IN	4	
24	EM963580	HEX BOLT - 3/4 X 4 1/2 IN	2	
26	EM505069	HEX NUT - 3/4 IN	2	
50	EM01005	CHAIN CONNECTOR LINK 3/8"	2	
52	HBC-1	TOW BAR W/ 2 IN BALL COUPLER	1	
54	EM513167	SAFTEY CHAIN	1	

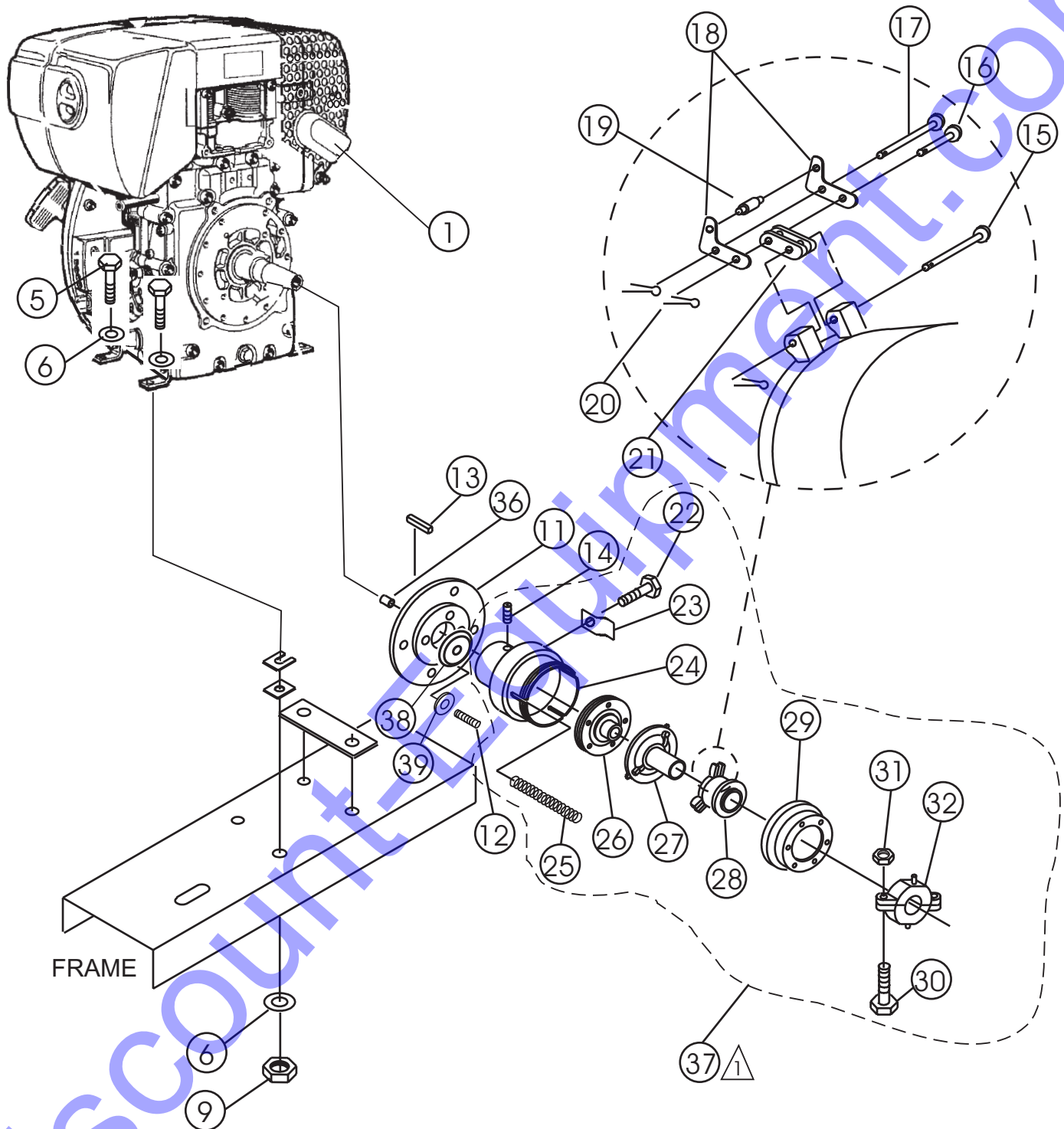
MG-30 PUMP — HATZ 2M41LZ ENGINE ASSY.

HATZ 2M41LZ ENGINE ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	2M41LZ	ENGINE, HATZ 35 HP	1	
2	EM934305	CLUTCH ASSEMBLY	1	
4	EM504243	TRASSMISSION DRIVE BELT B53	1	
6	EM402582	COMPRESSOR DRIVE PULLEY	1	
7	EM513152	STUD - 5/16 X 1-3/4 IN	1	
8	EM900082	COMPRESSOR DRIVE BELT B48	1	
10	6109180	LOCK WASHER - 1/2 IN	1	REPLACES 492626
12	492600	WASHER - 1/2 IN	1	
14	EM507231	HEX BOLT - 12 MM X 100 MM	1	
16	492394	HEX BOLT - 1/2 X 1-1/2 IN	4	
18	492600	WASHER - 1/2 IN	4	
20	6109180	LOCK WASHER - 1/2 IN	4	REPLACES 492626
22	6109160	HEX NUT - 1/2 IN	4	REPLACES 492556
58	EM25451	COIL, 12 VOLT	1	
59	EM25572	VALVE	1	
60	EM25571	BODY	1	
62	512185	HEX BOLT - 1/4 X 1-3/4	2	
64	2101402	LOCK WASJER - 1/4 IN	2	REPLACES 492622
66	492596	WASHER - 1/4 IN	2	
68	EM25429	ELBOW 90°	3	
70	EM512642	HOSE	1	
72	EM25577	TEE CONNECTOR	1	
74	EM50449	ELBOW 90° - 1/8 TO 7/16	2	
76	EM506085	GROMENT	2	
78	EM25576	HOSE - 20 IN	1	
80	EM25511	FITTING	1	
82	EM512643	ACCELERATING PISTON SUPPORT	1	
84	492357	HEX BOLT - 1/4-20 X12	2	
88	2101402	LOCK WASHER - 1/4 IN	2	REPLACES 492622
90	492561	HEX NUT - 1/4 IN	2	
96	EM50462	HOSE - 10 IN	2	
98	EMCC700	HYDRAULIC CYLINDER	1	
100	EM963007	HEX BOLT - 1/4 X 1-1/2 IN	1	REPLACES 492359
104	EM50449	ELBOW 90° - 18/ TO 7/16 IN	2	
106	EM492358	HEXT BOLT - 1/4 X 1-1/4 IN	1	
108	EM969079	HEX NUT - 1/4 IN	1	
130	EM511709	LABEL - " 800-30-MAYCO"	1	
142	506208	HOSE CLAMP	2	
144	EM20426	ELBOW 1/4 X1/4 IN	1	
146	EM20427	HOSE, 1/4" FUEL	3	SOLD BY THE FOOT 2.5' REQ.
147	EM491028	CABLE TIE WRAP	1	
152	EM963003	HEX BOLT - 1/4 X 3/4 IN	2	REPLACES 492356
153	2101402	LOCK WASHER - 1/4 IN	1	REPLACES 492622
154	EM503081	U- BRACKET	2	
156	492581	LOCK NUT 1/4"	1	
158	EM513209	ENGINE SIDE COVER	1	

MG-30 PUMP — HATZ 1B30 ENGINE (CLUTCH) ASSY.

HATZ 1B30 ENGINE (CLUTCH) ASSY.



NOTES:

- △ COMPLETE CLUTCH ASSEMBLY, ITEM 37, P/N 934022 INCLUDES ALL ITEMS WITHIN OUTLINE.

MG-30 PUMP — HATZ 1B30 ENGINE (CLUTCH) ASSY.

HATZ 1B30 ENGINE (CLUTCH) ASSY.

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	1B30	8.0 HP HATZ DIESEL ENGINE	1	
5	0169	BOLT BOLT HHCS 3/8-16 x 3"	4	
6	10136	FLAT WASHER 3/8"	8	
9	10133	LOCK NUT 3/8-16	4	
13	EM010009	SQ KEY 1/4 x 1/4 x 1"	1	
14	EM961045	SHSS 5/16-18 x 1/2" NYLOC	1	
15*	EM925013	LEVER PIN	3	
16*	EM925018	SHORT LINK PIN	3	
17*	EM925016	LONG LINK PIN	3	
18*	EM959012	LEVER	6	
19*	EM934054	ROLLER	3	
20*	5117	COTTER PIN	9	
21*	EM934053	CONNECTING LINK	6	
22*	TBD	SLOTTED BOLT HHCS 1/4-20 x 1/2"	1	
23*	EM934040	ADJUSTING LOCK	1	
24*	EM934039	CLUTCH HOUSING	1	
25*	EM918009	SPRING	3	
26*	EM934041	DRIVEN MEMBER	1	
27*	EM934042	PRESSURE PLATE ASSY.	1	
28*	EM934043	RELEASE SLEEVE	1	
29*	EM934045	ADJUSTING RING	1	
30*	EM963289	BOLT	2	
31*	2656	LOCK NUT	2	
32*	EM934044	RELEASING BEARING ASSY.	1	
33	EM801570	PILOT BUSHING	1	
36	EM801970	BUSHING	1	
37	EM934022	CLUTCH ASSY.	1	INCLUDES ITEMS W/*
38	TBD	OIL SEAL	1	
39	13379	WASHER	1	

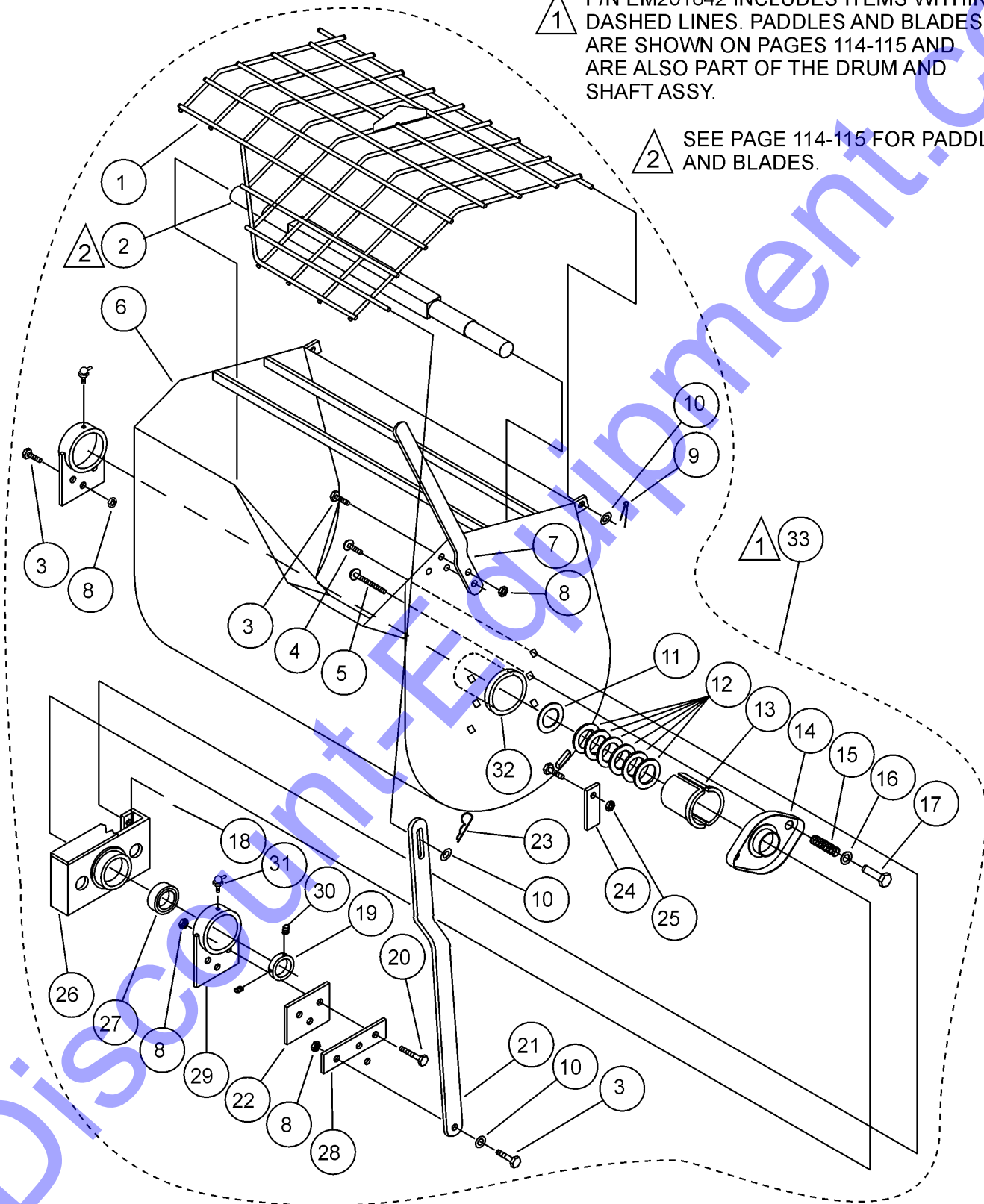
EM-120SM — MIXING DRUM ASSY.

MIXING DRUM ASSY.

NOTES:

DRUM AND SHAFT ASSY. ITEM 33, P/N EM201842 INCLUDES ITEMS WITHIN DASHED LINES. PADDLES AND BLADES ARE SHOWN ON PAGES 114-115 AND ARE ALSO PART OF THE DRUM AND SHAFT ASSY.

SEE PAGE 114-115 FOR PADDLES AND BLADES.



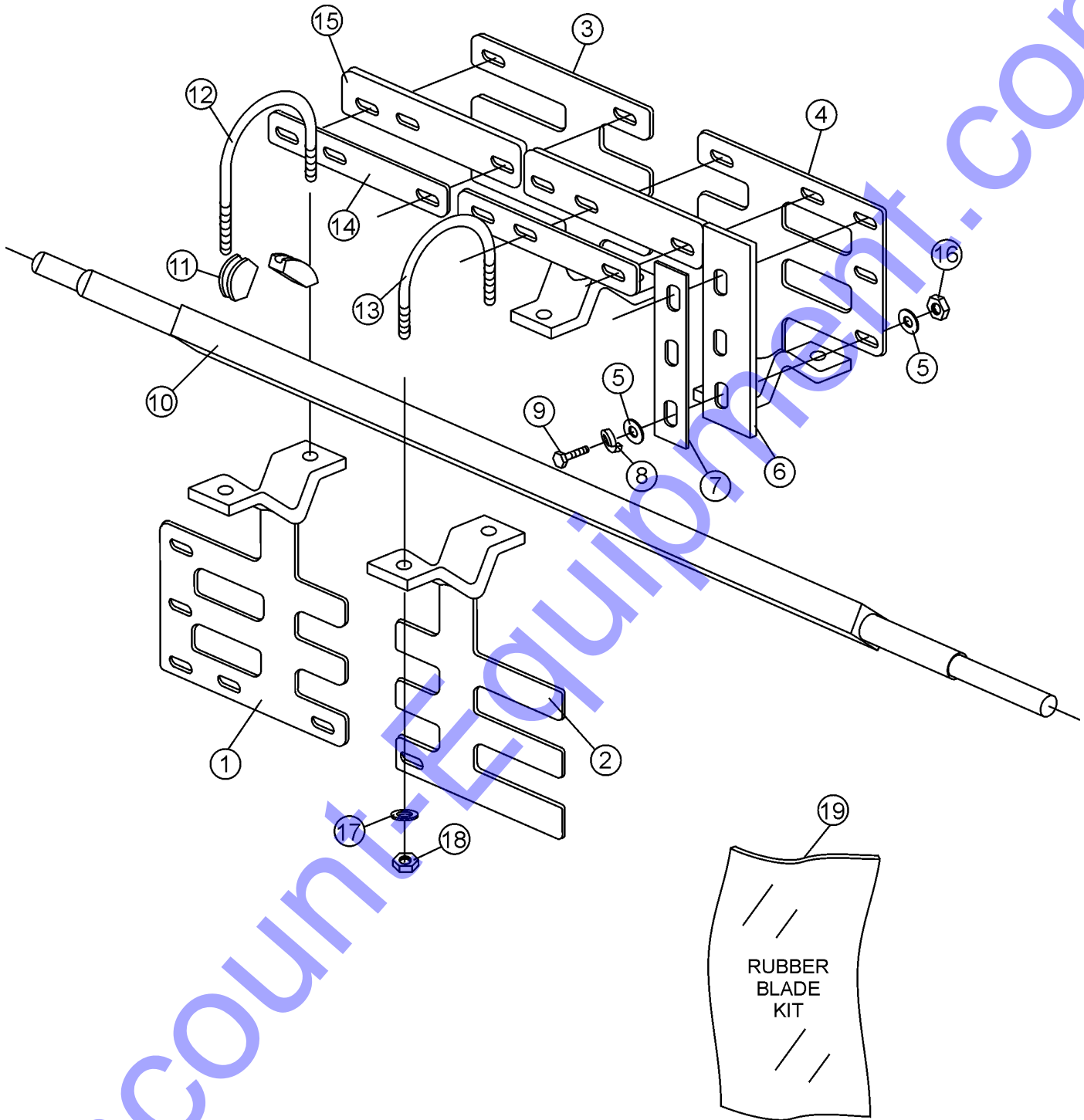
EM-120SM — MIXING DRUM ASSY.

MIXING DRUM ASSY.

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1%	EM2033449	DRUM GRILL	1	
2%	EM200333	PADDLE SHAFT	1	
3%	EM963692	BOLT HHCS 1/2-13 x 1.1/2"	6	
4%	EM966048	CARRIAGE BOLT 3/8-16 x 1.1/4"	8	
5%	EM200286	CARRIAGE BOLT 3/8-16 x 3 FULL THREAD	4	
6%	EM201618	DRUM	1	INCLUDES ITEMS W/*
7*%	EM201537	DUMP LEVER	1	
8%	10176	LOCK NUT 1/2-13	9	
9%	EM924015	COTTER PIN 3/16 x 1"	2	
10%	13211	FLAT WASHER 1/2"	4	
11%	EM200303	PACKING RING FOLLOWER	2	
12%	EM200301	SHAFT PACKING RING	12	
13%	EM200285	HALF GLAND PACKING	4	
14%	EM200288	PACKING GLAND PRESSURE PLATE	2	
15%	EM200794	GLAND ADJUSTMENT SPRING	4	
16%	EM923157	FLAT WASHER 5/8"	4	
17%	EM200287	SPECIAL ADJUSTING NUT 3/8-16	4	
18%	10133	LOCK NUT 3/8-16	8	
19%	EM200018	PADDLE SHAFT COLLAR	2	
20%	6159A	BOLT HHCS 1/2-13 x 2"	3	
21%	EM203344	GRILL OPENING BAR	1	
22%	EM200079	BEARING BRKT. SHIM .135" THICK	AR	
22%	EM200080	BEARING BRKT. SHIM .187" THICK	AR	
23%	7170	HITCH CLIP PIN	1	
24*%	EM201731	DRUM LATCH	1	
25*%	EM969023	LOCK NUT 5/8-11	1	
26%	EM201648	DRUM HEAD	2	
27%	EM902153	BALL BEARING	2	
28%	203335	GRILL CLOSING BAR HINGE	1	
29%	EM201786	BEARING BRKT.	2	INCLUDES ITEMS W/#
30%	EM961066	SHSS 3/8-16 x 3/8"	4	
31#%	EM916006	GREASE FITTING 90 DEG.	2	
32%	EM200237	PACKING BOX, WELDMENT	2	
33%	EM201842	DRUM AND SHAFT ASSY.	1	INCLUDES ITEMS W/% + PADDLES/BLADES

EM-120SM — PADDLE SHAFT ASSY.

PADDLE SHAFT ASSY.



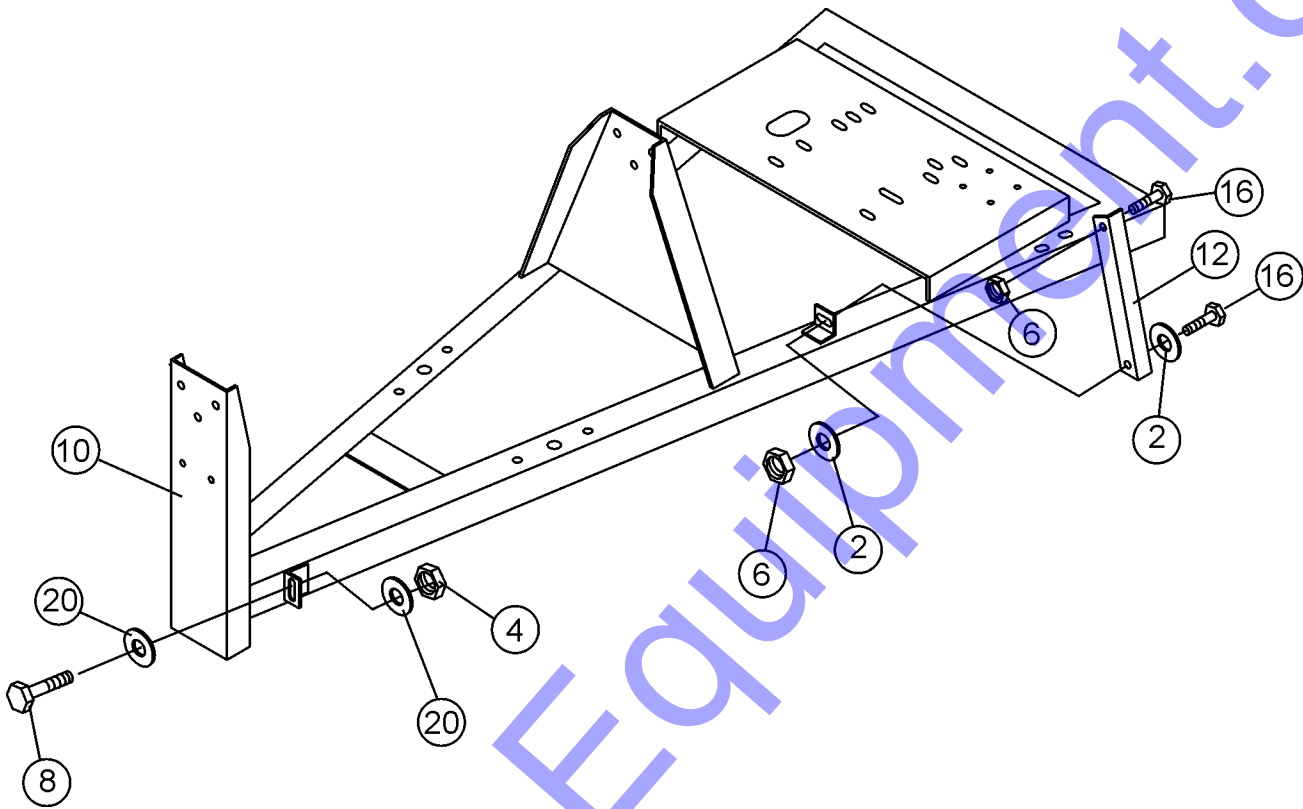
EM-120SM — PADDLE SHAFT ASSY.

PADDLE SHAFT ASSY.

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	EM200293	TOW END CAST PADDLE	1	
2	EM200294	CENTER TOW END CAST PADDLE	1	
3	EM200295	CENTER ENGINE END CAST PADDLE	1	
4	EM200296	ENGINE END CAST PADDLE	1	
5#	0300 B	FLAT WASHER 5/16"	7	
6#	EM200213	SIDE RUBBER WIPER	1	
7#	EM203433	SIDE SCRAPER BLADE	1	
8#	0161 C	LOCK WASHER 5/16"	7	
9#	1207	BOLT BOLT HHCS 5/16-18 x 1.3/4"	7	
10	EM200333	PADDLE SHAFT	1	
11	EM200292	PADDLE ARM INSERT CASTING	6	
12	EM200297	END PADDLE U-BOLT	2	
13	EM200268	CENTER PADDLE U-BOLT	2	
14#	EM203432	TOP SCRAPER BLADE	2	
15#	EM200212	TOP RUBBER WIPER	2	
16#	0161 D	HEX NUT 5/16-18	7	
17	5054 A	LOCK WASHER 1/2"	4	
18	EM968011	HEX NUT 1/2-13	4	
19	EM200863	RUBBER BLADE KIT	1	INCLUDES ITEMS W/#
19	EM200943	STEEL BLADE KIT - OPTIONAL	1	

EM-120SM — FRAME ASSY.

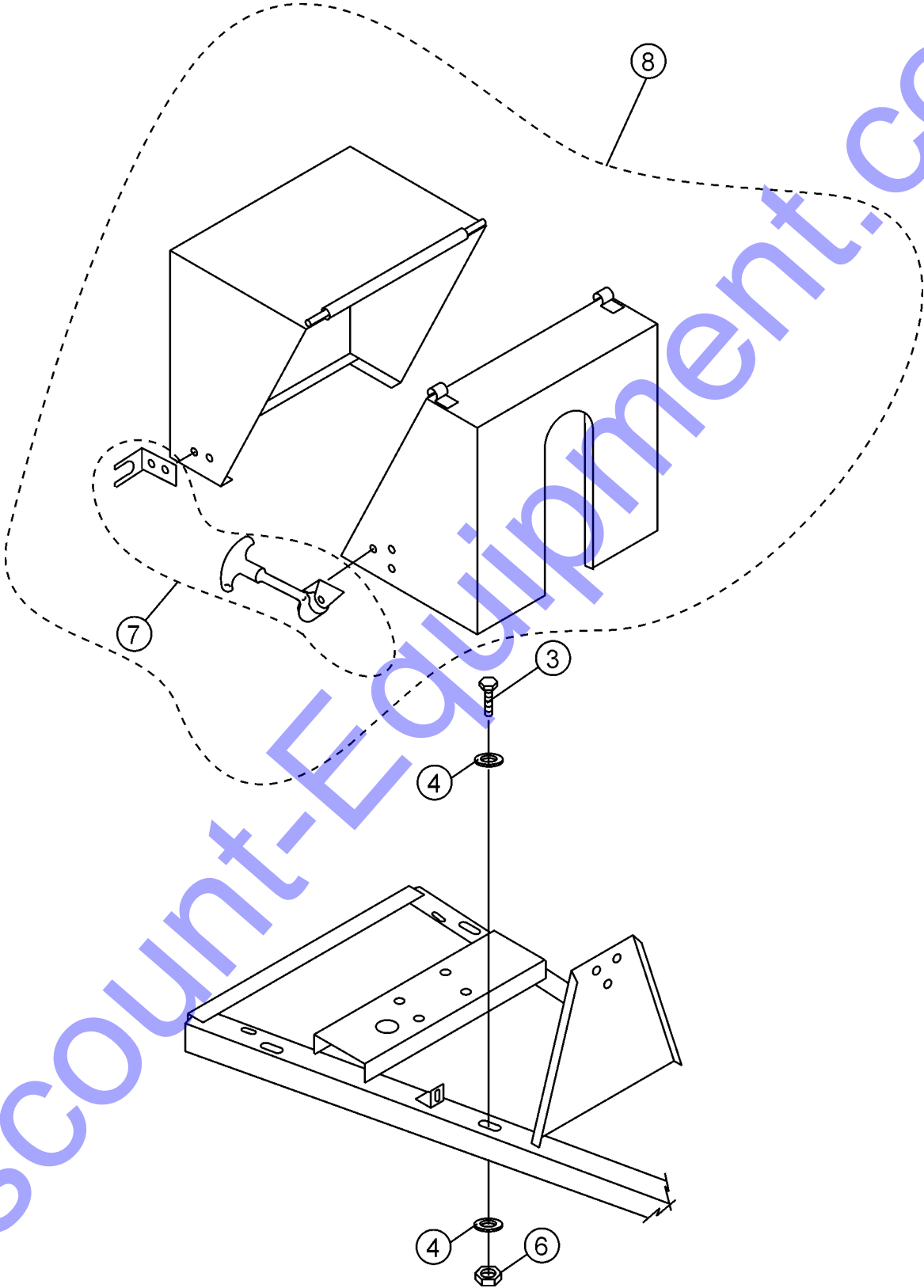
FRAME ASSY.



FRAME ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
2	504322	WASHER 1/2"	2	
4	492583	HEX NUT 3/8"	1	
6	4922584	HEX NUT 1/2"	4	
8	492376	BOLT BOLT HHCS 3/8" NC X 1-1/4" G5	1	
10	513212	FRAME	1	
12	204086	SUPPORT	2	
16	492334	BOLT BOLT HHCS 1/2" NC X 1-1/2" G5	4	
20	492598	WASHER 3/8"	2	

CAB ASSY.



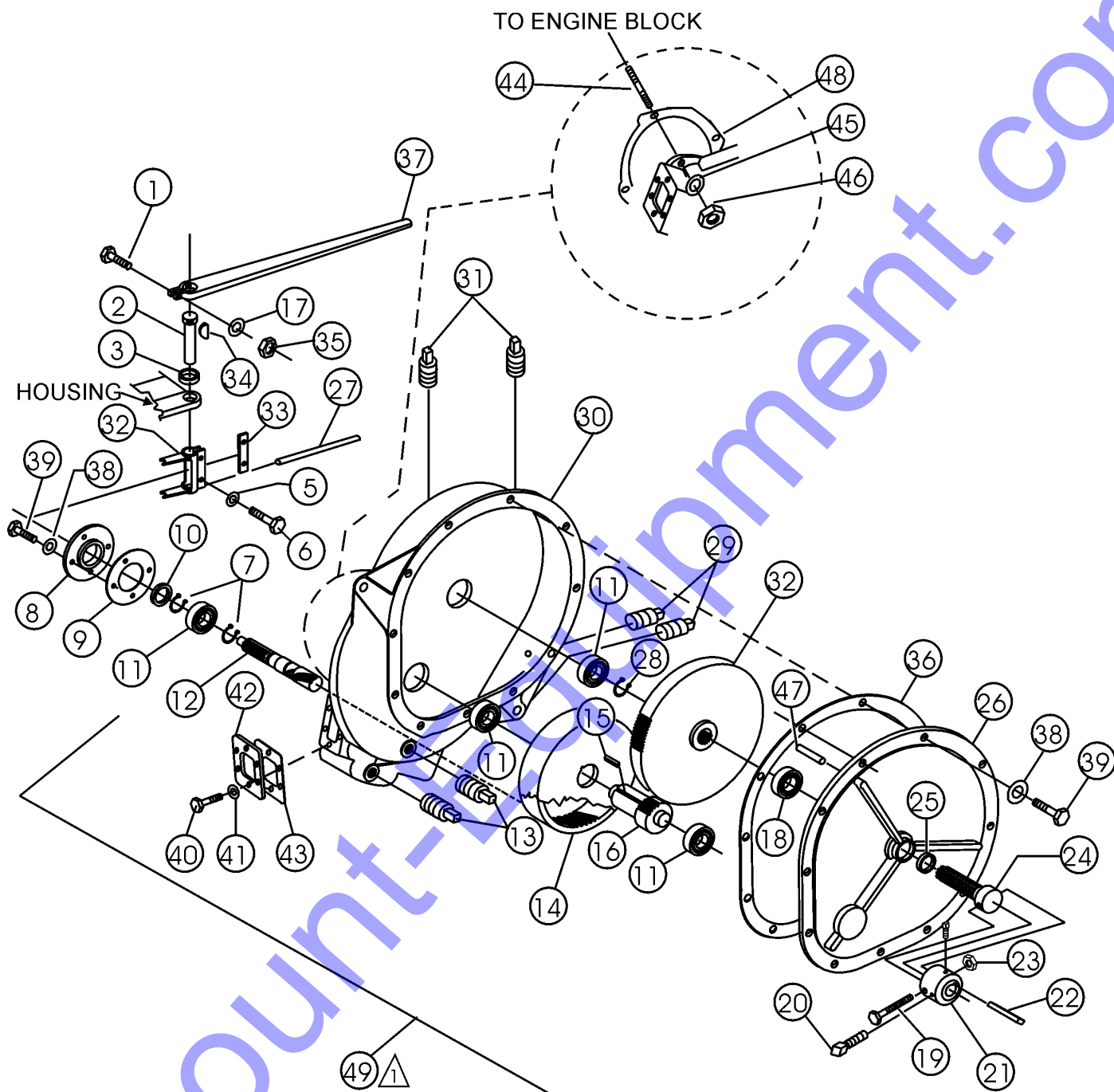
CAB ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
3	1284	BOLT HHCS 3/8-16 x 1.1/2"	4	
4	4001	FLAT WASHER 3/8"	8	
6	10133	LOCK NUT 3/8-16	4	
7*	491010	RUBBER LATCH ASSY.	2	
8	EM202957	COMPLETE CAB ASSY. (GAS).....	1	INCLUDES ITEMS W/*

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EM-120SM — TRANSMISSION ASSY.

TRANSMISSION ASSY.



NOTES:

- △ COMPLETE TRANSMISSION ASSEMBLY, ITEM 49, P/N 600000 INCLUDES ALL ITEMS WITHIN BRACKET, EXCEPT ITEMS, 19, 20, 21, 22, 23, 37, AND 44, 45, 46 AND 48.

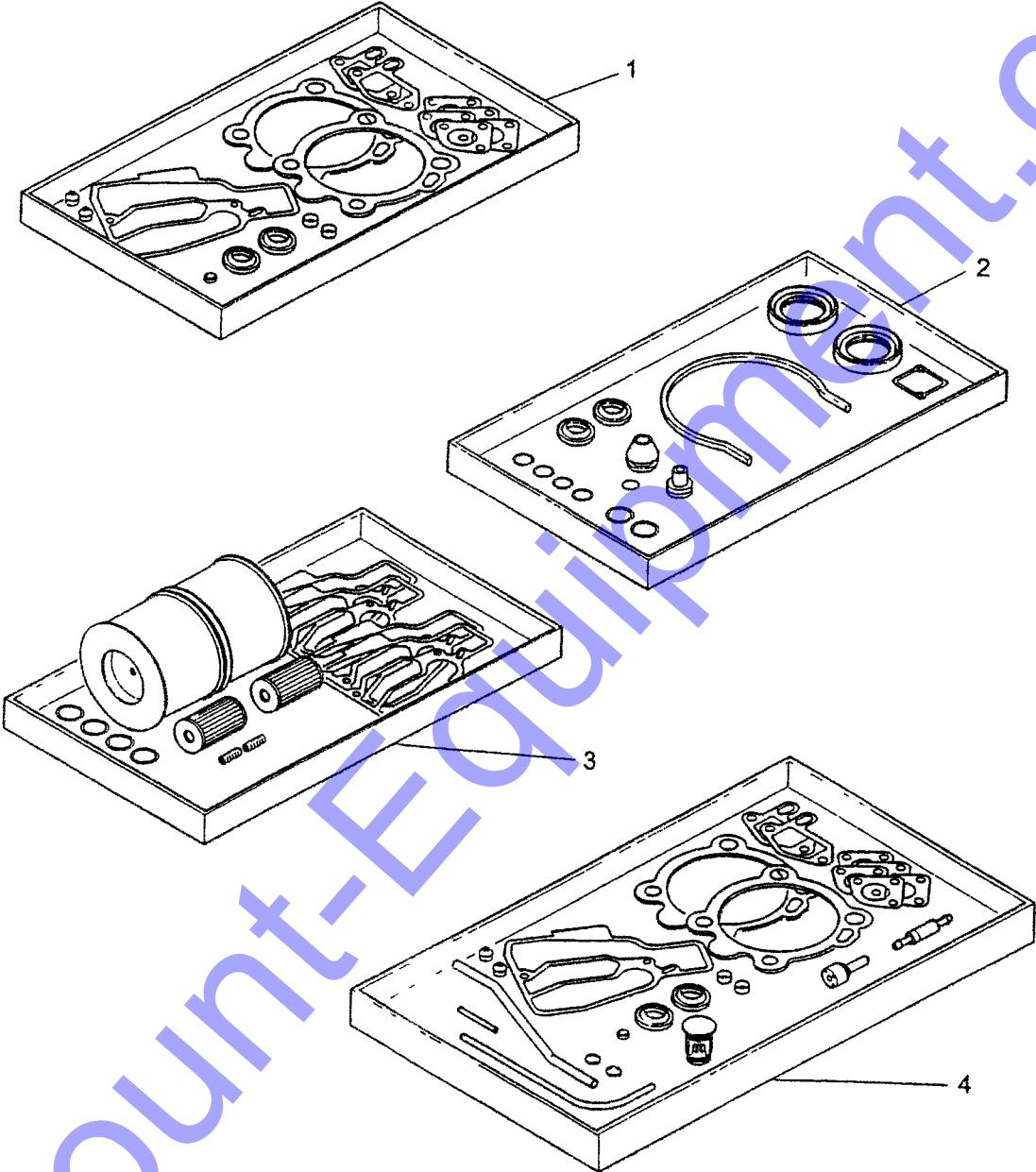
EM-120SM — TRANSMISSION ASSY.

TRANSMISSION ASSY.

<u>NO</u>	<u>PART NO</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1#	2200	BOLT HHCS 3/8-24 x 2"	1	
2#	EM600029	SHIFTER SHAFT	1	
3#	EM914005	SEAL	1	
4#	EM600028	CLUTCH YOKE	1	
5#	0181 B	LOCK WASHER 1/4"	2	
6#	0730	BOLT HHCS 1/4-20 x 1"	2	
7#	EM926029	SNAP RING	2	
8#	EM600023	BEARING RETAINER	1	
9#	EM600022	BEARING RETAINER GASKET	1	
10#	EM914209	SEAL	1	
11#	EM902091	BALL BEARING	4	
12#	EM600016	INPUT PINION SHAFT	1	
13#	EM911329	SQ HEAD MAG. PIPE PLUG 3/8"	2	
14#	EM600020	INTERNAL GEAR	1	
15#	010062	SQ KEY 3/8 x 3/8 x 1.3/8"	1	
16#	EM600131	OUTPUT DRIVE PINION	1	
17#	10136	FLAT WASHER 3/8"	1	
18#	040006208	BALL BEARING	1	REPLACES EM902161
19	EM963157	BOLT HHCS 5/8-11 x 4.1/2" GD2	1	
20	EM961019	SQHSS 3/8-16 x 1.1/4" CUP	2	
21	EM200255	PADDLE SHAFT CONNECTOR ASSY. KIT	1	
22	EM010022	SQ KEY 3/8 x 3/8 x 1.3/4"	1	
23	9503	LOCK NUT 5/8-11	1	
24#	EM600015	OUTPUT SHAFT	1	
25#	EM914207	OIL SEAL	1	
26#	EM600014	TRANSMISSION COVER	1	
27#	1729	ROLL PIN	1	
28#	EM926036	SNAP RING	1	
29#	EM911064	SQ HEAD PIPE PLUG 1/2 NPT	2	
30#	EM600012	MAIN TRANSMISSION HOUSING	1	
31#	EM911356	BREATHER VENT PIPE PLUG 1/2"	2	
32#	EM600133	OUTPUT SHAFT GEAR	1	
33#	EM600024	LOCK PLATE	1	
34#	EM927048	WOODRUFF KEY #A	1	
35#	10133	LOCK NUT 3/8-16	1	
36#	EM600021	TRANSMISSION COVER GASKET	1	
37	EM600018	SHIFTER LEVER	1	
38#	0161 C	LOCK WASHER 3/8"	17	
39#	0202	BOLT HHCS 5/8-16 x 1"	17	
40#	4196	BOLT HHCS 3/8-16 x 3/4"	6	
41#	1875	INTER. SHKP WASHER 3/8"	6	
42#	EM931233	COVER, SHIFTER	1	
43#	EM600026	GASKET, SHIFTER COVER	1	
44#	EM300999	STUD 7 / 16-14 x 2.1/16"	4	
45#	2955	LOCK WASHER 7/16"	4	
46#	EM492555	HEX NUT 7/16-14	4	REPLACES EM968010
47#	925109	DOWEL PIN	3	
48	EM801965	GASKET	1	
49	EM600000	COMP. TRANSMISSION ASSY.....	1	INCLUDES ITEMS/W#

HATZ 1B30 — SPARE PARTS KIT ASSY.

SPARE PARTS KITS ASSY.



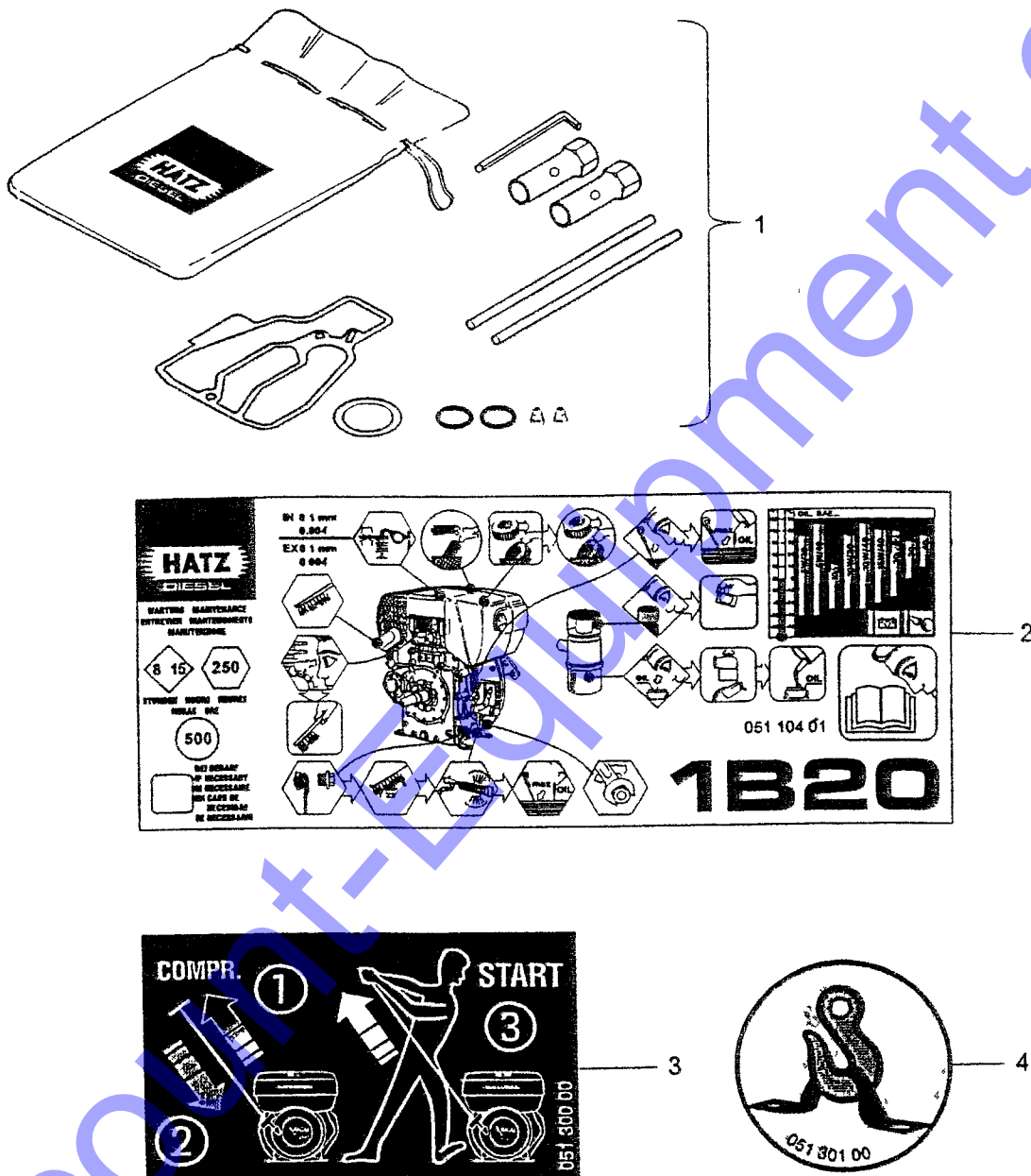
HATZ 1B30 — SPARE PARTS KIT ASSY.

SPARE PARTS KITS ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	01582200	GASKET SET CYL. HEAD	1	
2	01582300	GASKET SET CRANKCASE	1	
3	01582400	MAINTENANCE KIT- 1000 HRS	1	
4	01582500	EMERGENCY KIT	1	

HATZ 1B30 — ACCESSORIES ASSY.

ACCESSORIES ASSY.



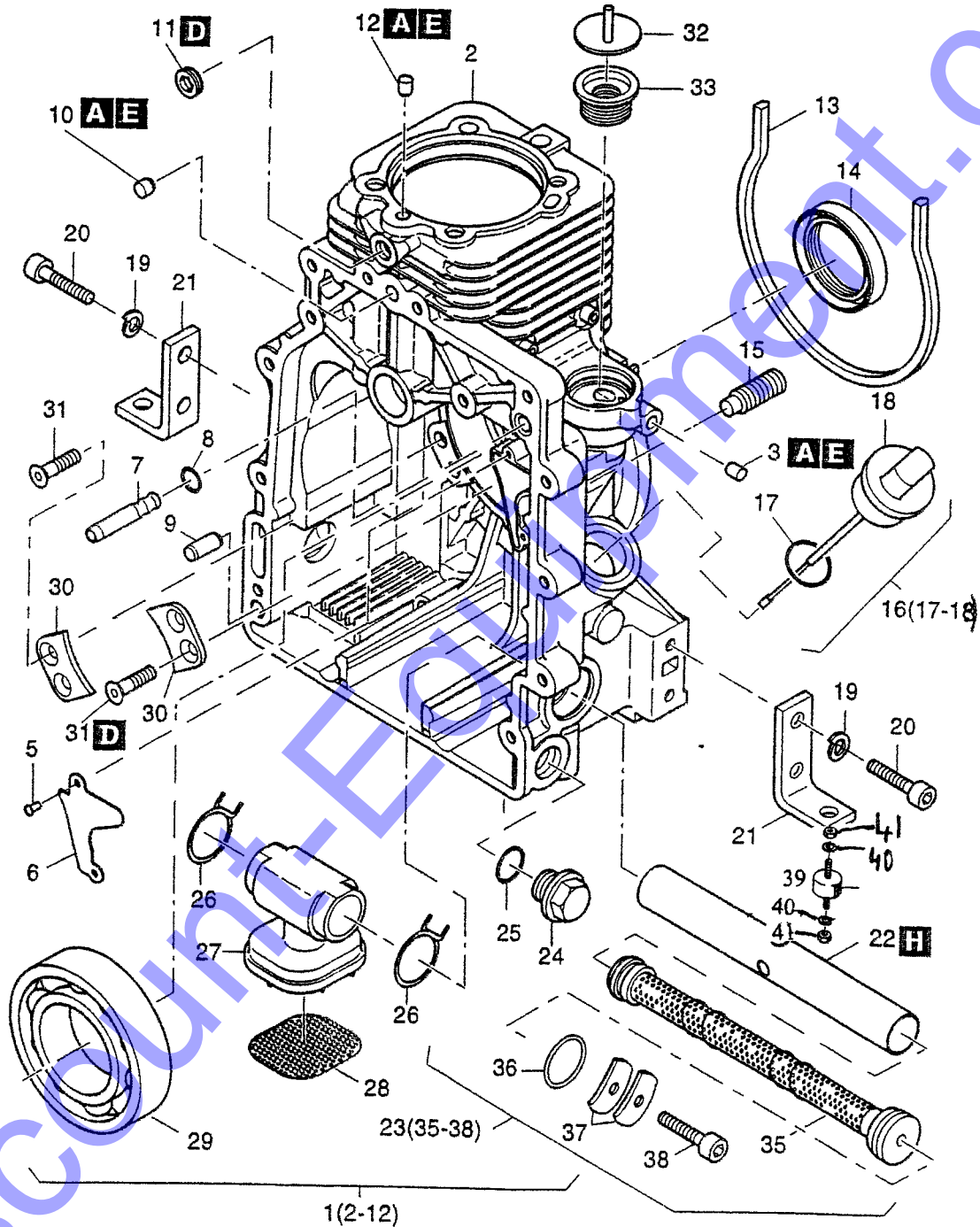
HATZ 1B30 — ACCESSORIES ASSY.

ACCESSORIES ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	01578700	TOOL KIT	1	
2	05120100	DECAL MAINTENANCE	1	
3	05130000	DECAL START	1	
4	05130100	DECAL	1	

HATZ 1B30 — CRANKCASE AND ENGINE MOUNT ASSY.

CRANKCASE AND ENGINE MOUNT ASSY.



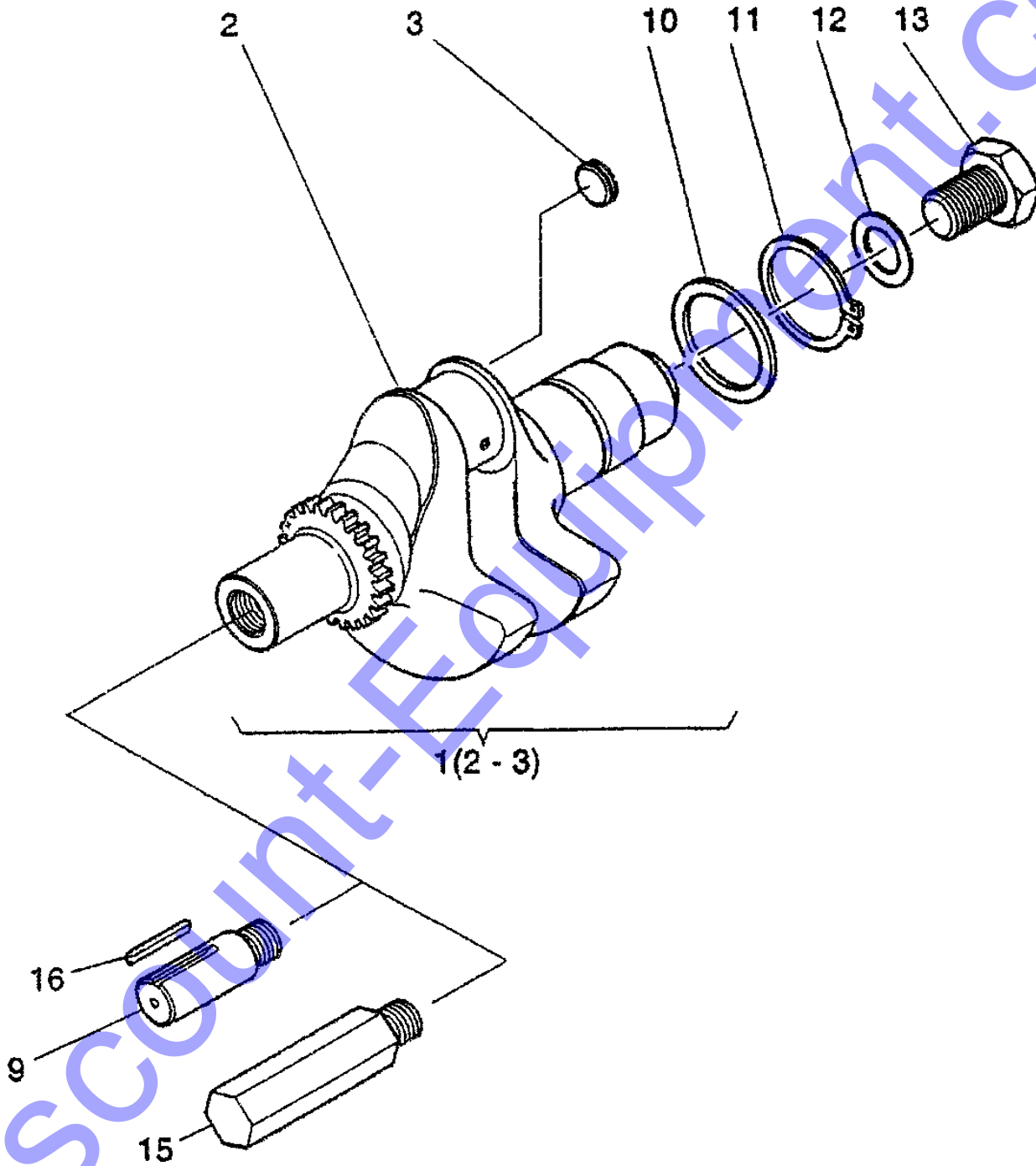
HATZ 1B30 — CRANKCASE AND ENGINE MOUNT ASSY.

CRANKCASE AND ENGINE MOUNT ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	01582710	CRANKCASE ASSEMBLY	1	
2		CRANKCASE	1	NOT SOLD SEPERATELY
3*	03455000	PLUG 6.5X7	1	
5*	40002600	BLIND RIVET	2	
6*	01333100	COVER PLATE	1	
8*	50440300	O- RING	1	INCLUDED IN CRANKC. GASK. SET
9*	50249101	CYL. PIN	1	
10*	04123800	PLUG	1	
11*	50062300	SCREW M10X1	1	
12*	04112800	PLUG	1	
13	04112600	SEALING STRIP 419MM	1	INCLUDED IN CRANKC.GASK.
SET				
14	50449800	OIL SEAL 42X55X10	1	INCLUDED IN CRANKC. GASK.
SET				
15	04115200	GRUB SCREW	1	
16	01316000	DIPSTICK W/SEALING RING	1	INCLUDES ITEMS W/%
17%	04125000	SEALING RING	1	
18%		DIPSTICK	1	NOT SOLD SEPERATELY
19	50208500	SPRING WASHER	8	
20	04121900	ALL. SCREW M8X35	8	
21	04099302	ENGINE BRACKET	4	
22	04105710	TUBE F. OIL FILTER	1	
23	01542702	OIL SUCTION FILTER	1	INCLUDES ITEMS W/#
24	50373100	DRAIN PLUG M22X1.5	1	INCLUDED IN MAINTENANCE KIT
25	50469800	JOINT A22X27	1	INCLUDED IN CRANKC. GASK. SET AND MAINTENANCE KIT
26	05036900	HOSE CLIP	2	
27	04104400	SUCTION PORT	1	
28	04104500	SIEVE	1	
29	50449700	BALL BEARING 6309	1	
30	04094400	PLATE	2	
31	50328000	CENTER SUNK SCREW AM6X16	4	
32	01555800	COVER	1	
33	03568700	RUBBER DIAPHRAM	1	
35#		FILTER, OIL SUCTION	1	NOT SOLD SEPERATELY
36#	50475900	O- RING 20X4	1	
37#	05148200	PLATE SPRING	2	
38#	50170700	ALL. SCREW M6X16	1	
39	99400696	ISOLATOR	4	
40	50208500	SPRING WASHER	8	
41	50022900	NUT M8	8	

HATZ 1B30 — CRANKSHAFT ASSY.

CRANKSHAFT ASSY.



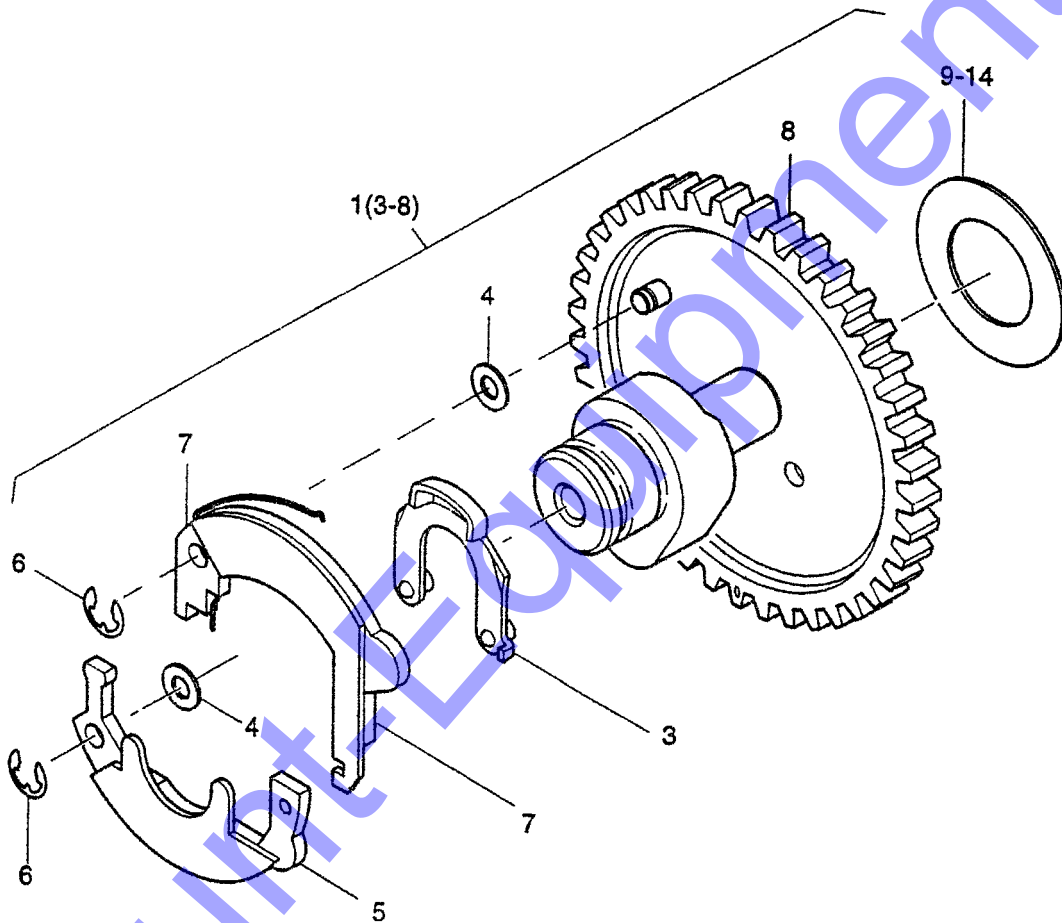
HATZ 1B30 — CRANKSHAFT ASSY.

CRANKSHAFT ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	01334200	CRANKSHAFT NO. X W? PLUG	1	INCLUDES ITEMS W/*
2*		CRANKSHAFT	1	NOT SOLD SEPERATELY
3*	04125300	CLOSING PLUG 12 MM	1	
9	TBD	STUBSHAFT 25 DIA.	1	
10	40065600	SUPPORTING DISK 45X55X3.0	1	
11	50021600	CIRCLIP A45X1.75	1	
12	04114201	DISK 18.5X37X5	1	
13	50443600	HEX. SCREW M18X1.5X55	1	
14	05141600	FITTING KEY A6.35X61	1	
15	05107301	STUBSHAFT SEM FINISHED 27 MM DIA.	1	
16	50473700	FITTING KEY 7X8X45	1	

HATZ 1B30 — CAMSHAFT ASSY.

CAMSHAFT ASSY.



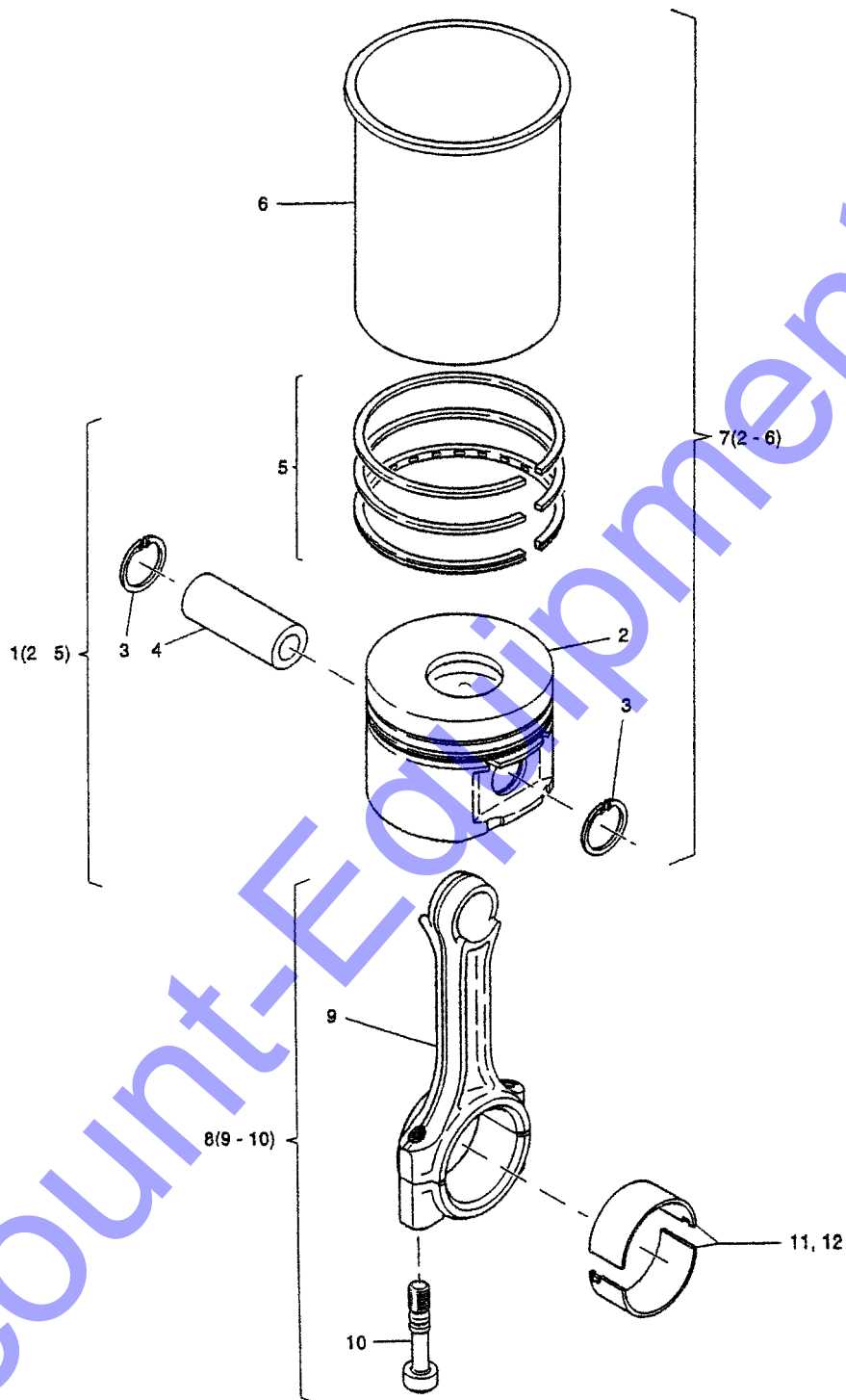
HATZ 1B30 — CAMSHAFT ASSY.

CAMSHAFT ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	01503520	CAMSHAFT ASSY.	1	INCLUDES ITEMS W/*
3*	01326400	CAMLEVER	1	
4*	50123200	SHIM 5X10X0.5 DIN988	2	
5*	01326600	FLYWEIGHT	1	
6*	50255300	LOCK WASHER	2	
7*	01326500	FLYWEIGHT	1	
8*		CAMSHAFT	1	NOT SOLD SEPERATELY
9	04121700	WASHER 0.9MM 23X38X0.9	0.1	
10	04112100	WASHER 1.0MM 23X38X1.0	0.1	
11	04112200	WASHER 1.1MM 23X38X1.1	0.1	
12	04112300	WASHER 1.2MM 23X38X1.2	0.1	
13	04125100	WASHER 1.3MM 23X38X1.3	0.1	
14	04125200	WASHER 1.4MM 23X38X1.4	0.1	

HATZ 1B30 — PISTON ASSY.

PISTON ASSY.



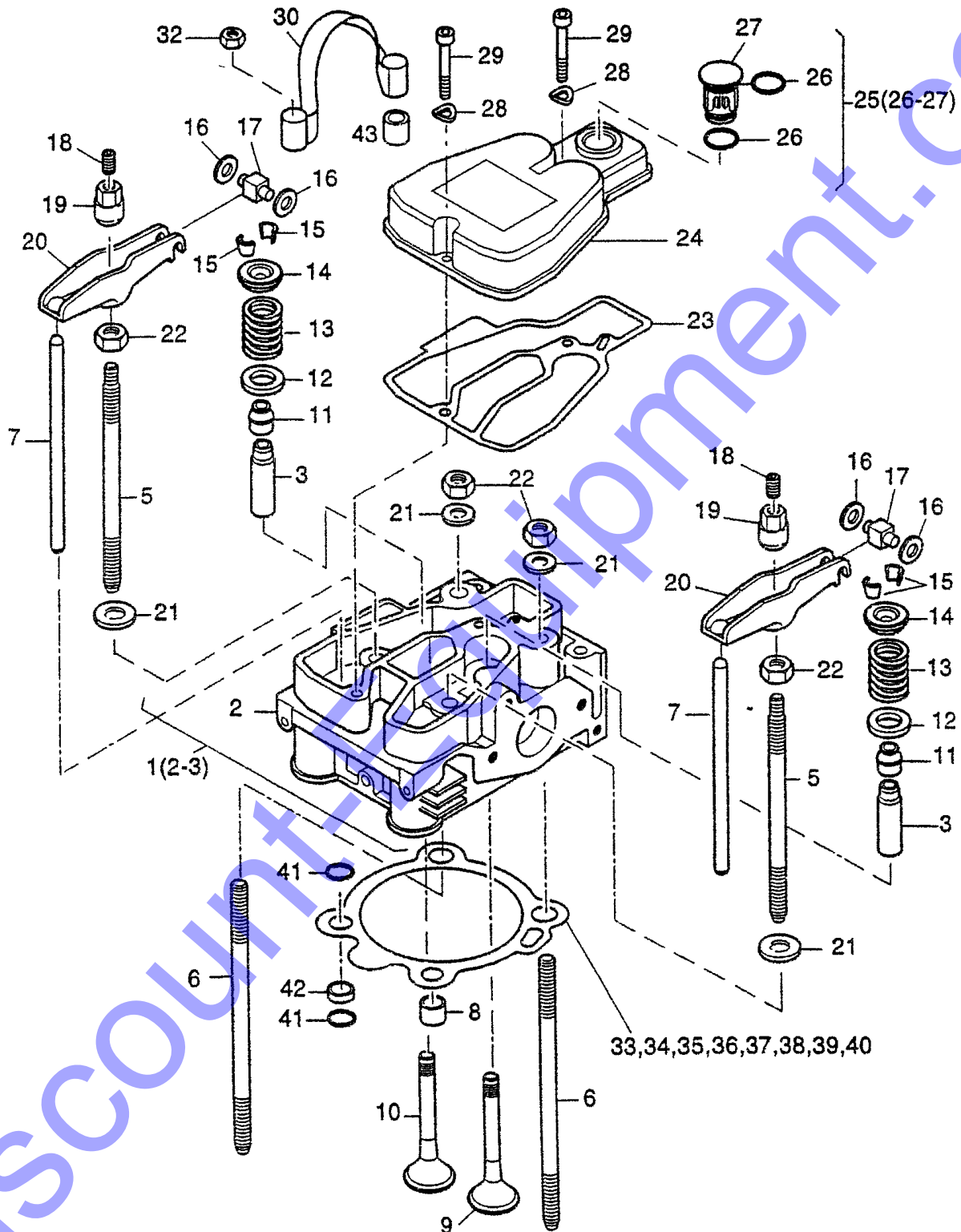
HATZ 1B30 — PISTON ASSY.

PISTON ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	01328501	PISTON 80MM ASSY.	1	INCLUDES ITEMS W/*
2*		PISTON 80MM	1	NOT SOLD SEPERATELY
3*%	01326500	FLYWEIGHT	2	
4*%	50463600	PISTON PIN	1	
5*%	01328601	PISTON RING SET 80MM	1	
6%		CYLINDER	1	NOT SOLD SEPERATELY
7%	01582600	CYLINDER WITH PISTON ASSY.	1	INCLUDES ITEMS W/%
8	01329201	CONROD ASSY.	1	INCLUDES ITEMS W/\$
9\$		CONROD	1	NOT SOLD SEPERATELY
10\$	04113100	CONROD SCREW	2	
11	01582100	BIG END BEARING	1	
12	01582000	BIG END BEARING - 0.5MM	1	

HATZ 1B30 — CYLINDER HEAD ASSY.

CYLINDER HEAD ASSY.



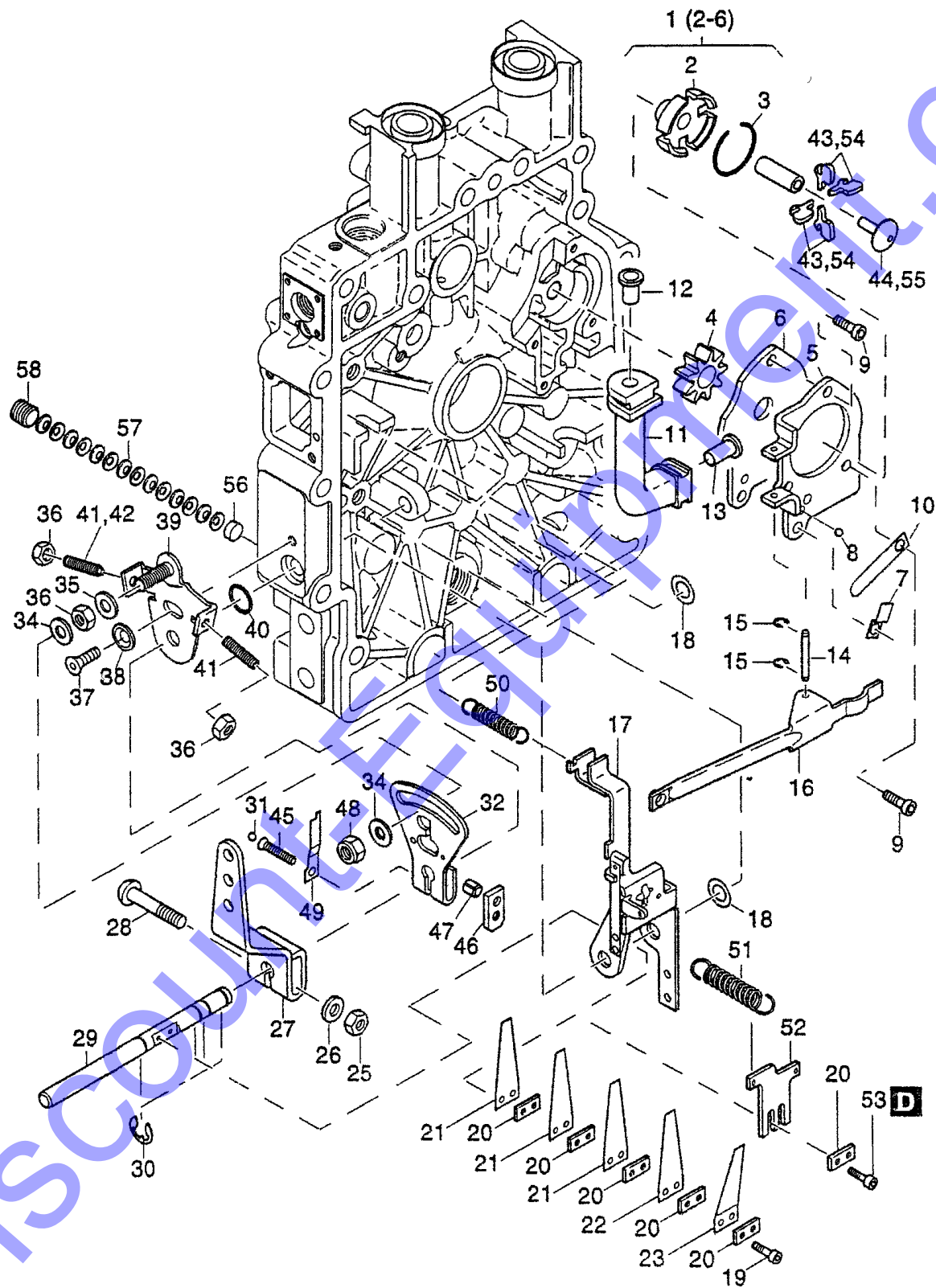
HATZ 1B30 — CYLINDER HEAD ASSY.

CYLINDER HEAD ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	01529801	CYLINDER HEAD ASSY	1	INCLUDES ITEMS W/*
2*		CYLINDER HEAD	1	NOT SOLD SEPERATELY
3	05129500	VALVE GUIDE	2	
5	05097500	STUD CYLINDER HEAD 141MM	2	
6	05097400	STUD CYLINDER HEAD 148MM	2	
7	05098900	PUSH ROD	2	
9	05093000	VALVE, INTAKE	1	
10	05093100	VALVE, EXHAUST	1	
11	50425800	VALVE STEM SEAL CAP	2	INCLUDED IN CRANKC. GASK. SET
12	04093700	WASHER	2	
13	04113500	VALVE SPRING	2	
14	04093800	SPRING PLATE	2	
15	50425700	COLLET	2	
16	50445100	DISK 6X12X1.2 DIN 988	4	
17	05091101	SLIDER	2	
18	50358000	GRUB SCREW M8X10	2	INCLUDED IN MAINTENANCE KIT
19	05054700	NUT FOR ROCKER ARM	2	
20	05098201	ROCKER	2	
21	05499300	WASHER 10.1X35X3	4	
22	50396600	HEX. NUT M10 DIN 934	4	
23	05093301	HEAD COVER GASKET	1	INCLUDED IN CRANKC. GASK. SET AND MAINTENANCE KIT
24	05092701	CYLINDER HEAD COVER	1	
25	01509600	DOSING DEVICE ASSY	1	INCLUDES ITEMS W/+ INCLUDED IN EMERGENCY KIT
26+	50425900	O- RING 16X2	2	
27+		DOSING DEVICE	1	NOT SOLD SEPERATELY
28	50081200	SPRING WASHER A6	2	
29	50374900	ALL SCREW M6X35	2	
30	04117701	LIFTING STRAP	1	
32	50453200	HEX. NUT M10	2	
33	05096301	CYLINDER HEAD GASKET 0.3MM	0..1	
34	05096401	CYLINDER HEAD GASKET 0.4MM	0..1	INCLUDED IN HEAD GASKET SET
35	05096501	CYLINDER HEAD GASKET 0.5MM	0..1	INCLUDED IN HEAD GASKET SET
36	05096601	CYLINDER HEAD GASKET 0.6MM	0..1	
37	05096701	CYLINDER HEAD GASKET 0.7MM	0..1	
38	05096801	CYLINDER HEAD GASKET 0.8MM	0..1	
39	05096901	CYLINDER HEAD GASKET 0.9MM	0..1	
40	05097001	CYLINDER HEAD GASKET 1.0MM	0..1	
41	50440300	O- RING 8X1.5	4	INCLUDED IN HEAD GASKET SET
42	04133500	SEALING RING CYLINDER HEAD	2	INCLUDED IN HEAD GASKET SET
43	04126100	PROTECTION HOSE 10X12X9	2	

HATZ 1B30 — OIL PUMP/GOVERNOR ASSY.

OIL PUMP/GOVERNOR



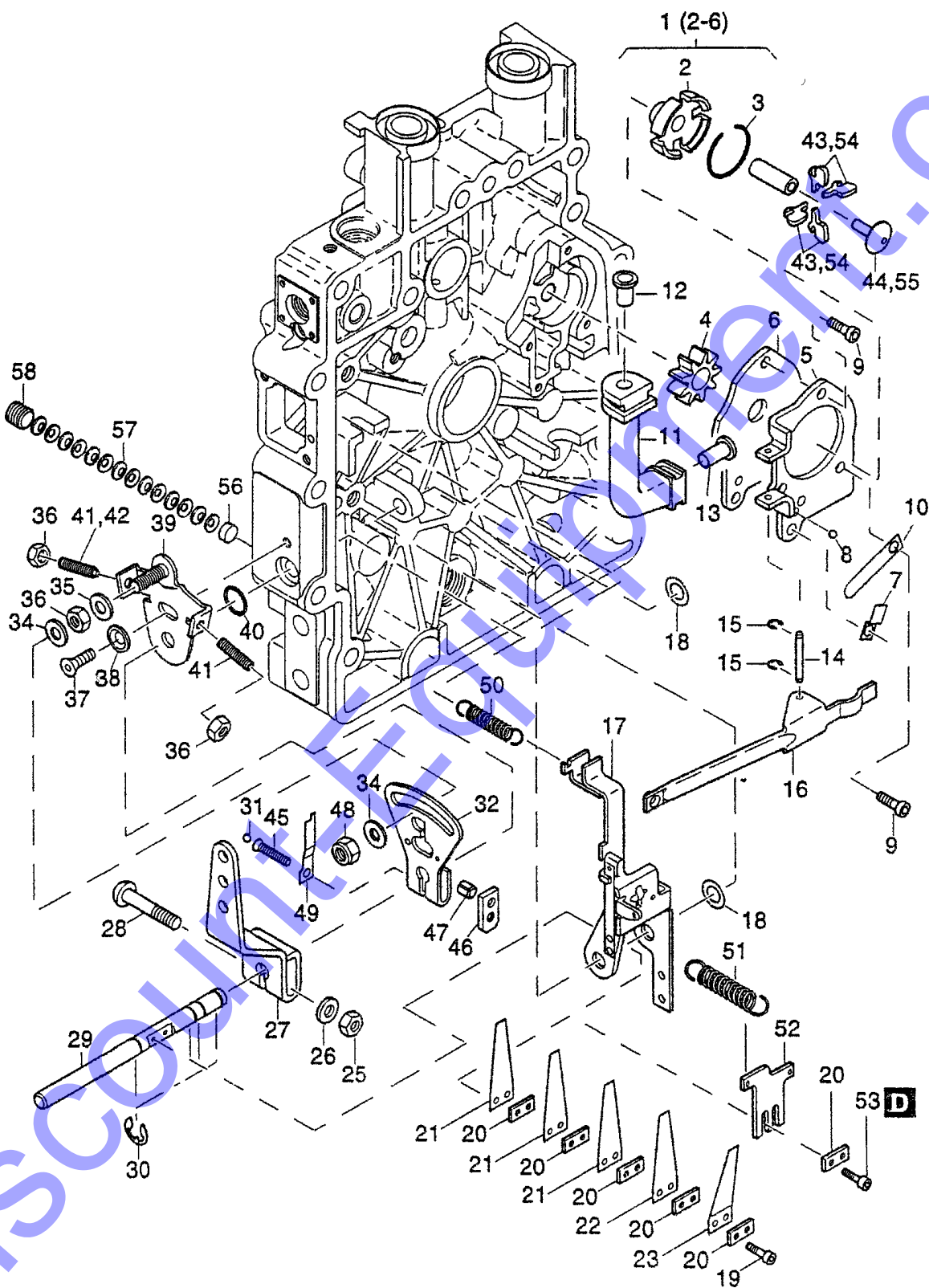
HATZ 1B30 — OIL PUMP/GOVERNOR ASSY.

OIL PUMP/GOVERNOR

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	01530210	COVER OIL PUMP ASSY.	1	INCLUDES ITEMS W/*
2*		COVER, OIL PUMP	1	NOT SOLD SEPERATELY
3*	50434901	CIRCLIP	1	
4*		GEAR, OIL PUMP	1	NOT SOLD SEPERATELY
5*		HOUSING, OIL PUMP	1	NOT SOLD SEPERATELY
6*		HOUSING, OIL PUMP	1	NOT SOLD SEPERATELY
7	05097100	RETAINING STRAP	1	
8	50447900	BALL 3.5MM	1	
9	50429400	ALL. SCREW M5X12	4	
10	05097300	FLAT SPRING 0.4	1	
11	04102900	OIL SUCTION TUBE	1	
12	50447400	TUBE INSERT	1	
13	50447500	TUBE INSERT	1	
14	05078600	SHAFT	1	
15	50434800	CIRCLIP	2	
16	05079400	LEVER	1	
17	01530402	GOVERNOR LEVER	1	
18	50422400	SHIM 8X14X1	2	
18	50125800	DISK 8X14X0.5	0.2	
19	50435000	ALL. SCREW M3X12	2	
20	05079800	INTERMED. PLATE	1..5	
21	05131600	GOVERNOR SPRING 0.2MM	1..3	
22	05078900	GOVERNOR SPRING 0.3	1	
23	05148600	STOP SPRING 0.4MM	1	
25	50144400	HEX. NUT M6	1	
26	50144500	FLAT WASHER	1	
27	04095600	LEVER	1	
28	03927300	SCREW M6X32	1	
29	05079301	SHAFT	1	
30	50092700	CIRCLIP	4	
31	50347100	BALL 3.175MM	1	
32	01333000	CONSOLE	1	
34	50114300	DISK	2	
35	50144500	FLAT WASHER	1	
36	50144400	HEX. NUT M6	3	
37	50423900	CTR. SUNK SCREW M6X20	1	
38	04122900	DISK	1	
39	01316402	SUPPORT	1	

HATZ 1B30 — OIL PUMP/GOVERNOR ASSY. (CONT.)

OIL PUMP/GOVERNOR



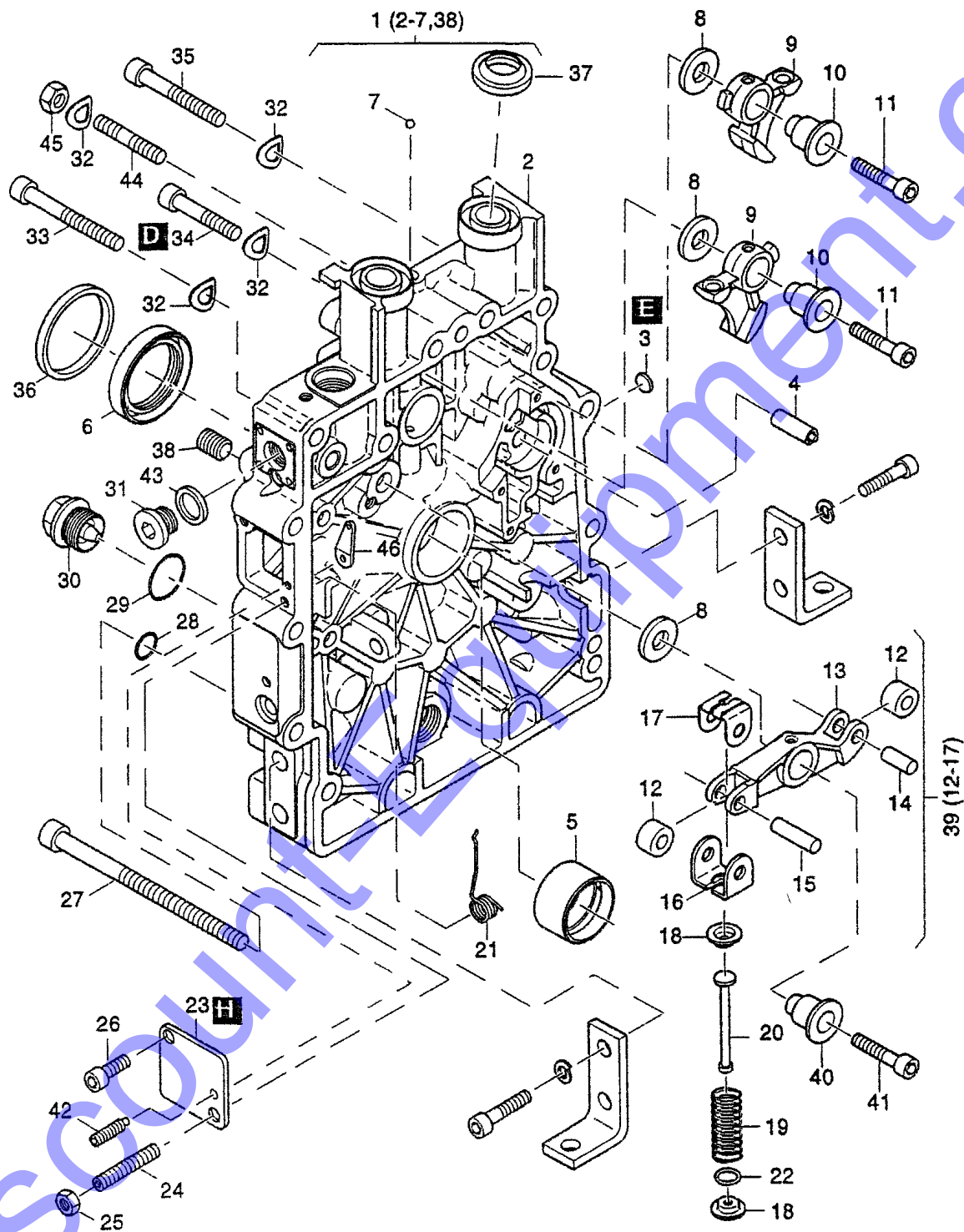
HATZ 1B30 — OIL PUMP/GOVERNOR ASSY. (CONT.)

OIL PUMP/GOVERNOR

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
40	40022401	O- RING 8X2	1	
41	50138100	THREADED PIN M6X35	1..2	
42	50004200	THREADED PIN M6X18	0..1	
43	05079601	CENTRIFUGAL WEIGHT	8	
44	05078501	GOVERNOR SLEEVE	1	
45	50475300	FILL. HEAD SCREW 5X25	1	
46	05151300	SUPPORT	1	
47	50475400	PIN 5X8	1	
48	50328300	HEX. NUT M6	1	
49	04122800	PLATE SPRING	1	
50	04000200	TENSION SPRING	1	
51	05130900	GOVERNOR SPRING	1	
52	05130800	STOP PLATE	1	
53	50465300	CYL. SCREW M3X8	2	
54	05146900	CENTRIFUGAL WEIGHT	4	
55	05147001	GOVERNOR SLEEVE	1	
56	05151700	PLUG	1	
57	50475800	PLATE SPRING	14	
58	50475700	GRUB SCREW M10X10	1	

HATZ 1B30 — TIMMING COVER ASSY.

TIMING COVER ASSY.



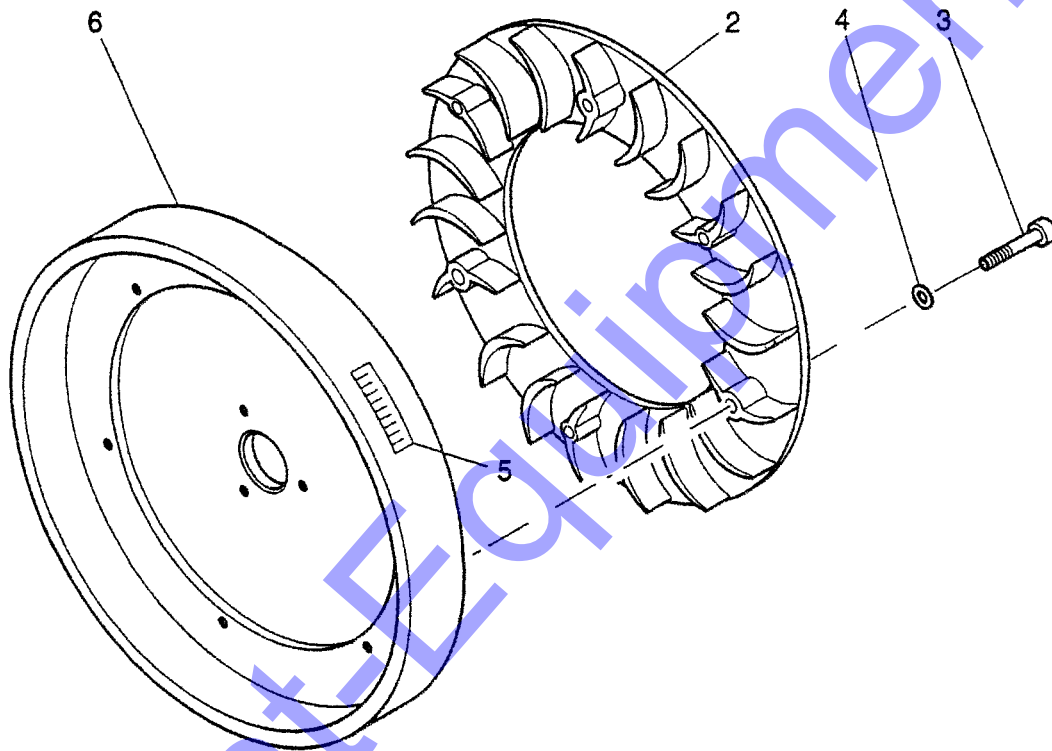
HATZ 1B30 — TIMMING COVER ASSY.

TIMING COVER ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	01319510	TIMING COVER ASSY	1	INCLUDES ITEMS W/*
2*		TIMING COVER	1	NOT SOLD SEPERATELY
3*	04130200	CLOSING PLUG	1	
4*	01533900	BOLT GOVERNOR HOUSING	1	
5*	05053100	MAIN BEARING	1	
5	04124800	MAIN BEARING - 0.5	1	
6*	40033700	OIL SEAL 30X47X8	1	IN CRANKCASE GASKET SET
7*	50443400	BALL	1	
8	03794100	WASHER	3	
9	05053400	CAM FOLLOWER	2	
10	03794201	CAM FOLLOW SPINDLE	2	
11	50457900	ALL. SCREW M6X25	2	
12\$		BUSHING, ROCKER ARM	2	NOT SOLD SEPERATELY
13\$		ROCKER ARM	1	NOT SOLD SEPERATELY
14\$		PIN, ROCKER ARM	1	NOT SOLD SEPERATELY
15\$		PIN, ROCKER ARM	1	NOT SOLD SEPERATELY
16\$		CLAMP, ROCKER ARM	1	NOT SOLD SEPERATELY
17\$		CLAMP, ROCKER ARM	1	NOT SOLD SEPERATELY
18	04094801	CUP	2	
19	04095700	PRESSURE SPRING	1	
20	04094700	DRAW ROD	1	
21	05095210	SPRING	1	
22	04133900	DISK 10.7X19X0.5	1	
23	04095210	COVER	1	
24	50448901	GRUB SCREW M6X30	1	
25	50144400	HEX. NUT M6	1	
26	50384200	ALL. SCREW M6X12	1	
27	50463000	ALL. SCREW M8X130	2	
28	50162900	JOINT A8X14	2	IN CRANKCASE GASKET SET
29	50469800	JOINT A22X27	1	IN MAINT. + CRANKCASE SET
30	50373100	DRAIN PLUG M22X1.5	1	IN MAINTENANCE KIT
31	50459200	CLOSING SCREW M12X1.5	1	
32	50095100	SPRING WASHER A8	13	
33	50248800	ALL. SCREW M8X60	1	
34	50453400	ALL. SCREW M8X45	2	
35	50392900	ALL. SCREWM8X50	9	
36	04097800	CENTERING RING SAE A	1	
37	04106500	SEALING RING TIMING COVER	2	IN HEAD GASKET SET
38*	50358000	GRUB SCREW M8X10	5	
39	01319601	ROCKER ARM	1	INCLUDES ITEMS W/\$
40	04096810	CAM FOLLOW SPINDLE	1	
41	50469900	ALL. SCREW M6X30	1	
42	50274901	GRUB SCREW M4X20	1	
43	04122000	JOINT	1	
44	50038700	STUD M8X50	1	
45	50148000	HEX. NUT M8	1	
46	05127100	LEVER	1	

HATZ 1B30 — FLYWHEEL ASSY.

FLYWHEEL ASSY.

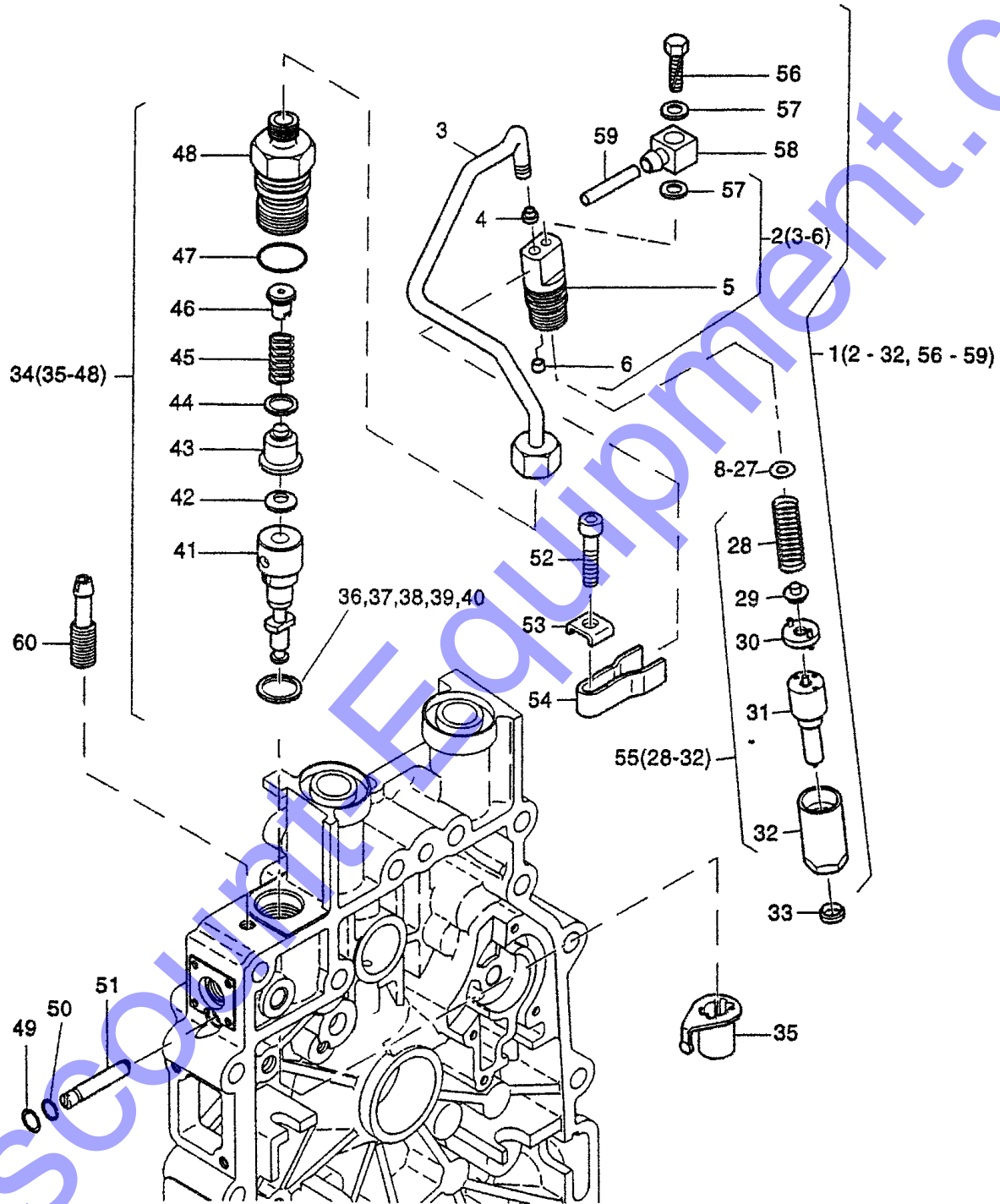


FLYWHEEL ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
2	01321310	BLOWER RING	1	
3	50327300	ALL. SCREW M4X20	6	
4	50003400	SPRING WASHER A4	6	
5	04117300	STICKER "TDC"	1	
6	04110302	FLYWHEEL	1	

HATZ 1B30 — FUEL INJECTION ASSY.

FUEL INJECTION ASSY.



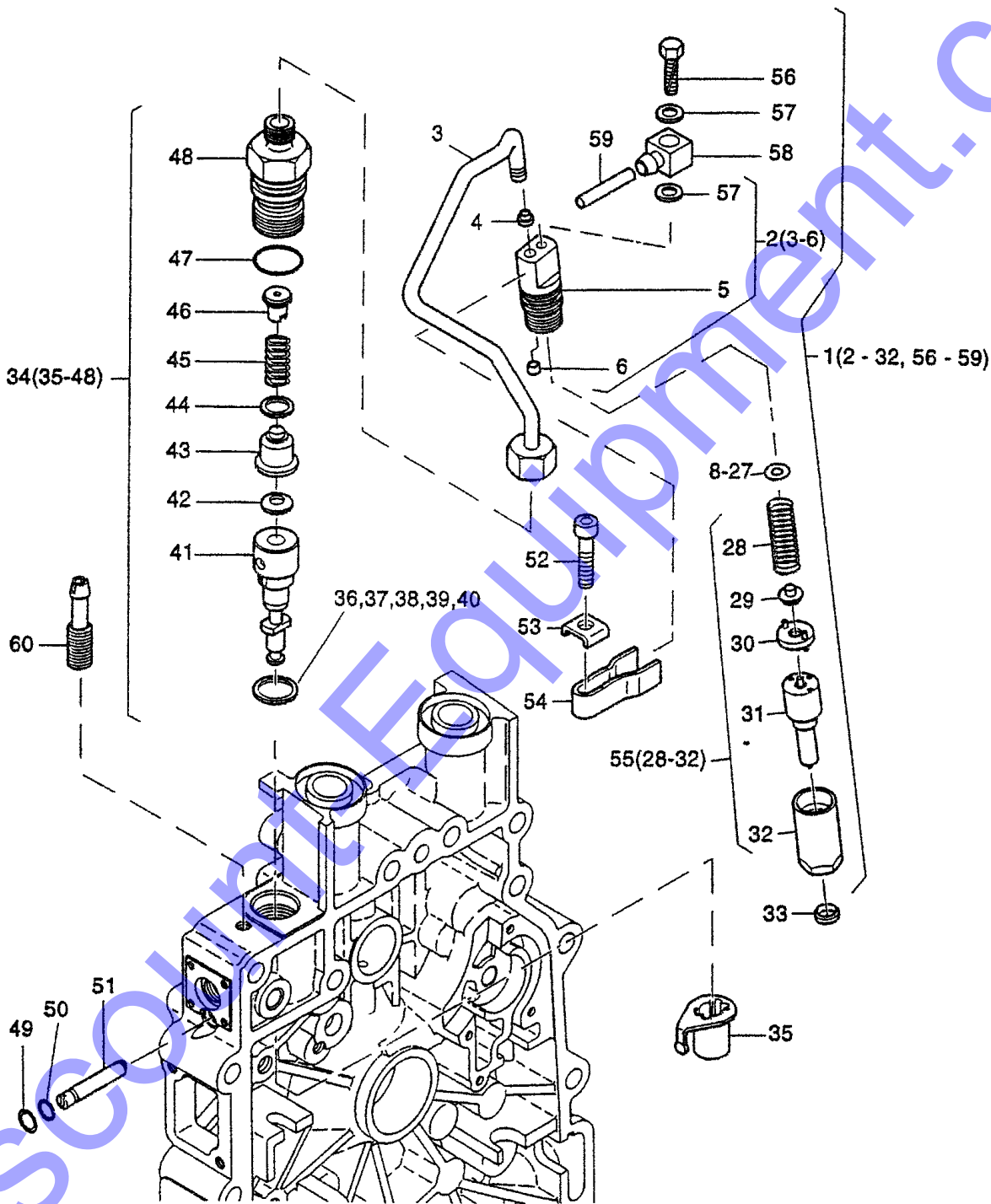
HATZ 1B30 — FUEL INJECTION ASSY.

FUEL INJECTION ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	01328800	INJECTOR ASSY.....	1	INCLUDES ITEMS W/\$
2\$	01577110	NOZZLE HOLDER ASSY	1	INCLUDES ITEMS W/#
3#\$		PIPE	1	NOT SOLD SEPERATELY
4#\$	05096101	SEALING CONE 4.9MM	0.1	SEE TECHNICAL ADVICE 95125801
4	05070601	SEALING CONE 5.3MM	0.1	
5#\$		NIPPLE BODY	1	NOT SOLD SEPERATELY
6#\$	05081500	SEALING CONE	1	
8\$	50436400	SHIM 1.00MM	0.1	
9\$	50436500	SHIM 1.04MM	0.1	
10\$	50436600	SHIM 1.10MM	0.1	
11\$	50436700	SHIM 1.14MM	0.1	
12\$	50436800	SHIM 1.20MM	0.1	
13\$	50436900	SHIM 1.24MM	0.1	
14\$	50437000	SHIM 1.30MM	0.1	
15\$	50437100	SHIM 1.34MM	0.1	
16\$	50437200	SHIM 1.40MM	0.1	
17\$	50437300	SHIM 1.44MM	0.1	
18\$	50437400	SHIM 1.50MM	0.1	
19\$	50437500	SHIM 1.54MM	0.1	
20\$	50437600	SHIM 1.60MM	0.1	
21\$	50437700	SHIM 1.64MM	0.1	
22\$	50437800	SHIM 1.70MM	0.1	
23\$	50437900	SHIM 1.74MM	0.1	
24\$	50438000	SHIM 1.80MM	0.1	
25\$	50438100	SHIM 1.84MM	0.1	
26\$	50438200	SHIM 1.90MM	0.1	
27\$	50438300	SHIM 1.94MM	0.1	
28+		SPRING	1	NOT SOLD SEPERATELY
29+		SPRING WASHER.....	1	NOT SOLD SEPERATELY
30+		PLATE	1	NOT SOLD SEPERATELY
31+\$	50442200	NOZZLE.....	1	IN EMERGENCY KIT
32+		BODY	1	NOT SOLD SEPERATELY
33	05070500	JOINT	1	IN HEAD GASKET SET
55	01326100	PARTS SET NOZZLE ASSY.	1	INCLUDES ITEMS W/+
56\$	50464500	HEX SCREW M6X16	1	
57\$	50110800	JOINT A4X8	2	
58\$	05129000	CONNECTING NIPPLE	1	
59\$	05130300	HOSE 2.5X295	1	

HATZ 1B30 — FUEL INJECTION ASSY. (CONT.)

FUEL INJECTION ASSY.



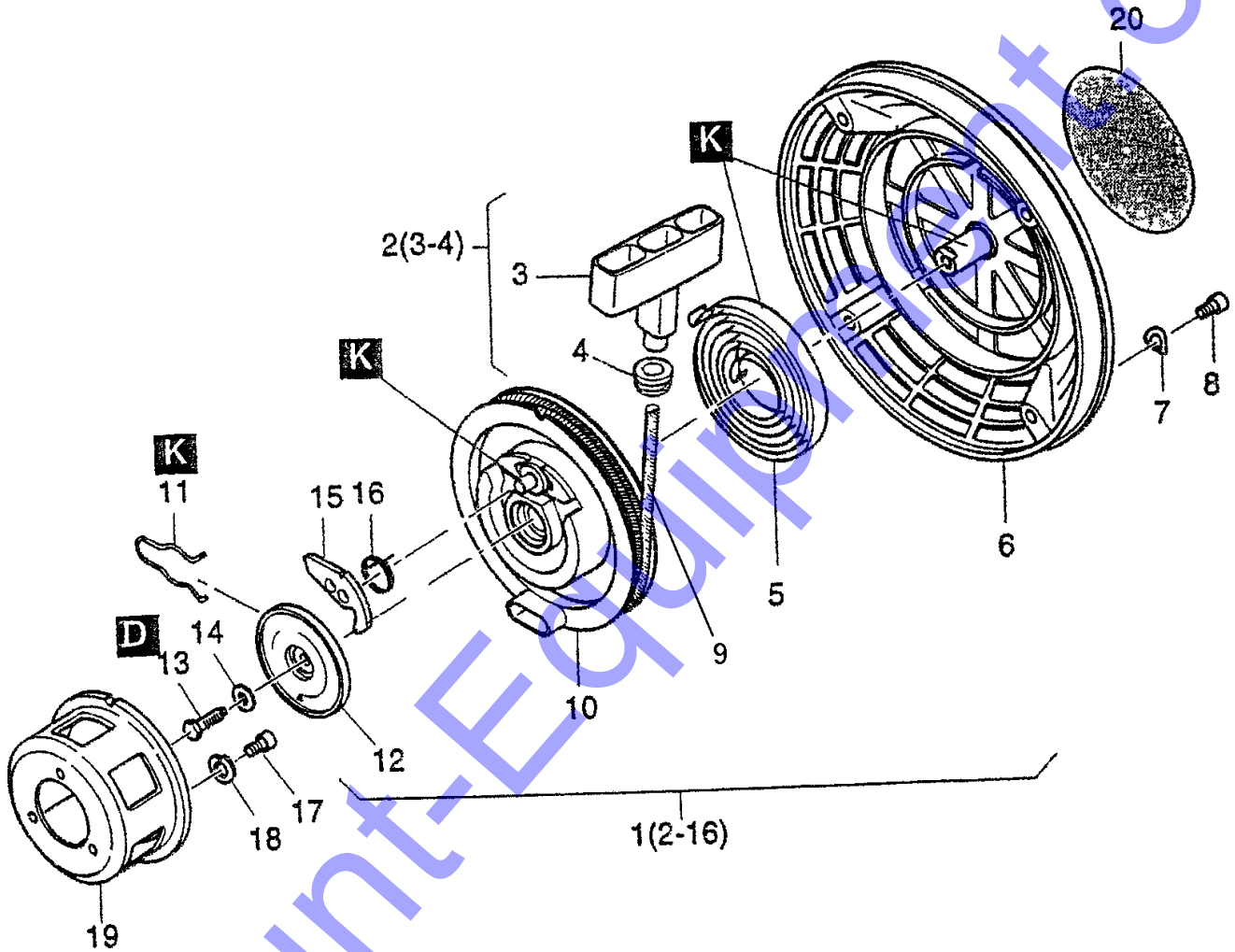
HATZ 1B30 — FUEL INJECTION ASSY. (CONT.)

FUEL INJECTION ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
34	01322200	INJECTION PUMP	1	INCLUDES ITEMS W/*
35*	01330800	CONTROL SLEEVE	1	
36*	04096300	SHIM 0.2MM	0.1	
37*	04096400	SHIM 0.3MM	0.1	
38*	04096500	SHIM 0.4MM	0.1	
39*	04096600	SHIM 0.5MM	0.1	
40*	04096700	SHIM 0.6MM	0.1	
41*		VALVE, FUEL INJECTOR PUMP	1	NOT SOLD SEPERATELY
42*	50471600	SPRING WASHER 8	1	
43*		BODY, FUEL INJECTOR PUMP	1	NOT SOLD SEPERATELY
44*	50476900	WASHER	1	
45*		SPRING, FUEL	1	NOT SOLD SEPERATELY
46*		BODY, FUEL	1	NOT SOLD SEPERATELY
47*	50476500	O- RING 17X2	1	
48*	50445900	VALVE HOLDER	1	
50	50433900	O- RING 1.0X3.3	1	
51	04097700	PIN	1	
52	50323900	ALL. SCREW M6X30	1	
53	05089300	RETAINING YOKE	1	
54	05056700	FORK FOR INJECTOR	1	
60	05084201	CONNECTING NIPPLE	1	

HATZ 1B30 — RECOIL STARTER ASSY.

RECOIL STARTER ASSY.



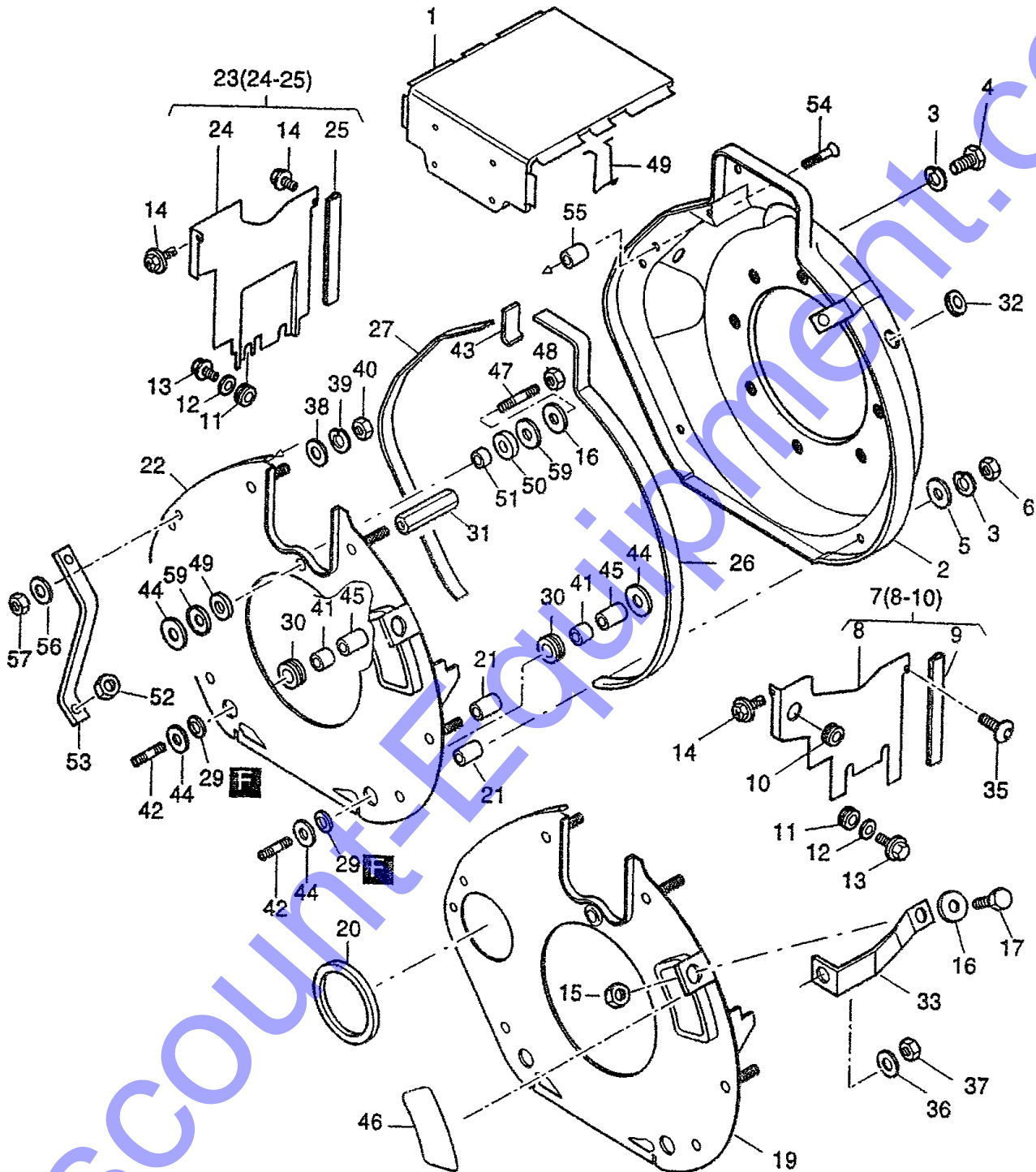
HATZ 1B30 — RECOIL STARTER ASSY.

RECOIL STARTER ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	01515002	RECOIL STARTER ASSY.....	1	INCLUDES ITEMS W/*
2*	01497800	HANDLE ASSY.....	1	INCLUDES ITEMS W/#
4*#		HANDLE	1	NOT SOLD SEPERATELY
4*#	03665200	RUBBER SLEEVE	1	
5*	05045201	RETURN SPRING	1	
6*	01569300	HOUSING RECOIL STARTER	1	
7*	50081200	SPRING WASHER A6	4	
8*	50062700	ALLEN SCREW M6X10	4	
9*	05088901	ROPE RECOIL STARTER	1	
10*	01548800	ROPE PULLEY	1	
11*	05044901	BRAKE SPRING	1	
12*	05045001	BRAKE DISK	1	
13*	50146300	HEX SCREW M6X18	1	
14*	50165600	SPRING WASHER	1	
15*	05044800	RATCHET	1	
16*	05061300	RETURN SPRING	1	
17	50062700	ALLEN SCREW M6X10	3	
18	50170900	SPRING WASHER 6	3	
19	50445800	DRIVING SLEEVE	1	
20	05109100	STICKER LABEL	1	

HATZ 1B30 — AIR DUCT ASSY.

AIR DUCT ASSY.



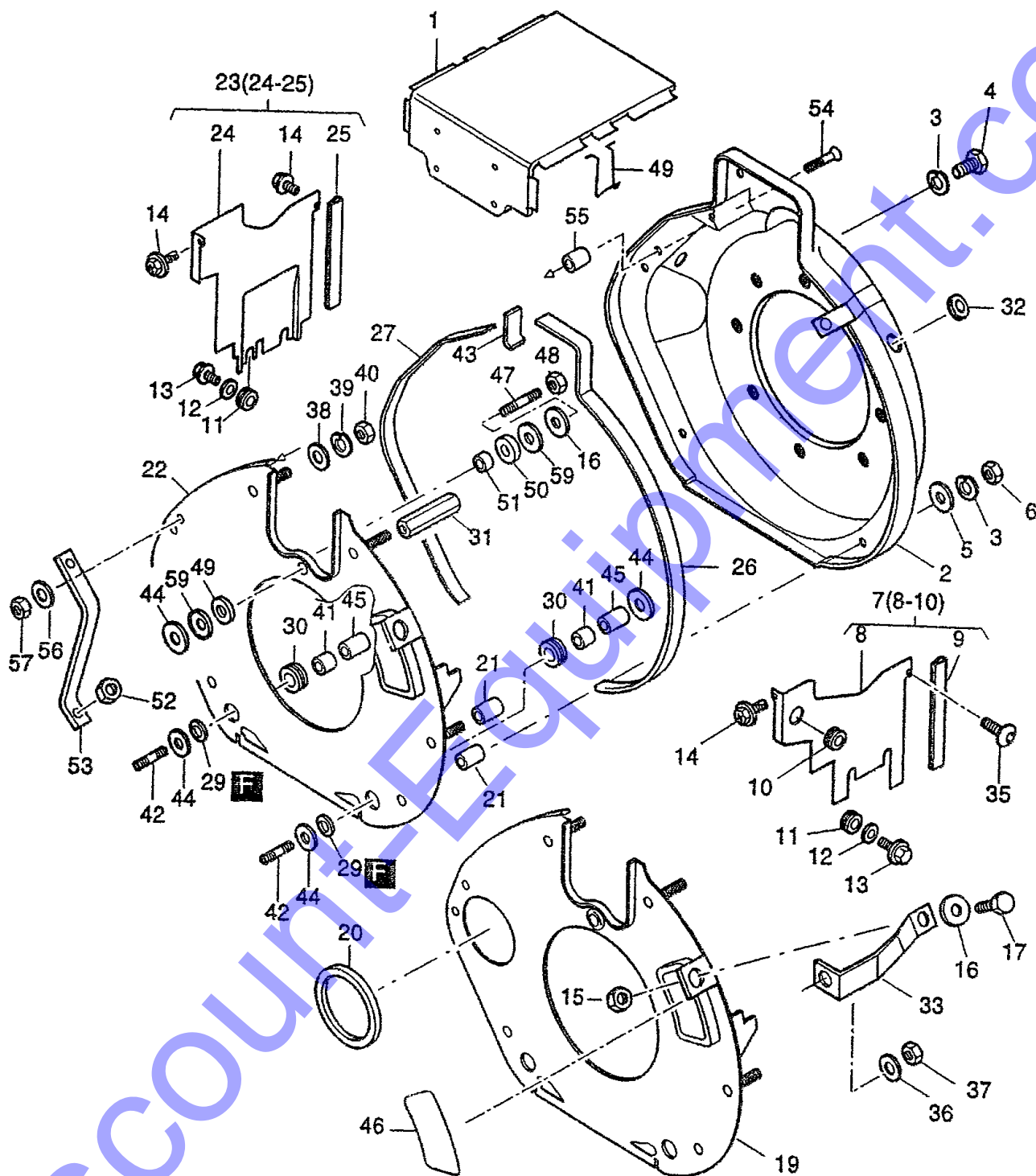
HATZ 1B30 — AIR DUCT ASSY.

AIR DUCT ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	01551401	HOOD	1	
2	01551301	BLOWER DUCTING	1	
3	50170900	SPRING WASHER 6	7	
4	50146300	HEX SCREW M6X18	1	
5	50120000	DISC A6,4	2	
6	50144400	HEX NUT M6	6	
7	01326300	COOLING AIR DUCTING	1	INCLUDES ITEMS W/*
8*		AIR DUCT	1	NOT SOLD SEPERATELY
9*	05128900	SEALING STRIP 80MM	1	
10*	50334800	RUBBER SLEEVE	1	
11	50163801	RUBBER SLEEVE	3	
12	50441600	WASHER 4,3	3	
13	50445400	HEX. SCREW M4X10	3	
14	50335600	COMBI SCREW M6X16	3	
15	50144400	HEX. NUT M6	1	
16	50114300	DISK 6,4	2	
17	50177100	HEX. SCREW M6X16	1	
19	01326800	PARTING SHEET	1	ELECTRIC START ONLY
20	04099500	SEALING RING	1	
21	04098400	SPACER TUBE 7X12X16.3	5	
22	01326700	PARTING SHEET	1	
23	01326200	COOLING AIR DUCT	1	INCLUDES ITEMS W/#
24		AIR DUCT	1	NOT SOLD SEPERATELY
25		AIR DUCT STRIP	1	NOT SOLD SEPERATELY
25	04111500	SEALING STRIP 119MM	1	
26	05108100	SEALING STRIP 495MM	1	
27	04124600	SEALING STRIP 388MM	1	
29	03575500	SEALING RING	2	
30	00921400	SPACER BUSHING	2	
31	05081700	SPACER	1	
32	50453300	RUBBER SLEEVE	1	
33	01599600	SUPPORT	1	
35	50328000	CTR. SUNK SCREW AM6X16	1	
36	50095100	SPRING WASHER A8	1	
37	50344700	HEX. NUT M8	1	
38	50144500	FLAT WASHER 6,4	1	
39	50170900	SPRING WASHER 6	1	

HATZ 1B30 — AIR DUCT ASSY. (CONT.)

AIR DUCT ASSY.



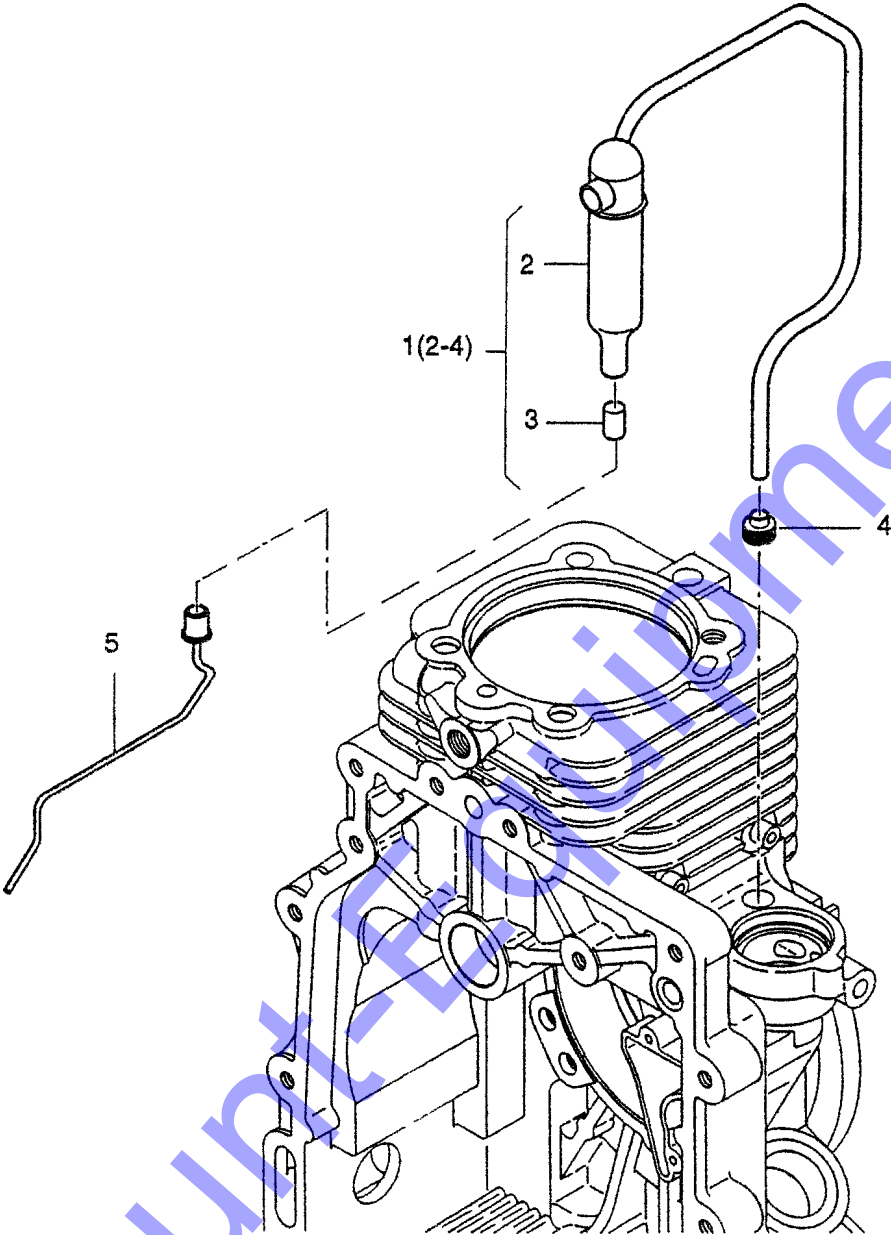
HATZ 1B30 — AIR DUCT ASSY. (CONT.)

AIR DUCT ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
40	50144400	HEX. NUT M6	1	
41	04119100	TUBE 6X8X14	2	
42	50458100	STUD M6X45	2	
43	05007300	SEALING STRIP 48MM	1	
44	04042000	WASHER 6.5X22.5X1	5	
45	05132900	BUSH 6.5X13X14	2	
46	04116700	COVER	1	
47	50464401	STUD M6X35	1	
48	40028300	HEX. NUT M6	1	
49	05133800	RUBBER RING 17X28X5	1	
50	05133900	RUBBER RING 17X28X9	1	
50	05133900	RUBBER RING 17X28X9	1	
51	05132700	BUSH 6.5X17Z11.5	1	
52	50148000	HEX. NUT M8	1	
53	05133000	SUPPORT FUEL TANK	1	
54	50445000	CTR. SUNK SCREW M6X35	1	
55	05132800	SPACER TUBE 7X12X16.3	1	
56	50170900	SPRING WASHER 6	1	
57	50144400	HEX NUT M 6	1	
58	05145800	SPRING CLIP	1	
59	05097600	WASHER	2	

HATZ 1B30 — CRANKCASE BREATHER ASSY.

CRANKCASE BREATHER ASSY.



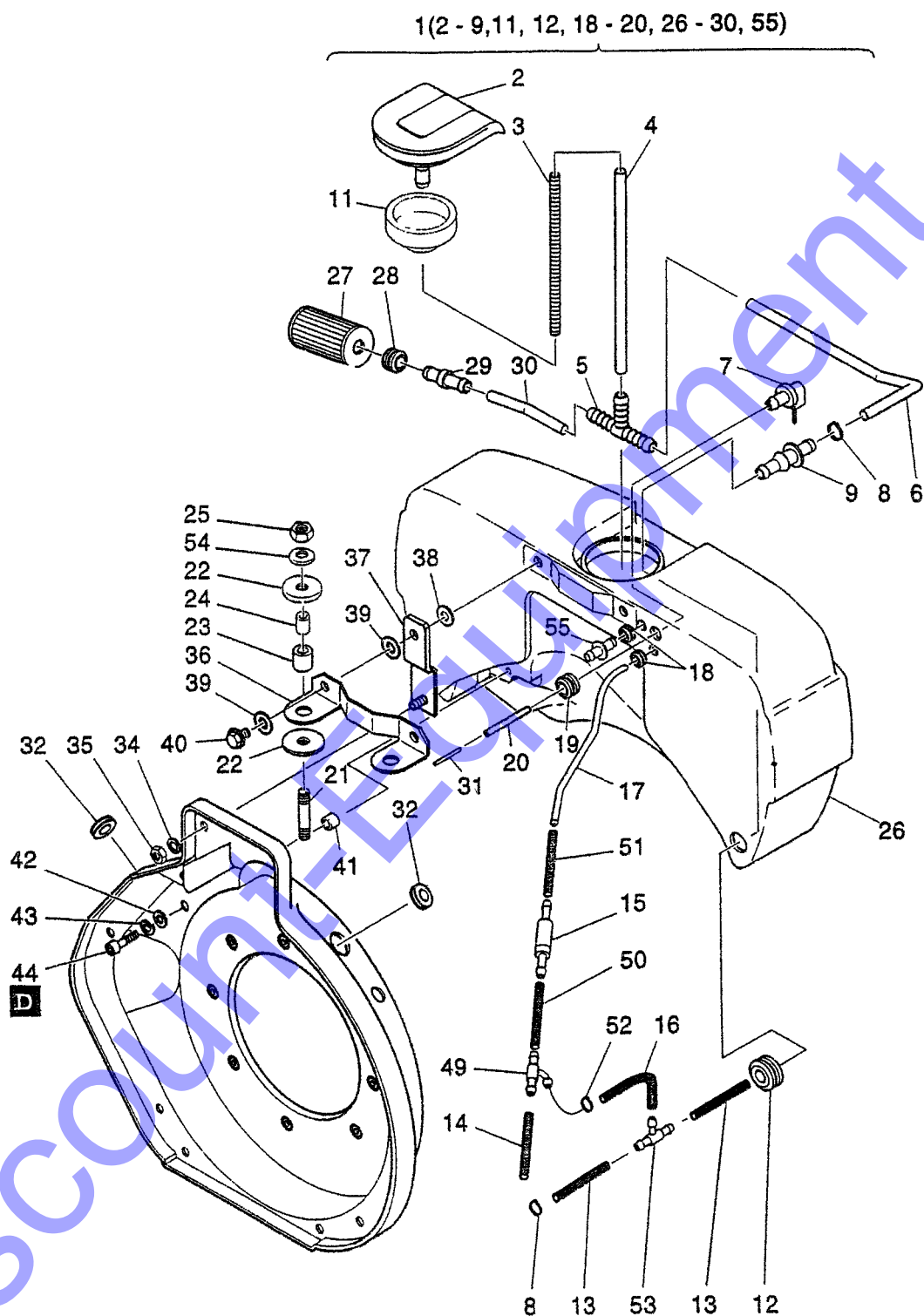
HATZ 1B30 — CRANKCASE BREATHER ASSY.

CRANKCASE BREATHER ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	01599200	OIL SEPARATOR ASSY.	1	INCLUDES ITEMS W/*
2*		OIL SEPERATOR	1	NOT SOLD SEPERATELY
3*	05102900	FILTER BREATHER SYSTEM	1	
4*	01617900	BREATHER TUBE	1	IN CRANKCASE GASKET SET
5	01551600	SUCTION PIPE	1	

HATZ 1B30 — FUEL TANK ASSY.

FUEL TANK ASSY.



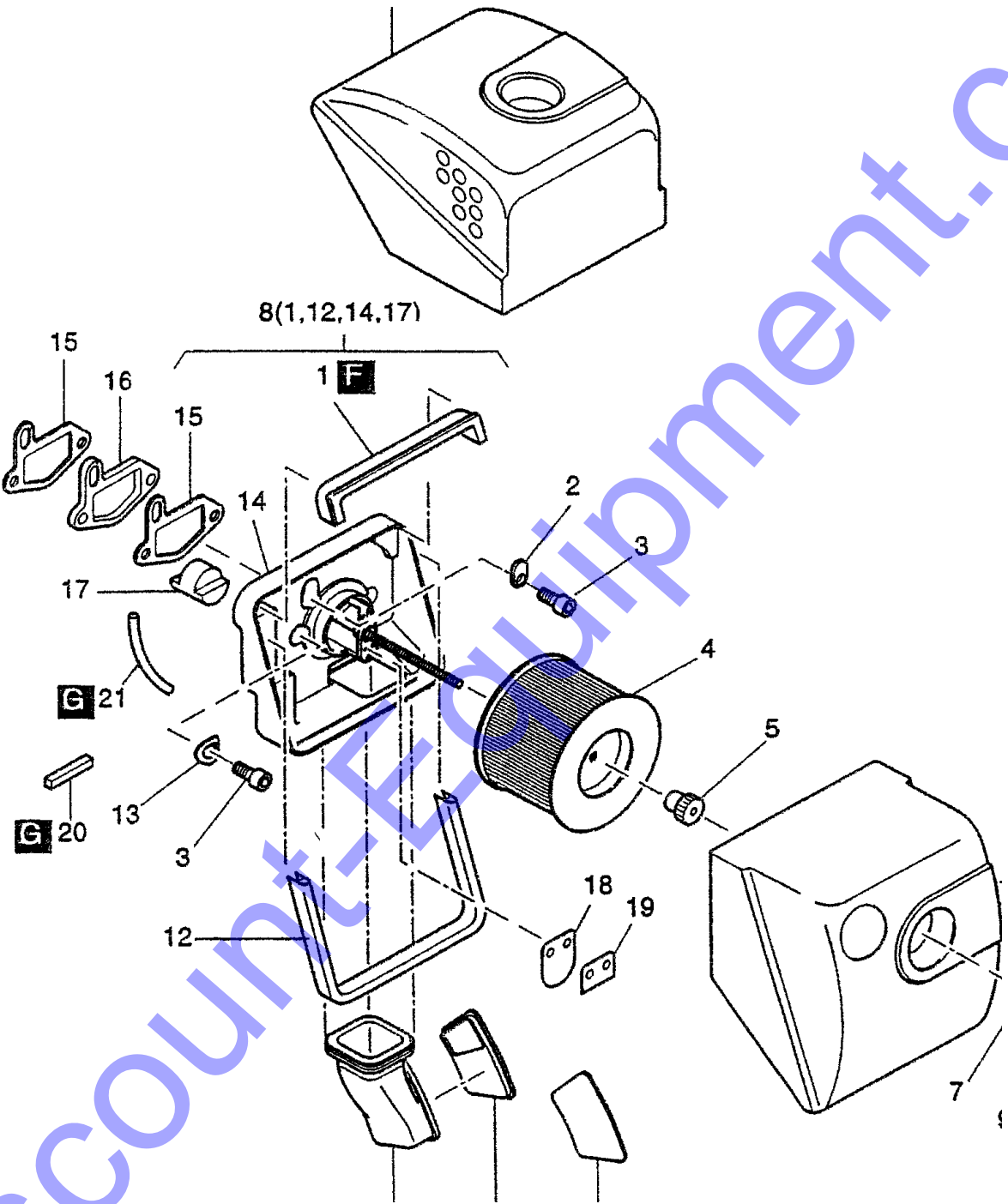
HATZ 1B30 — FUEL TANK ASSY.

FUEL TANK ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	01588610	FUEL TANK ASSY 5 LITER.....	1	INCLUDES ITEMS W/*
2*	01535302	CAP FOR FUEL TANK	1	
3*		FUEL HOSE WRAP	1	NOT SOLD SEPERATELY
4*	05084600	FUEL HOSE 7X165	1	
5*	50440600	NIPPLE FOR FUEL TANK	1	
6*	05137000	FUEL PIPE 7X220	1	
7*	01534900	FUEL VENT VALVE	1	
8*	50441100	HOSE CLIP	2	IN EMERGENCY KIT
9*	05084000	CONNECTING NIPPLE	1	
11	05086401	GASKET FOR FUEL CAP	1	
12*	50440800	RUBBER SLEEVE	1	
13	05123100	FUEL HOSE 7/70	2	
14	05085300	FUEL HOSE 3.5X45	1	
15	01534600	FUEL VENT VALVE	1	
16	003673300	FUEL HOSE 4.5/170	1	
17	05122200	FUEL PIPE	1	
18*	05130400	RUBBER SLEEVE	2	
19*	50440900	RUBBER SLEEVE	1	
20*	05085600	BREATHER HOSE	1	
21	50231900	STUD M8X25	2	
22	05109810	DISK 8.2X22X2	4	
23	05086810	RUBBER SHELL	2	
24	05122800	INSULATING SLEEVE	2	
25	40028400	HEX. NUT M8	2	
26		FUEL TANK.....	1	NOT SOLD SEPERATELY
27*	01635200	FUEL FILTER	1	IN MAINTENANCE KIT
			INCLUDES ITEMS W/#
28*#	50440900	RUBBER SLEEVE	1	
29*	05084400	CONNECTING NIPPLE	1	
30*	05136900	FUEL PIPE 7X80	1	
31	05085500	TUBE 1.4X2X16	1	
34	50170900	SPRING WASHER 6	2	
35	50144400	HEX. NUT M6	2	
36	05122300	SUPPORT	1	
37	01331300	SUPPORT	2	
38	50120000	DISK A6,4	2	
39	05110010	DISK 7.1X17.9X2	4	
40	01588900	HEX. SCREW M6X16	2	
41	04118800	DISK 6.5X13X4.8	4	
42	50144500	FLAT WASHER 6,4	4	
43	50170900	SPRING WASHER 6	4	
44	50170700	ALL. SCREW M6X16	4	
49	05122700	HOSE NIPPLET	1	
50	05123200	FUEL HOSE 3.5X38	1	
51	04060400	FUEL HOSE 4.5X100	1	
52	50399801	CLAMP 11,3	1	
53	50459600	HOSE NIPPLE T	1	
54	50148100	FLAT WASHER 8,4	2	
55*	05129610	CONNECTING NIPPLE	1	

HATZ 1B30 — AIR FILTER ASSY.

AIR FILTER ASSY.



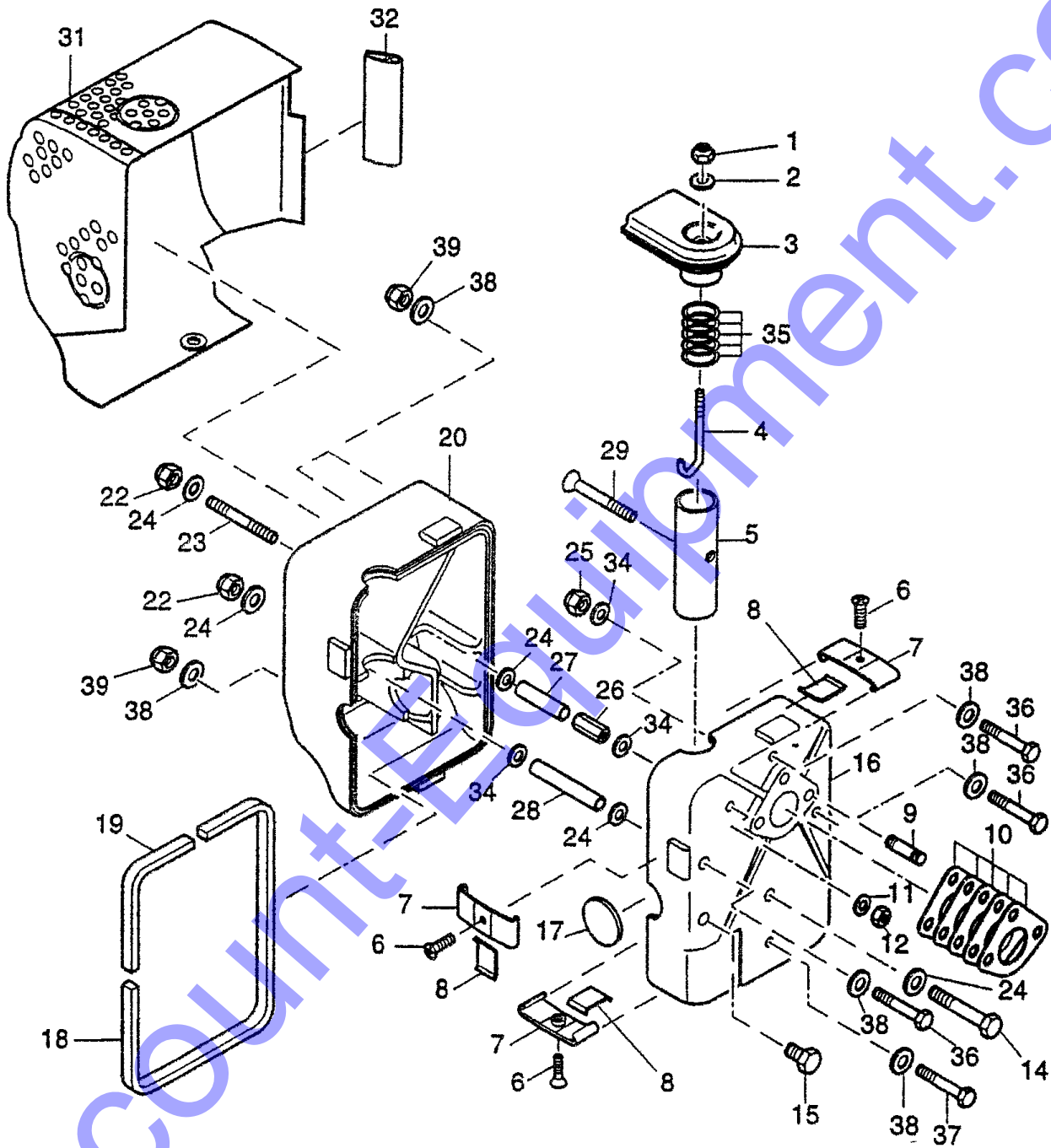
HATZ 1B30 — AIR FILTER ASSY.

AIR FILTER ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1*	05107600	SEALING STRIP	1	
2	05056400	WASHER	1	
3	50171500	ALL. SCREW M8X25	3	
4	50426000	AIR FILTER ELEMENT	1	IN MAINTENANCE KIT
5	50454300	NUT M6	1	
6	05107500	COVER AIR FILTER	1	
7	50435800	RUBBER SLEEVE	1	
8	01607900	AIR FILTER HOUSING ASSY	1	INCLUDES ITEMS W/*
9	50452200	WING NUT M6	1	
10	04116600	COVER, RUBBER INSERT	1	
11	04116501	RUBBER INSERT	1	
12*	05056100	SEALING STRIP 365MM	1	
13	50095100	SPRING WASHER A8	2	
14		AIR FILTER ASSY	1	NOT SOLD SEPERATELY
15	05056300	GASKET AIR FILTER.....	2	IN HEAD GASKET SET
16	05088300	INSULATING FLANGE	1	
17*	05098100	PLUG	1	
35	05132000	COVER AIR FILTER	1	
36	04116700	COVER	1	

HATZ 1B30 — MUFFLER ASSY.

MUFFLER ASSY.



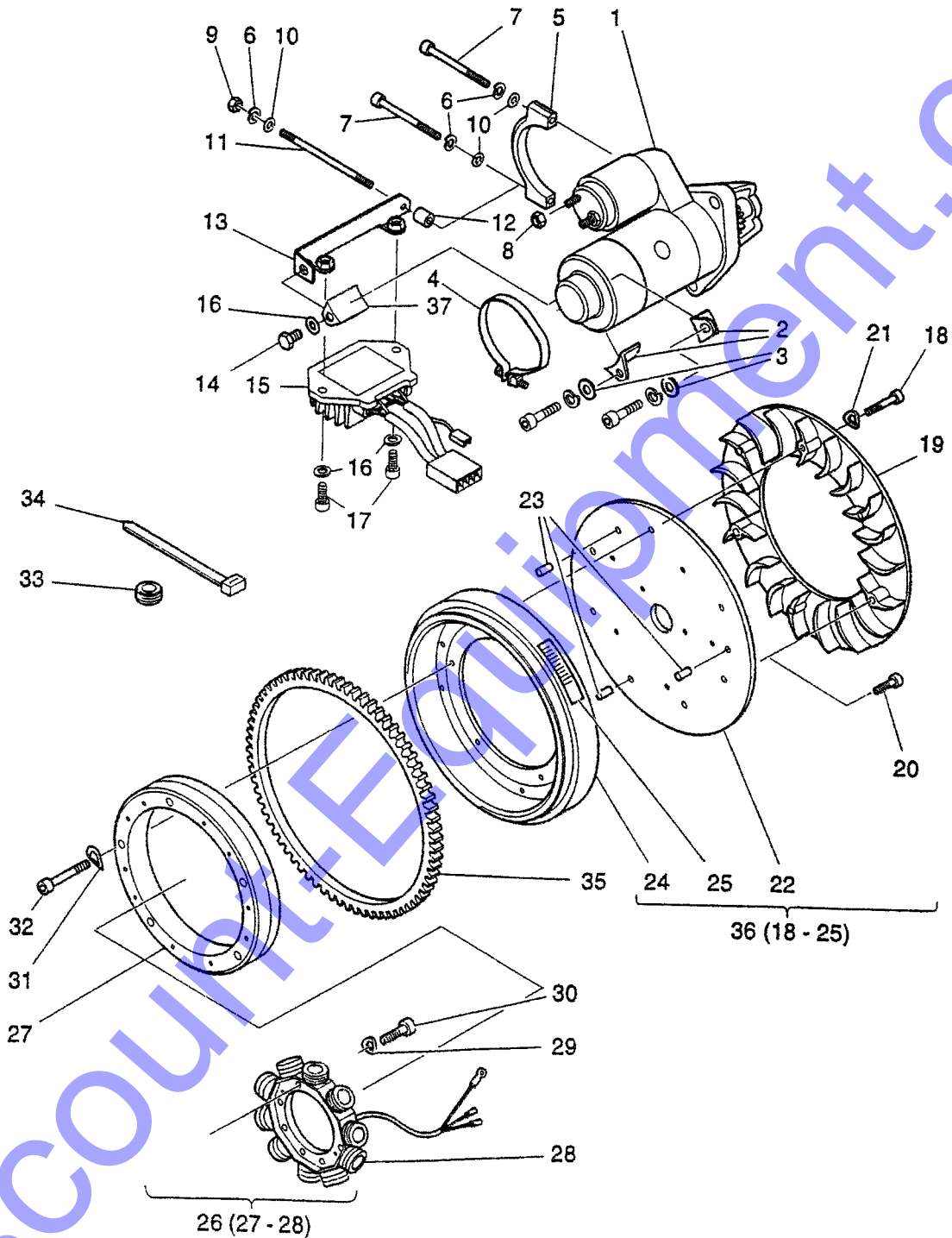
HATZ 1B30 — MUFFLER ASSY.

MUFFLER ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	40028300	HEX. NUT M6	1	
2	50144500	FLAT WASHER 6,4	1	
3	01531311	EXHAUST END PIPE	1	
4	05081101	THREADED BOLT M6	1	
5	05081410	EXHAUST TUBE	1	
6	50422500	CTR. SUNK SCREW M6X12	3	
7	01531201	CLAMP	3	
8	05081611	SUPPORTING PLATE	3	
9	50128100	STUD	3	
10	05103600	MUFFLER GASKET 1B30	5	IN HEAD GASKET SET
11	50144500	FLAT WASHER 6,4	1	
12	40028300	HEX NUT M6	1	
14	50028900	HEX. SCREW M8X100	1	
15	50450500	HEX. SCREW M8X10	1	
16	05103401	MUFFLER, INNER PART	1	
17	05081002	COVER	1	
18	05104100	SEALING STRIP	1	
19	05104000	SEALING STRIP	1	
20	05103500	MUFFLER, OUTER PART	1	
22	40028400	HEX. NUT M8	3	
23	50445201	STUD M8X70	1	
24	50148100	FLAT WASHER 8,4	6	
25	40028400	HEX. NUT M8	1	
26	05083900	SPACER NUT M8	1	
27	05103901	SPACER TUBE 51.6MM	1	
28	05103801	SPACER TUBE 65MM	1	
29	50445000	CTR. SUNK. SCREW M6X35	1	
31	01560200	MUFFLER GUARD	1	
32	05100300	SEALING STRIP 65MM	1	
34	04054300	WASHER 8.4X23.5	3	
35	05127000	WASHER 28.1X34X0.5	5	
36	50460700	HEX. SCREW M6X100	3	
37	50460800	HEX. SCREW M6X55	1	
38	50144500	FLAT WASHER 6,4	8	
39	40028300	HEX. NUT M6	4	

HATZ 1B30 — STARTER/ALTERNATOR ASSY.

STARTER/ALTERNATOR ASSY.



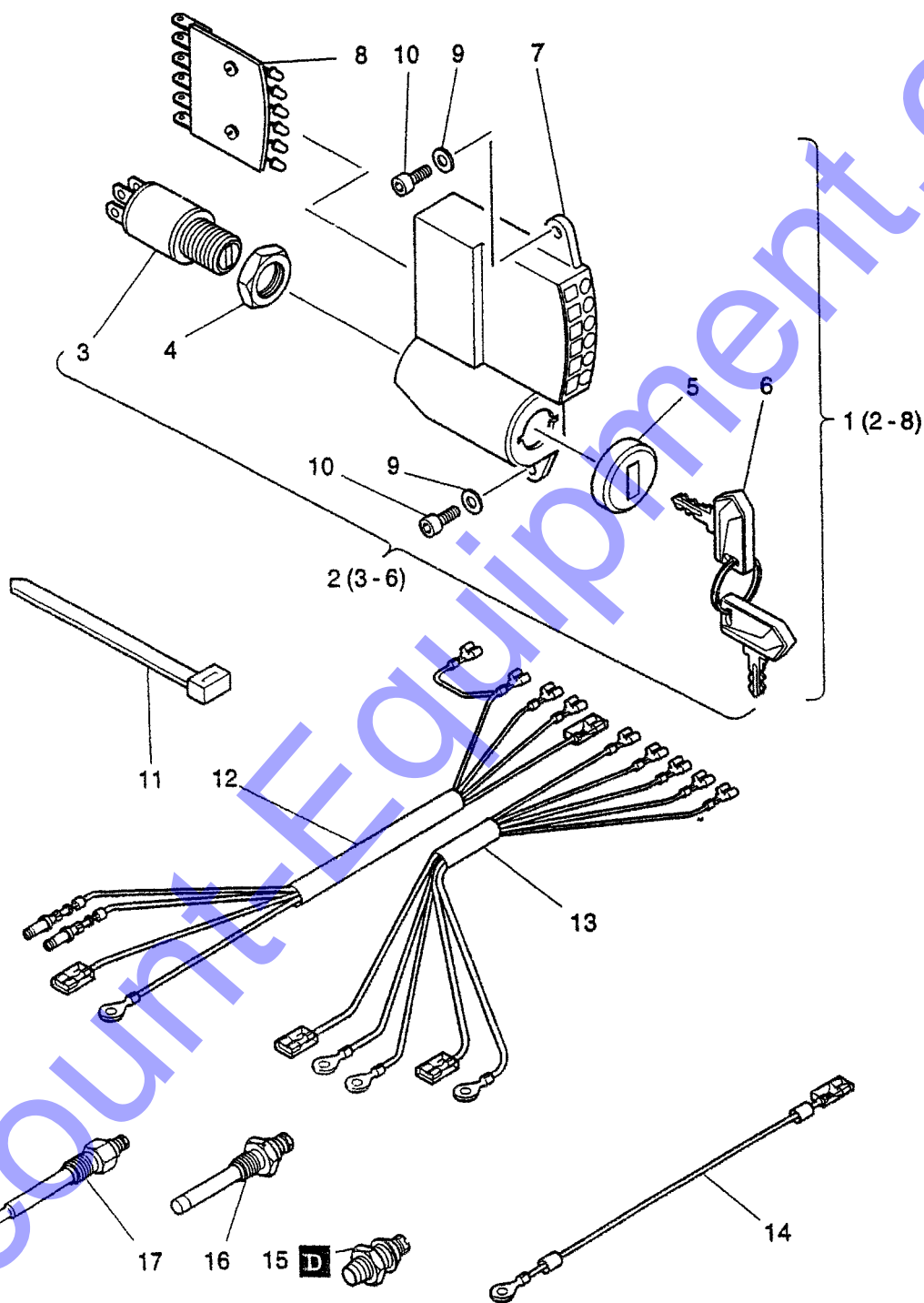
HATZ 1B30 — STARTER/ALTERNATOR ASSY.

STARTER/ALTERNATOR ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	50426201	STARTER 12V	1	
2	04138400	SUPPORT	2	
3	50148100	FLAT WASHER 8,4	2	
4	04115600	HOSE CLIP	1	
5	04099100	RETAINING BRACKET	1	
6	50170900	SPRING WASHER 6	2	
7	50444300	ALLEN SCREW M6X80	2	
8	50023200	HEX. NUT	1	
9	50144400	HEX. NUT M6	1	
10	50144500	FLAT WASHER 6,4	2	
11	50449600	STUD MFS 6X95	1	
12	03671400	SPACER BUSH	1	
13	01560900	SUPPORT BRACKET	1	
14	50096200	HEX. SCREW M8X12	1	
15	05100701	REGULATOR 12V	1	
16	50148100	FLAT WASHER 8,4	3	
17	50165400	ALLEN SCREW M8X16	2	
18\$	50327300	ALLEN SCREW M4X20	6	
19\$	01321310	BLOWER RING	1	
20\$	50416800	ALLEN SCREW M6X16	3	
21\$	50003400	SPRING WASHER A4	6	
22\$	04098720	FLANGE	1	
23\$	50035200	PIN 6X12	3	
24\$	04110101	ADD. FLYWHEEL	1	
25	04117400	"TDC" STICKER	1	
26	50435901	ALTERNATOR 12V 200W ASSY	1	INCLUDES ITEMS W/*
27*	???	1	NOT SOLD SEPERATELY
28		ALTERNATOR	1	NOT SOLD SEPERATELY
29	50081900	SPRING WASHER A5	4	
30	50427100	ALLEN SCREW M5X25	4	
31	50081200	SPRING WASHER A6	5	
32	50448700	ALLEN SCREW M6X30	5	
33	03565400	RUBBER SLEEVE	1	
34	50358400	STRAP	3	
35	04108000	RING GEAR	1	
36	TBD	ADD. FLYWHEEL ASSY	1	INCLUDES ITEMS W/\$
37	04138400	SUPPORT	1	

HATZ 1B30 — ELECTRONIC COMPONENTS ASSY.

ELECTRONIC COMPONENTS ASSY.



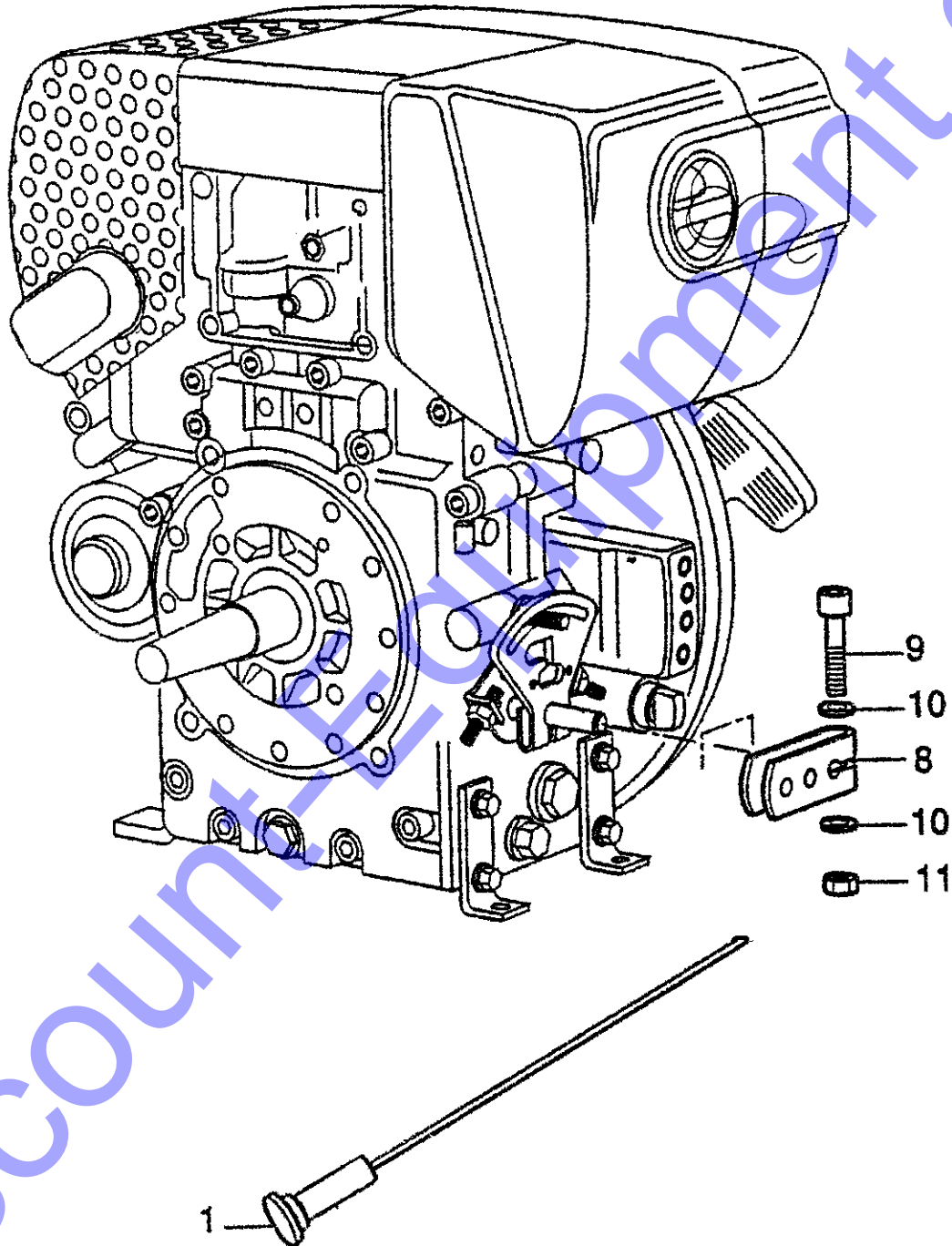
HATZ 1B30 — ELECTRONIC COMPONENTS ASSY.

ELECTRONIC COMPONENTS ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	01560800	INSTRUMENT BOX, W/O GLOW SYST.	1	INCLUDES ITEMS W/\$
1	01561701	INSTRUMENT BOX FOR GLOW SYST.	1	INCLUDES ITEMS W/#
2\$#	50384401	STARTING SWITCH ASSY.	1	INCLUDES ITEMS W/*
3*\$#		STARTING SWITCH BODY	1	NOT SOLD SEPERATELY
4*\$#		NUT, STARTING SWITCH	1	NOT SOLD SEPERATELY
5*\$#		FACE PLATE, STARTING SWITCH.....	1	NOT SOLD SEPERATELY
6*\$#	50404900	KEY	1	
7\$#	05101000	HOUSING, INSTRUMENT BOX	1	
8\$#	05092100	LED DISPLAY	1	
9	50144500	FLAT WASHER 6,4	2	
10	50149100	ALLEN SCREW M6X12	2	
11	50358400	STRAP	2	
12	01542100	WIRING HARNESS	1	
14	01546800	WIRE	1	
15	50469100	OIL PRESSURE SWITCH	1	
16	50268600	TEMP. SWITCH	1	
17	50449200	GLOW PLUG 12V	1	USE LOCTITE 221

HATZ 1B30 — SPEED CONTROL ASSY.

SPEED CONTROL ASSY.



HATZ 1B30 — SPEED CONTROL ASSY.

SPEED CONTROL ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	510229	THROTTLE CABLE	1	
8	05117700	LEVER	1	
9	50427100	ALLEN SCREW M5X25	1	
10	50216300	WASHER 5,3	2	
11	50094300	HEX. NUT M5	1	
12	05129900	STICKER	1	

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