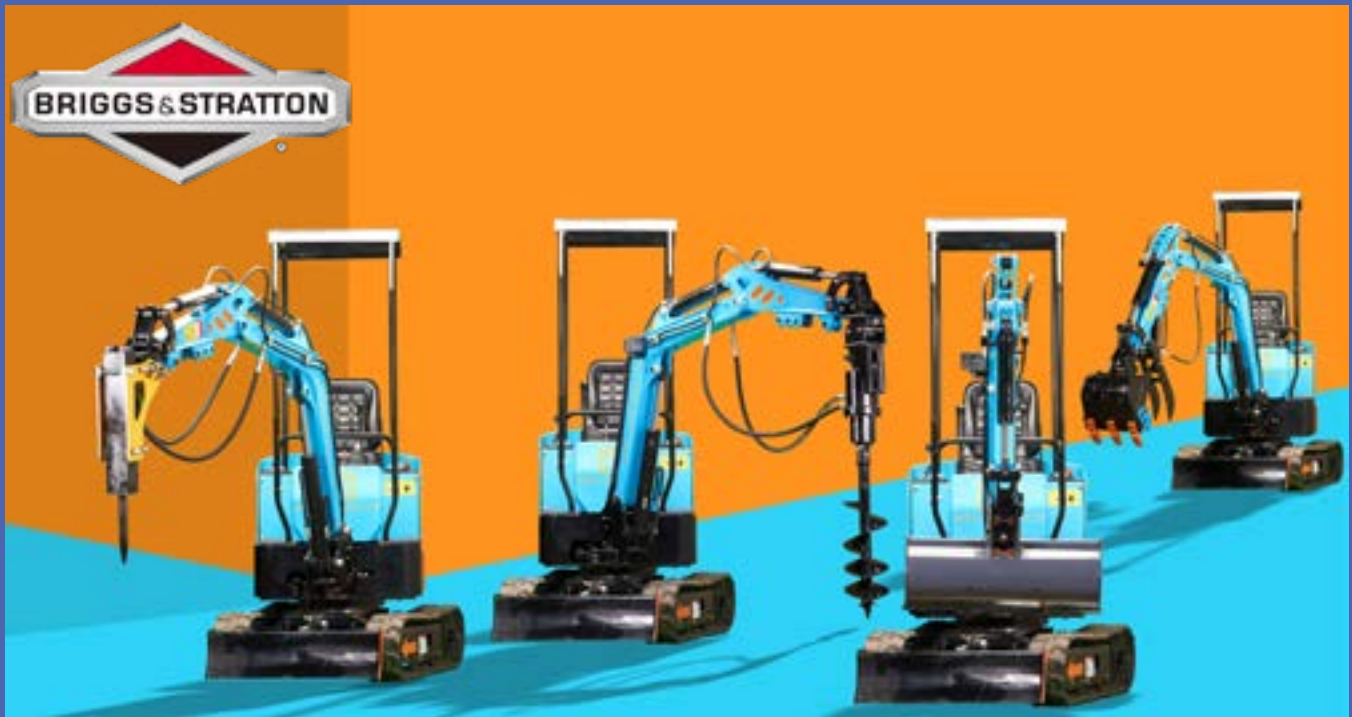




MOLIOR MULTO  
moliormulto.com

# The MIT

Gasoline Powered Crawler Excavator



MAINTENANCE & OPERATION

# MANUAL

O W N Y O U R W O R K

# INDEX



## 1. Overview

- i. Usage
- ii. Attachments
- iii. Dimensions & Stats

## 2. The Machine

- i. Basics
- ii. Power Transfer
- iii. Mechanical System
- iv. Hydraulic System
- v. Electrical System

## 3. Getting Started

- i. Basic Knowledge
- ii. Preparing to Work
- iii. Operating Essentials
- iv. Precautions

## 4. Maintenance

- i. Daily Inspection
- ii. Routine Maintenance & Service
- iii. Storage

## 5. Troubleshooting.

- i. Mechanical
- ii. Hydraulics
- iii. Electrical
- iv. Engine
- v. Other

## 6. Parts List

# Safe Operation

READ AND UNDERSTAND THIS MANUAL CAREFULLY BEFORE OPERATING THE MIT EXCAVATOR!!! KEEP THIS MANUAL WITH THE MIT AT ALL TIMES.

## BEFORE STARTING

- Know your equipment and its limitations. Read and understand the manual before starting and operating the MIT.
- Always use the seat belt.
- Do not modify the ROPS (roof structure). Before starting the MIT ensure the ROPS bolts are tight.
- Always sit in the seat when starting/operating the MIT
- Do not operate the MIT while under the influence of medication, alcohol, controlled substances or while tired.
- Check surroundings before starting/using the MIT and attachments.
- Do not permit anyone to use the MIT before they have read and understand the manual and work requirements.
- Never wear baggy, torn or loose clothing when working with the MIT. Clothing could become snagged in equipment leading to injury and death.
- Wear all required safety equipment while using the MIT including but not limited to: safety helmet, eye protection, safety shoes, ear protection, working gloves etc.
- Do not permit passengers to ride in or on the excavator.
- Before starting the MIT check levers, pedals and all mechanical parts for correct adjustment and wear. Replace/repair as needed. Ensure all nuts/bolts are properly adjusted.
- Keep MIT clean, Heavy soil, grease, dust, debris etc. can cause injuries, fire and/or accidents.
- Always ensure MIT has been filled with fuel, lubricated, greased and all necessary maintenance performed before starting.
- DO NOT MODIFY THE MIT
- Never operate the hydraulic hammer above the seat level. This could cause objects to fall on the operator.
- Ensure all attachments are properly affixed.

## OPERATING

- Understand equipment and environment to minimize overturning risk. Some prohibited uses which can lead to overturning including traveling and turning with implements and loads carried too high etc. Some of these obvious hazard lists are outlined in the manual but the list is not and cannot be exhaustive. It is the owner's responsibility to be alert for any equipment or environmental conditions that could compromise safe operation.
- Start and control the MIT only from the operator's seat. Never lean out of the seat while the engine is running. Keep arms and legs inside the ROPS structure.
- Before starting the MIT make sure all levers, pedals and control elements are not stuck and move freely. Correct before starting. Make sure the dozer blade is in front of you before starting. If the dozer blade is behind you when starting you will move in the opposite direction to the drive levers.

## OPERATING

- Do not operate or idle the engine in a non-ventilated area. This could lead to carbon monoxide poisoning and death. Carbon monoxide is a colorless, odorless, deadly gas. Symptoms can include headache, fatigue, shortness of breath, nausea and/or dizziness. SEEK IMMEDIATE FRESH AIR AND MEDICAL ATTENTION.
- Take all precautions against tipping. Stay away from steep slopes and embankments. Do not swing bucket downhill. Lower dozer blade when digging. Keep the bucket as low as possible when driving uphill. Turn slowly at reduced speed on slopes. Do not place the MIT at the edge or near trenches, banks etc that MIT weight can cause the ground to give way.
- Never cross an incline horizontally or at an angle. This can cause MIT rollover. Approach inclines vertically to avoid a loss of control. Avoid performing work when the MIT is on an incline which could lead to the MIT being unbalanced and tipover.
- Watch where you are going at all times. Avoid trees, wires and other obstacles.
- Do not change direction on steep slopes. Before a direction change ensure the area is free of people and/or obstacles.
- Ensure there is enough working light for clear visibility.
- When towing the MIT or using the MIT to tow ensure the load is less than the strength of the towing line.
- When the MIT is parked or left unattended on a slope ensure the bucket is on the ground and all control levers are set to neutral. Brace the tracks with chocks.
- NEVER OPERATE THE MIT WITH OR AROUND CHILDREN!!!!

## AFTER OPERATION - Before leaving the machine

- Park MIT on a firm, flat and level surface. If this is not possible park across the slope.
- Lower attachments and dozer blade to the ground.
- Stop the engine.
- Release all pressure from the hydraulic system.
- Remove the key.

## MAINTENANCE

- Before doing maintenance on the MIT, ensure it is parked on a firm, flat level surface. Lower all attachments to the ground, stop the engine, release pressure trapped in the hydraulic system and remove the key. When working on the hydraulic system ensure the hydraulic oil is cooled sufficiently to avoid burns. Start maintenance work CAREFULLY i.e. loosen plug slowly so oil does not squirt out.
- Before work on the engine make sure the exhaust system, radiator and hydraulics are cooled.
- Turn engine off when filling the fuel tank.
- Smoking is prohibited while refueling or handling the battery.
- Keep a first-aid box and fire extinguisher at hand at all times.
- Do not open the radiator cap before radiator has cooled. Loosen cap slowly to allow release of pressure.

# Safe Operation Continued

## Maintenance - continued

- Oil under high pressure can penetrate the skin and may be harmful to your health if not treated immediately.
- Leaking hydraulic fluid has enough pressure to penetrate the skin and cause serious injuries. Leakages from pin holes can be invisible. Do not use hands when checking for leaks. Always use a piece of wood or cardboard. It is **STRONGLY** recommended you use a face mask or eye protection. Should injuries occur with leaking hydraulic fluid contact a doctor immediately. The fluid can cause gangrene or serious allergic reaction.
- Observe all laws and regulations re. disposal of used oil, coolants, solvents, hydraulic fluids, battery acids and batteries.
- Securely support the MIT with stands or suitable blocking before working underneath. For your safety do not work under any hydraulically supported device. The can settle, suddenly leak down or be accidentally lowered.
- When lifting the MIT with an attachment place a safety block or safety post to prevent MIT rollover.

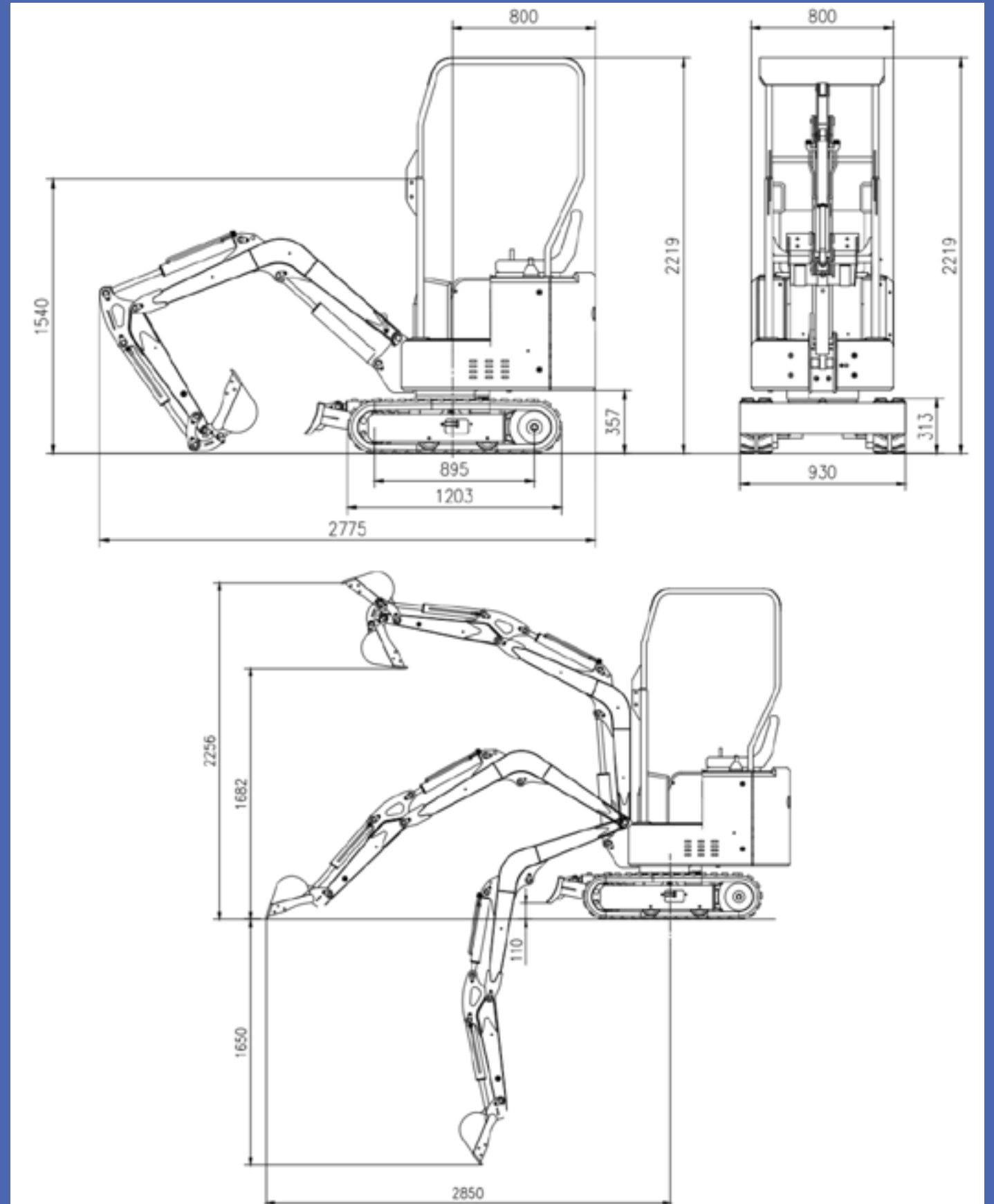
## CHAPTER 1 OVERVIEW

**The Mini 1 Ton is the perfect machine for excavating, crushing, ditch cleaning, drilling, bulldozing & more. With a range of quick hitch attachments it is a versatile tool on any job site. Small in size but powerful enough to get the job done. It is easy to transport and narrow enough to get into those hard to reach areas.**

**The MIT is well suited to a variety of different tasks including farming, landscaping, ditching, agriculture, demolition, small earthwork, civil engineering, road recovery, concrete breaking, burying of cable, laying of water supply line, garden cultivation and more.**

# ATTACHMENTS

# DIMENSIONS



# CHAPTER 2

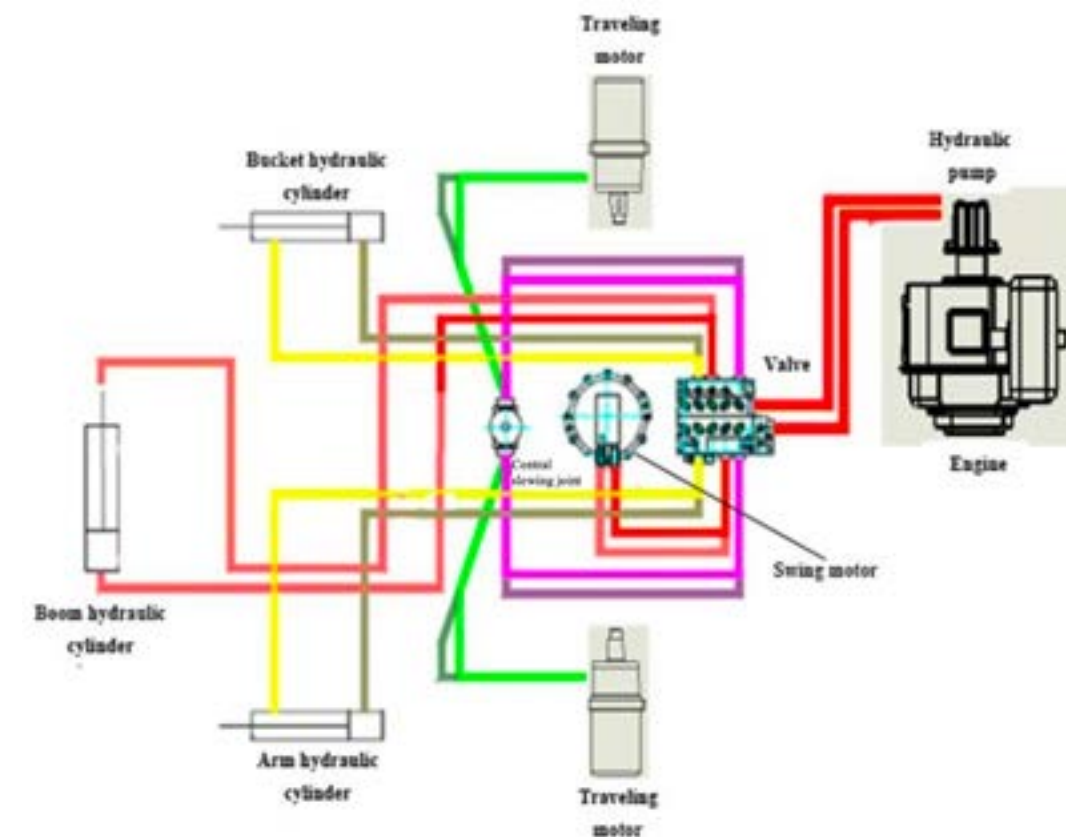
# THE MACHINE

Wheel track **895**  
Overall track length **1203**  
Ground clearance **357**  
Ground clearance of tail **800**  
Chassis width **930**  
Track width **180**  
Track height **313**  
Transportation length **2775**  
Overall height **2219**

Max digging radius on ground **2850**  
Max digging depth **1650**  
Max digging height **2600**  
Max unloading height **1800**  
Max vertical digging depth **1380**  
Min swing radius **1300**  
Max dozer height **110**  
Max dozer depth **110**

Weight of machine **950kg**  
Standard bucket capacity **0.025**  
Rated power **10Kw**

The Mini IT is composed of the power train, work equipment, swing mechanism, control mechanism, drive system, traveling mechanism and auxiliary equipment as shown.



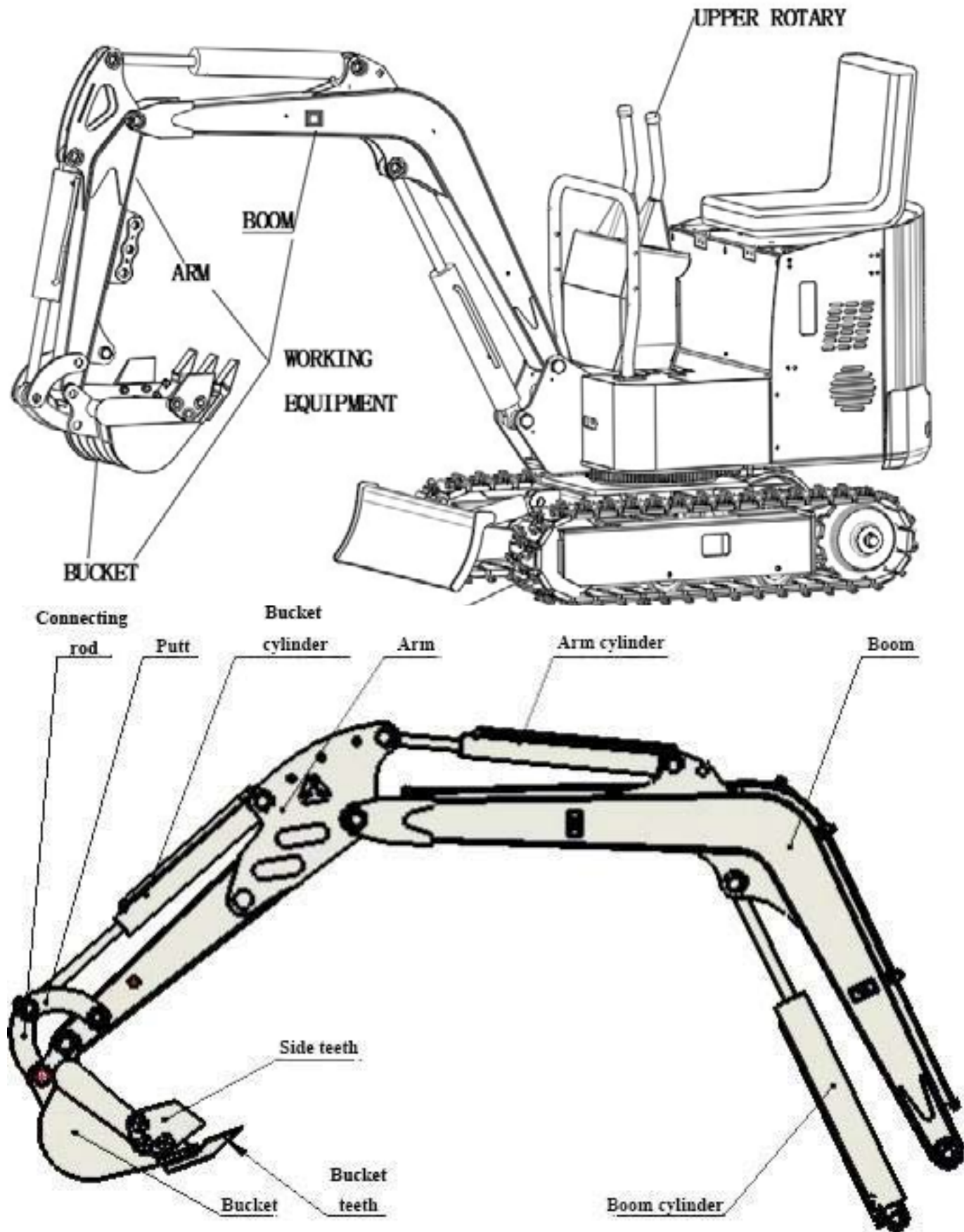
The Briggs & Stratton gasoline engine produces mechanical energy that is then altered by the hydraulic gear pump into hydraulic energy. This energy is distributed to each actuating element (hydraulic cylinder, swing motor, traveling motor) transforming the hydraulic energy back to mechanical energy, driving the work equipment and running the machine.

# MECHANICAL

**POWER** Briggs & Stratton

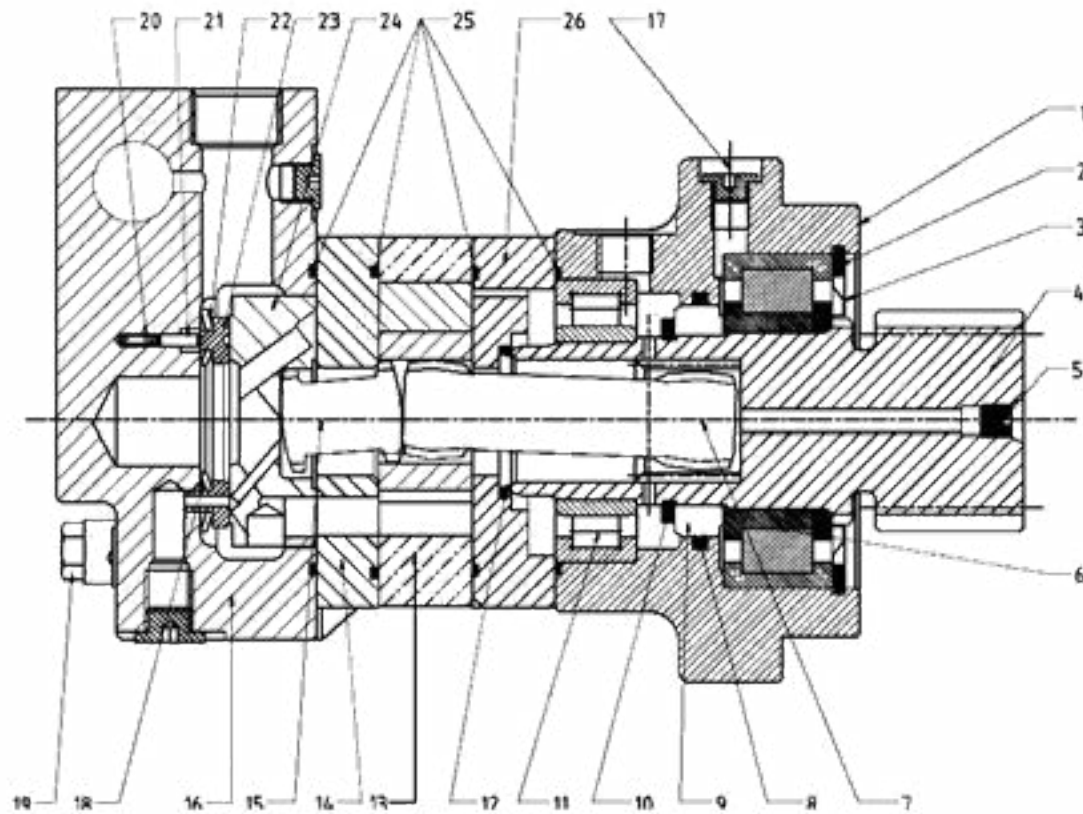
**DRIVE** Shizmadzu

**SWING** Rotary Drive,  
Slewing Support  
Dual independent motors

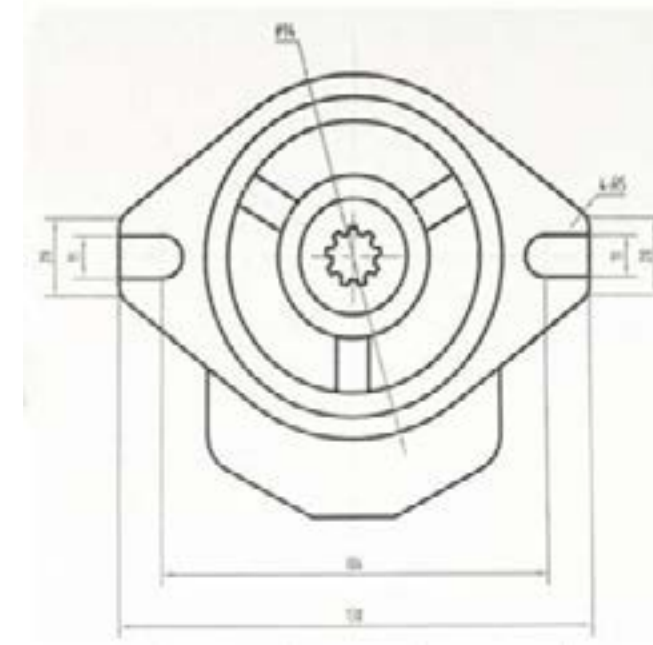
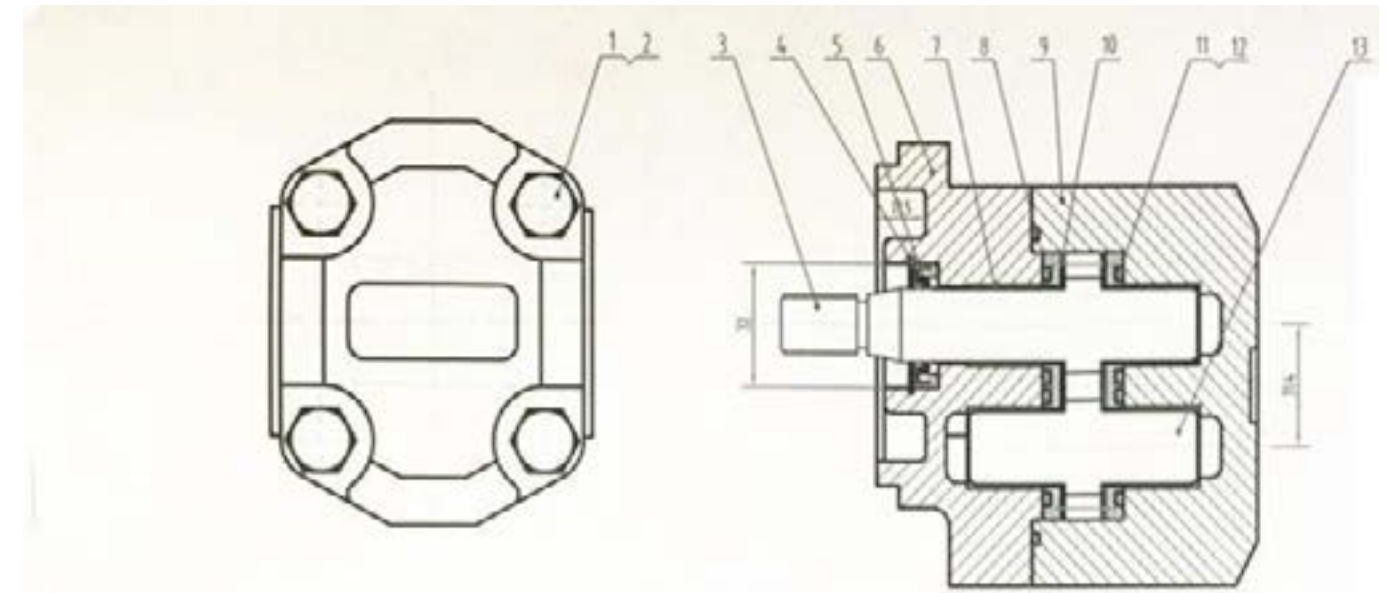


# HYDRAULIC

## ROTARY MOTOR



## MAIN PUMP

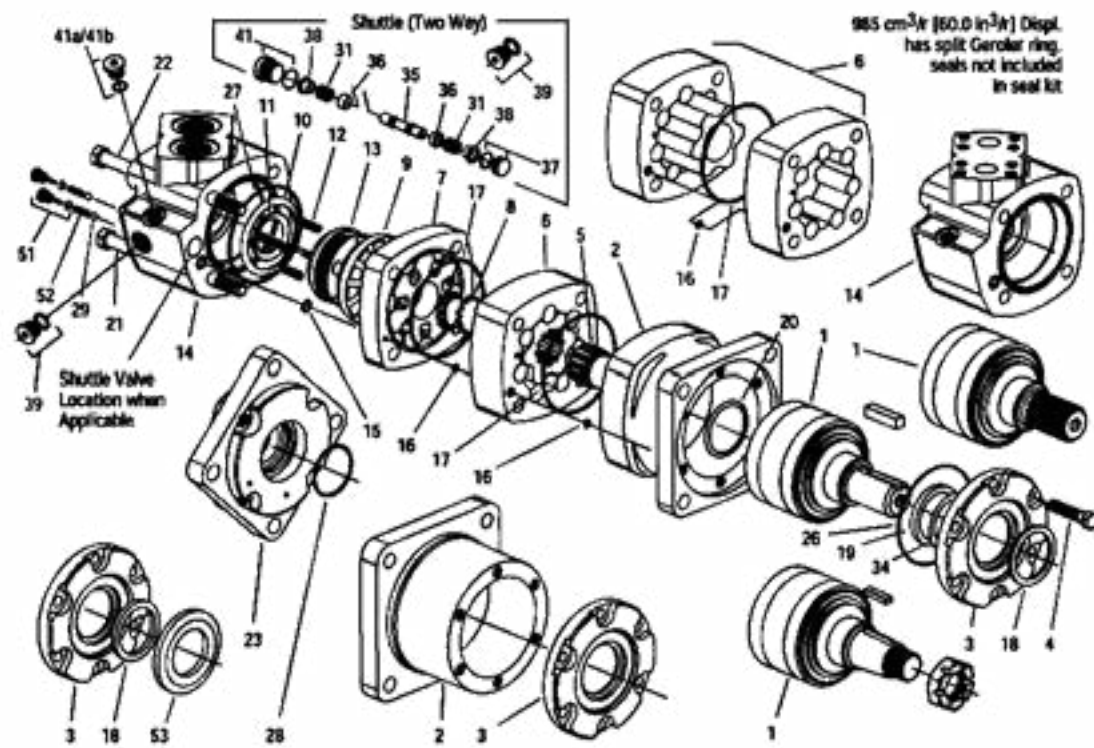


1	GB75-85	bolt M10x65-10.9	4	40Cr
2	GB93-87	gasket 10	4	65Mn
3	DHP006-01	driving gear shaft	1	20CrMnTi
4	GB893.1-86	ring 32	1	65Mn
5	oil seal	NY19c32x7	1	Combine parts
6	DHP006-02	front cover	1	QT450-10
7	DU bearing	∅21x∅19x20	4	Combine parts
8	DHP006-03	RECTANGULAR RING	1	Rubber L-4
9	DHP006-04	pump casing	1	QT450-10
10	DHP006-05	lateral plate	1	25Copper base powder metallurgy material
11	DHP006-06	Ear gasket	2	Rubber L-4
12	DHP006-07	Ear shape block slice	2	nylon
13	DHP006-08	driven gear	1	20CrMnTi

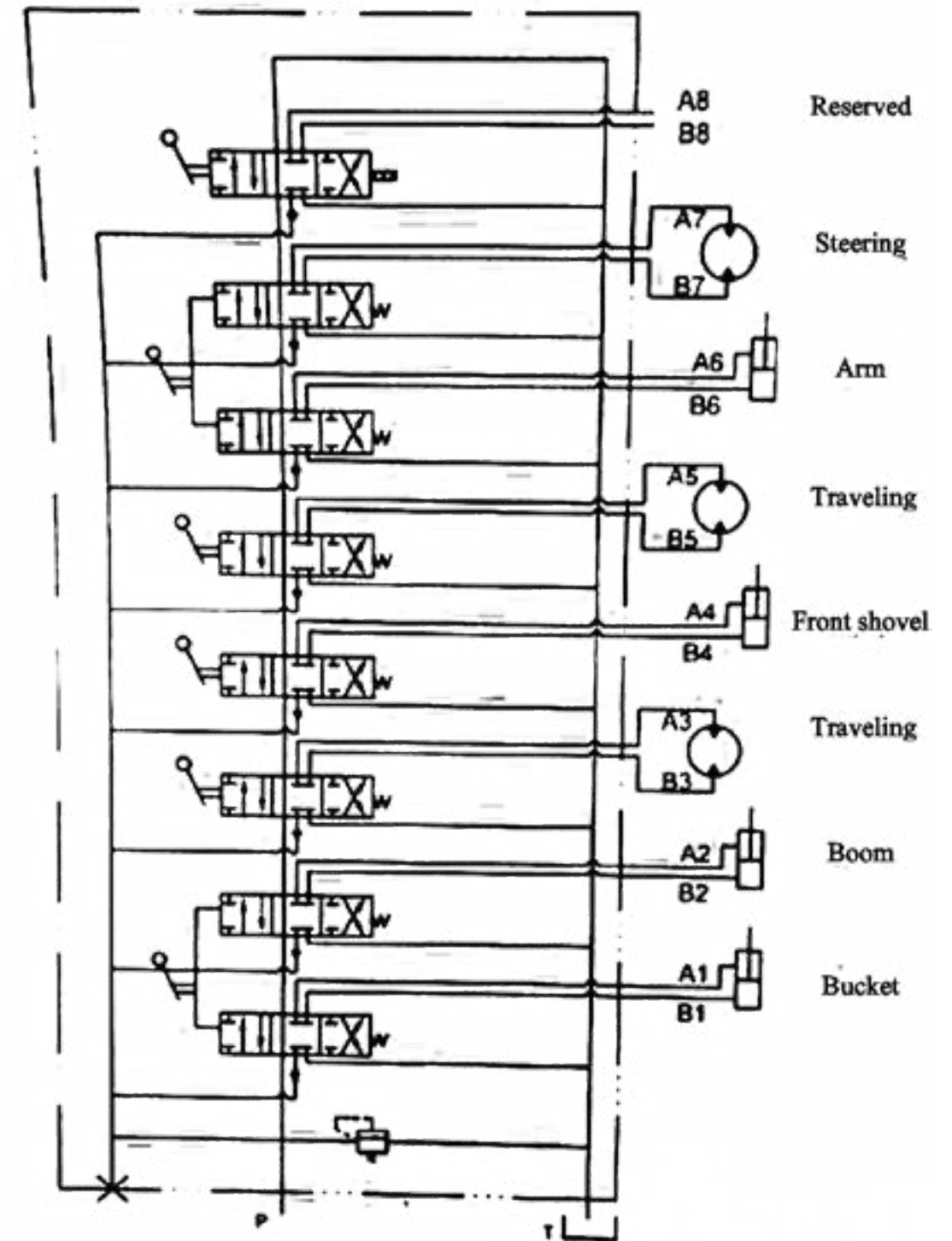


# TRAVELING MOTOR

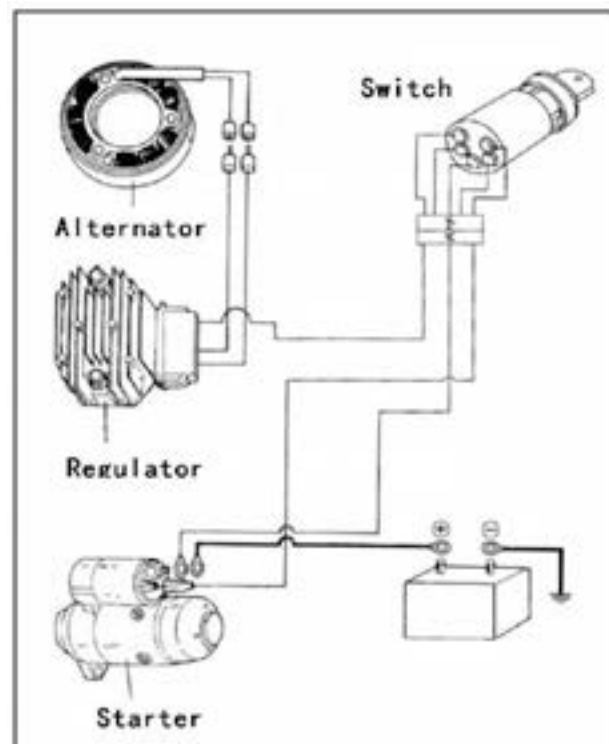
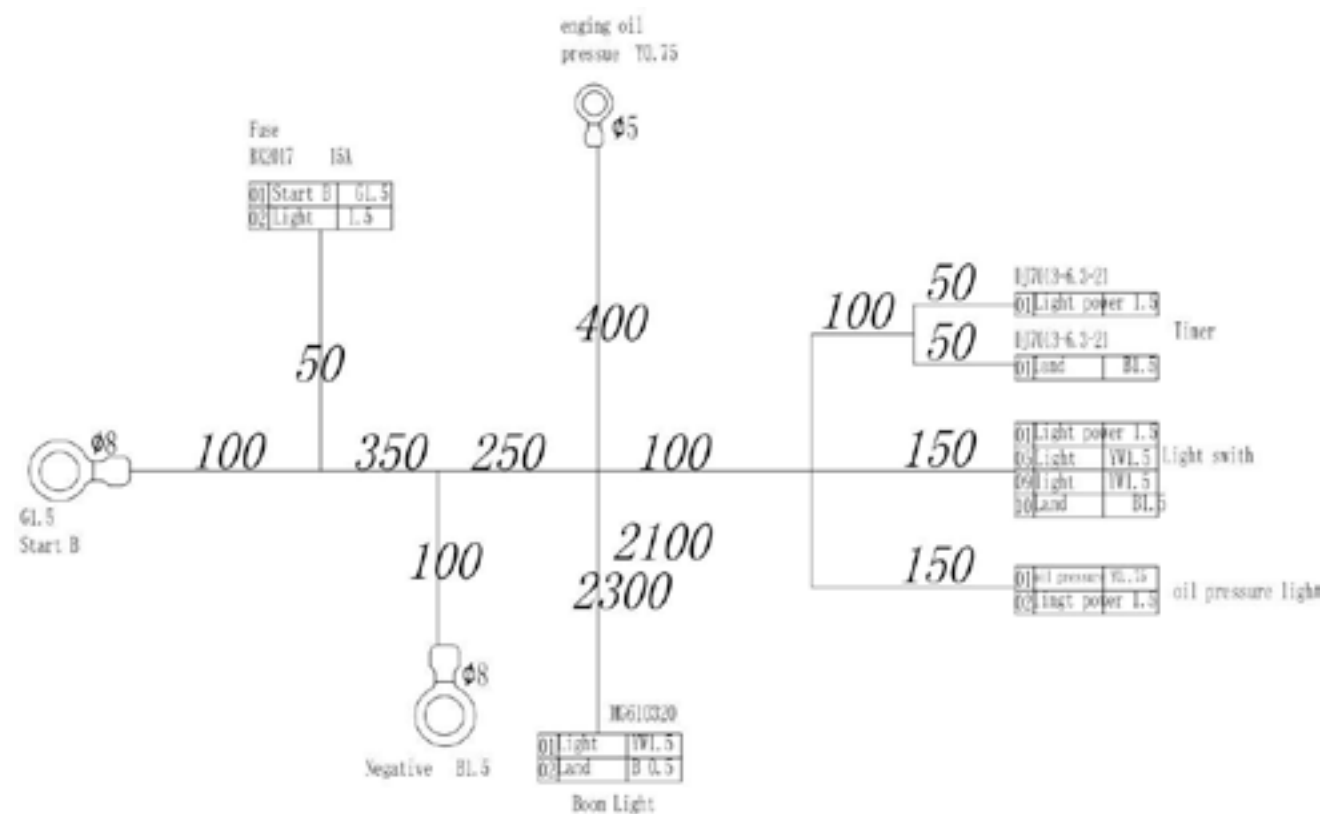
Disc Valve Motors—6000 series -005 and -006



# MAIN VALVE



# ELECTRICAL



# CHAPTER 3 GETTING STARTED

Normal operating range for the MINI IT excavator is hydraulic oil temperature as high as 85°C, exhaust temperature as high as 700°C and pressure as high as 16-18MPa. TAKE ALL NECESSARY PRECAUTIONS TO PROTECT FROM SEVERE BURNS AND DEATH.

Operators should be specially trained and obtain all certifications. All operators must familiarize themselves with the contents of this manual before operating the MIT.

In addition, maintenance and repair of the MIT should be strictly in line with the manual to avoid any accident.

## BASIC KNOWLEDGE

There are four basic movements:

1. Bucket rotation
2. Arm stretching / shortening
3. Boom lifting / lowering
4. Turntable swinging

In general, pulling/pushing of the hydraulic cylinder and rotation of the hydraulic motor is controlled with a three-way axial slide valve through the oil-flow direction. Work speed is controlled by the operator or auxiliary devices.

# CONTROL SYSTEM

- 1) The control system should be centered in the cabin when starting.
- 2) Starting and stopping should be steady and in control. Manoeuvring and working with the MIT should always be smooth and in control.
- 3) The operational force on the controls should not exceed 40~60 N. Handle travel should not exceed 17cm.
- 4) Do not operate in air temperature exceeding 40°C or below -20°C.

# PREPARATION

## Pre Startup Inspection

In order to prolong time between service check the following before startup:

1. Look for dirt around or below the machine, loose bolts, oil leaks and damaged or worn parts. Repair/replace as needed.
2. Check all switches, lamps and fuse box work normally.
3. Check work equipment and hydraulic parts work normally.
4. Check engine oil levels and gasoline level. Replenish as needed.

# OPERATION ESSENTIALS

## TRAVELING

### Straight

*Move both handles forwards or backwards and the machine will move in that direction.*

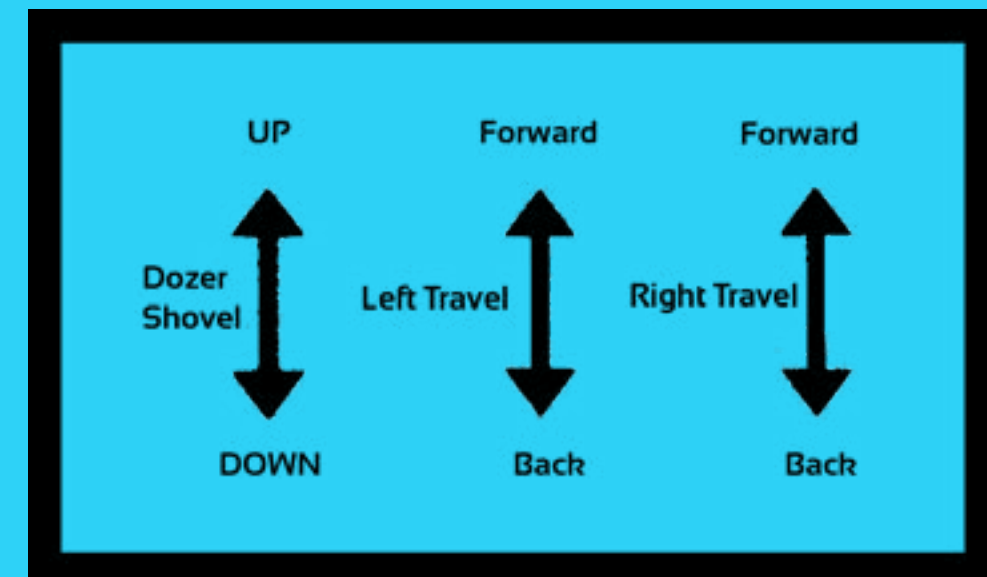
### Steering

*Left turn in situ: backward shift the left handle while forward pushing the right handle.*

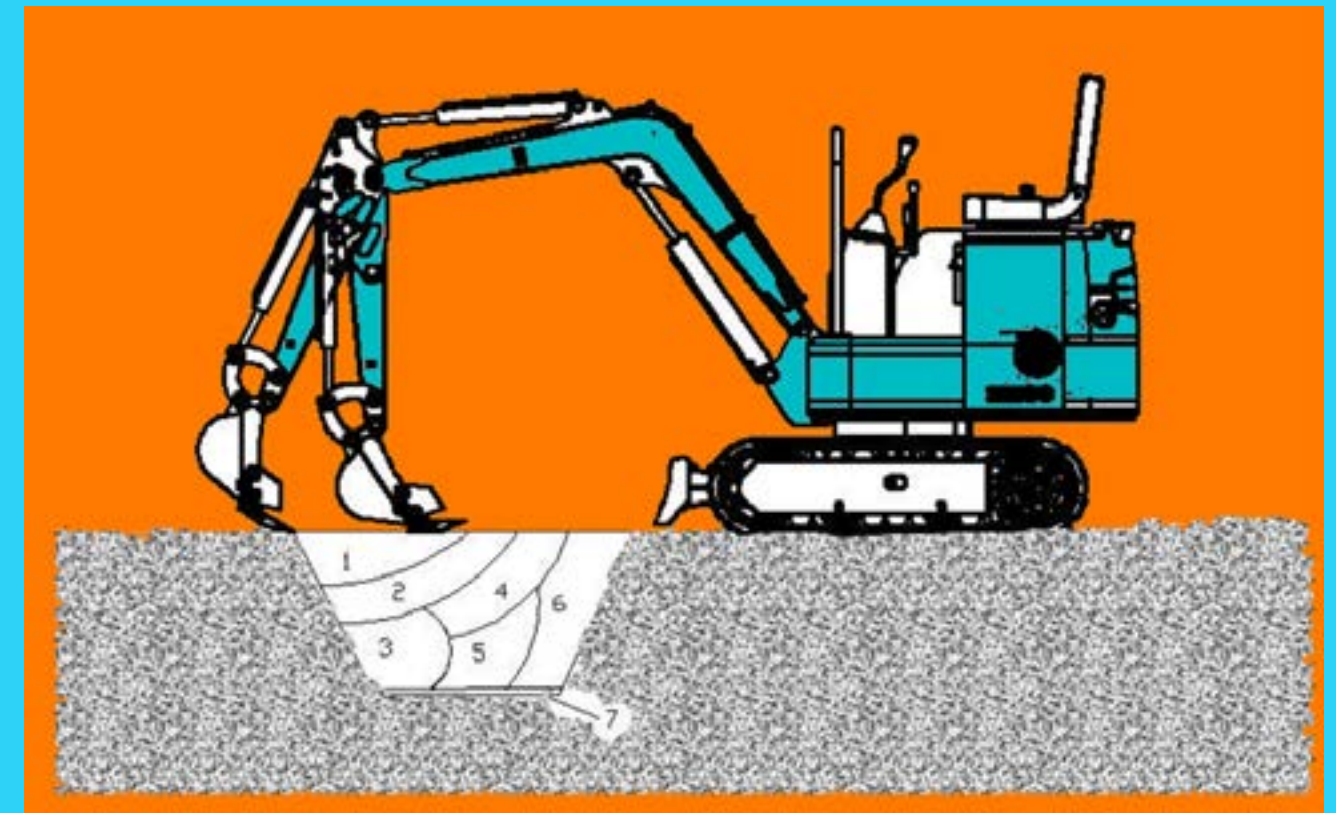
*Right turn in situ: backward shift the right handle while forward pushing the left handle.*

*Gradual left turn: gradually push the right handle further than the left handle*

*Gradual right turn: gradually push the left handle further than the right handle*



# Basic Ditching



# PRECAUTIONS

1. Avoid sliding land and falling stone.
2. Do not bump other work equipment.
3. Maintain bucket control. Do not collide the bucket with other equipment, people or structures. Do not cross a loaded bucket over other vehicle cabs or people.
4. Proceed with extreme caution on soft ground or wetlands to avoid sinking the MIT
5. When traveling avoid any large obstacles, boulders, stumps, equipment, power lines etc.
6. It is prohibited to work with water depth exceeding the allowable limit.
7. When loading/unloading large stones handle carefully to avoid dropping.
8. On cold days, park the machine on solid ground to avoid the track being frozen. Move any loose material away from track and its' frame. If track is iced on to the ground, use the boom to lift the track and carefully move the machine, so as not to damage the sprocket and the track.
9. Before movement of the machine, make sure the traveling direction is consistent with its' handle. When the traveling motor is at the rear part, push forward the traveling handle to drive the machine forwards.
10. For long - distance traveling, please rest the MIT for 5min after every 20 min of time to avoid travel motor damage.
11. Never try to cross over a slope of more than 15 degrees. The MIT could overturn.
12. Take care during machine reversing and/or slewing to avoid collisions.
13. Do not excavate under the MIT. It will overturn.
14. Do not drive on high dams or slopes. This could lead to the machine tipping or sliding resulting in severe accidents or death.
15. Do not use the MIT on unmarked ground. Cable severing or pipe damage could lead to explosion, electrocution and/or fire resulting in accidents, severer injury or death.
16. Be careful of overhead obstructions including but not limited bridges, overhead wires, trees, etc. This could result in personal injury; care must be taken to prevent the boom or the arm from colliding with any elevated item. Keep a safe distance from overhead power lines. Verify and abide by all local laws and rules. Exercise extreme caution when working on wet land. Electrocution risk will be magnified.
17. Keep all non essential workers out of the work area at all times.

# CHAPTER 4 MAINTENANCE

## DAILY

Item	Quantity	Before Every Operation	Interval hours 10	Interval hours 50
Check the engine oil level in sump	1	*	*	
Check the hydraulic oil level in hydraulic oil tank	1	*	*	
Check the fuel level in tank	1	*	*	*
Check the oil-water separator to completely drain any water or sediment out	1	*	*	*
Check if the fuel pipe is leaking, cracked or bent		*	*	
Check work equipment pivots		*	*	
Check for any fluid leaking from hydraulic hose and pipe		*	*	
Check for worn or loose bucket teeth	4	*	*	
Check the seat belt for wear	1	*	*	
Check nuts and bolts for tightening torque		*	*	

Note: \* Maintenance interval under normal conditions

# PERIODICALLY

# GREASING

S/N	Item	100 H	250 H	500 H	1000 H	1500 H	2000 H	2500 H	4000 H
1	Greasing of slewing bearing		*						
2	Greasing of slewing bearing gears	*							
3	Change engine oil	●	▲	*					
4	Change hydraulic oil					△	*	△	
5	Change hydraulic oil suction filter elements				*				
6	Check if fuel pipe cracked/bent		*						
7	Check fuel hose for leakage/cracks		*						
8	Change bucket		*						
9	Bucket connection								
10	Remove traveling handle								
11	Replace seat belt								
12	Check track for wear/replace as needed			*					
13	Tensioner maintenance			*	*				

NOTE: \* Maintenance interval under normal conditions  
 ▲ Maintenance interval of engine oil  
 △ Change interval for hydraulic oil is dependent on the type of oil used  
 DUSTY WORK ENVIRONMENTS REQUIRE SHORTENED MAINTENANCE INTERVALS

Parts		Quantity	10 H	50 H	100 H	250 H	500 H	1000 H	2000 H
1. Lubrication of work equipment pins	Pivot at base of boom	10	*						
	Pivot at base of boom cylinder								
	Pivots of bucket and connecting rod								
	Others		6	*					
2. Lubrication of slewing bearing		2				*			
3. Lubrication of external meshing gear of slewing bearing		1					*		

NOTE: it is recommended to use lithium grease  
 \* Maintenance interval under normal conditions

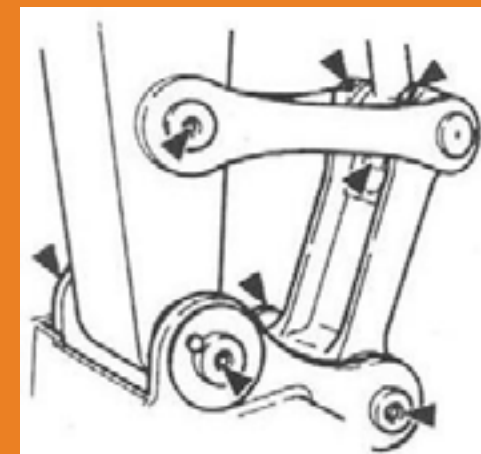
Pivot at base of boom



Pivot at base of boom cylinder

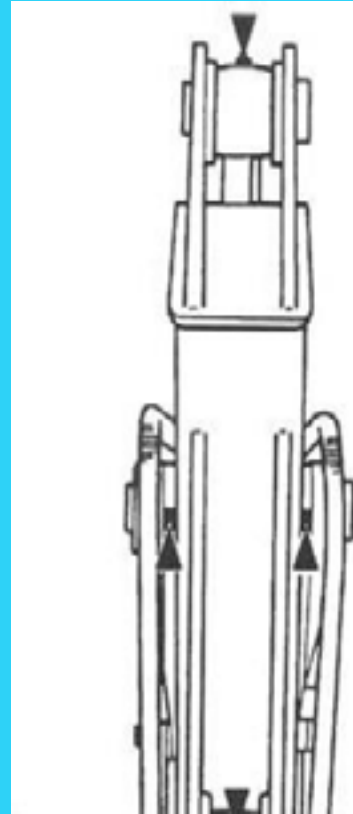


Pivot between bucket and connecting rod



# ENGINE

- Others - Pivot between boom and arm; pivot of arm cylinder plunger; pivot at base of bucket cylinder



- Slewing Bearing - every 250 H

- Park machine on flat ground.
- Lower bucket on to ground.
- Idle engine at low speed for 5 min.
- Turn ignition switch to OFF and remove key.
- With upper structure standing still, add grease in to the two grease nipples.
- Start engine. Lift bucket off the ground. Swing upper structure by 45 degrees (1/8 cycle).
- Lower bucket back on to ground.

- External Meshing Gear 45 of Slewing bearing - every 500 H

- Park machine on flat ground.
- Lower bucket on to ground.
- Idle engine at low speed for 5 min.
- Turn ignition switch to OFF and remove key.
- Grease needs to be applied to the top of the external meshing gear of the slewing bearing, free from any contaminants. Add approximately 0.5 kg of grease as needed. All contaminated grease must be replaced with new grease.



## Engine oil

Parts	Quantity	10 H	50 H	100 H	250 H	500 H	1000 H	2000 H
Engine Oil	1			●	▲	*		
Engine Oil Filter	1			●	▲	*		

Select oil viscosity for appropriate temperature conditions. For general use/average temperature we recommend **15W 40**



**INSPECT ENGINE OIL LEVEL DAILY**  
Change Engine oil at minimum every 500 H  
Change Engine oil filter at minimum every 500 H

- Start engine to preheat oil.
- Park M1T on flat ground.
- Lower bucket on to ground.
- Idle engine at low speed for 5 min.
- Turn ignition switch to OFF and remove key.
- Remove drain plug. Using a clean cloth as a screen drain oil into a 2L container.
- Check for metal scraps and/or debris on the cloth.
- Replace and tighten drain plug.
- Loosen the drain plug to have oil flow through the filter cylinder in to a container.
- Using a screwdriver remove the screws holding the engine oil filter elements. Remove the filter.
- Install the new filter and tighten screws with a screwdriver.
- Remove oil filter cap and add recommended amount of oil. Check AFTER 15 mins to ensure the oil level is between circle markers.
- Replace oil filter cap.
- Check if drain plug is leaking.
- Check oil level on dipstick.



# HYDRAULICS



CAUTION: Keep body and face away from the exhaust valve (breathing valve/breathing cap).  
When the excavator has been running gear oil is EXTREMELY HOT. Turn machine off and wait for gear oil to cool down BEFORE slowly releasing the breather pressure!

Parts	Quantity	10 H	50 H	100 H	250 H	500 H	1000 H	1500 H	2500 H	4000 H
Check hydraulic oil level	1	*								
Clean hydraulic oil reservoir drain pipe	1				*					
Change hydraulic oil	16.5L								*	
Change hydraulic oil suction filter elements	1						*			
Check hose and pipeline		*								
				*						
Change the hose	39									*
NOTE: * normal maintenance interval										

## Inspection and maintenance of hydraulic system



CAUTION: The hydraulic system gets VERY hot when in use. Cool the machine fully before performing any maintenance or inspection!

1. Machine must be on flat and solid ground before performing any maintenance.
2. Lower bucket on to ground and shut down engine.
3. Remove key from ignition.
4. DO NOT start any maintenance until the hydraulic oil and lubricant has cooled fully. The hydraulic system will be hot and pressurized following use.
  - a. Drain all air from hydraulic oil reservoir to release inside pressure.
  - b. Let machine sit to fully cool down



CAUTION: Inspection and maintenance of hot and pressure parts may cause them or hydraulic oil to spray out, leading to severe personal injury!

- c. Do not face your body towards the nuts and/or bolts while removing them. They are hydraulic parts and may still have pressure.
    - d. Never check traveling or slewing motor circuits while on a slope. They may have pressure due the dead weight.
  4. Keep seal surface free of dirt and damage while connecting the hydraulic hoses and pipe. Additionally see below for further details:
    - a. Clean hose, pipe and inside of hydraulic oil tank with detergent. Thoroughly dry.
    - b. Ensure o-ring is free from damage and/or defects.
    - c. Do not twist the pressure hose during connection. This will reduce its lifespan.
    - d. Carefully tighten the low-pressure hose clamp.
  5. Add the same grade of hydraulic oil. Never mix different grades. Change ALL system oil at the same time.
  6. NEVER START THE ENGINE IF THERE IS NO HYDRAULIC OIL IN THE SYSTEM.

## Inspection of Hydraulic oil level - each day



IMPORTANT: Never start engine without hydraulic oil in the system!

1. Machine must be parked on flat and solid ground
2. Completely retract the arm cylinder and extend out the bucket cylinder.
3. Lower bucket on to ground.
4. Idle engine at low speed for 5 minutes.
5. Shut down engine and remove key from ignition.
6. Check the oil level in the hydraulic oil tank is between the markers on the dipstick. Add as needed



CAUTION: The hydraulic oil tank is pressurized. Slowly open the cap to release pressure before adding oil.

7. Open the hydraulic tank to add oil then recheck the oil level.
8. Put the cap back on the hydraulic oil tank.



Change the hydraulic oil - 2000 H

Replace the hydraulic oil suction filter element - every 1000H



CAUTION: Allow the excavator to fully cool. The hydraulic oil MUST be cool before performing any maintenance.

1. Machine must be parked on flat and solid ground
2. Completely retract the arm cylinder and extend out the bucket cylinder.
3. Lower bucket on to ground.
4. Idle engine at low speed for 5 minutes.
5. Shut down engine and remove key from ignition.
6. Dismantle the covers
7. Clean the top of the hydraulic oil reservoir to prevent dirt from entering the system.
8. Slowly open the hydraulic oil cap to release the pressure.
9. Loosen and remove the oil pickup filter element cap.
10. Loosen and remove the drain plug at the bottom of the hydraulic oil tank. Drain oil from tank.
11. Remove oil pickup filter and levers.



CAUTION: The hydraulic oil tank is pressurized. Slowly open the hydraulic oil cap to release the pressure before removing the cap!

12. Clean the filter and inside of the tank.
13. Use oil pick up pump to suck the oil residue out of the bottom of the hydraulic oil tank.
14. Install filter and levers. Ensure the filter is correctly affixed on to the outlet.
15. Clean and re-install the drain plug on to the bottom of the tank.
16. Add oil until between the markers on the oil dipstick.
17. Replace the oil pickup filter element cap. Ensure the filter and levers are correctly positioned then tighten the bolts to 49 N.m.

IMPORTANT: Starting the engine without hydraulic oil will damage the hydraulic pump!

18. Tighten the oil tank cap.
19. While the engine is idling at low speed slowly and steadily control the lever for 15 min to drain the air from the hydraulic system.
20. Completely retract the arm cylinder and extend out the bucket cylinder.
21. Lower the bucket on to the ground.
22. Turn off the engine. Remove the ignition key.
23. Check the hydraulic oil level in the hydraulic oil tank and add as needed.

Inspection of hose and pipeline - daily and every 250H



CAUTION: Any sprayed fluid could penetrate your skin leading to severe injury!

Use a paperboard to check for leakage,

Take care to keep your hands and body away from pressurized oil.

In case of injury immediately go to the nearest doctor with trauma experience. Fluid entering skin must be removed within hours to prevent gangrene.



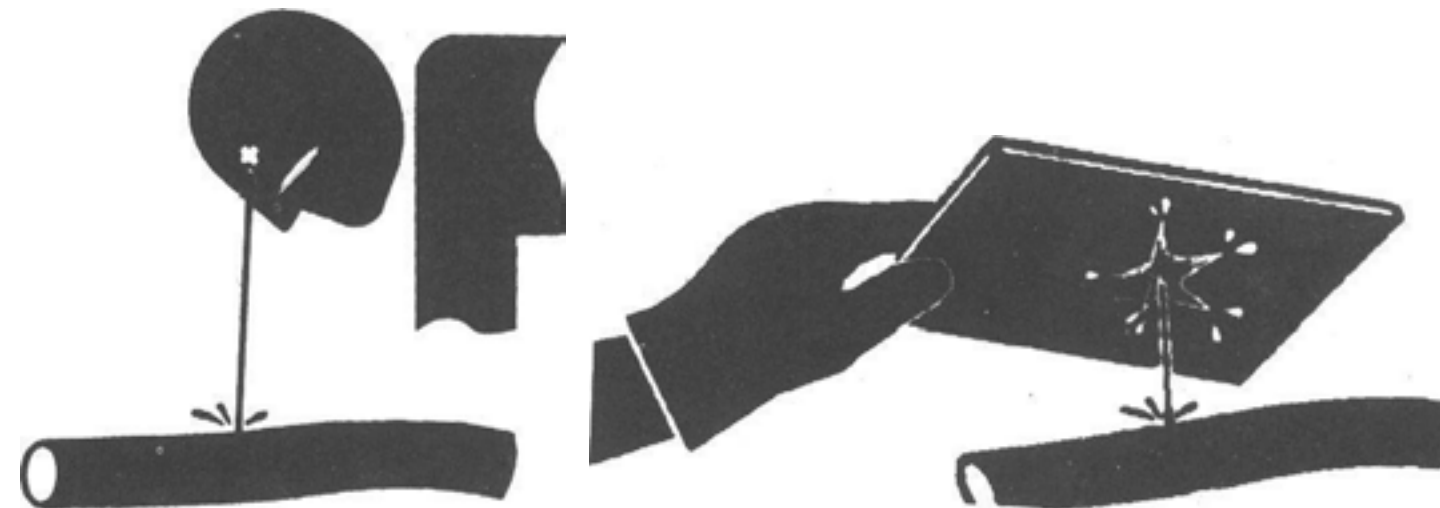
CAUTION: Leaked hydraulic oil and lubricant may lead to fire and/or personal injury.

1. Machine must be parked on flat and solid ground.
2. Lower bucket on to ground.
3. Shut down engine and remove key from ignition.
4. Check for missing parts, loosened pipe clamps, twisted hoses, pipeline/hoses rubbing on each other etc. Replace, repair or tighten according to table 1-3
5. Tighten, repair or replace any loosened, damaged or lost pipe clamps, hoses, pipes, oil cooler and flange bolts.

DO NOT BEND OR IMPACT ANY PRESSURE PIPELINES.

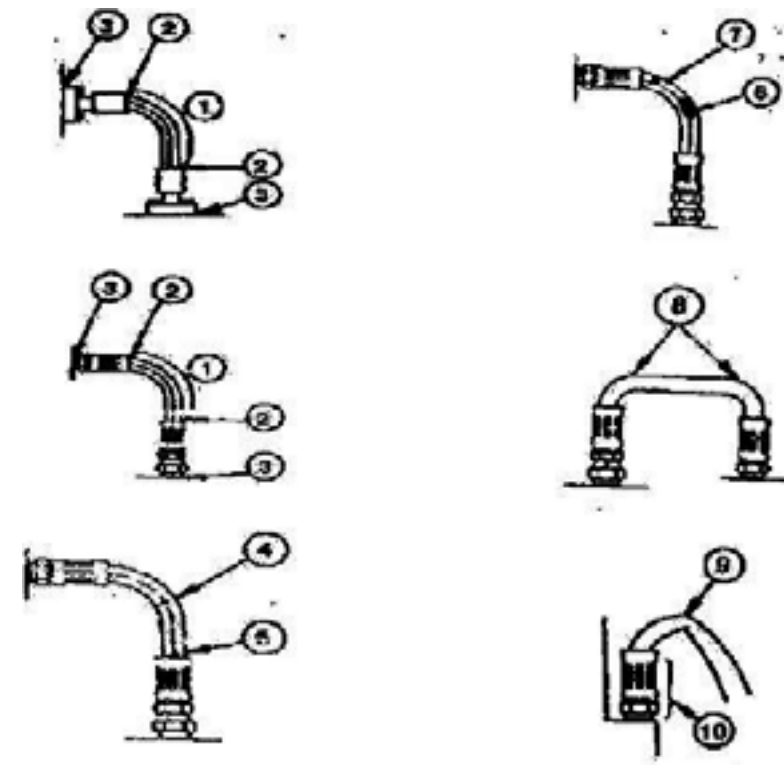
NEVER INSTALL BENT OR DAMAGED HOSE OR PIPELINE.

CAUTION: RELATED POSITIONS OF CHECKPOINTS AND ABNORMALITIES



Please use genuine MIT excavator parts

Interval - Hours	Check Points	Abnormal	Measures
Every Day	Hose Surface	Leakage 1	Replace it
	Hose End	Leakage 2	Replace it
	Connector Body	Leakage 3	Tighten or replace the hose or O-ring
Every 250 H	Hose Surface	Crack 4	Replace it
	Hose End	Crack 5	Replace it
	Hose Surface	Reinforcing material protruded 6	Replace it
	Hose Surface	Local part protruded 7	Replace it
	Hose	Bend 8	Replace it
	Hose	Bend 9	Change it (proper bending radius)
	Hose End and Joint Body	Deformation or corrosion 10	Replace it



# FUEL SYS-

Fuel Tank Capacity - 7 L

Parts	Quantity	10 H	50 H	100 H	250 H	500 H	1000 H	2000 H
Drain dirt out of fuel collection tank	1	*						
Check the fuel hose	Leakage	*			*			
	Crack/Twist/Other	*			*			
*Maintenance interval under nor-								

Recommended fuel: Clean, fresh, unleaded gasoline, a minimum of 87 octane. Gasoline with up to 10% ethanol is acceptable. To protect the fuel system from gum formation, mix a fuel stabilizer into the fuel. At altitudes over 1524 M a minimum of 85 octane gasoline is required.

## Fill Up Fuel

1. Machine must be parked on flat and solid ground.
2. Lower bucket on to ground.
3. Shut down engine and remove key from ignition.
4. Let engine cool for at least 2 minutes before removing fuel cap.
5. Fill fuel tank outdoors in a well ventilated area.
6. Do not overfill the fuel tank, To allow for expansion of the fuel do not fill above the bottom of the fuel tank neck.
7. Keep fuel away from sparks, open flames, pilot lights, heat and other ignition sources.
8. Check fuel lines, tank, cap and fittings frequently for cracks or leaks. Replace as needed.
9. If fuel spills wait until it evaporates before starting engine.
10. Clean the fuel cap area of dirt and debris. Remove fuel cap.
11. Fill fuel tank to bottom of tank neck. Install cap.

# ELECTRICAL

Battery - Check battery electrolyte levels and terminals for corrosion. Follow all precautions below before accessing the battery.



CAUTION: Gas inside of the battery can cause an explosion. Keep all sparks and flames away from the battery. Sulphuric acid in the battery electrolyte can cause severe burns, blindness and damage clothing and anything it comes in contact with.

Take the following precautions when working with the battery:

1. Refilling the battery must be performed in a well-ventilated site.
2. Wear gloves and goggles.
3. Take care to not spray/spill the electrolyte.
4. Fill according to battery indicators.
5. If you touch the electrolyte/acid:
6. Rinse area immediately with fresh water.
7. Neutralize the acid.
8. Rinse eyes for 10-15 minutes then immediately access medical attention.
9. Always disconnect the battery clips (-) away from the ground then connect it.
10. Keep terminals clean, free from dirt and corrosion. Ensure terminals are properly tightened. Coat terminals with Vaseline to avoid corrosion.

To Replace the battery:

The batter is a 12V battery with one negative pole (-) grounded. If the battery will not hold a charge replace with the same model.

To Replace the fuse:

If the electrical panel is not working first check the fuse. Ensure you replace the fuse with the same amperage fuse to prevent overloading and burning the electrical system.

# GENERAL

Parts	Quantity	10 H	50 H	100 H	250 H	500 H	1000 H	2000 H	4000 H
Check if bucket teeth are worn or loosened		*							
Change the bucket	-	If needed							
Replace bucket with a new one and reconnect	-	If needed, replace the bucket and connect the new one to the machine							
Adjust bucket connecting rod	1	If needed							
Take down the traveling lever	2	If needed							
Check and replace the fuse	1	*	Every 3 years						
Check the track	2					*			
Maintenance of tensioner	2						*		
Check fuel injection timing	-	If needed							
Measure engine pressure compression	-						▶		
Check starter and A/C generator	-						▶		
Check nuts and bolts for tightening torque	-	*	*	*	*	*	*	*	*
Note: * Maintenance interval under normal conditions ▶ Contact your trained service technician									

CHECK THE BUCKET TEETH BEFORE EACH WORKING DAY. Tighten as required. Replace when worn beyond the service limit.

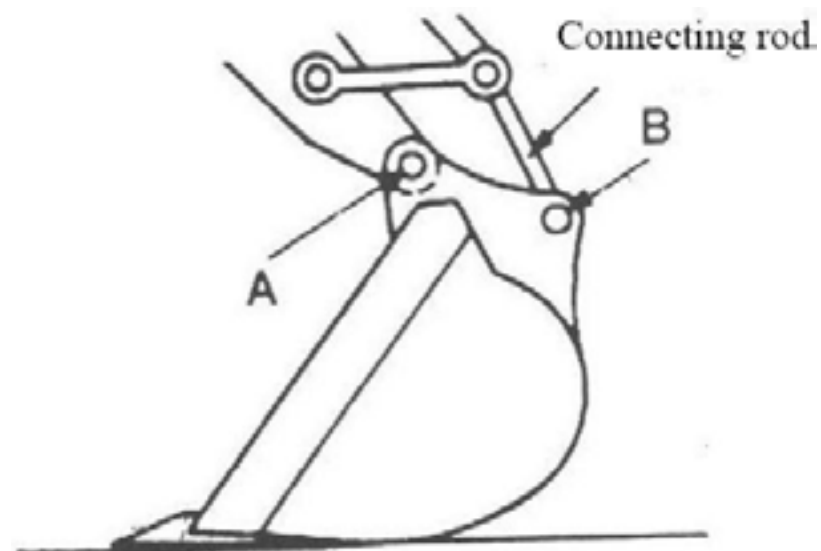
New	Service Limit
190 mm	130 mm



CAUTION: Wear safety glasses when working on the bucket, connecting pin and/or teeth. Metal pieces could become airborne leading to personal injury.

Changing the bucket:

1. Park M1T on flat, solid ground. Lower the flat bucket surface fully on to the ground. Ensure the bucket will not move after removing the pin.
2. Slide the O ring out. Please refer to diagram below.
3. Remove bucket pins A and B to separate the bucket from the arm. Clean the pin and corresponding pin hole. Properly grease both the pin and pin hole.
4. Adjust the arm and new bucket correctly, ensuring the bucket does not move.
5. Install bucket pins A and B.
6. Put the locket and ring on to pins A and B.
7. Adjust the connection clearance of bucket at pin A. Refer to the method to adjust the bucket connection clearance. .
8. Grease pins A and B.
9. Start engine and run at low speed. Slowly rotate the bucket to two directions to check for interference in bucket movement. Do not continue use if there is interference. Correct and check again.



CHECK THE NUTS AND BOLTS FOR TIGHTENING TORQUE BEFORE EACH WORKING DAY. Tighten as required to set torque. Replace with nuts/bolts of same or higher grade when worn beyond the service limit.



CAUTION: Use torque wrench to check the torque of nuts and bolts.!

Metric Nuts and Bolts			
Thread Dimensions	Standard Torque (N.m)	Thread Dimensions	Standard Torque (N.m)
M6	12±3	M14	160±30
M8	28±7	M16	240±40
M10	55±10	M20	460±60
M12	100±20	M30	1600±200

Torque of Main Components (N.m)	
Thread Dimensions	Recommended Torque
M16 bolts - traveling motor	252±39.2
M16 bolts - sprocket	252±39.2
M20 bolts - slewing bearing	570±60
M20 bolts - swing mechanism	570±60



1. Clean nuts and bolts before installing.
2. Grease nuts and bolts (such as white zinc b dissolvable by lubricant) to stabilize their abrasion coefficient.
3. Counterweight bolts must also be tightened.
4. All tightening torques expressed in kgf.m. I.e. use a wrench 1 M, apply 12kgf to the end of the wrench generating the following torque:  $1m \times 12kgf = 12kgf.m$ . To generate the same torque with a 0.25m wrench  $0.25m \times y = 12kgf.m$ . Needed force  $y = 12kgf.m / 0.25m = 48kgf$

# STORAGE

## Maintenance under special cases

Operational Conditions	Precautions for maintenance
Wet conditions - Swamp, rain, snow etc.	Check all drain plugs are tight before operation. Clean machine after operation. Check all nuts and bolts for loss, breakage, damage or looseness. Lubricate all parts at the same time.
Beach/Sand	Check all drain plugs are tight before operation. Thoroughly clean machine after work to remove all sand and salt. Frequently maintain electrical system to prevent corrosion.
Dusty environment	Air Filter: Clean periodically or at shorter intervals Radiator: Clean oil cooler screen to avoid blockage Fuel System: clean filter and element periodically or at shorter interval Electrical: clean specifically ac generator/starter rectifier
Stony/gravel roads	Track: Operate with care. Frequently check nuts and bolts for damage, breaks or missing. Loosen the track a little more than usual. Work Equipment: Parts may become damaged. Use a reinforced or heavy duty bucket.
Freezing and below	Fuel: use fuel suitable for low temperatures Lubricant: hydraulic oil/engine oil appropriate to conditions with dry quality/low viscosity Battery: Keep battery fully charge and maintain at shorter intervals. Electrolyte may freeze if not fully charged
Falling objects	Ensure roof over driver seat is firmly affixed. Check frequently for damage and repair/replace as needed.

1. Repair worn or damaged parts and replace as needed.
2. Clean primary air filter elements.
3. Retract all hydraulic cylinders if possible. If not possible grease all plungers exposed out of cylinder.
4. Lubricate all grease points.
5. Park track on a solid, flat surface.
6. Clean machine and parts fully after use. Pay special attention to the track.
7. Battery should be stored fully charged in a dry area. If battery remains in MIT separate the negative pole from the post.
8. Paint as needed to avoid rust.
9. Store in a dry, safe area. If stored outside cover with a fully water proof cover.
10. If stored for an extended period run at minimum once per month.

# CHAPTER 5 TROUBLESHOOTING

Machine performance and service life are heavily influenced by maintenance quality and consistency. Preventative maintenance is essential to ensure MIT longevity. There are daily, short, medium and long term maintenance regiments to follow.

## Mechanical Troubleshooting

Symptom	Possible Causes	Solution
Noisy structural components	1. Loose fasteners. 2. Aggravated abrasion between the bucket and end face of the bucket rod.	1. Inspect and tighten. 2. Adjust the clearance to less than 1 mm.
Bucket teeth have dropped during operation	1. Deformed spring and weakened elasticity of the bucket tooth pin. 2. Unmatched bucket tooth pin and seat.	Change the bucket tooth pin.
The crawler has tangled up.	1. Loose crawler. 2. The driving wheel moves fast in front on rugged road.	1. Tighten the crawler. 2. The guide wheel must move slowly in front on rugged roads.

## Hydraulic System Troubleshooting

Symptom	Possible Causes	Solution
The MIT does not move	Low oil in hydraulic oil tank. Main pump cannot suck oil.	Add correct amount of hydraulic oil
	Blocked oil filter.	Change filter and clean system.
	Damaged engine coupling (i.e. plastic plate, elastic plate etc.).	Change,
	Damaged main pump.	Replace or repair the main pump.
	Servo system pressure is low or zero.	Adjust to regular pressure. If this fails to increase the pressure of the servo overflow valve, disassemble and wash. If the spring is fatigued add a washer or change the spring.
	Safety valve is set at low pressure or stuck.	Adjust to regular pressure. If this fails to increase the pressure disassemble and wash. If the spring is fatigued add a washer or change the spring.
	Main pump oil suction pipe explodes or comes off.	Change with a new one.

Symptom	Possible Causes	Solution
The unilateral crawler fails to move	Main pump supplying fuel to unilateral crawler is damaged.	Change
	Main valve rod is stuck and the spring is broken.	Repair or change
	Traveling motor is damaged.	Change
	The upper and lower chambers of swivel joint are connected.	Changed the oil or clean the assembly
	Traveling system fuel pipe explodes.	Change
MIT moves slowly or has no power	Low oil in hydraulic oil tank.	Add hydraulic oil as required
	Low engine RPM.	Adjust engine RPM
	Low system safety valve pressure.	Adjust to specified pressure
	Leak inside main pump.	Change or repair pump
	Traveling motor, rotation motor and cylinder are worn to different degrees causing internal leaks.	Change or repair worn parts
	Aging sealing components, worn hydraulic elements and degraded oil can all cause slow or non existent operation speed along with increased temperature.	Change hydraulic oil. Change sealing components. Adjust fit clearance and pressure of hydraulic components.
	Blocked engine filter can cause decrease of RPM under load, possibly leading to stalling.	Change engine filter.
	Blocked hydraulic filter accelerates abrasion of the pump, motor and valve leading to internal leaks.	Clean and changed the filter/element according to the maintenance schedule.
Right and left traveling systems do not move (no other abnormalities).	Damage between main valve rod and valve hole causes internal leak.	Repair the valve rod
	Damaged central rotation connector.	Change the oil seal and change the groove if it is damaged.
	High pressure chamber and low pressure chamber of traveling operation valve is connected.	Change
	Leak inside the traveling operation valve.	Change
	Low overloaded pressure of traveling valve of main valve or the valve rod is stuck.	Adjust and grind
	The left and right traveling reducers fail.	Repair
	The left and right traveling motors fail.	Repair
	The oil pipe explodes.	Change
Deviation during traveling (no other abnormalities).	Wrong adjustment of variable point of main valve or internal pump leak.	Adjust or repair
	Internal/external spring of one traveling valve core of main valve is damaged or tightened.	Change
	The traveling motor leaks inside due to abrasion.	Repair or change



Symptom	Possible Causes	Solution
Deviation during traveling (no other abnormalities).	The sealing component of the central rotation connector is aged and damaged.	Change the sealing component
	The left and right crawlers are not adjust the same.	Adjust
Boom (bucket rod and bucket) move only to one side	Main valve core is stuck or valve rod spring breaks.	Repair or change
Boom (bucket rod and bucket) dos not move	Boom valve rod is stuck or of low overloaded pressure.	Repair
	Fuel supply pipe leaks, detached, O ring damaged or pipe fitting is loose.	Change the damaged component
	Sand/stone in main valve or the low pressure chamber is connected to the high pressure chamber.	Change
Boom (bucket rod and bucket) drops too fast of the cylinder drops at a certain height due to dead weight (i.e. not operated)	Low overloaded valve pressure.	Adjust
	Internal leak of cylinder.	Change the sealing component, repair the inner wall or groove of cylinder or change the cylinder.
	Loose oil pipe fitting or damaged O ring.	Change
Boom (bucket road and bucket) works powerlessly	Internal leak of multi-way valve or sand/stone inside.	Change
	Low overloaded pressure.	Adjust
	Serious internal leak of oil cylinder.	Change the oil seal
	Main valve is disabled due to an internal leak.	Repair or change
Boom (bucket rod and bucket) moves even when not operated	Multi-way valve core is stuck or an internal leak.	Grind or change
	Multi-way valve rod spring breaks.	Change
	Working cylinder leak or the working device drops due to dead weight.	Change the oil seal
	Low pressure of overloaded overflow valve or the spring breaks	Adjust to specified pressure- Change broken spring
Hot hydraulic oil	Wrong grade of hydraulic oil.	Change to correct hydraulic oil
	Hydraulic oil cooler surface is polluted by oil and dirt, blocking the air hole.	Clean
	Low oil level of hydraulic oil tank.	Add hydraulic oil to correct level
	The hydraulic components i.e. motor, main valve, oil cylinder or sealing components are worn causing an internal leak which increases the oil temperature. Traveling rotation and working device are delayed and powerless. The hot temperature degrades the hydraulic oil. The safety valve is not tight enough leading to overflow.	Change the elements according to maintenance protocol

Symptom	Possible Causes	Solution
No action of rotation (no other abnormalities)	Broken hydraulic oil pipe.	Replace
	Stuck rotary valve rod on main valve.	Repair
	Damaged rotary motor.	Repair or Replace
	Damaged rotation support.	Replace
Indifferent left and right rotation speed	Right/left rotation on multi-way valve is different overloaded pressure.	Adjust
	Rotation valve rod of multi-way valve is slightly stuck.	Repair
Delayed or powered rotation	External leak of hydraulic oil pipe.	Change pipe fitting and sealing components
	Low overloaded pressure for rotation of multi-way valve.	Adjust
	Internal leak of rotary motor.	Repair or replace
	Damaged multi-way valve.	Replace
Rotation mechanism moves when not in operation	Broken main valve rod spring.	Replace
MIT makes abnormal noises and shales during operation	Low hydraulic oil level in hydraulic oil tank.	Add oil
	Oil contains too much moisture and air.	Change
	Safety valve of multi-way valve makes noise.	Adjust
	Damaged coupling.	Replace
	Vibration caused by loose pipe clamp.	Adjust
	Blocked filter.	Replace
	Air in oil suction hose.	Release the air
	Uneven engine rpm	Adjust
Powerless oil cylinder of oil leak	Bearing is not lubricated or scraped.	Apply lubrication oil or change the shaft or sleeve
	Damaged sealing components.	Change sealing components
	A groove is found on the piston rod due to abrasion or detachment of chromium coating of piston rod causing an oil leak.	Coat, paint, repair or replace
	Air in the cylinder causes a shaking noise during operation.	Release the air

Electrical Control System Troubleshooting

Fault codes electrical control system M1T	
1.	Engine fails to start
2.	Engine flames out during operation
3.	Engine fails to flame out
4.	Automatic slow-down does not work
5.	Slewing and traveling of all working devices

1. The engine fails to start

Fault Description	Engine fails to start	
The fuel pump system does not supply fuel or supplies too little fuel	Low engine RPM	Adjust to regular RPM
	Pump fault	Replace
	Low fuel in tank	Add fuel
	Fuel tube breaks, tube connector is loose, damaged O ring	Replace

Possible Causes		Standard value in regular condition and reference value of fault diagnosis		
1	Low Battery	Battery voltage	Color of charge state densitometer	
		Above 12V	Green (if white change the battery)	
2	Fuse F1 and F11 fail	GND fail may happen if fuse is burned.		
		If monitoring indicator on monitor panel is not illuminated, inspect the circuit between the battery and the specified fuse		
3	Engine ignition switch fault	TURN THE ENGINE START SWITCH TO OFF AND KEEP IT OFF DURING DIAGNOSIS		
		Ignition switch	Position	Resistance
		Between 30 and 17	OFF	1MΩ
Start	Below 1MΩ			
4	Starter relay K3 fault	TURN THE ENGINE START SWITCH TO OFF AND KEEP IT OFF DURING DIAGNOSIS		
		Pin		Resistance
		85 - 86		200 - 400Ω
		87 - 30		Above 1MΩ
5	Security lock switch fault (open circuit inside)	TURN THE ENGINE START SWITCH TO OFF AND KEEP IT OFF DURING DIAGNOSIS		
			Lock rod	Resistance
		Between 105 and GND	Unlocked	1MΩ
Locked	Below 1MΩ			

Possible Causes		Standard value in regular condition and reference value of fault diagnosis		
6	Start motor fault (open circuit or short circuit inside)	TURN THE ENGINE START SWITCH TO OFF AND KEEP IT OFF DURING DIAGNOSIS. If all PS, GND, signals and engine start input are correct while engine start output is abnormal, the engine starter relay has failed.		
		Engine or Starter Motor	Engine Start Switch	Voltage
		PS; terminal B and GND	Start	20 - 30 V
Input of engine start, terminal C and GND	20 - 30 V			
7	Alternator fault	TURN THE ENGINE START SWITCH TO OFF AND KEEP IT OFF DURING DIAGNOSIS.		
				Voltage Below 1V
8	Disconnect wire harness (disconnect from connector or poor contact)	TURN THE ENGINE START SWITCH TO OFF AND KEEP IT OFF DURING DIAGNOSIS.		
			Resistance	Below 1
9	Poor GND of wire harness (contact with earth circuit)	TURN THE ENGINE START SWITCH TO OFF AND KEEP IT OFF DURING DIAGNOSIS.		
			Resistance	Above 1M
10	Short circuit of wire harness (contact with 24V)	TURN THE ENGINE START SWITCH TO OFF AND KEEP IT OFF DURING DIAGNOSIS.		
			Voltage	Below 1V

2. Engine flames out during operation

Possible Causes		Standard value in regular condition and reference value of fault diagnosis		
1.	Disconnected wire harness (disconnected from connector or poor contact)	TURN THE ENGINE START SWITCH TO OFF AND KEEP IT OFF DURING DIAGNOSIS.		
		Between CN-12T ② and CN-132F ⑥	Resistance	Below 1
2.	Poor GND of wire harness (contact with earth circuit)	TURN THE ENGINE START SWITCH TO OFF AND KEEP IT OFF DURING DIAGNOSIS.		
		Between CN-12T ② and CN-132F ⑥	Resistance	Above 1M

## Section V Troubleshooting of gasoline engine

## 1. Symptoms of failed start up of engine:

When starting the engine, the starter drives the engine but the engine fails to start.

Possible Causes:

- I. Low battery
- II. Battery terminal is rusted or loose
- III. Battery ground wire is rusted or loose or poor GND of engine
- IV. Starter relay armature fails to disengage
- V. Ignition switch fault or starter fault

Solution:

- I. A low battery can result from failure to power off all electrical elements at end of previous work session. The battery charges during operation of the MIT. For battery failures change the battery to a fully charged battery or connect to another battery pack in parallel to start the engine.
- II. Clean the battery terminals. Tighten the PS wire clip to contact the PS wire with the battery terminal.
- III. Clean the ground wire terminal to ensure reliable GND; ensure reliable GND of engine.
- IV. Repair or change the starter relay.
- V. Inspect and repair the ignition switch. Inspect and repair the starter.

Symptoms of low fuel levels:

When starting the engine the starter runs at acceptable RPM's but the engine fails to start.

Possible Causes:

- I. Fuel tank is empty.
  - II. Fuel supply system channel fault.
  - III. Air, water or foreign matter exists in the fuel system which blocks the system.
  - IV. Fuel pump fault.
- Engine Fault.

Solution:

- I. Fill the fuel tank, start the engine and run the engine to deliver fuel to the carburetor.
- II. Inspect all pipelines of the fuel supply system, fuel filter and fuel pump. Change blocked and/pr damaged assemblies as needed to ensure unobstructed fuel supply.
- III. Release air trapped in the fuel system. If the engine will not start due to an air blockage decrease the temperature.
- IV. Inspect the fuel pump is working optimally.
- V. Inspect and repair the engine as required.

## 3. Engine is hard to start:

Symptoms:

1. Starter runs at the correct RPM and drives the engine but it is hard to start the engine.
2. Hard to start the engine when it is cold.  
Hard to start the engine when it is hot.

Possible Causes:

- I. Fuel tank is blocked.
- II. Fuel pump fault.
- III. Wrong injection timing.
- IV. Low temperature of oil and intake air.
- V. Intake air filter is blocked.
- VI. Fuel tube leak.
- VII. Starter fault.
- VIII. Improper starter operation.
- IX. Wrong fuel grade.
- X. Engine fault.

Solution:

- I. Inspect and change the fuel filter.
- II. Inspect and change the air filter element.
- III. Inspect and adjust the fuel pump.
- IV. Inspect the fuel tube and oil channel to ensure and unblocked oil supply.
- V. Inspect the starter and start control device for reliable operation.
- VI. Start the engine according to the start protocol.
- VII. Add the correct grade of fuel. Discharger and water from the fuel tank as necessary.
- VIII. Repair the engine.

## 4. Check if the starter fails to start the engine:

Symptoms:

1. Turn the ignition switch to ON but the starter does not work.
  2. The driving gears of the starter do not engage.
  3. The driving gears of the starter fail to disengage.
- Low engine RPM/uneven engine RPM.

Possible Causes:

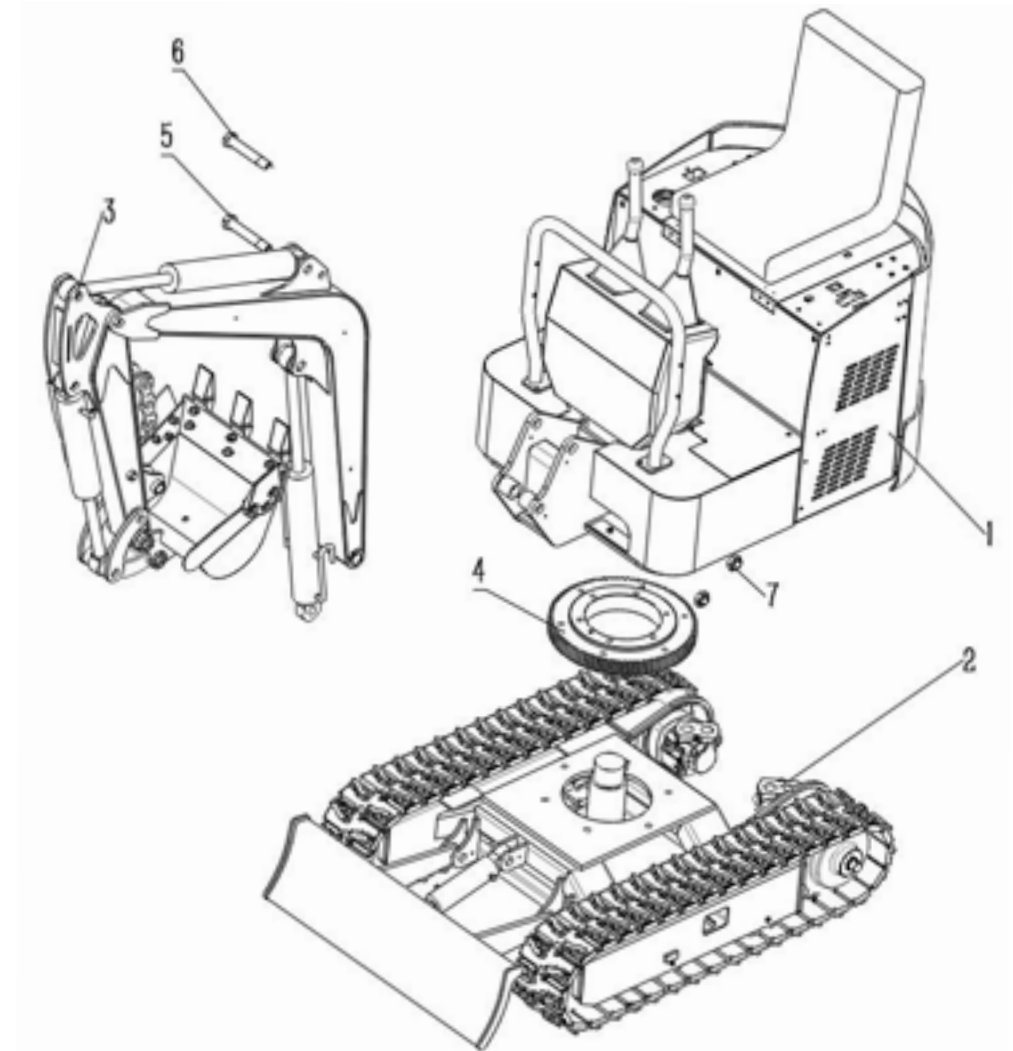
1. The battery is not fully charged.
2. Loose battery terminals.
3. Loose ground wire.
4. Disabled start circuit.

5. Electromagnetic relay armature is stuck.
6. Starter fault.
7. Starter driving gear is stuck by engine flywheel gear ring.
8. Driving gear of starter adheres to the bearing.
9. Starter fails to drive the engine.
10. Engine fault.

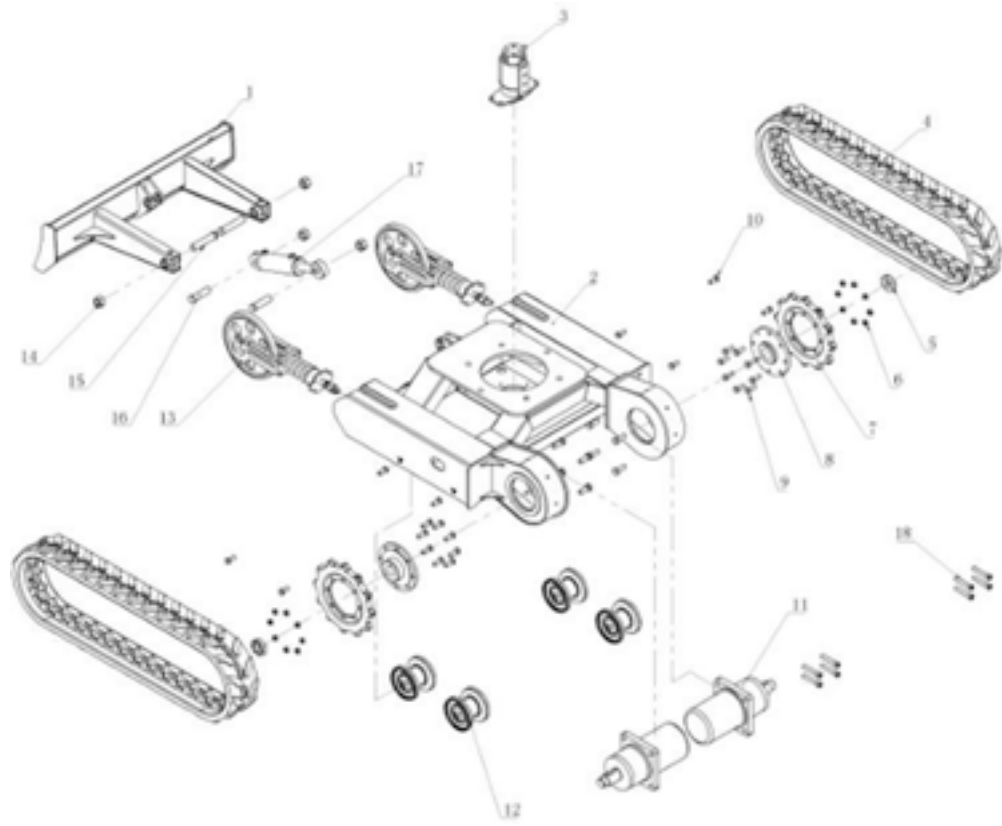
Solution:

1. Check the battery is fully charged. Charge as required.
2. Connect the battery terminal and connector.
3. Repair the battery ground wire.
4. Inspect the start circuit. Ensure the starter terminal is live.
5. Inspect the starter electromagnetic relay to eliminate possibility of an electromagnetic relay fault. This will be obvious. If you cannot hear the relay there is a fault.
6. Inspect and repair the starter.
7. Try again to engage the starter driving gear and engine flywheel gear.
8. Inspect the bearing on the end of the starting shaft of the starter.
9. Small torque of starter. Change the starter if necessary.
10. Repair the engine.

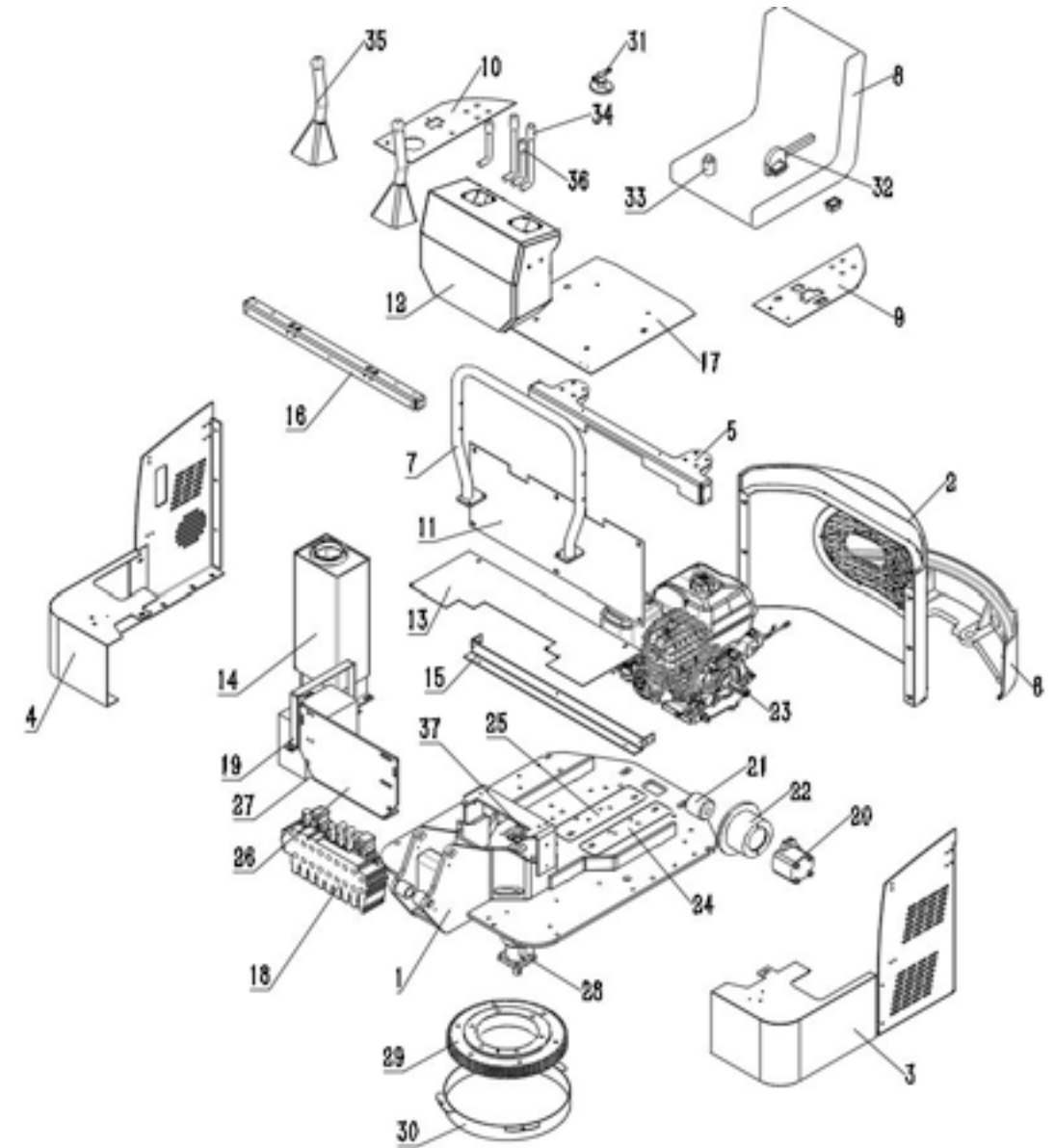
# PARTS LIST



S/N	Name	Quantity
1	Upper frame assembly	1
2	Lower frame assembly	1
3	Front work equipment assembly	1
4	Slewing bearing assembly	1
5	Connecting shaft between boom and upper frame	1
6	Connecting shaft between boom and upper frame	1
7	Pivot sleeve	2

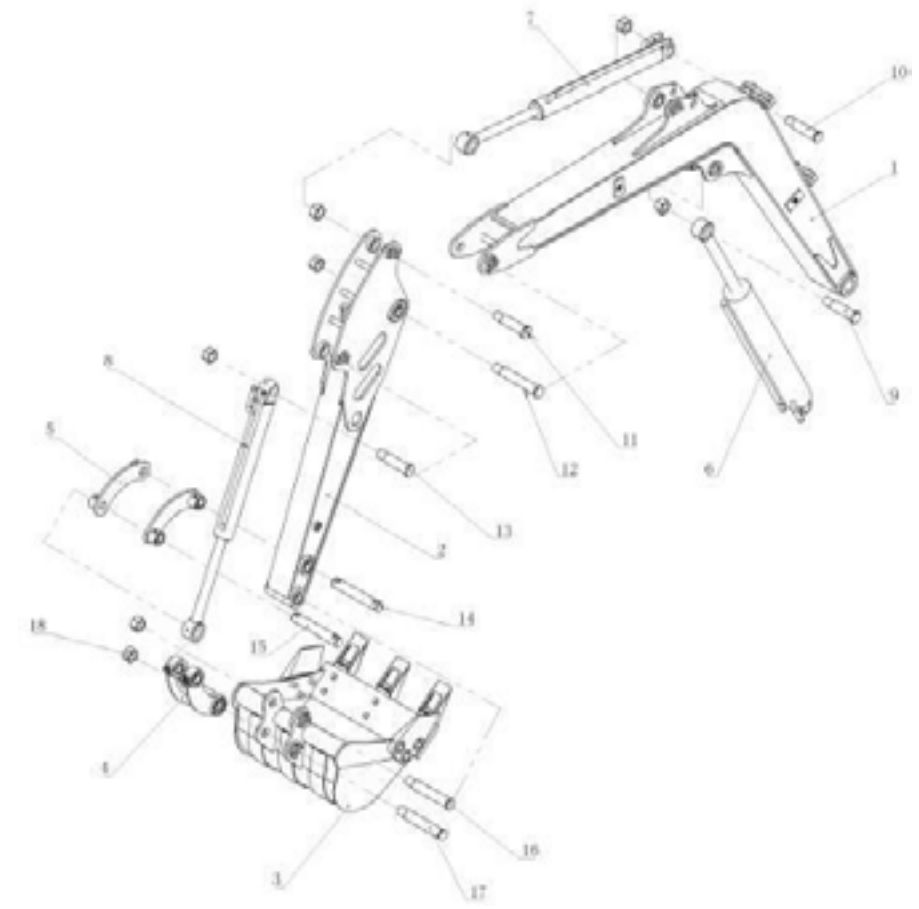


Lower Frame			
S/N	Part No.	Part Name	Quantity
1	1.1	Welded dozer shovel	1
2	1.2	Welded lower frame	1
3	1.3	Slewing joint	1
4	1.4	Rubber crawler	2
5	1.5	Lock nut	2
6	1.6	Sprocket nuts	16
7	1.7	Drive wheel	2
8	1.8	Connecting disc	2
9	1.9	Sprocket bolts	16
10	1.10	Bolts fixing the track roller	8
11	1.11	Traveling motor	2
12	1.12	Track roller	4
13	1.13	Idler assembly	2
14	1.14	Pivot nuts	4
15	1.15	Connecting shaft of dozer shovel	2
16	1.16	Connecting shaft of cylinder	2
17	1.17	Cylinder of dozer shovel	1
18	1.18	Bolts fixing idler assembly	8



Upper Frame Assembly			
S/N	Part No.	Part Name	Quantity
1	2.1	Welded upper frame	1
2	2.2	Rear housing covers	1
3	2.3	Left housing covers	1
4	2.4	Right housing covers	1
5	2.5	Welded inside support frame	1
6	2.6	Rear counterweight plate	1 set
7	2.7	Handrail	1
8	2.8	The seat	1

Upper Frame Assembly			
S/N	Part No.	Part Name	Quantity
9	2.9	Left - upper cover	1
10	2.10	Right - upper cover	1
11	2.11	L-shaped covers	1
12	2.12	Console	1
13	2.13	Pedal	1
14	2.14	Hydraulic Oil Tank	1
15	2.15	Front of bracket A	1
16	2.16	Front of bracket B	1
17	2.17	Seat plate	1
18	2.18	Multi-way valve	1
19	2.19	Battery platen	1
20	2.20	Master cylinder	1
21	2.21	Coupler	1
22	2.22	Pump disc	1
23	2.23	Engine	1
24	2.24	Rear bracket base of engine	1
25	2.25	Front bracket base of engine	1
26	2.26	Main valve holder	1
27	2.27	Battery	1
28	2.28	Rotary Motor	1
29	2.29	Slewing bearing	1
30	2.30	Dust cover	1
31	2.31	Main power switch	1
32	2.32	Manual accelerator	1
33	2.33	Key starter	1
34	2.34	Traveling handle	2
35	2.35	Work handle	2
36	2.36	Front shovel handle	1
37	2.37	Slewing join pallet	1



Front Work Equipment			
S/N	Part No.	Part Name	Quantity
1	3.1	Boom	1
2	3.2	Arm	1
3	3.3	Bucket	1
4	3.4	Connecting rod	1
5	3.5	Push rod	1
6	3.6	Boom cylinder	1
7	3.7	Arm cylinder	1
8	3.8	Bucket cylinder	1
9	3.9	Medium boom shaft	1
10	3.10	Rear shaft of arm cylinder	1
11	3.11	Front shaft of arm cylinder	1
12	3.12	Front boom shaft	1
13	3.13	Rear shaft of bucket cylinder	1
14	3.14	Medium arm shaft	1
15	3.15	Front shaft of bucket cylinder	1
16	3.16	Front arm shaft	1
17	3.17	Connecting shaft between bucket and connecting rod	1
18	3.18	Shaft lock sleeve	7