

# INDEX FOR THE HYDRAFORM MANUAL

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## **Disclaimer**

### **Machine, Training and Building Manual**

Hydraforms manual has been prepared for clients use to advise on the best possible use of the machine, blockmaking and building system incorporating years of experience in the field.

### **“Other Factors” to be considered**

Soils, cements, mix preparations, material codes, building materials, building codes, local regulations, external conditions and more are all important to produce a quality block and achieve acceptable building standards.

### **Disclaimer**

Hydraform cannot be held responsible for not achieving acceptable quality levels in block production and building as the “Other Factors” are out of our control

# 1. HYDRAFORM SAFETY INSTRUCTIONS AND WARRANTY INFORMATION

## 1.1 SAFETY INSTRUCTIONS

**Injuries can be costly**

**Read these few points thoroughly**

**When towing or moving the Hydraform machine.**

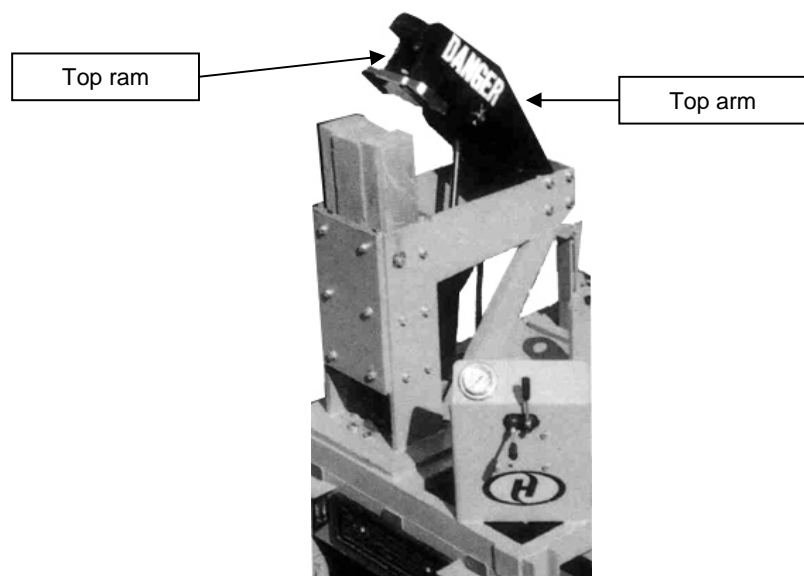
- Do not speed.
- Make sure mobile machines are connected to the towing vehicle correctly.
- Secure all machines on the pick-up or trailer.
- **Do not hit top ram and bottom ram together. Do not operate without soil in the machine. Never produce blocks shorter than 100 mm.**

**Cleaning the Hydraform machine.**

- Do not clean the machinery if the motor is idling or the electricity power is on.

### **DANGER**

- **Beware of TOP RAM opening and closing during blockmaking. It can cause damage to your hands, fingers and body**
- **Only a trained operator should operate the machine**



## 1.2 SET UP OF MACHINE ON SITE

The Hydraform machine must be in a level position resting on the four corner stands or legs.

### Check list before block production or starting the machine

- Check hydraulic oil level gauge on tank **(on all machines)**
- Check air filter for cleanness **(on diesel machines only)**
- Check engine oil **(diesel machines only)**
- Check electric connections **(electric machines only)**
- Check mixer for free movement **(M7ExM or mixer machines only)**

### 1.3 HYDRAFORM WARRANTY



#### WARRANTY REGISTRATION CERTIFICATE

The manufacturers guarantee that the machine is free from defects of design, workmanship, and material for a period of 6 months from the date of delivery. The guarantee is confined to defects, which render the machine unusable or materially impair its function due to faulty materials, workmanship or design. Defects of this nature should be notified at once in writing to the nearest Hydraform office, and substantiated. Replaced parts become the property of the manufacturers. The manufacturers will meet all reasonable costs of the replacements in all cases of expressly admitted claims. Repairs require the prior permission of the manufacturers. The guarantee does not apply to natural wear and tear, nor to defects resulting from negligence or misuse. The guarantee becomes null and void in the event of failure to observe the operating instructions or if the machine is repaired by the purchaser or third parties without authorization by the manufacturers.

**MACHINE TYPE** \_\_\_\_\_ **DELIVERY DATE** \_\_\_\_\_

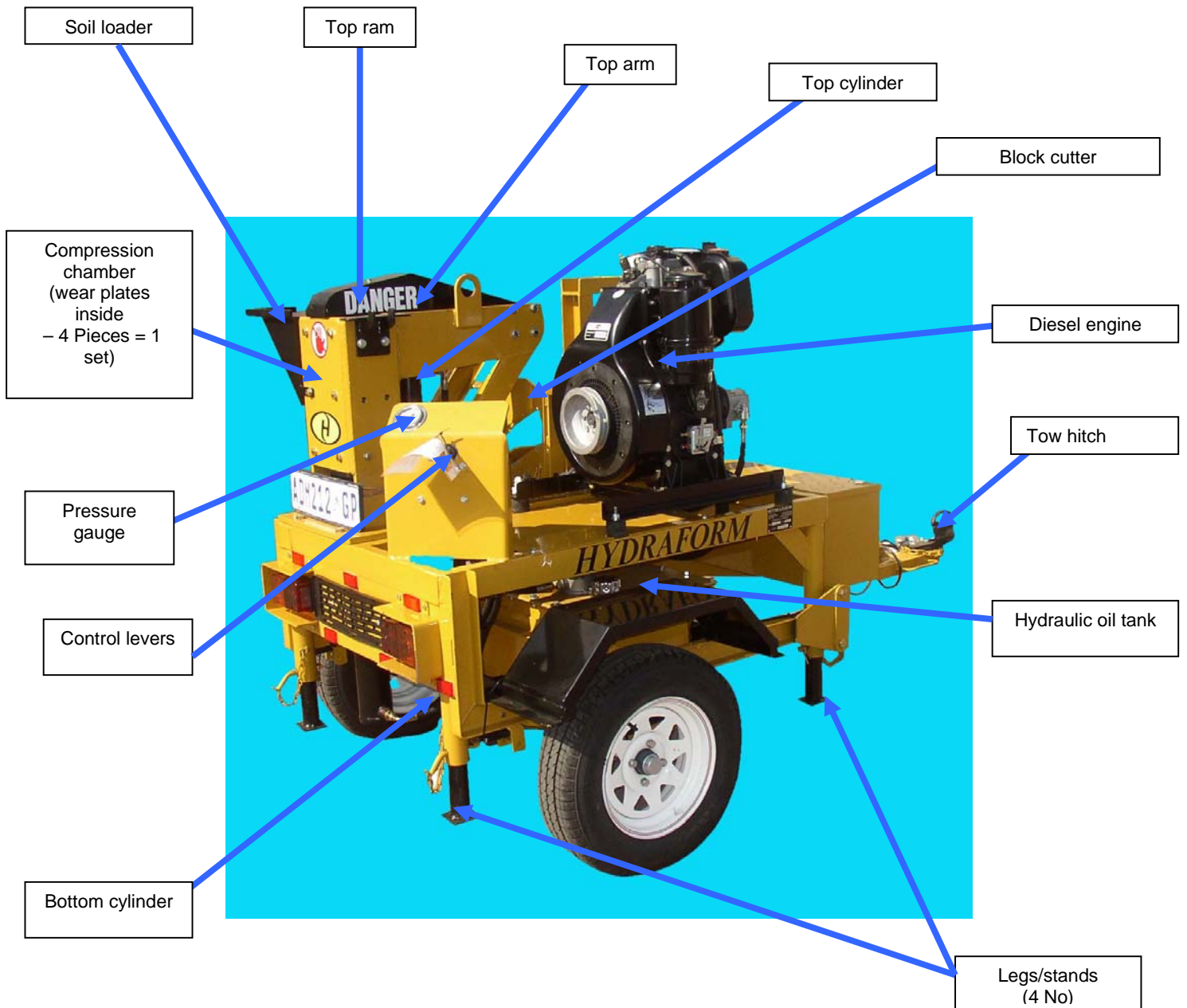
**SERIAL NUMBER** \_\_\_\_\_

**ACCEPTED CLIENT** \_\_\_\_\_

**DATE** \_\_\_\_\_

## 2. THE LAYOUT AND PARTS OF THE HYDRAFORM MACHINE

### 2.1. M7 HYDRAFORM BLOCKMAKING MACHINE

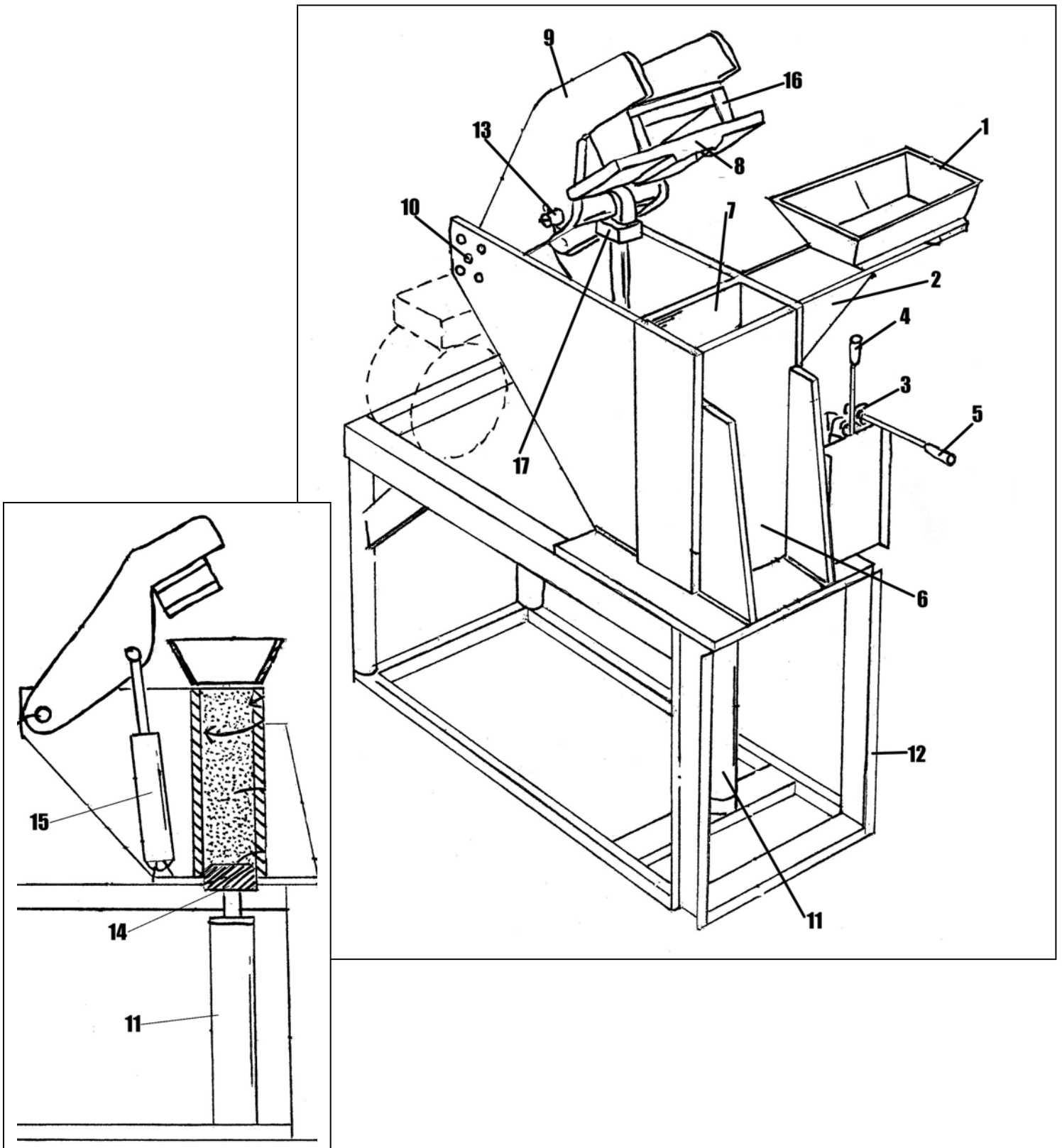


## 2.2 PARTS LIST

<b>NO.</b>	<b>DESCRIPTION</b>
1.	SOIL HOPPER
2.	SOIL HOPPER SUPPORT
3.	VALVE CONTROL
4.	TOP ARM CYLINDER LEVER (TOP RAM)
5.	BOTTOM CYLINDER LEVER (BOTTOM RAM)
6.	CHAMBER
7.	WEAR PLATES 4 PER SET
8.	TOP RAM
9.	TOP ARM
10.	REAR PIN AND BEARINGS
11.	MAIN CYLINDER (80MM)
12.	FRAME (FIXED OR MOBILE)
13.	PIN
14.	BOTTOM RAM
15.	TOP ARM CYLINDER
16.	TOP RAM EXTENSION
17.	CLEVIS



### 2.3 DRAWING: CORNER AND SIDE VIEW OF M7



### 3. OPERATING AND MAINTENANCE OF THE HYDRAFORM MACHINE

#### 3.1 MACHINE OPERATION

It is important that only one person, (the trained operator) is in charge and responsible for the machine and the block production.

##### Two lever operation

There are two levers to operate the machine, each lever must be moved separately.

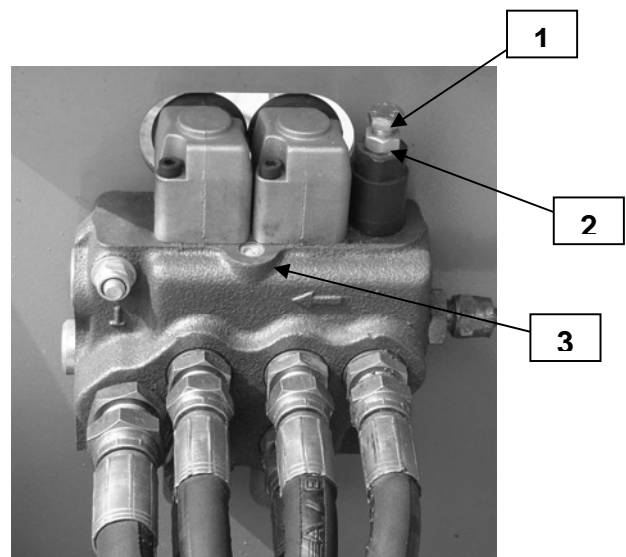
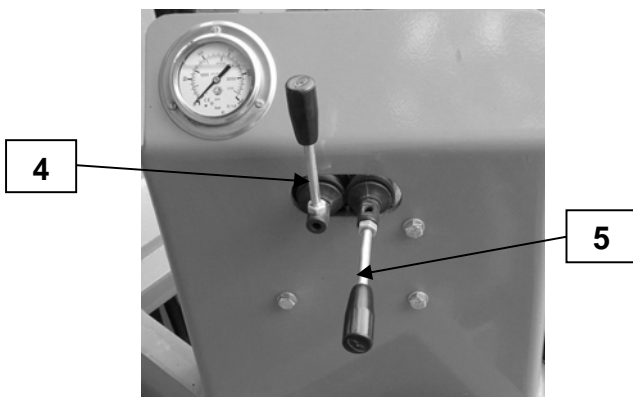
By letting go of any of the two, the spring-loaded lever goes back into the neutral position.

Lever: Nr.4. This is the left hand lever when standing in front of machine, this controls the top ram (top arm), when pushed forward, top ram (top arm) opens, when pulled back, top ram (top arm) closes.

Lever: Nr.5. This is the right hand lever when standing in front of machine, this controls the bottom ram, when pushed down bottom ram moves down, when pushed up bottom ram moves up.

##### Lock and system pressure

1. Adjustment bolt for pressure setting.
2. Lock nut.
3. Double bank valve body.
4. Top ram lever.
5. Bottom ram lever.



## **How to change hydraulic system pressure**

Your machine will be delivered with the system pressure pre-set to 90 – 100 BAR (9-10 MPa).

It is not necessary to reset the pressure.

If you are working with high sand content soils, then you will need to increase the system pressure to 120 – 130 BAR (12-13 MPa).

If you are working with high clay content soils you may need to decrease the system pressure to 60 – 80 BAR (6 – 8 MPa).

1. Loosen locknut (Nr. 2).
2. Loosen adjustment bolt (Nr. 1) for lower pressure.
3. Tighten adjustment bolt (Nr. 1) for higher pressure.

To take the reading on the pressure gauge open the top ram and hold the bottom ram in the down or up position.

**NB!!        Make sure the top ram is in the open position, when changing the pressure.**

## **3.2 HOW TO PRODUCE ONE HYDRAFORM BLOCK**

### **STEP BY STEP INSTRUCTIONS**

1. Bottom ram in down position.
2. Top ram open.
3. Fill mix into hopper.
4. Push hopper across chamber and return to original position.
5. Close top ram.
6. Move bottom ram upwards to compact the soil-cement mixture.
7. Open top ram.
8. Move bottom ram upwards until the produced block is completely out of the chamber.
9. Take block away to be cured.
10. Move main cylinder downward until the end.
11. Stop.

**REPEAT STEP 1 TO 11 FOR FURTHER BLOCKS**

### 3.3 MAINTENANCE OF MACHINE

#### MAINTENANCE TO BE DONE EVERY DAY

- Machine must be cleaned overall.
- If production is stopped make sure bottom ram is down and the top ram is closed.
- After stopping the engine release the pressure in the hydraulic hoses by moving the hydraulic levers in the respective directions.
- **(See section 3.4 and 3.6)**

#### WEEKLY MAINTENANCE

- Once a week check machine for wear and tear, leaks, loose bolts, clean machine thoroughly, check engine, and hydraulic system.

#### WEARPLATES MAINTENANCE

- Wearplates may need changing after 40 000 – 80 000 blocks. The wearplates need to be changed when the block height is 118 mm  
**(See section 3.7 and section 8.7)**

### 3.4 DIESEL ENGINE MAINTENANCE (Antor - Lombardini)

**For diesel engine maintenance refer to engine manual, which is supplied with all new machines.**

**MAINTENANCE SCHEDULE FOR ANTOR DIESEL ENGINES**

Operation	Part	TIME ( HOURS )							
		10	50	125	250	500	1000	2500	5000
Cleaning	Head and head and cylinder				•				
	Fins (*)				•				
	Fuel tank						•		
	Injector					•			
Checking	Air fan oil level	•							
	Crankcase oil level	•							
	Fuel pipes connections					•			
	Valve-rocker clearances					•			
	Injector opening pressure					•			
Changing	Air filter (**)				•				
	Crankcase oil (***)		☐		•				
	Oil filter cartridge		☐		•				
	Fuel filter cartridge				•				
Overhaul and repair	Partial (****)							•	
	General								•

☐ For new engines only

(\*) The cleaning operation for the engines that are working in hard conditions will be done everyday.

(\*\*) The air filter must be changed every 250 hours. In dusty conditions, the air filter must be changed more frequently

(\*\*\*) See instructions for recommended oil.

(\*\*\*\*) Control of cylinders, piston-rings, valve guides and springs.

## **3.5 DIESEL MOTOR**

### **(Diesel powered machines only)**

Hydraform backs up our customers with technical advice on all kinds of service questions, spare parts and engine repairs.

### **CONTACT HYDRAFORM**

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## 3.6 HYDRAULIC MAINTENANCE

### Service instructions

Main points to check are as follows:

1. Visually checking correct oil level of hydraulic tank, hydraulic oil must always be visible in sight glass. Top up hydraulic oil with oil grade 68 if required.
2. Visually checking all hydraulic hoses connection points for leaks – tighten if necessary.
3. Every 1000 hours (6 months of operation) the suction filter must be removed and cleaned. To do this, first remove reservoir lid, then reach into the tank and loosen filter. Wash filter with cleaning fluid (paraffin or equivalent), blow dry and replace filter, close lid ensuring seals are intact.

**The above checks should be done on a regular basis to ensure safe operation of the machine.**

### Hydraulic Maintenance Schedule

<b>DAILY:</b>	Check hydraulic oil level in tank. Check for external leaks  Worn hoses.
<b>EVERY 6 MONTHS:</b>	Change return – line filter element.
<b>YEARLY:</b>	Change suction strainer (inside the tank).  Change breather.  Change return – line filter element.  Remove tank lid and clean tank.



## 3.7 CHANGING OF WEARPLATES ON ALL MACHINES

### Wearplates

There are four wearplates in the machine, which give the shape of the block. These are of special material to achieve wear resistance. However, depending on the working conditions and the soil abrasion wearplates must be changed when necessary.

When the block height reaches 118 mm, the wearplates **must** be changed. The blocks will show signs of cracking and no longer fit together properly. **(See section 8.7)**

### Important note:

1. Wearplates must always be replaced as a set.
2. Every time wearplates are changed new bolts, washers and spring washers must be used.
3. All bolts are high tensile materials.
4. After wearplates have been fitted check bottom ram and top ram for free movement, (top ram is designed to have free play).

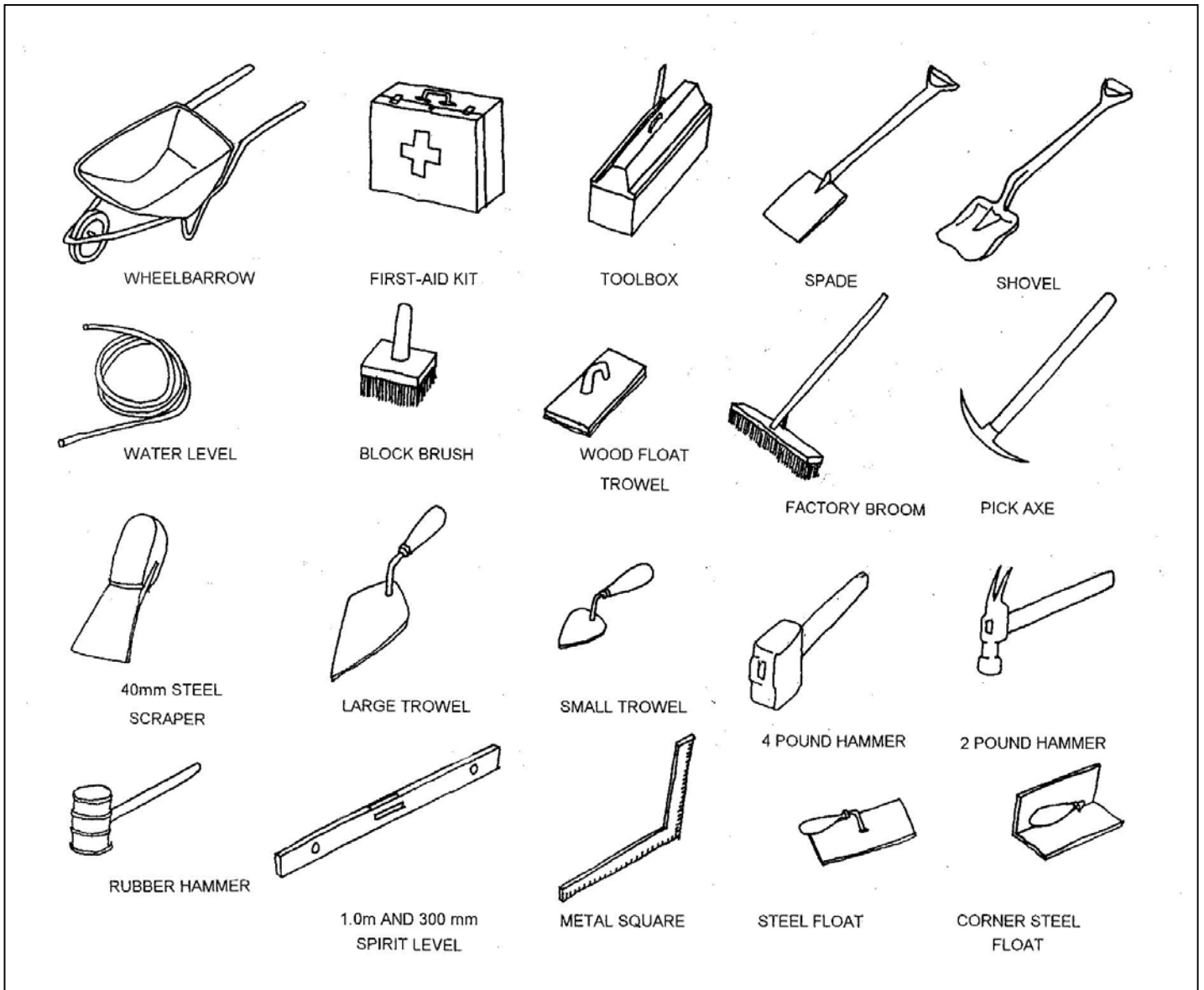
### Taking out wearplates

- Open the top ram and move bottom ram down to its lowest position.
- Stop engine.
- Switch off Diesel motor or electric motor.
- Front and back wearplates are bolted into the compression chamber with six bolts.
- Side wearplates are bolted into the compression chamber with four bolts.
- Take out front and rear wearplates bolts.
- Take out front and rear wearplates (if you have difficulty in taking them out, use a block of wood and a hammer to loosen the plates).
- Take out left and right side wearplates bolts.
- Take out side wearplates.

### Fitting the new wearplates

- Use new bolts and spring washers whenever possible.
- The wearplate compression chamber form must be cleaned and lightly oiled.
- Fit side plates first, ensuring that the top of the plate is level with the top of the compression chamber, tighten bolts.
- Fit front and rear plate ensuring that they are level with the chamber.
- Tighten bolts.
- Start machine and move top ram up and down slowly to ensure free movement, into the block chamber.
- Move bottom ram up and down to ensure free movement, tighten all bolts again.
- Proceed with blockmaking.

## 4. TOOLS FOR PRODUCTION AND CONSTRUCTION



## TOOLS FOR PRODUCTION AND CONSTRUCTION (contd.)

