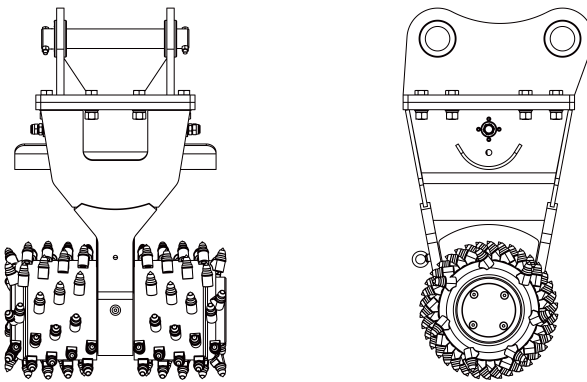


# MANUAL

## TRANSVERSE DRUM CUTTER

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This manual is applicable to all products of Yichen Transverse Drum Cutter series.

- Thank you for purchasing our products. Please pay attention to the instructions for safe operation before use. Please keep the manual properly after reading for future reference.
- Due to the continuous improvement of the company's products, the contents of the manual will also be updated. Please contact our company to obtain the latest version of the manual.



## COMPANY PROFILE

Ningbo Yichen Environment Tech Co., Ltd. is a high-tech enterprise specializing in R&D and manufacturing of excavator attachments and environmental engineering equipment. Its main products are drum cutters, rock saws, crusher buckets, screening buckets, earth drills, and soil stabilization systems.

Our predecessor is Ningbo Ant Heavy Industry. The company has continued more than 20 years of experience. Our products are exported to dozens of countries such as the United States, Australia, Britain and Southeast Asia, and are widely used in the fields of new and reconstructed highways, airports, tunnels, bridges, heavy engineering infrastructure and so on. At present, it is a well-known cooperation unit of top 500 enterprises such as State Grid Corporation of China, China Communications Construction, China Railway Construction Corporation, China Railway Group, XuGong Group and Sany group, and has provided products and technical services for a long time to provide strong support for urban construction, municipal administration, transportation and water conservancy.

Ningbo Yichen Environment Tech Co., Ltd. is a member of China engineering machinery, and a member of China Engineering Machinery Industry Association. While creating social and economic value, Yichen has reached a consensus with customers to reduce pollution and reduce public hazards and leave a beautiful environment to the next generation.

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MAKE YOUR EXCAVATOR VERSATILE

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## 1. INTRODUCTION

Congratulations on purchasing the Yichen Transverse Drum Cutter. This series of Transverse Drum Cutter is designed and manufactured with the most advanced technology. If it is properly used and maintained, it will serve you for many years.

The purpose of this manual is to give you a comprehensive understanding of the machine and its safety operation specifications, including information on how to structure the product, how to install it correctly, how to use and maintain it correctly, and how to query common faults.

The personnel responsible for use, installation, operation and maintenance shall carefully read and understand this manual before use, installation, operation and maintenance.

If the operator violates the way required in the manual, Ningbo Yichen Environment Tech Co., Ltd. (Yichen) will refuse to take any responsibility.

If any modification or modification is not allowed in the manual, the company will not assume any responsibility and warranty.

This operation manual or copy must be kept in the operation room so that the operation and maintenance personnel of the milling and digging machine can use it at any time. For any problems related to use, including use, maintenance, repair, transportation, storage or removal, if the information to solve the problem cannot be obtained from the manual, the company must be contacted.

## 2. SYMBOL FOR ATTENTION



### Attention

Improper use of the machine and improper maintenance operation may lead to serious injury or even death.

operators and qualified maintenance personnel shall carefully study all contents of this manual before using the machine or carrying out any maintenance operation. the procedures and precautions outlined in this manual apply only when the machine is used for permitted purposes.

**Use this symbol in the safety information in this manual and help avoid situations that may cause damage or injury. This information is also used to warn of hazards that may cause damage to the machine.**



### Important

This symbol is used when precautions need to be taken to avoid any operation that may shorten the service life of the machine.

The company's engineers have considered all reasonable uses or misuse that may lead to potential hazards. For this reason, the safety information contained in this manual may not include every possible safety precautions.

### 3. PRECAUTIONS - SAFETY

Most accidents that involve product operation, maintenance and repair are caused by failure to observe basic safety rules and precautions. An accident can often be avoided by recognising potentially hazardous situations before an accident occurs. A person must be alert to potential hazards. This person should also have the necessary training, skills and tools to perform these functions properly.

Yichen cannot anticipate every possible circumstance that might involve a potential hazard. The warnings in this manual and on the cutting unit are therefore not all inclusive. If a tool, procedure, work method or operating technique that is not specifically recommended by Yichen is used, you must satisfy yourself that it is safe for you and for others.

You should also ensure that the cutting unit will not be damaged or be made unsafe by the operation, lubrication, maintenance or repair procedures that you choose. The information and illustrations contained within this manual are on the basis of the information that was available at the time that this manual was written.

The specifications, torques, pressures, measurements, adjustments, illustrations and other items can change at any time. Ensure all the following safety instructions are read and understood prior to operating, performing and lubrication, maintenance and repair to avoid personal injury. Safety precautions and warnings are provided in this manual and on the cutting units. If these warnings are not heeded, bodily injury or death could occur to you or to others.



#### Attention

Installation personnel, operators and maintenance personnel must wear personal protective equipment (see section 5.2) or use relevant safety legislation enforced by the state.



#### Attention

If the installation personnel, operators or maintenance personnel do not wear appropriate safety tools and accidents occur, the company refuses to bear all responsibilities.

### **3.1 OBJECTIVE**

The preparation of this manual provides a clear understanding of the installation, operation and maintenance of the Transverse Drum Cutter. We have made every effort to provide information representative of the equipment we produce; However, some design features may be changed due to the requirements of special users.

### **3.2 GENERAL SAFETY PRECAUTIONS**

The following list of general safety precautions shall be considered as guidelines only. The purpose of general safety precautions is to make all personnel aware of the dangerous factors and dangers around the equipment and in the work area.

#### **3.2.1 GENERAL DESCRIPTION**

The following safety statements in this manual are only intended to highlight the basic safety procedures. The safety information provided shall not be used as a substitute for insurance requirements, safety procedures, laws, rules and regulations.

#### **3.2.2 SAFETY PROGRAM**

The owner and operator of the machine are responsible for organizing the development of a safety program, which shall be consistent with good management practices and any applicable laws, acts or regulations. Plant personnel must be informed of any requirements, precautions or equipment related hazards. These factors must be communicated to all relevant personnel so that they have a clear understanding to ensure the safe implementation of equipment operation and maintenance.

#### **3.2.3 SAFETY RESPONSIBILITY**

The employer is responsible for ensuring safe and healthy working conditions for all employees. In order to comply with the health and safety at work act, employers are required to provide workplaces without risk factors that will not cause disease, injury or death to employees. It is the responsibility of employees to take the necessary measures, including the implementation of regulations, to ensure compliance. All copies of any summary of the employer's recruitment shall be posted in case of any violation or at any other specified place.

#### **3.2.4 SAFETY CONSCIOUSNESS**

Careful and safety conscious operators are the foundation of safe work and the best guarantee to prevent accidents. The safety of operators and other personnel depends on reasonable care and judgment during the operation of the equipment. In order to prevent accidents, operators of equipment must abide by safety rules and preventive measures, and learn how to identify dangerous factors before they become accidents.



### 3.3 PERSONAL SAFETY

- Read and understand all warnings, cautions and instructions in this operator's manual and the symbols fixed on the equipment.
- Read and understand any risk assessments that have been made for the equipment or procedures you operate.
- Place the list of all emergency telephone numbers next to the telephone, and inform all personnel in the work area of the location where the list of emergency telephone numbers is placed.
- All accidents must be reported to the relevant supervisor and the doctor or medical facility should be consulted as soon as possible.
- When working on or around equipment, use all handles, ladders, guard rails or any other safety devices. Use safety belt or safety belt if necessary.
- Always wear safety goggles when working in the area with flying debris and dust or in the environment required by the operating regulations.
- In areas where load noise is a problem, wear appropriate hearing protection equipment.
- When working on the site, you must wear safety helmet and safety shoes.
- Wear breathing apparatus or respirator when using paints, chemicals and solvents that may endanger health.
- Do not work around or operate the machine under the influence of any drugs, tranquilizers or alcohol.
- Be sure to take necessary precautions to keep hair, sleeves, trouser legs or any other loose clothing accessories away from moving parts or controls.
- Wear gloves when it is possible to prevent cutting, scratching, scalding and solvents.
- Whenever possible, use lifting and mobile equipment to assist in the work. Be sure to use your legs to lift the weight, not your waist.

### 3.4 EQUIPMENT SAFETY

- Equipment that is not properly prepared for operation is unsafe. The operator must read the instruction manual before operating the machine for the first time in order to learn the operation and maintenance characteristics, limitations and capabilities. The user should be familiar with the local working environment of the machine and the functions of the controller, indicators, warning symbols and instructions for careful operation.
- Do not remove, damage or change the warning signs or information signs installed on the equipment by the factory. Do not climb over the equipment during transportation or lifting.
- Before operation of the equipment, check all components for any damage or tendency to damage. Any failure shall be reported to the site supervisor.
- Check all fluid and lubrication systems for leaks and for correct levels. The loss of pressure due to the reduced oil level may cause serious hydraulic failure. Improper lubrication can cause bearing failure and damage.
- Do not adjust the pressure valve to obtain a higher operating pressure. Follow the manufacturer's guidelines for the recommended pressure.
- Check all vent valves to ensure that valves and fittings are firmly in place.
- Before operation of any equipment, check whether there are any tools, parts or other foreign objects under and around the equipment.
- Always follow the manufacturer's guidelines for starting, operating and shutting down the machine.
- Do not allow any unskilled or unauthorized personnel to operate the equipment without the supervision of a skilled operator.
- Be sure to use appropriate warning devices to alert others that the machine is about to start.
- Do not leave the equipment controller unattended. If you have to leave, be sure to have qualified operators take over your work.
- Be vigilant against any improper display readings, abnormal sounds, odors or visible defects during equipment startup and operation. If any unsafe conditions occur, the equipment shall be stopped in a safe manner.
- When any inspection, lubrication, adjustment or maintenance is required, the machine must be stopped and the equipment must be locked.
- When carrying out any inspection, lubrication, adjustment or maintenance, be sure to follow the manufacturer's guidelines.
- Always wear personal protective equipment (see Section 5.2) during operation. Keep a safe distance of 30m from the excavator and the drum cutter.

### 3.5 ELECTRICAL SAFETY

- Only qualified electricians are allowed to work on live parts of any device or equipment.
- It must be assumed that the circuit is live before the electrical test procedure is proven.
- Before performing any inspection, lubrication, maintenance or adjustment procedures, lock out and label the electrical / mechanical controller.

- Before operating any equipment, be sure to check any wires, cables or connectors that show signs of wear, cut, fracture or damage.
- Before operating any equipment, check whether the grounding wire, motor plug and power cable are firmly connected.
- When working in these areas, know the location of all electrical switch boxes on site and try to know the location of power lines and underground cables.
- Do not operate electrical equipment when it is raining or standing on a wet surface. Always disconnect the power supply under these conditions.

### 3.6 SAFETY OF PRESSURIZING SYSTEM

- Be sure to relieve the system pressure before performing any maintenance on pressurized system components.
- Be sure to relieve the system pressure before any internal inspection of the pressurized system vessel.
- If it is a damaged component, it should be replaced before pressurizing the system.
- Do not attempt to disassemble the pressurization system without proper operation of the equipment.
- Always follow the manufacturer's procedures when inspecting and repairing components of the pressurization system.

### 3.7 SAFETY OF FLAMMABLE AND HAZARDOUS MATERIALS

- Be sure to store flammable and dangerous materials in safe places and specially designed storage containers.
- Do not allow smoking or ignition around fuel tanks, hydraulic systems or other flammable material storage facilities.
- The fire extinguisher shall be fully charged and identified, and shall be located in the designated area during the whole working period.
- Always turn off all engines and motors when adding fuel or transporting flammable, combustible or hazardous materials.
- Always fill the fuel storage tank in a well ventilated area away from smoking materials, open flames, heaters or any other form of heat source.
- Do not start a diesel or gasoline engine in an enclosed space unless there is sufficient ventilation.
- Do not use flammable or combustible substances for cleaning purposes.
- When handling any flammable or combustible substance, be sure to follow the manufacturer's guidelines.
- Any inspection of the battery must be carried out in a well ventilated area.
- Dispose of wastes, discharged fluids and hazardous materials in accordance with all environmental policies and regulations.



#### Attention

When handling flammable and hazardous materials, always wear appropriate personal protective equipment (see section 5.2)

## 4. MOVEMENT AND TRANSPORT

If the weight and size of the Drum Cutter are known, the Drum Cutter must be handled and transported by specially skilled personnel. If the handling operator cannot see the complete Drum Cutter to be moved, another auxiliary operator is required to assist on the ground, but it shall be outside the range of the ground moving vehicle.

### Before moving the Drum Cutter, consider:

All shields and covers are properly closed and secured.

Depending on the type of transport, it is necessary to protect the machine and its components against all possible stresses.

### When the Drum Cutter arrives, the user shall:

Check the delivery of the Drum Cutter.

Check for damage (visible broken or dented shell plates) during transport. If this happens, notify the carrier immediately and inform the delivery of the goods "pending approval". In case of damage, a written report shall be prepared to the carrier within 6 days after the acceptance of the machine.

### Storage of Drum Cutter:

Keep the Drum Cutter away from the transportation area.

Place the Drum Cutter on the wooden mat and maintain the maximum stability.



### Attention

Pay attention to the transportation safety requirements indicated by the safety signs.



If the Drum Cutter needs to be stored for more than two months, please follow the following instructions:  
Lubricate the different rotating points (central lubrication point) to prevent the equipment from being damp.  
Store the Drum Cutter in a dry place at a temperature between  $-5^{\circ}\text{C}$  and  $+30^{\circ}\text{C}$ .  
Protect the Drum Cutter from dirt, dust and moisture.

## 5. GENERAL INFORMATION

Yichen Transverse Drum Cutter is a direct drive design. In this design, a motor with large torque and low speed is installed between cutting heads with independent bearing assemblies. Assembling a high-power motor allows the customer's excavator to maximize its digging performance within its torque range. A high powered motor is selected to suit the hydraulics for excavators with a torque range capable of giving the maximum pick forces possible. The unit has its own hydraulic valve assembly incorporated within the body of the unit. The valve protects the excavator and hydraulic motor from pressure spikes during start up. The valve also allows the Transverse Drum Cutter to be operated without the need for a separate motor drain line. Any Hydraulic problems can be diagnosed quickly with a relief to atmosphere indicating that there is a problem with the circuit. The Transverse Drum Cutter Unit is suitable for mounting on any type of hydraulic machine or excavator provided the attachment carrier can supply the required power and machine stability is always ensured. The Transverse Drum Cutter unit has the power and flexibility for a range of applications. The cutting drums will easily cut through soft rock, sandstones, most concretes and tarmac. On harder materials, the unit can grind and scale surfaces to a uniform finish. The Transverse Drum Cutter unit is available with a wide range of hydraulic motors and cutting drums featuring different pick configurations suitable for most applications.

### These include:

- Tunnelling and mining, profiling and finishing walls and face roofs.
- Civil engineering works, trenching, pipeline construction, excavation of foundations and trenches.
- Road construction, asphalt cover refurbishment.
- Retreating and demolition work, diaphragm walls, partial demolition of buildings.
- Hydraulic engineering, cutting of sheet piling, canal and riverbeds.
- Steel works sector, reduction of furnace slag.
- Environmentally sensitive areas, bio remediation of contaminated soils.
- Raw material extractive industry, excavation of rock or industrial minerals.

The Transverse Drum Cutter unit can run at full system pressure. This alleviates the need to set the relief pressure lower than the system pressure, thus avoiding overheating of the hydraulic circuit. The user must take into consideration the standards for noise protection during operation and carry out a noise measurement if required. The noise level generated by the cutting unit was measured to be 88dB(A) whilst cutting a 400mm wide trench, using 600mm diameter cutting heads, in a macadam surface at 1m from the cutting heads and 1.5m above ground level. This value has been corrected to take account of the noise generated by the engineer and power pack of the track mounted excavator used for these tests. The noise level generated is dependent upon many factors which will vary from one application to another. Consequently, the user is reminded of his obligation under the Noise at Relevant local regulations assessment wherever an employee is likely to be exposed to an average noise level (Leq) of dB(A) or above, and take appropriate measures as necessary.

**Attention**

Please read this operation manual carefully before carrying out any operation of the crusher bucket.

**5.1 LOCATION OF IDENTIFICATION AND LABELS (SAMPLE)**

The cutting unit does not incorporate dust suppression sprays as standard equipment. The slow pick speed and type of strata generally excavated combine to reduce dust to make minimal levels. However, in those circumstances, where excessive dust levels are generated, appropriate counter measure should be adopted, for example externally mounted water sprays on the excavator boom and the use of personal protective equipment. In order to improve working efficiency and ensure functionality and safe operation of the machine, it is advised that the unit is handled correctly and proper maintenance and inspections is carried out at all times. Improper handling may result not only in problems with the machine, but may also negatively affect operating performance.

Please read this instruction manual carefully so that you are acquainted with the correct handling and operation. Items described in this manual are subject to change without prior notice.

## 5.2 CAUTION AND WARNING SYMBOLS

Great attention shall be paid to the design and construction of this equipment so that it can operate in a safe and effective manner. Any warning, caution and management symbols required for the use of the equipment shall be clearly located and securely connected. If these symbols are damaged during transportation or on site, they shall be replaced as soon as possible.



### Attention

Personal protective equipment (PPE) refers to protective clothing, hard hats, goggles or other clothing or equipment designed to protect the wearer from injury. Hazards handled by protective equipment include physical, electrical, thermal, chemical, biological hazards and airborne particulate matter. Wear protective equipment for the purpose of occupational safety and health related to work.

	<b>Management regulation symbol:</b> Protective clothing includes: work gloves. Exposed hands may be cut and worn by metal or stone when operating the machine.
	<b>Management regulation symbol:</b> Protective clothing includes: close fitting conjoined clothing. Loose clothing may be caught by the machine when operating the machine. Be sure to wear proper work clothes.
	<b>Management regulation symbol:</b> protective clothing includes: protective shoes. Protect the operator's feet from injury and prevent the operator from slipping.
	<b>Management regulation symbol:</b> Protective clothing includes: ear plugs, ear muffs, and anti noise helmet. When the machine is running, prevent noise from damaging the eardrum and causing hearing loss.
	<b>Management regulation symbol:</b> protective clothing includes: safety helmet. Prevent head injury.
	<b>Management regulation symbol:</b> Protective clothing includes: Glasses / goggles. When the machine is running, the dust generated by working may cause damage to the eyes. Always wear appropriate protective equipment to avoid eye injury and visual impairment.

	<p><b>Management regulation symbol:</b></p> <p>Dust mask includes: N95 mask, surgical mask and industrial dust mask (national standard &lt;GB2626-2006 self priming filter anti particulate respirator&gt;).</p>
	<p><b>Management regulation symbol:</b></p> <p>When operating the machine, the dust generated by working may cause damage to the body. Be sure to wear appropriate dust-proof equipment to prevent dust from entering the human respiratory system.</p>
	<p><b>Caution symbol:</b></p> <p>In order to install and operate the device safely, this operation manual must be studied and understood in a complete manner.</p>
	<p><b>Caution symbol:</b></p> <p>During operation, personnel must keep a safe distance of at least 30m from the machine. The operator shall isolate the hazardous area. There is a risk of injury through the overturning of handle materials and devices.</p>
	<p><b>Caution symbol:</b></p> <p>During operation, the belt and moving parts may cause damage to the body, and clothing may be pinched and twisted in. In order to install and operate the device safely, high attention must be paid to prevent personal injury.</p>
	<p><b>Caution symbol:</b></p> <p>correct lifting point.</p>
	<p><b>Caution symbol:</b></p> <p>Hydraulic oil hose inlet.</p>
	<p><b>Caution symbol:</b></p> <p>Hydraulic oil hose outlet.</p>
	<p><b>Caution symbol:</b></p> <p>Hydraulic oil drain line to excavator.</p>



## 6、 SAFETY AND ACCIDENT PREVENTION

### 6.1 SAFETY

Ensure the area is clear of personnel before and during operation of the cutting unit. The cutting unit will produce small fragments that can be forcibly ejected and may cause injuries. Ensure no personnel or equipment are within this area. If anyone enters this area, stop cutting and turn off the engine of the excavator.

- When leaving the excavator, place the cutting head on the ground and turn off the engine.
- Never touch the cutting unit whilst the cutting drums are rotating.
- Always stop the engine and remove the keys when inspecting or servicing the cutting unit.
- Do not adjust hydraulic valves or any part of the hydraulic system while the machine is running.
- Always change frayed or damaged hoses immediately.
- Always use specified equipment and change at once if damaged.

### 6.2 OPERATION

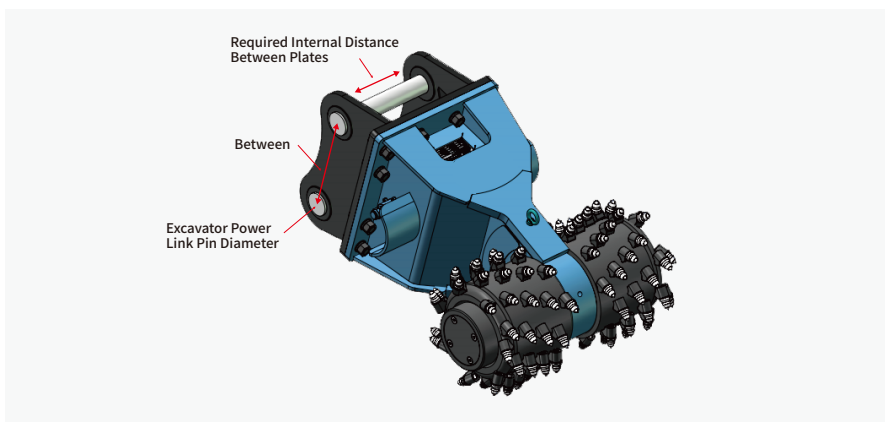
Ensure that the maintenance schedule has been adhered to before operating the machine.

- Only personnel with suitable training/knowledge are to maintain and operate the machinery.
- Operate the handles smoothly without jerking. If the cutting head stalls, back off the work equipment of the excavator. Do not overload the picks as this may cause damage to the cutting unit.
- Do not operate the cutting unit at the end of the stroke of a hydraulic excavator cylinder.
- Do not use the cutting drum with damaged or missing picks as this causes vibration and may damage the unit or excavator.
- The cutting unit should never be run in reverse rotation.
- Never try to cut with the unit while tracking the excavator as this may cause damage to the unit.
- Never place the cutting head against the working surface before starting the unit as this may damage the unit. The unit should be running and fed into the working surface at a rate that does not allow stalling.
- Cutting conditions are best if the cutting unit drums move into the direction of the attachment carrier. If the unit is moved sideways to achieve a larger cutting area, it must be ensured that the pressure on the excavator's boom, arm and cutting drum bearing is not too strong.
- Periodically check that the cutting head is clear of debris as this can affect the overall cutting rate.
- Always ensure that the cutting unit or any part of the unit is correctly attached during any maintenance work. The Ningbo Ant Machinery Co.,Ltd. must be consulted before the cutting unit is used in wet environments or under water. Before the cutting unit can be used in such environments it has to be converted.

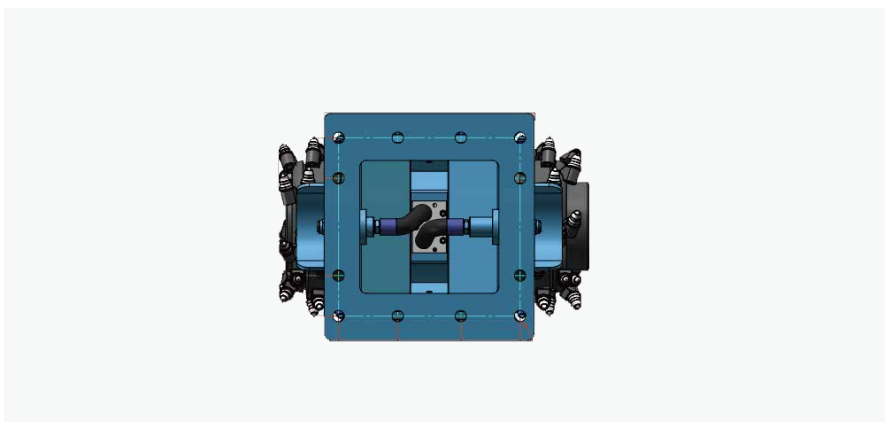
## 7、INSTALLATION

### 7.1 ADAPTOR BRACKET

The Transverse Drum Cutter requires an adaptor bracket to suit the excavator being used. Ant machinery can supply a bracket if the following information is supplied.

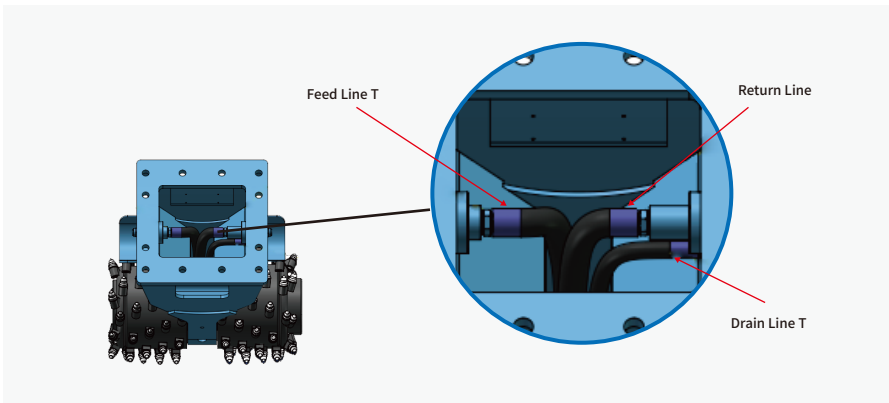


To simplify installation the Transverse Drum Cutter mounting flange is designed to suit existing hydraulic breakers.

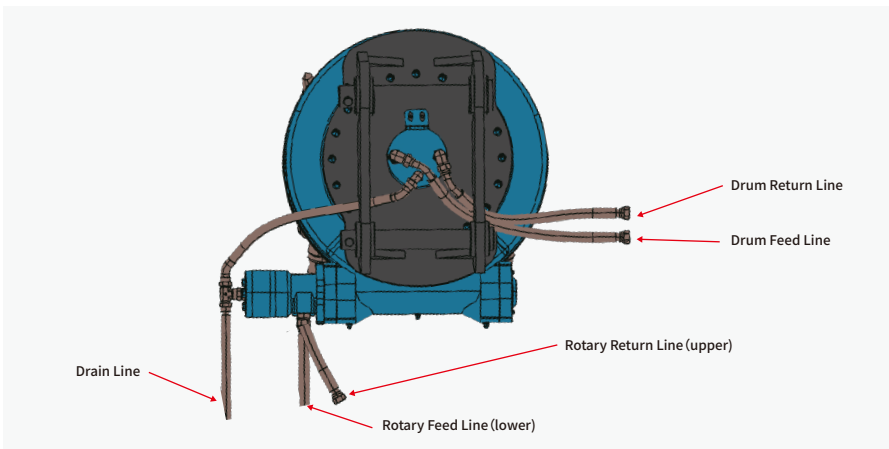


## 7.2 HYDRAULIC CONNECTION

The Transverse Drum Cutter Unit revolves in one direction only and therefore the ideal way to connect into the excavator's circuit is to take the return directly back to tank via the excavator's return line filter (Hydraulic Hammers utilise this type of circuit). The rockwheel can be operated without the need for a separate drain line as long as the pressure in the return line does not exceed 50 bar. In the majority of cases the pressure in the return line will be no greater than 15 bar for this type of circuit. Pressure spikes will occur during the operation of the Transverse Drum Cutter, but these should not exceed the required 50 bar. In the event of the pressure exceeding the 50 bar a relief to atmosphere prevents any damage occurring. A separate drain line will have to be fitted in this event. It is recommended that a filter be used for the return flow if not already fitted.



## ROTARY DRUM CUTTER HYDRAULIC CONNECTION



## TUBING

### OIL INLET

model	name	Specifications	pressure	Rupture pressure
YF-05RW	2m x G1/2" bore hose	R9R	350bar	1400 bar
YF-10RW	2m x G1/2" bore hose	R9R	350bar	1400 bar
YF-15RW	2m x G1" bore hose	R9R	350bar	1400 bar
YF-20RW	2m x G1" bore hose	R9R	350bar	1400 bar
YF-30RW	2m x G1" bore hose	R9R	350bar	1400 bar
YF-40RW	2m x G1" bore hose	R9R	350bar	1400 bar

### OIL RETURN PIPE

model	name	Specifications	pressure	Rupture pressure
YF-05RW	2m x G1/2" bore hose	Europulse	185bar	740 bar
YF-10RW	2m x G1/2" bore hose	Europulse	185bar	740 bar
YF-15RW	2m x G1" bore hose	Europulse	185bar	740 bar
YF-20RW	2m x G1" bore hose	Europulse	185bar	740 bar
YF-30RW	2m x G1" bore hose	Europulse	185bar	740 bar
YF-40RW	2m x G1" bore hose	Europulse	185bar	740 bar

## 7.3 DETERMINING THE HYDRAULIC SETTINGS

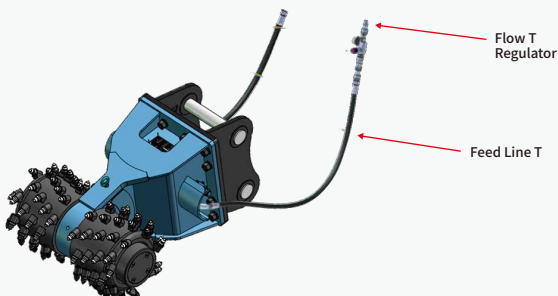


### Attention

A responsible person familiar with the workings of hydraulic systems must only carry out the following procedure.

It is imperative that the following procedure is carried out to ensure the Transverse Drum Cutter is set up in accordance with the specification. Failure to do so may affect the warranty on the unit. The following will require an adjustable flow regulator with pressure gauge. It is recommended that a Start Up Kit (see Flow Regulator Kit) is obtained before the procedure is carried out.

1. First it must be established how the flow and pressure can be adjusted for the circuit intended for the Transverse Drum Cutter.
2. Place the flow regulator into the excavator feed line.



3. With the unit off load (i.e. not cutting), and the flow regulator fully open, slowly increase the flow to the unit by increasing the excavator engine speed. Count the cutting drum revolutions. Example: The ideal speed is 76-78 rpm, the maximum is 112 rpm. Note the revolutions at maximum engine speed. Check no oil is coming from the relief to atmosphere. If oil is coming from this point a drain line will have to be installed before any further checks can be made.

## SPEED

model	The ideal speed	the maximum
YF-05RW	100-105 rpm	126 rpm
YF-10RW	90-93 rpm	124 rpm
YF-15RW	85-87 rpm	122 rpm
YF-20RW	76-78rpm	112 rpm
YF-30RW	76-78rpm	112 rpm
YF-40RW	60-65rpm	92 rpm

4. The pressure will now need to be measured. The higher the pressure the better the cutting performance will be for the Transverse Drum Cutter. Ideally the pressure should be set as close to the excavator's main relief to help reduce heat generation as the cutting drums will be less likely to stall. Wind the flow regulator fully in until the cutting drums no longer turn. Set the pressure at the maximum possible, this is normally around 320 bar.
5. The hydraulic power that is being delivered to the Transverse Drum Cutter from the excavator must now be determined. This is the most important consideration when setting up the Transverse Drum Cutter. If too much power is being delivered the hydraulic motor of the Transverse Drum Cutter will fail prematurely. If it is too low the cutting performance will be reduced. Increase the restriction to the flow and note the speed of the cutting drums and the pressure at the corresponding speed. Take readings in 50 bar steps. The following formula can then be used:

$$\text{Power in kW} = (\text{Speed in rpm} \times \text{Pressure in bar} \times 4.18) / 600$$

6. Find the maximum value for the power. This value must not exceed 110 kW, if it does then the flow and / or the pressure must be reduced. As a guide if the material being cut is soft then it is recommended that the pressure is reduced, if the material is hard then the flow should be reduced.

## PRESSURE TO BE REDUCED

model	Rated power	Power found	Original setting	New settin
YF-05RW	22KW	25KW	400 bar	$22/25 \times 400 = 352$ bar
YF-10RW	45KW	50KW	400 bar	$45/50 \times 400 = 360$ bar
YF-15RW	70KW	75KW	400 bar	$70/75 \times 400 = 373.3$ bar
YF-20RW	90KW	95KW	450 bar	$90/95 \times 450 = 378.9$ bar
YF-30RW	110KW	115KW	450 bar	$110/115 \times 450 = 430.4$ bar
YF-40RW	140KW	145KW	450 bar	$140/145 \times 450 = 434.4$ bar

## FLOW TO BE REDUCED

model	Rated power	Power found	Original speed setting	New settin
YF-05RW	22KW	25KW	100rpm	$22/25 \times 100 = 88$ rpm
YF-10RW	45KW	50KW	90rpm	$45/50 \times 90 = 81$ rpm
YF-15RW	70KW	75KW	85rpm	$70/75 \times 85 = 79.3$ rpm
YF-20RW	90KW	95KW	76rpm	$90/95 \times 76 = 72$ rpm
YF-30RW	110KW	115KW	76rpm	$110/115 \times 76 = 72.6$ rpm
YF-40RW	140KW	145KW	60rpm	$140/145 \times 60 = 57.9$ rpm

## 7.4 SWAPPING THE FEED AND RETURN LINES

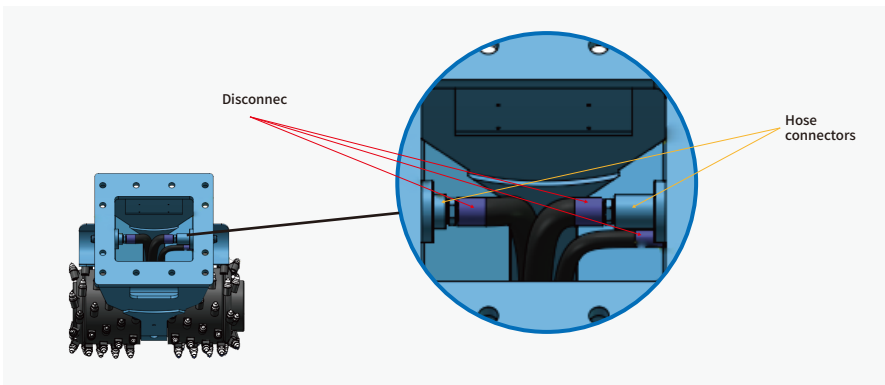


### Attention

A responsible person familiar with the workings of hydraulic systems must only carry out the following procedure.

The Transverse Drum Cutterunit is supplied with the feed line on the left hand side (looking from operators cab) and the return line on the right hand side. If required the feed and return lines can be swapped to the opposite sides. To do this the hoses must first be swapped internally. The correct personal protective equipment must be used when exposed to oil and/or temperature.

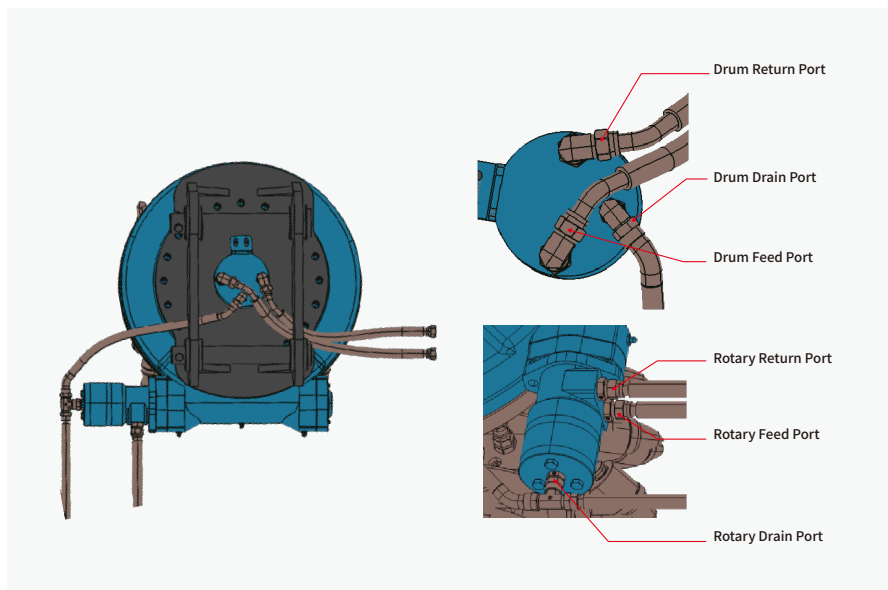
1. Disconnect the feed, return and drain at the points shown.
2. Disconnect and swap the Hose Connectors.
3. Loosen the fittings at the points shown on the hydraulic block to allow the hoses to bend smoothly.



4. Reconnect the return and drain at the opposite side.
5. Reconnect the feed at the opposite side.
6. Retighten the fittings at the hydraulic block

### Hydraulic connection of rotary transverse drum cutter

Connect the drum hydraulic line with your base machine hydraulic system first, then connect the rotary's hydraulic line with your base machine hydraulic system. Swap the positions of the feed line and return line with each other if necessary. During this operation, there may be contact with oil or extreme temperatures, please pay attention to personal protection.



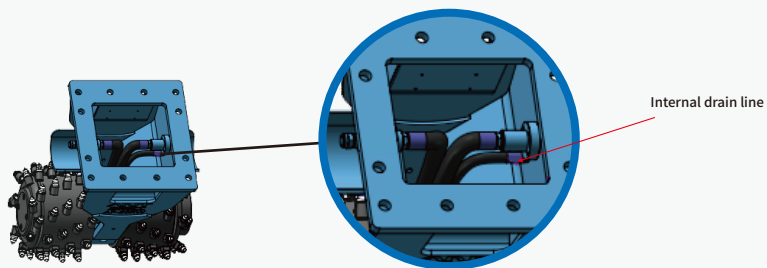
## 7.5 CONNECTING A DRAIN LINE



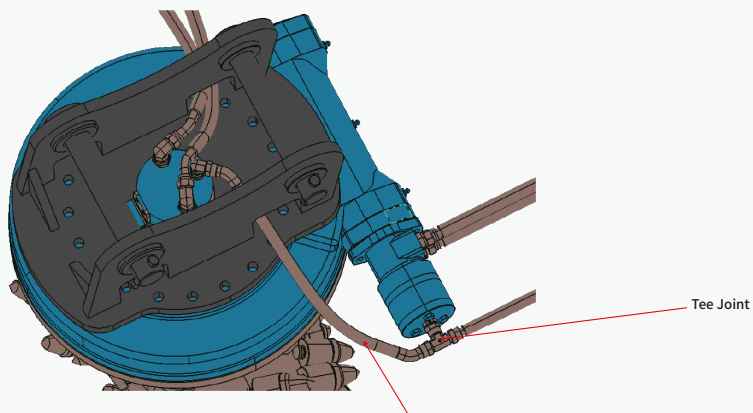
### Attention

A responsible person familiar with the workings of hydraulic systems must only carry out the following procedure.

Connect the oil drain interface reserved for the excavator with the oil drain interface of the Transverse Drum Cutter.

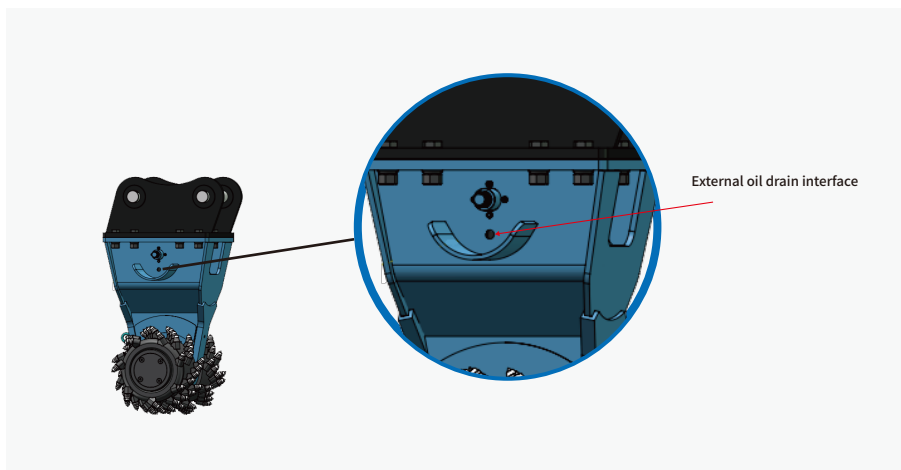


Drain line connection method of rotary mechanism (if equipped) of transverse drum cutter.



Use this line to connect the drum drain port with the rotary drain port in series through a tee joint, and then connect the other port of the tee joint to the drain line of excavator.





## 7.6 POLLUTION AND FILTRATION

A low level of pollution will ensure that the moving parts of the hydraulic motor (piston, distribution) have a longer lifetime. A pollution level lower than class 9 of NAS 1638 is recommended ( 18/13 of ISO.4406 ).



### Important

Failure to maintain the required filtration can affect the manufacturer's warranty on the hydraulic motor.

## 7.7 HYDRAULIC OIL

- Oil type HV 46 or 68
- HV mineral oils possessing improved viscosity / temperature properties (DIN 50524, part 3)..
- Class 46: Viscosity is at 40 °C
- Class 68: Viscosity is at 40 °C

If the oil type is below 46 centistokes at 40 °C (ISO HV46) the performance must be down-rated.

## 7.8 STARTING-UP

Before starting up, the pre-shift maintenance schedule must be performed and torque settings checked .

Ensure the hydraulic circuit complies with the relevant technical description for the unit.

A new motor must not be operated off-load at high speed. Oil will not pass into the motor crankcase unless the unit is working , resulting in a lack of lubrication to the motor pistons.

Operate the unit for a period of around 20 minutes. Check the relief to atmosphere for leakage. A separate drain line may have to be fitted if leakage is present. However, it is not uncommon for a small amount of oil to be lost when the unit is started for the first time.

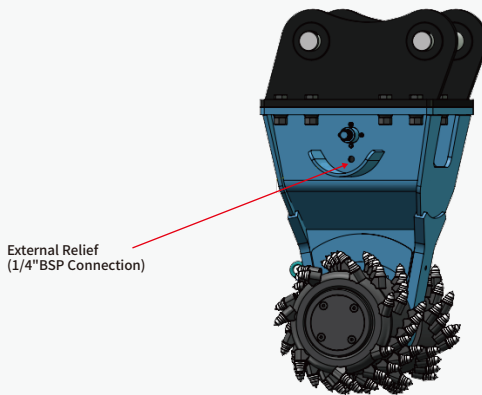
During the running in period the oil temperature should be checked –between 50°and 60°is acceptable.

Under no circumstances must it exceed 80°. If this occurs, the cooling circuit must be redesigned. After the running in period the flows and pressures should be checked out and reset if necessary

## 7.9 UNDERWATER OPERATION

Transverse Drum Cutter can be operated underwater to a depth of 30 meters. However, Yichen Environment Tech Co., Ltd. should be contacted if the unit is to be operated below 10 meters for a prolonged period of time.

**Note: The drain line shall be connected before installation.**



## 8. FAULT FINDING

OIL LEAKAGE FROM EXTERNAL RELIEF		
CHECK	DIAGNOSIS	ACTION
Check excavator hydraulic circuit.	Oil relieves to atmosphere if the pressure in the return line exceeds 50 bar. For optimum performance the Rockwheel needs a return directly back to tank.	Remove Drum Cutter from circuit –check flow, relief pressure and power in circuit (see Determining Hydraulic Settings). Also check all hydraulic hoses/pipes, fittings and quick couplers.
Check hydraulic motor.	A worn motor will leak oil past the pistons and reduce cutting performance. Contaminated oil, and/or low oil viscosity and too much flow are the main reasons for motor failure	Hydraulic motor will have to be replaced. Return motor to Ant Machinery.
Check for leakage from external relief (see hydraulic Connection).	Oil relieves to atmosphere if the pressure in the return line exceeds 50 bar. For optimum performance the Rockwheel needs a return directly back to tank.	Ensure return line has no restrictions.
Check Pressure difference between feed and return is not greater than 50 bar.	Excessive pressure signifies possible mechanical problems.	Remove cutting heads (see Removing Cutting Heads), disconnect hoses and quick couplers. Using a suitable lever try to rotate output shaft. If the shaft appears seized the Motor Side Housing and Driven Side Housing will have to be removed for inspection.
Check the rotational speed of the cutting heads matches the flow, 10 rpm = 41.8lpm.	Flow can be lost through a defective start up valve or a worn hydraulic motor.	See Checking the Condition of the Hydraulic Motor. If the motor leakage is within limits the start up valve is probably defective.
Check hydraulic motor.	A worn motor will leak oil past the pistons and reduce cutting performance. Contaminated oil, and/or low oil viscosity and too much flow are the main reasons for motor failure.	Hydraulic motor will have to be replaced. Return motor to Yichen.

CUTTING HEADS DON'T TURN		
CHECK	DIAGNOSIS	ACTION
Check excavator hydraulic circuit.	Drum Cutter performance is dependant on correct function of excavator hydraulic circuit.	Remove Drum Cutter from circuit –check flow, relief pressure and power in circuit (see Determining Hydraulic Settings). Also check all hydraulic hoses/pipes, fittings and quick couplers.
Check Pressure in feed line.	Excessive pressure signifies possible mechanical problems.	Remove cutting heads (see Removing Cutting Heads), disconnect hoses and quick couplers. Using a suitable lever try to rotate output shaft. If the shaft appears seized the Motor Side Housing and Driven Side Housing will have to be removed for inspection.

OIL LEAKAGE FROM EXTERNAL RELIEF		
CHECK	DIAGNOSIS	ACTION
Check excavator hydraulic circuit.	Oil relieves to atmosphere if the pressure in the return line exceeds 50 bar. For optimum performance the Rockwheel need a return directly back to tank.	Remove Drum Cutter from circuit-check flow, relief pressure and power in the circuit(see Determining Hydraulic Settings).Also check all hydraulic hoses/pipes, fittings and quick couplers.
Check hydraulic motor.	A worn motor will leak oil past the pistons and reduce cutting performance. Contaminated oil,and/ or low oil viscosity and too much flow are the main reasons for motor failure	Hydraulic motor will have to be replaced. Return motor to Yichen for analysis.

OIL LEAK		
CHECK	DIAGNOSIS	ACTION
Oil leaking from area between adaptor bracket and mounting face of Drum Cutter.	A number of hoses and fitting are located in this area.	Remove adaptor bracket to establish area of leak.
Oil leaking from area between cutting head and housing.	Oil can leak from: 1.Mounting Bolts 2.Mounting face between housing and bearing housing 3.Breather	Remove cutting head(see removing cutting heads) Establish where the leakage originates from. Leakage from 1 will be due to loose mounting bolts.Remove the 4 M12x25 caphead bolts and the end plate to allow access to the M16x160 or M16x200 caphead bolts.check the torque setting is 330Nm. Leakage from 2 will require the bearing housing to be removed as an o'ring failure is possible. Leakage from 3 will mean the internal shaft seal has failed.

ONLY ONE CUTTING HEAD TURNS		
CHECK	DIAGNOSIS	ACTION
Only one head turns or turns faster than the other.	Internal shaft failure.	Drum Cutter must notused. Full strip down required.

## 9、 MAIN TENANCE



### Attention

Qualified technical personnel can only carry out maintenance or repair work.

The following checks are recommendations for a maintenance schedule and should be altered according to usage and familiarity with the unit.

The operator must be instructed to wear the appropriate level of personal protective equipment when oils used in the hydraulic system. The used oil must be collected and stored in a suitable container, prior to disposal in an approved manner.

DURATION	CHECK
Pre – Shift	Check for leakage from external relief. Check cutting heads are securely fastened. Check all bolted joints. Check for leaks and damage on hoses. Check all picks and boxes for wear and replace with new where necessary.
Every 100 Hours	Check bolted joints. Check for any internal leakage. Check torque settings on cutting drums.
Every 1000 Hours	Check condition of hydraulic motor. Remove cutting drums and check for leakage from seals, also check bolted joints. Check condition of Laminar Rings Replace the Outboard Bearing Grease

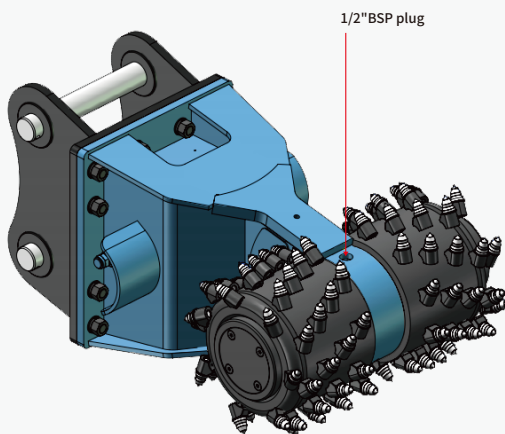
## 9.1 CHECKING THE CONDITION OF THE HYDRAULIC MOTOR



### Attention

A responsible person familiar with the workings of hydraulic systems must only carry out the following procedure.

1. Switch off the engine of the host vehicle.
2. Ensure the hydraulic oil is not too hot.
3. A 1/2" BSP plug can be seen between the two cutting drums.
4. Remove the plug and connect a suitable hose, place the section of the hose into a bucket of known capacity or similar measuring device.
5. Place the cutting head in a stalled condition by blanking off the return line.
6. Turn on the cutting unit.
7. Note the flow rate of the oil from the drain line; it should be no more than 5 lpm.
8. If a drain line has been fitted to the unit then this procedure can be followed by simply feeding the existing drain line into a measuring device.



## 9.2 FILLING (PURGING) THE HYDRAULIC MOTOR



### Attention

A responsible person familiar with the workings of hydraulic systems must only carry out the following procedure.

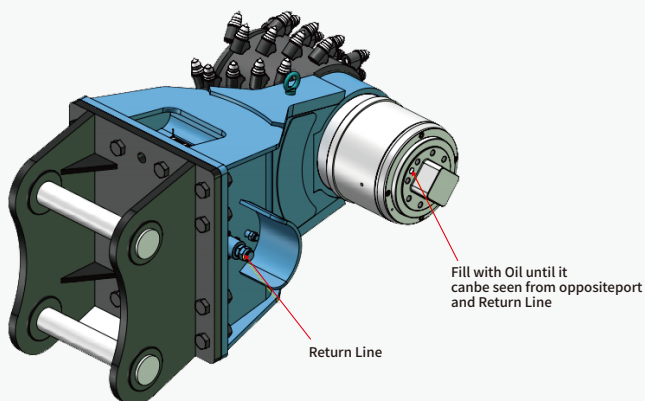
It is recommended that you contact /consult Ant Machinery before attempting to undertake the following measures as your warranty may be affected.

The Transverse Drum Cutter will have been filled with oil before shipment and should not need to be re-filled unless oil has been lost from any area around the hydraulic motor.

1. Switch off excavator.
2. Open the hexagon socket plug.
3. Disconnect the return line from the excavator and remove quick coupler if fitted.
4. Connect a hose to the RH Drum 1/2" BSP port
5. Feed oil into the unit until oil can be seen to come from the opposite BSP port.

**IT IS IMPERATIVE THAT THE OIL IS CLEAN.**

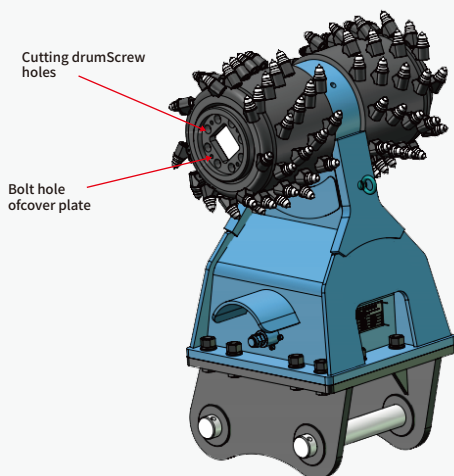
6. Blank this port.
7. The other side feed the oil according to the above steps.



### 9.3 REMOVING / REPLACING THE CUTTING DRUMS

It is recommended that you contact Seller before attempting to undertake the following measures as your warranty may be affected.

1. Switch off the excavator.
2. Remove the 4 caphead bolts to remove the Cutting Drum Cover Plate.
3. Remove the 8 caphead bolts.
4. If required place a suitable spacer on the end of the shaft and use the 4 M16 bolts and the Cutting Head Cover Plate to help withdraw the Cutting Head.
5. The centre of gravity of the Cutting Head is approximately at the point where the seventh pick from the inside sits. Any sling around the cutting drum should pass through this point for ease of removal.
6. The drum can now be lifted off taking care not to damage the square drive on the shaft.
7. When the cutting drum is put back on use the new bolt caphead bolt to make sure it is the same as before. The torque of the bolt must meet the specified requirements.

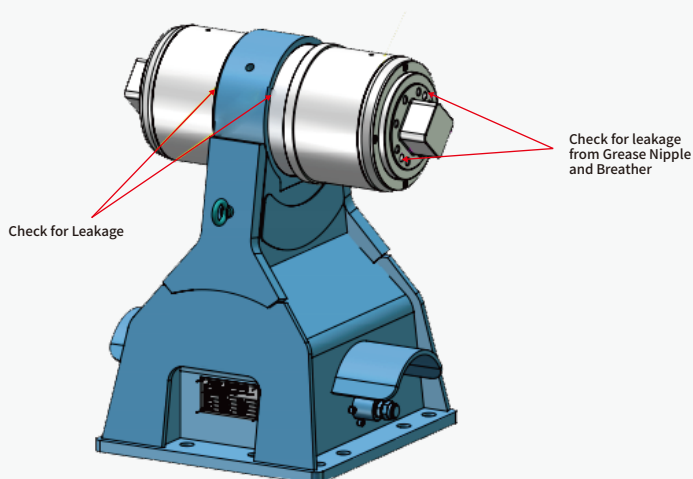




## 9.4 CHECKING THE MECHANICAL SEALS AND HOUSING BOLTS

It is recommended that you contact /consult seller before attempting to undertake the following measures as your warranty may be affected.

1. Switch off the excavator.
2. Remove the Cutting Drums (see Removing the Cutting Drums).
3. Remove the End Plate
4. With the End Plate removed check for any leakage from the Mechanical Seal.
5. Check for any leakage from the Housings.
6. Check for any leakage from the grease nipple and breather.
7. Check whether the bolts are loose

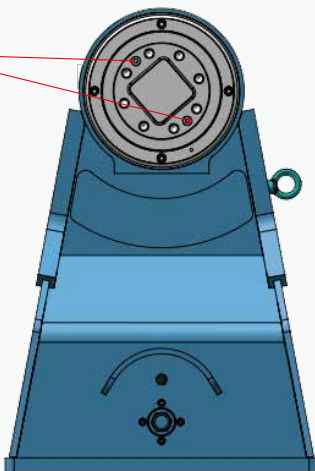


## 9.5 REPLACING THE OUTBOARD BEARING GREASE

The outboard bearing in each of the bearing housings runs in grease. This grease can be replaced to help improve the life of the bearings. It is recommended that you contact /consult Yichen before attempting to undertake the following measures as your warranty may be affected.

1. Switch off the excavator.
2. Remove the Cutting Drums (see Removing the Cutting Drums).
3. Remove cover plate and inspect butter opening.
4. Pump a lithium based grease into the housing until old grease can be seen to exit from the port.
5. Periodically rotate the shaft and continue to pump in grease until no more old grease can be seen.
6. Put Cutting Drum Cover Plate on.

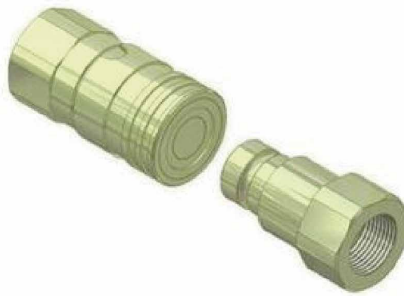
pump oil intohousing



## 9.6 USING QUICK COUPLERS

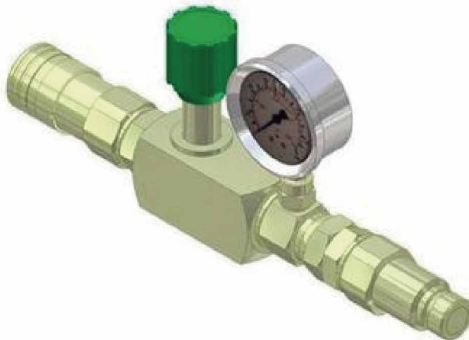
If the Transverse Drum Cutter is to be interchanged with other equipment, e.g. bucket or hydraulic hammer, it is recommended that quick Couplers are used. The following conditions must be met when using couplers.

1. Only flat face Couplers to be used.
2. Ensure Couplers are clean before re-connecting.
3. Minimum size of 3/4" Coupler to be used on both lines.
4. Use male and female Couplers on the cutting unit to avoid incorrect connection to host machine.
5. Check that the additional back pressure in the return line does not result in leakage from external relief.
6. When the unit is disconnected from the host vehicle a pressure lock can develop in the return line from the cutting unit if the cutting drums are rotated. To prevent this the quick couplers should be connected together before the unit is removed from the excavator.



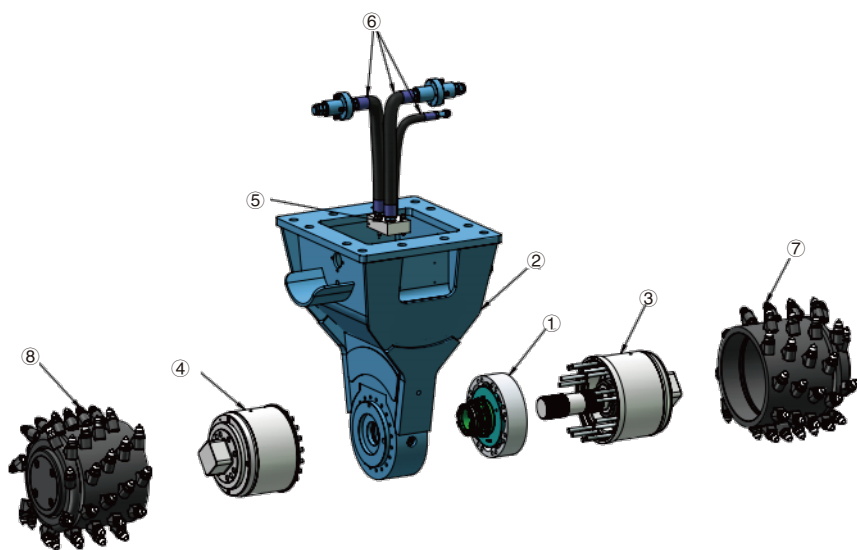
## 9.7 FLOW REGULATOR KIT

The following Flow Regulator Kit (RWA-183) can be obtained from Yichen to assist in the setting up of the Transverse Drum Cutter.



## 10、 PARTS LISTING AND RECOMMENDED SPARES HOLDING

- |  |                            |
|--|----------------------------|
| ① High Torque Drive Assembly           | ⑤ Start Up Valve Assembly  |
| ② Housing Assembly                     | ⑥ Hoses & Fittings         |
| ③ Motor Side Bearing Housing Assembly  | ⑦ Right Hand Drum Assembly |
| ④ Driven Side Bearing Housing Assembly | ⑧ Left Hand Drum Assembly  |



## RECOMMENDED SPARES HOLDING

The following assemblies have been selected to provide guidance on spares holding for the Transverse Drum Cutter.

YF-05RW	QTY	PART NUMBER	ITEM	DESCRIPTION
First Level Spares (Recommended on Site)	1	RWA-185	9	Excavator Return Hose Assembly
	1	RWA-184	10	Excavator Feed Hose Assembly
	64	RW-0350 or RW-0673	7	Cutting Picks
Intermediate Level Spares	1	RWA-185	9	Excavator Return Hose Assembly
	1	RWA-184	10	Excavator Feed Hose Assembly
	64	RW-0350 or RW-0673	7	Cutting Picks
	1	RWA-160	6	Hoses & Fittings Assembly
	1	RWA-161A	7	RH Rockwheel Assembly
	1	RWA-162A	8	LH Rockwheel Assembly
	1	RWA-046	1	High Torque Drive Assembly
Top Level Spares (Major Components)	1	RWA-159	5	Start Up Valve Assembly
	1	RWA-157A	3	Motor Side Housing Assembly
	1	RWA-158A	4	Driven Side Housing Assembly

YF-10RW	QTY	PART NUMBER	ITEM	DESCRIPTION
First Level Spares (Recommended on Site)	1	RWA-185	9	Excavator Return Hose Assembly
	1	RWA-184	10	Excavator Feed Hose Assembly
	64	RW-0350 or RW-0673	7	Cutting Picks
Intermediate Level Spares	1	RWA-185	9	Excavator Return Hose Assembly
	1	RWA-184	10	Excavator Feed Hose Assembly
	64	RW-0350 or RW-0673	7	Cutting Picks
	1	RWA-160	6	Hoses & Fittings Assembly
	1	RWA-161A	7	RH Rockwheel Assembly
	1	RWA-162A	8	LH Rockwheel Assembly
	1	RWA-046	1	High Torque Drive Assembly
Top Level Spares (Major Components)	1	RWA-159	5	Start Up Valve Assembly
	1	RWA-157A	3	Motor Side Housing Assembly
	1	RWA-158A	4	Driven Side Housing Assembly

<b>YF-05RW</b>	<b>QTY</b>	<b>PART NUMBER</b>	<b>ITEM</b>	<b>DESCRIPTION</b>
First Level Spares (Recommended on Site)	1	RWA-185	9	Excavator Return Hose Assembly
	1	RWA-184	10	Excavator Feed Hose Assembly
	64	RW-0350 or RW-0673	7	Cutting Picks
Intermediate Level Spares	1	RWA-185	9	Excavator Return Hose Assembly
	1	RWA-184	10	Excavator Feed Hose Assembly
	64	RW-0350 or RW-0673	7	Cutting Picks
	1	RWA-160	6	Hoses & Fittings Assembly
	1	RWA-161A	7	RH Rockwheel Assembly
	1	RWA-162A	8	LH Rockwheel Assembly
	1	RWA-046	1	High Torque Drive Assembly
Top Level Spares (Major Components)	1	RWA-159	5	Start Up Valve Assembly
	1	RWA-157A	3	Motor Side Housing Assembly
	1	RWA-158A	4	Driven Side Housing Assembly

<b>YF-10RW</b>	<b>QTY</b>	<b>PART NUMBER</b>	<b>ITEM</b>	<b>DESCRIPTION</b>
First Level Spares (Recommended on Site)	1	RWA-185	9	Excavator Return Hose Assembly
	1	RWA-184	10	Excavator Feed Hose Assembly
	64	RW-0350 or RW-0673	7	Cutting Picks
Intermediate Level Spares	1	RWA-185	9	Excavator Return Hose Assembly
	1	RWA-184	10	Excavator Feed Hose Assembly
	64	RW-0350 or RW-0673	7	Cutting Picks
	1	RWA-160	6	Hoses & Fittings Assembly
	1	RWA-161A	7	RH Rockwheel Assembly
	1	RWA-162A	8	LH Rockwheel Assembly
	1	RWA-046	1	High Torque Drive Assembly
Top Level Spares (Major Components)	1	RWA-159	5	Start Up Valve Assembly
	1	RWA-157A	3	Motor Side Housing Assembly
	1	RWA-158A	4	Driven Side Housing Assembly

YF-05RW	QTY	PART NUMBER	ITEM	DESCRIPTION
First Level Spares (Recommended on Site)	1	RWA-185	9	Excavator Return Hose Assembly
	1	RWA-184	10	Excavator Feed Hose Assembly
	64	RW-0350 or RW-0673	7	Cutting Picks
Intermediate Level Spares	1	RWA-185	9	Excavator Return Hose Assembly
	1	RWA-184	10	Excavator Feed Hose Assembly
	64	RW-0350 or RW-0673	7	Cutting Picks
	1	RWA-160	6	Hoses & Fittings Assembly
	1	RWA-161A	7	RH Rockwheel Assembly
	1	RWA-162A	8	LH Rockwheel Assembly
	1	RWA-046	1	High Torque Drive Assembly
Top Level Spares (Major Components)	1	RWA-159	5	Start Up Valve Assembly
	1	RWA-157A	3	Motor Side Housing Assembly
	1	RWA-158A	4	Driven Side Housing Assembly

YF-10RW	QTY	PART NUMBER	ITEM	DESCRIPTION
First Level Spares (Recommended on Site)	1	RWA-185	9	Excavator Return Hose Assembly
	1	RWA-184	10	Excavator Feed Hose Assembly
	64	RW-0350 or RW-0673	7	Cutting Picks
Intermediate Level Spares	1	RWA-185	9	Excavator Return Hose Assembly
	1	RWA-184	10	Excavator Feed Hose Assembly
	64	RW-0350 or RW-0673	7	Cutting Picks
	1	RWA-160	6	Hoses & Fittings Assembly
	1	RWA-161A	7	RH Rockwheel Assembly
	1	RWA-162A	8	LH Rockwheel Assembly
	1	RWA-046	1	High Torque Drive Assembly
Top Level Spares (Major Components)	1	RWA-159	5	Start Up Valve Assembly
	1	RWA-157A	3	Motor Side Housing Assembly
	1	RWA-158A	4	Driven Side Housing Assembly

## 11、 WARRANTY CONDITIONS

Transverse Drum Cutter Units are the result of a long-term experience in the field of cutting units. Great importance is attached to the fact that our products meet the highest quality demands in design, material and manufacture.

The warranty covers; 12 months parts, not exceeding 1000 operating hours, however not later than 12 months after delivery.

The warranty period begins with the handing over to the end-user and/or commissioning of the unit. A warranty registration and an installation/commissioning document are contained at end of this section. These forms must be completed and returned to Yichen, immediately upon receipt of the cutting unit in order for the warranty to be registered. Failure to do this will invalidate warranty.

Warranty can only be provided if:

- Delivery inspection, handing over and introduction are carried out according to regulations.
- There is application for the right purpose.
- Inspection and maintenance regulations are strictly complied with.

These preconditions represent an important contribution to the prevention of damage, to operation readiness and lifetime.

In the case of warranty, Yichen engage to bear direct material and assembly costs caused by the elimination of the damage. Ant machinery will proceed from our spare parts prices. Only genuine Yichen spare parts are allowed to be used for repairs (unless agreed with Yichen).

### 11.1 WARRANTY ITEMS

Claims for repairs should be within 4 weeks after the date of damage.

In the event of failure of a part covered by the warranty the user will make the failed part, which is the subject of the claim, available for inspection at the premises of Yichen or at the premises of a mutually accepted third party.

Defective parts have to be retuned in unchanged condition, carriage paid. Complete units such as hydraulic motors, gears etc must not be disassembled or taken apart. Any parts returned for examination need to be clearly referenced to unit serial no.

Should the part be found to have failed due to defects in design, workmanship or materials, subject to the conditions below, Yichen shall replace all the parts free of charge CIF.

Should Yichen accept a warranty claim, Yichen will compensate the spare parts which were necessary to repair the damage at net prices. Costs for auxiliary material cannot be accepted in principle.



## 11.2 ITEMS NOT INCLUDED IN THE SCOPE OF THE WARRANTY

- Compensation for suspended work due to breakdown.
- Compensation for any work carried out, or costs incurred, due to breakdown.
- Compensation for incidental or consequential damages of a hydraulic excavator due to breakdown
- Breakdown due to negligence of proper handling, operation, maintenance and inspection not in accordance with procedures detailed in this manual.
- Loss of damaged parts.
- Breakdown caused by modifications made by the customer without prior notice to Yichen.  
Breakdown caused by the use of parts other than those supplied by Yichen.
- Breakdown caused by the use of the unit for strata having excessive adhesion and abrasive characteristics.
- Breakdown caused by repair without prior notice to Yichen.
- Breakdown caused by improper installation such as over pressure or excessive flow.
- The cutting head, cutting picks, cutting pick boxes, hoses, seals, oil and grease are seen as consumable items and are not classed as warranty items.
- Expenses for oil, lubricants and fuels as well as other auxiliary materials.
- Expenses for downtime, transport and cleaning.
- Expenses for the elimination of the damage and disturbances of any kind that are not a result of our work during manufacture and assembly.
- Expenses for parts, which probably failed due to normal wear, such as picks, pick holders, cutting drums, inspection and maintenance parts etc.
- Attachments not factory installed and or other modifications which were made without Yichen consent and due to improper operation by third parties.

### 11.3 HYDRAULIC CUTTING UNIT WARRANTY

#### REGISTRATION FORM

DATE OF RECEIPT OF UNIT:	
SERIAL NUMBER:	
APPLICATION / PROJECT NAME:	
CUSTOMER NAME:	
ADDRESS:	
TELEPHONE NUMBER:	
FAX NUMBER:	
E-MAIL ADDRESS:	
SIGNATURE:	
PRINT NAME:	
POSITION:	

**Attention**

This form must be completed and returned to Yichen, immediately upon receipt of the cutting unit in order for the warranty to be registered. Failure to do this will invalidate warranty.

## 11.4 HYDRAULIC CUTTING UNIT INSTALLATION/COMMISSIONING FORM

Dealer: N/A		
Dealer: N/A		
Customer: N/A		
Type of cutting unit:	Serial Number: N/A	Date of Manufacture: N/A
Putting into operation. Place /Date:..... Job Description:..... Excavator Type / Model and Serial Number:..... Adaptor Bracket Details (see page 13): <ul style="list-style-type: none"> <li>Stick Pin Diameter: .....</li> <li>Power Link Diameter:.....</li> <li>Distance Between Pins: .....</li> <li>Distance Between Plates: .....</li> </ul> Hydraulic Connection (see page 14): <ul style="list-style-type: none"> <li>Return Line to Tank: .....</li> <li>Filter in Return Line:.....</li> <li>Maximum Cutting Drum Speed (rpm):.....</li> <li>Pressure Setting (bar): .....</li> <li>Power to Unit (kW): .....</li> <li>Relief to Atmosphere Leakage, Yes / No:.....</li> </ul> Hydraulic Oil Specification (see page 18): <ul style="list-style-type: none"> <li>Oil Specification: .....</li> <li>Oil Manufacturer: .....</li> </ul> Underwater operation, Details (see page 19) .....		
Further information if Known: Geology (Type, Compressive Strength, Abrasivity etc.)		Miscellaneous: Paint specification
The receipt of the cutting unit in perfect condition, the receipt of the operating instructions as well as the instructions obtained for the proper operation and maintenance of the hydraulic cutting unit and correct hydraulic connections and adjustment of the base vehicle (excavator) is confirmed herewith.		
Place / Date	Name / Signature (dealer customer service)	Name /Signature (customer)



### Important

In case of conversion / mounting of the cutting unit on a different excavator, a new report must be made!

ALL ENVIRONMENTAL ENGINEERING EQUIPMENT  
SOLUTION SERVICE PROVIDER



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