



HYDRAULIC UNIT

E-2002Ax

INSTRUCTION MANUAL

- © Thank you for purchasing our products.
- © Before using, please read Instruction manual carefully, and use the machine safety by following the instructions.
- © After reading, please keep it where anyone can utilize.

CONSEC CORPORATION

MEANING OF SIGNAL WARDS ⚠WARNING , ⚠CAUTION AND POINT

The instruction manual includes three signal words ; ⚠WARNING, ⚠CAUTION and POINT which mean as follows.

⚠WARNING : It is assumed that if the user use the machine wrongly, it would be the risks that the user could be died or injured.

⚠CAUTION : It is assumed that if the user use the machine wrongly, it would be the risks that the user could remain the disabled or damage for the materials.

POINT : Important notices for the installation of machine, instructions, maintenance and servicing.

"CAUTION" might cause the serious accidents depending on the situations. Since we mention the important notices, please strictly follow the instruction in order to avoid the accidents.

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1 . WARNING AND CAUTION

- ⊙ Before using, please read "WARNING & CAUTION", and follow the instructions and use safely.
- ⊙ To avoid the risk of fire, electric shock and personal injury, follow all the instructions stated in "Safety notice for Hydraulic machinery" and "Notes for usage of Hydraulic unit".
- ⊙ After reading, please keep it where anyone can utilize.

【1】 Safety Notice for Hydraulic Machinery

WARNING

1. Do not use for other than specified purposes.
2. Keep bystanders and children away.
 - ⊙ Never allow bystanders to contact hydraulic unit itself, other hydraulic equipment, control box or cord and hose.
3. Avoid dangerous environments.
 - ⊙ Do not use Hydraulic unit itself or control panel such as electric machines in the rain, damp or wet places.
 - ⊙ Keep working area lightly.
 - ⊙ Do not use machine where there are flammable gas or flammable liquid.
 - ⊙ Cluttered work areas invite accidents.
4. Wear appropriate work clothes.
 - ⊙ Do not wear the loose clothing or jewelries in order to avoid to being caught in the rotating parts.
 - ⊙ When working outdoors, we recommend to wear the rubber gloves and insulated no-skid footwear.
 - ⊙ Wear cap or hair cover in case that you have long hair.
5. Use safety protection tools.
 - ⊙ Wear safety glasses during working. If there are many dust, wear the dust mask.
6. Do not work with improperly posture.
 - ⊙ Fix the footing and maintain the balance at all times.
7. Work carefully without staying alert.
 - ⊙ When using the machines, operate carefully by considering operation methods, how to use and surrounding area.
 - ⊙ Do not come close to the rotating parts. It will be dangerous to being caught in or injured.
 - ⊙ Be careful not to jam your hands or feet between moving parts or connecting parts.
 - ⊙ Do not use machine when you are tired or distracted.

 WARNING

8. Be careful for receiving electric shocks.
 - ⊙ Earth Hydraulic Unit for sure.
 - ⊙ Use power source equipped with earth leakage breaker.
 - ⊙ When working, wear rubber gloves and rubber shoes.
9. Do not treat the cord and hose roughly.
 - ⊙ Do not carry machines by holding the cord.
 - ⊙ Do not carry machines by pulling the cord from the power receptacle.
 - ⊙ Do not get close the cord or hose near the heat, oil and sharp objects.
10. Use CONSEC recommended accessories and options.
 - ⊙ When you use the accessories and options which are not listed in the manual or CONSEC's catalogue, it might cause the accidents or personal injury. Do not use the accessories and options which CONSEC does not recommend.
11. Inspect for the damaged parts.
 - ⊙ Before using, inspect the protection cover and other parts damages carefully, and make sure that whether the machine operate properly and the designed functions work or not.
 - ⊙ Check for alignment, binding of moving parts, parts damages, mounting, and any other conditions that may affect operation.
 - ⊙ Do not use machine if the switch does not turn on or of off.
 - ⊙ Regarding the exchange or the repair for the damaged parts, follw the instruction manual.
 - ⊙ In case that there are no instructions in the manual, contact to the distributors or CONSEC.
12. Stop Hydraulic unit as following cases.
 - ⊙ When connecting or removing Hydraulic hoses.
 - ⊙ When exchanging the options such as blades or core bits.
 - ⊙ Repairing
 - ⊙ You hear the strange noise from Hydraulic unit.
 - ⊙ You can anticipate other hazardous situations.
13. Remove the key or the wrench for sure.
 - ⊙ Before turning on the switch, make sure that the key and the wrench which are used for the inspection and adjusting are removed.
14. Each machine should be maintained carefully.
 - ⊙ Regarding the supplying the oil or the exchange of options, follow the instruction manual.
 - ⊙ Keep the Grip dry and clean, and avoid the oil or grease.
15. When you do not use the machine, storage properly.
 - ⊙ Storage in the dry place, safe place where children can not reach and the place where you can lock.

⚠ WARNING

16. Ask for repairing to CONSEC's sales (service) representative.

- Ⓞ Since this machine is manufactured in compliance with applicable safety standards, do not remodel it.
- Ⓞ If the person who is a very little understanding of repairing, knowledge and technique, performance can not operate enough. And, you will invite the accident or injury.
- Ⓞ Ask for repairing to the distributor or CONSEC's sales (service) representative.

【2】 Notes for Usage of Hydraulic Unit

⚠ WARNING

1. Do not use fire around Hydraulic Unit

- Ⓞ Do not use fire near Hydraulic unit and Do not place flammable items near Hydraulic unit.

2. Do not use in the rain.

3. Do not incline Hydraulic unit or do not move Hydraulic unit during operation.

- Ⓞ It may cause the accidents such as falling down or improper operation.

4. When lifting Hydraulic unit, pay attention to the surroundings.

- Ⓞ After making sure that there is no one or no obstacle in the surroundings, then lift Hydraulic unit by using shackle etc.
- Ⓞ When lifting Hydraulic unit, do not enter under Hydraulic unit.
- Ⓞ Do not give any impacts when lifting up or down. The impact could cause the damage or breakage of Hydraulic unit.

5. For storing, set Hydraulic unit at the flat place and keep Hydraulic unit by setting the wheel stopper.

- Ⓞ Use wheel stopper for sure. If wheel stopper is not used, Hydraulic unit could move suddenly which will cause unexpected accidents.

6. Use the proper voltage which is indicated on the nameplate.

- Ⓞ Use three-phase 400V·50/60Hz of power source and connect to over 50A of commercial power source.
- Ⓞ In case that you apply for the voltage which is over the indicated voltage, it will cause the accidents.

7. Operation of remote control switch must be handled by an operator who is going to use hydraulic equipment connected with Hydraulic Unit after making sure the safety surrounding hydraulic equipment.

8. Connect hydraulic hoses as straight as possible.

- Ⓞ If you connect Hydraulic unit such conditions in that the hoses are extremely bent or twisted, it will cause the decreasing of the pressure, accidents, or personal injury.

 WARNING

9. Do not use hydraulic hoses if there is crack or breakage.
 - ⊙ If there is crack or breakage on hydraulic hoses, this causes oil leakage. As a result, this could lead to an accident or injury.
10. Be careful not hydraulic actuation oil fly apart to the body.
11. Do not use other than hydraulic actuation oil in hydraulic actuation oil tank.
 - ⊙ Use specified hydraulic actuation oil in hydraulic actuation oil tank. Do not mix with other liquid such as water, gasoline, kerosene etc.
12. Use hydraulic equipment to match the capacity of Hydraulic Unit.
 - ⊙ Before using hydraulic equipment, make sure the capacity of Hydraulic Unit match hydraulic equipment. If unmatched hydraulic equipment is connected and used, this causes an accident or damage.
13. After starting Hydraulic Unit, the temperature of piping are is high due to increasing of temperature of hydraulic actuation oil. Be careful when staring the temperature sensor or immediately after finishing the work.
14. When using “Hakken” brand hydraulic equipment, adjust the set discharge pressure below 21MPa.

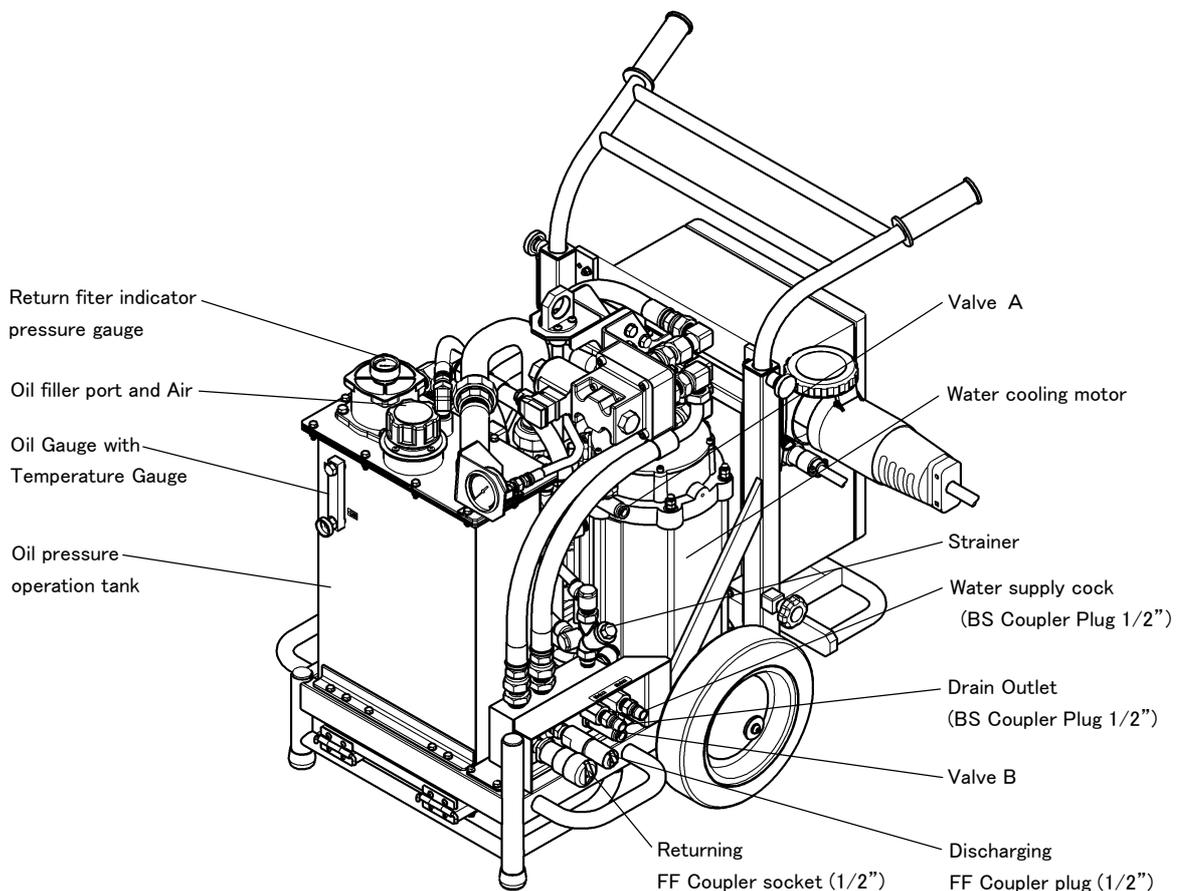
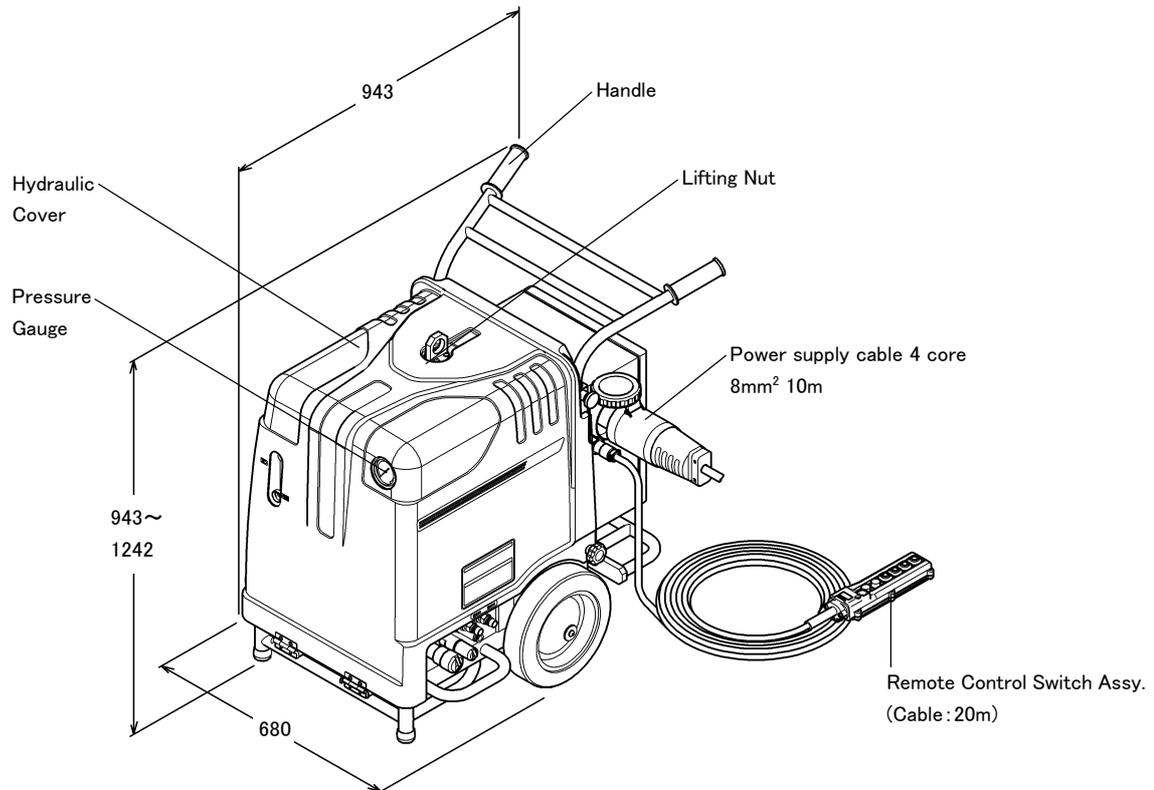
 CAUTION

1. When storing Hydraulic Unit at the place where the temperature goes below zero, always remove the water inside of Hydraulic Unit. Refer to (Page 18 【10】4 J). If water is not removed, water become frozen and this causes the damage.
 - ⊙ Do not convert feed water-inlet (male) into the lock up type coupler. When converting into the lock up type coupler, feed water-inlet will be frozen or damaged due to not enough draining water at the below zero.
2. When Unit Cover is opened and closed or when Unit Cover is removed, carefully do so. When moving Hydraulic Unit, be careful not to touch the object.
 - ⊙ If Unit Cover is handled roughly, Unit Cover could be damaged.
3. Use hydraulic actuation oil temperature range from 20°C~60°C.
 - ⊙ When using at low temperature place such as cold region, do running-in operation until oil temperature of hydraulic actuation oil goes up over 20°C.
 - ⊙ When supplying the water for hydraulic unit, adjust the water amount temperature range from 20°C~60°C.
4. Since Hydraulic Unit is water-cooling type electric motor, operate while supplying the water.
 - ⊙ When operating without supplying the water, Hydraulic Unit will stop due to increasing the temperature of electric motor and hydraulic actuation oil which will cause damage.

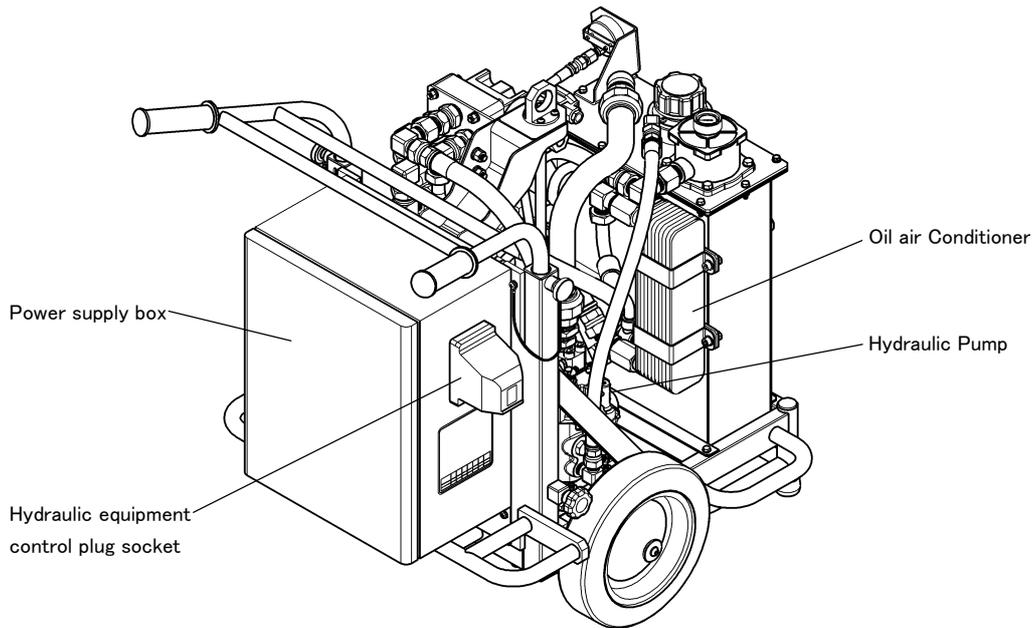
 CAUTION

5. When the amount of hydraulic actuation oil become below LOW sign on temperature gauge and oil amount indicator, fill up the tank.
 - ◎ The amount of hydraulic actuation oil must be always within the range of HI~LOW sign on temperature gauge and oil amount indicator.
6. Use specified hydraulic actuation oil.
 - ◎ Use CONSEC specified mineral abrasion resistance actuation oil ISO-VG46.
(When Hydraulic Unit is shipped out of factory, 「Shell Tellus S2M46」is used as hydraulic actuation oil.)
7. Do not use old hydraulic actuation oil.
 - ◎ Because old hydraulic actuation oil might contain air, water, dust and this causes not only pressure drop, but also damage to Hydraulic Unit.
8. When operating Hydraulic Machine at 60Hz area, do not set maximum discharge at 57.6L/min.
 - ◎ When "Hakken" brand hydraulic equipment is used in frequency 60Hz area, set discharge below .
(Tighten discharge amount adjustment screw about 3/4 rotation). When operation over 54L/min. Otherwise "Hakken" brand hydraulic equipment could be damaged.
 - ◎ When changing from one model to another or connecting with other brand hydraulic equipment, set discharge within maximum flow and maximum RPM described on the nameplate.
9. After disconnecting hydraulic hoses, always attach coupler caps.
10. When using new hydraulic hoses (option) to extend the length of hoses, oil amount in the tank will be decreased due to no oil inside of new hoses. Refill oil in the tank by checking the oil level gauge.
 - ◎ Fill the hose by one of them and fill in the tank accordingly.
Refer to 「2. Connection of Hydraulic Hoses Assy. Note.3」 in page 13.

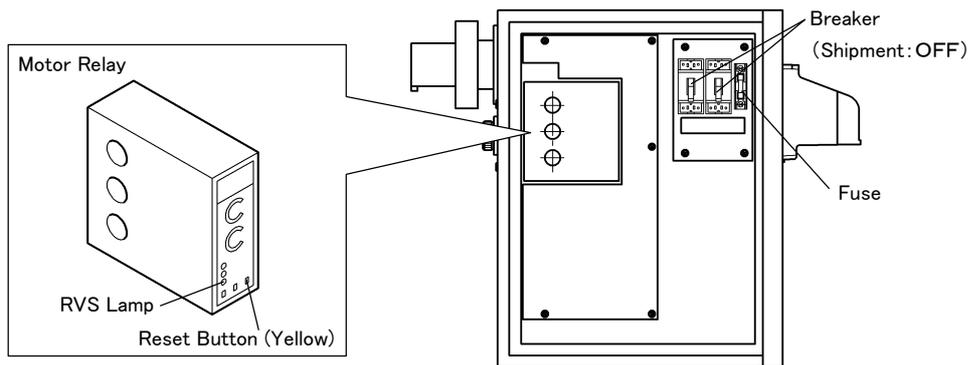
2. DESCRIPTION



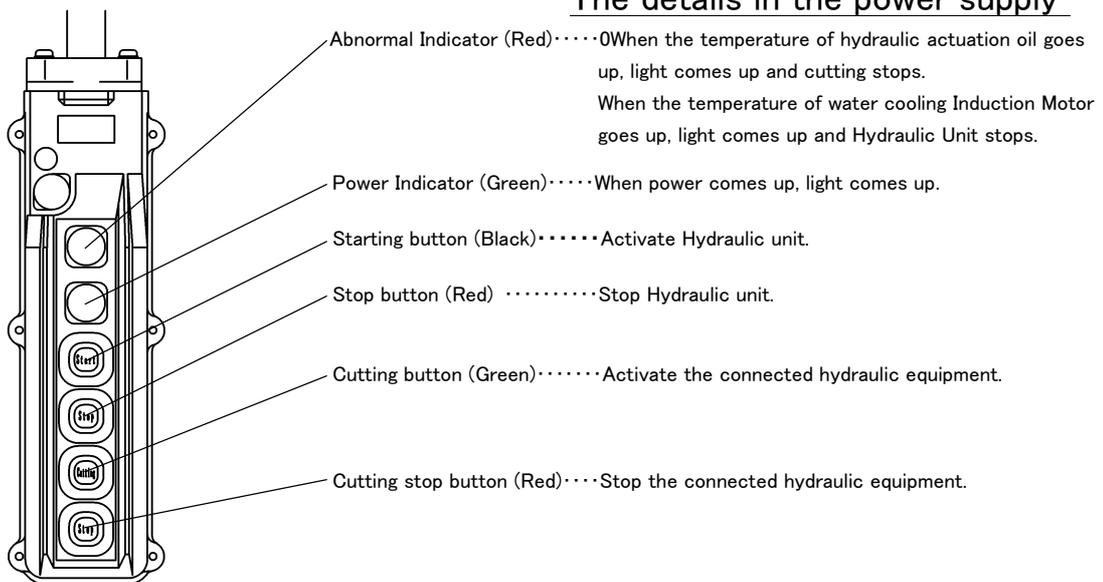
The details (front) in the unit cover



The details (the rear) in the unit



The details in the power supply

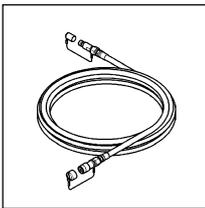


Remote Control Switch (closed-up) (Cable length 20m)

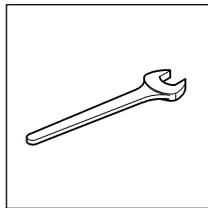
3. SPECIFICATION

Model		E-2002Ax	
Power supply		3-phase 400V 50/60Hz Commercial power source over 50A	
Electric motor		Three(3) -phases induction motor Enclosed outer fan shape 20 kW 2P	
Hydraulic pump	Name		Variable capacity piston pump
	Rated pressure		21 MPa
	Rotary speed		2986/3583min (50/60Hz)
	The range of adjusting discharge amount.		23.5~47.9 L/min (50 Hz)
			28.3~57.6 L/min (60Hz)
Factory setting	Discharge pressure	21 MPa	
	Discharge amount	41.7/50.2 L/min (50/60 Hz)	
Oil tank capacity		20 L	
Hydraulic actuation oil		mineral abrasion resistance actuation oil ISO-VG46	
Output of Hydraulic equipment control socket plug		Single phase 200 V 50/60 Hz 15A	
Main body weight (Excluding cord)		212kg	

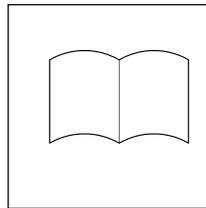
4. STANDRD ACCESSORIES



Hydraulic hoses
5/8" ASSY.
FF Plug and Socket
20m
...2pce



Single-ended Spanner
13mm
...1pce



Instruction Manual
...1pce

5. APPLICATIONS

- ⊙ Hydraulic power and controlling device for "Hakken" brand Hydraulic core drill, Hydraulic wall cutter, Compact hydraulic wire saw and Hydraulic plunge cutter.
- ⊙ Hydraulic power and controlling device for other manufacturer's hydraulic equipment.

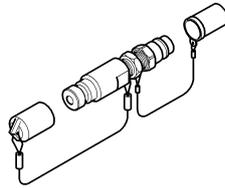
6. OPTIONS (SOLD SEPARATELY)

Hydraulic hoses 5/8" ASSY.
FF Plug and Socket 20m



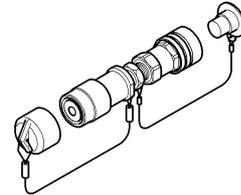
Used when extending Hydraulic Hose of E-2002Ax Need 2 pcs. (It does not contain hydraulic actuation oil.)

Exchange Adapter
B male - F male 1/2"



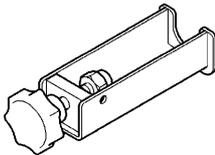
Used to change BS coupler plug (Bridge Stone) and FF coupler plug (Nitto Kouki).

Exchange Adapter
B female - F female 1/2"



Used to change BS coupler socket (Bridge Stone) and FF coupler socket (Nitto Kouki).

Pressure Relief Tool for Hydraulic hoses



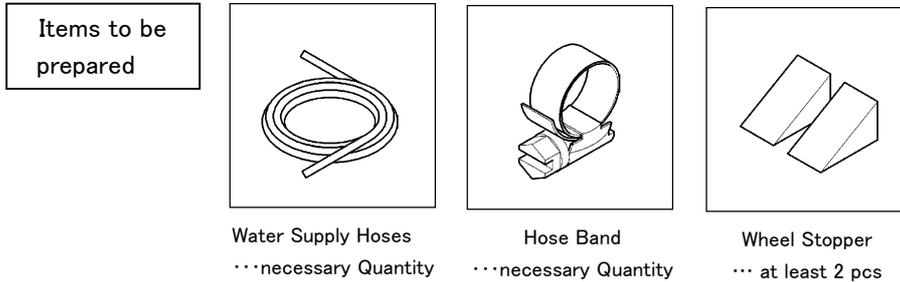
Used to release the pressure by opening the increased inner pressure hose Assy. of coupler.
Exclusive use for FF coupler 1/2" (Nitto Koki)

POINT

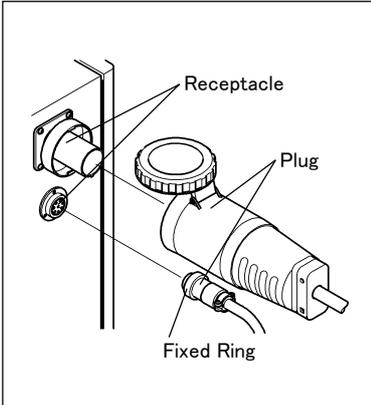
Hydraulic unit E-2002Ax applies for FF couplers (manufactured by NITTO KOKI CO.,LTD.) on the main feeding pipes. In case that you use the BS couplers, the exchange adapter is necessary for exchanging from BS couplers (manufactured by Bridgestone corporation) to the FF couplers. Please use 「B concavo - F concavo」 and 「B convex - F convex」 as for the pair.

7. INSTRUCTIONS FOR OPERATION

【1】 Preparation for Starting Hydraulic Unit



- 1) Set Hydraulic unit at the flat area and well ventilated, and fix the both of wheels by using the Wheel stopper in order not to move, and also fix the caster by the Wheel stopper.
- 2) Inspect before the operation. Refer to 「Checking Before Operation」 in the page 20.
- 3) Connect the Remote control switch to the Power supply box of Hydraulic unit.

<p>⚠ CAUTION</p> <ol style="list-style-type: none"> 1. If Receptacle or Plug were wet, dry them up enough before connecting them. 2. If Plug or surrounding parts were stained with dust, mud or debris, make them clean before connecting them. 3. When connecting the plug of Electric Cable and Remote Control Switch with Power Supply Box of Hydraulic Unit, do not forget to fasten the fixing ring. 	
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【2】 Connection of Power Supply

Electric cable are composed of R (Red), S (White), T (Blue) and Earth (Green). Connect with Power supply correctly.

<p>⚠ WARNING</p> <ol style="list-style-type: none"> 1. Be careful for receiving the electric shocks. Use the Power source installed with Earth leakage breaker. 2. Use the Power source proper voltage which is described on the name plate. The Power source must be applied for "Three-phase 400V, 50/60Hz", and must be connected to the Commercial supply source by applying over 50A. 3. When connecting the Electric cable to the Power supply, also connect to the Earth cord (Green cord) for sure.
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<p>POINT</p> <ol style="list-style-type: none"> 1. When wiring wrongly, Hydraulic Unit rotates for a moment. But Motor relay RVS lamp (Red) in the power supply box lights up and Hydraulic Unit does not activate.(Backstop-equipped.) 2. When Hydraulic Unit does not start, alternate whichever two of R•S•T wires and connect again. When applying current, release by the reset button (Yellow).
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【3】 Connection of Hydraulic Hoses and Water Supply Hoses

⚠ WARNING

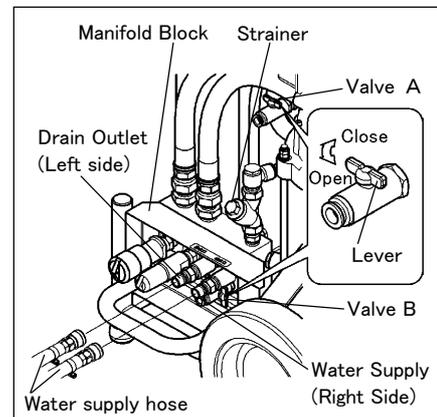
When connecting Hydraulic Hoses Assy., please make sure Hydraulic Unit is stopped. While Hydraulic Unit is in operation, hydraulic couplers can not be connected because oil pressure is high during operation. If hydraulic couplers are forcibly connected, actuation oil could leak out.

⚠ CAUTION

1. Water cooling 3-phase induction motor is used in this Hydraulic Unit. Therefore water must be fed always. Water Supply Hoses must be connected before starting Hydraulic Unit.
2. If Hydraulic Unit is used without water feeding, the temperature of induction motor and oil goes up. Then temperature sensor is activated and Hydraulic Unit stops and Abnormal Indicator lights up.

1. Connection of Water Supply Hoses

- 1) Connect Water Supply Hose from running water to coupler of feed-water inlet (male).
- 2) Connect Water Supply Hose to coupler of drain outlet (male).

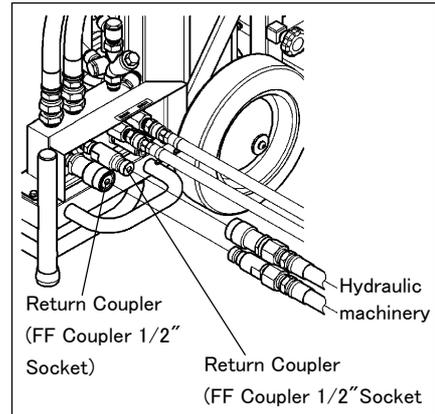


⚠ CAUTION

1. Do not mix up feed-water inlet (right) and drain outlet (left). If these two are connected alternatively, cooling efficiency goes down and the temperature of electric motor and hydraulic actuation oil goes up.
2. When connecting Water Supply Hose directly, always use hose band.
3. Use for clear water for cooling water.
4. Strainer is installed to the water supply side of manifold block. Check regularly and clean. (Refer to 「4.Clean for Strainer」 in page 23.
5. Check the lever of drain valve A and B is 「Close」. (If the lever is 「Open」, water will flow from the valve when supplying water.

2. Connection of Hydraulic Hoses Assy.

Connect Hydraulic Hoses Assy. with hydraulic couplers of Hydraulic Unit.



⚠ CAUTION

1. Connect FF Coupler until it clicks.
2. When there are dust or mud on the FF Coupler, connect after wiping by clean cloth.
3. When filling hydraulic actuation oil to new hose, do not connect to Hydraulic Machine. Connect circularly discharge/return coupler by one new hose and fill little by little by inching by using remote control switch. Always connect hose one by one and fill hydraulic actuation oil. When connecting two hoses at one time, hydraulic actuation oil decreases rapidly which causes damage. (One hose needs about 6L hydraulic actuation oil.)
When inching extremely for a short time, Hydraulic Unit might not start even though wiring correctly.

POINT

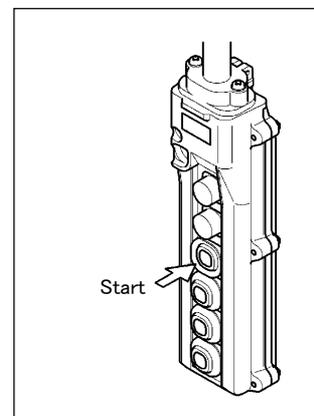
When using “Hakken” brand hydraulic equipment with BS coupler (BRIDGESTONE), separately sold 「Conversion Adapter」 is necessary.

【4】 Starting of Hydraulic Unit

- 1) Prepare for Starting Hydraulic Unit and Connect with Power Supply Refer to 「【1】 Preparation for Starting Hydraulic Unit」 and 「【2】 Connection of Power Supply」 in page 11.
- 2) Connect Water Supply Hoses with Hydraulic Unit and start water feeding.
- 3) Push 「Starting」 on remote control switch.

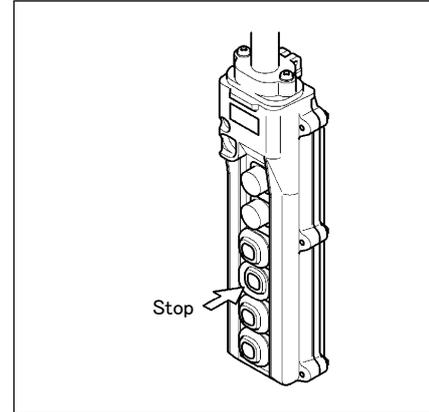
⚠ CAUTION

1. After starting Hydraulic Unit, always check the amount of actuation oil. When necessary, refill oil tank.
2. This instruction manual explains double method of water supplying of cooling for Hydraulic Unit and for cutting. When the amount of water supply is not enough during operation, either dividing the water supply hose or supplying the water of cooling for Hydraulic Unit or supplying the water for cutting independently.
3. Adjust the amount of water supply 10L/min and temperature of hydraulic actuation oil is 20°C~60°C. If the amount of water supply is not enough, effluent temperature decreases. Be careful for the amount of water supply.



【5】 Stopping Hydraulic Unit

- 1) Follow the instructions in the manual of hydraulic equipment and stop Hydraulic equipment.
- 2) Push 「Stop Button」 on remote control switch and stop Hydraulic Unit.



【6】 Running-in Operation of Hydraulic Actuation Oil

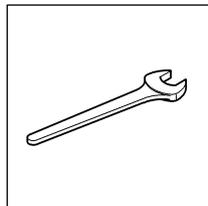
⚠ CAUTION

When oil temperature of hydraulic actuation oil is below 20°C, running-in operation must be done.

- 1) Prepare for Starting Hydraulic Unit and Connect with Power Supply.
Refer to 「【1】 Preparation for Starting Hydraulic Unit」and 「【2】 Connection of Power Supply」 in page 11.
- 2) Connect Water Supply Hoses and Hydraulic Hoses Assy. Then connect discharge end of each hose with return end of each hose like a loop.
Refer to 「2.Connection of Hydraulic Hose Assy.」 in page 13.
- 3) Start Hydraulic Unit.
Refer to 「【4】 Starting of Hydraulic Unit」in page 13.
- 4) 6 seconds after starting, push 「Cutting Button」on remote control switch and start discharge.
- 5) Check oil temperature by temperature gauge and oil amount indicator. When oil temperature becomes above 20°C, running-in operation is completed.
- 6) Push 「Cutting Stop Button」on remote control switch and stop discharge.
- 7) Stop Hydraulic Unit. Refer to 「【5】 Stopping Hydraulic Unit」 in page 14.
- 8) Disconnect Hydraulic Hose Assy. that is connected circularly.

【7】 Setting Discharge Amount

Items to be prepared



Single-ended Spanner
13mm
... 1 pce

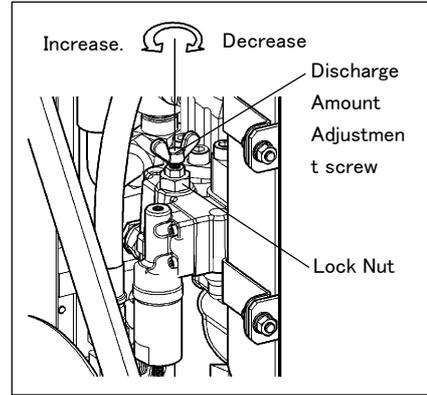
- ◎ This Hydraulic Unit can set the rotation speed of Hydraulic Motor arbitrarily by changing the discharge amount.
- ◎ When this unit is shipped, it is set at 41.7 /50.2L/min (50Hz/60Hz).

1) Start Hydraulic Unit.

⚠ CAUTION
When changing discharge, always connect Hydraulic Unit and Hydraulic Machine, then start Hydraulic Unit before changing it.

2) Loosen lock nut and set the discharge by turning discharge set screw.

- ① Set discharge at 「Maximum」. The position of 「Maximum」 discharge is where discharge set screw is loosen freely once and tighten back until discharge set screw slightly contacts lock nut.
- ② Refer to the table below, set the discharge as needed. When decreasing discharge, tighten discharge set screw. When increasing the discharge, loosen discharge set screw.



Guide of discharge amount [L/min]

Frequency \ Number of tighten	0	1	2	3	4	5	Maximum
	50Hz	47.9	43.8	39.7	35.5	31.4	27.3
60Hz	57.6)	52.7	47.7	42.8	37.8	32.9	28.3

- ③ By turning discharge set screw one revolution, approx. 4L (50Hz) and approx. 5L (60Hz) rise and fall.

⚠ CAUTION
<ol style="list-style-type: none"> 1. Read carefully instruction manual of Hydraulic Machine connected to Hydraulic Unit and adjust the discharge amount in order to be within maximum discharge amount of Hydraulic Machine. If it is used more than maximum discharge amount, it causes damage. 2. Use CONSEC's Hydraulic Machine below 54L/min (Number of tighten 3/4 : 60Hz). If it is used more than 54/min (Number of tighten 3/4 : 60Hz), it will cause damage.

3) Fix it by tightening Lock Nut

4) Stop Hydraulic Unit. Refer to 「【5】 Stopping Hydraulic Unit」 in page 14.

【8】 Setting Discharge Pressure (Maximum Load Pressure)

- ③ By turning discharge set screw one revolution, approx. 4L (50Hz) and approx. 5L (60Hz) rise and fall.

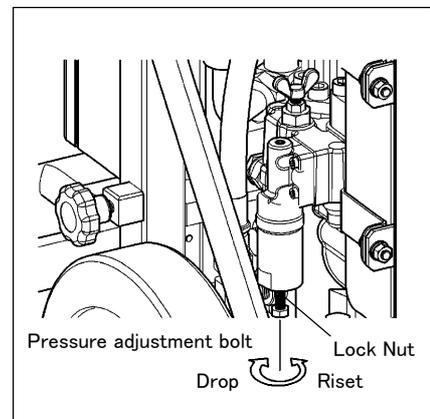
⚠ WARNING
<ol style="list-style-type: none"> 1. When changing pressure, start Hydraulic unit before changing the pressure. 2. Read the instruction manual of Hydraulic equipment carefully which is connected to Hydraulic unit, and adjust the pressure within rated pressure of Hydraulic equipment. In case that you use it more than rated pressure, it will cause the damages. 3. CONSEC set the rated pressure most of “Hakken”brand Hydraulic equipment “Maximum 21Mpa” (except some machines).

- 1) Conduct running- operation of hydraulic actuation oil. Please refer to 「【6】 Running- operation of hydraulic actuation oil」 in the page 14.
- 2) Remove Hydraulic hoses Assy. from Hydraulic unit. Remove the both of the couplers of hydraulic hoses Assy which are installed, and shut down the Hydraulic circuit.

POINT

When staying connected Hydraulic hose, setting pressure will not be shown on Oil Pressure Gauge.

- 3) Start Hydraulic unit. Please refer to 「【4】 Starting of Hydraulic unit」 in the page 13.
- 4) Wait for approximately 6 seconds after starting Hydraulic Unit, and press 『Cutting』 Button on Remote Control Switch.
- 5) Loosen the lock bolt by using the single end wrench (13mm), and turn the pressure adjusting bolt.
- 6) When increasing pressure, tighten pressure adjustment screw. When decreasing pressure, loosen pressure adjustment screw.
- 7) Set less than the range of 21MPa with looking at Oil Pressure Gauge, and tighten lock nut and fix it.
- 8) Press 『Cutting Stop Button』 on Remote Control Switch.
- 9) Stop Hydraulic Unit.
Refer to 「【5】 Stopping Hydraulic Unit」 in page 13.



【9】 Use of Hydraulic Equipment

⚠ WARNING

Read instruction manual of Hydraulic Equipment carefully before use.

- 1) Conduct running-in operation of hydraulic actuation oil.
Refer to 「【6】 Running-in operation of hydraulic actuation oil」 in page 14.
- 2) Conduct running-in operation of hydraulic actuation oil.
Refer to 「【7】 Setting discharge」 in page 14.
- 3) Set pressure of hydraulic actuation oil according to Hydraulic Equipment to be used.
Refer to 「【8】 Setting pressure (Maximum load pressure)」 in page 15.
- 4) Connect Hydraulic Equipment.
As Power Supply to control Hydraulic Equipment, single-phase 200/220V 15A plug socket is available.

5) Start and Stop of Hydraulic Equipment

After pushing 「Cutting Button」 on remote control switch, electromagnetic valve opens and hydraulic actuation oil starts flowing. After pushing 「Cutting Stop Button」 on remote control switch, electromagnetic valve closes and hydraulic actuation oil stops flowing.

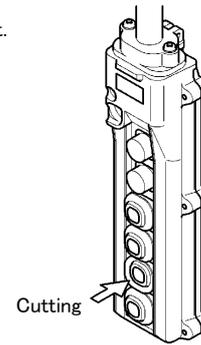
⚠ WARNING

Remote control switch must be handled by an operator who directly uses connected Hydraulic Equipment after making sure the safety of surrounding area.

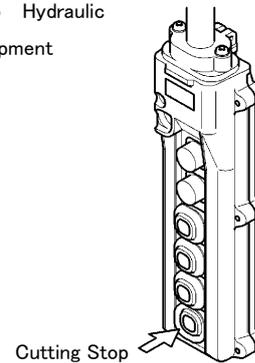
POINT

When pushing 「Cutting Button」 on remote control switch, do so 6 seconds after starting.

Start Hydraulic Equipment.



Stop Hydraulic Equipment



【10】 After Operation

1) Stop Hydraulic Unit.

Refer to 「【5】 Stopping Hydraulic Unit」 in page 14.

⚠ WARNING

After stopping Hydraulic Unit, do not stop feeding water at least 5 minutes.

2) Disconnect Hydraulic Hoses and Water Supply Hoses in the reverse procedure of 「【3】 Connection of Hydraulic Hoses and Water Supply Hoses」 in page 12.

⚠ CAUTION

1. When dust is attached on the couplers, when disconnecting Hydraulic Hose, joint part of coupler is hard to return. Air will enter inside of Hydraulic Unit If Hydraulic Equipment sets higher than Hydraulic Unit and disconnect Hydraulic Hoses from the side of Hydraulic Equipment. In the result, hydraulic actuation oil will overflow from hydraulic actuation oil tank. Remove first Hydraulic Hoses from the side of Hydraulic Unit.
2. When disconnecting Hydraulic Hose, keep clean on the coupler. Then, install coupler cap.
3. Make sure that water supply stops and remove Water Supply Hose.

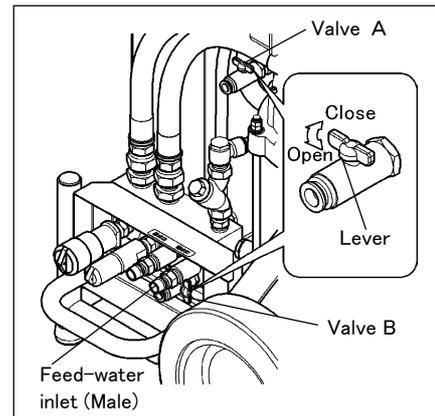
3) Remove Power Supply Cable and control switch from Hydraulic Unit.

 CAUTION

1. Check Power Supply is OFF and remove cable from Power Supply. After that remove plug of Power Supply Cable from Hydraulic Unit.
2. After removing power supply cable and control switch, keep clean plug and receptacle. Then, install cap.

4) Remove water inside water pipe.

Turning the lever of drain valve A and drain valve B toward 「OPEN」, you can drain the water. After finishing draining, turn back both of lever toward 「CLOSE」.



 CAUTION

1. Check Power Supply is OFF and remove cable from Power Supply. After that remove plug of Power Supply Cable from Hydraulic Unit.
2. After removing power supply cable and control switch, keep clean plug and receptacle. Then, install cap.

5) Conduct cleaning and maintenance.

「**[2]** Maintenance and Regular Servicing」 in page 20.

8 . TROUBLE SHOOTING DURING OPERATION

◎ If you find abnormal during operation, stop working and investigate the cause by checking following table under safe condition.

Trouble	Cause	Troubleshooting
Hydraulic Unit does not start.	Power Supply is OFF.	Turn ON Power Supply
	Power Supply Cable is disconnected.	Connect to Power Supply Cable.
	Cable of remote control switch is disconnected.	Connect to Cable of remote control switch.
	Breaker of Power Supply Box is OFF.	Turn ON breaker.
	Thermal Relay of Power Supply Box is operating.	Push reset botton (Yellow) of motor relay.
	Breaking of wire.	Repair.
	Connection of R·S·T is wrong.	Two of R·S·T wires must be alternatively connected again. Refer to 「【2】Connection of Power Supply」 in page 7.
	Fuse of Power Supply Box is disconnected.	Exchange fuse after investigating the cause of over current inside of control circuit.
Hydraulic Unit stops.	Abnormal indicator on remote control switch lights up. (Temperature sensor activated.)	Hydraulic Unit stops. This is caused increasing temperature of water-cooling electric motor. Increase water supply amount and cool down. Hydraulic Unit stops cutting. This is caused increasing the temperature of hydraulic actuation oil. Continue supplying water ad cooling down while operating Hydraulic Unit.
	Breaker of Power Supply Box turned off.	Turn ON Breaker.
	Power Supply capacity is small.	Exchange large capacity of Power Supply. Refer to 「7-【2】Connection of Power Supply」.
Hydraulic equipment does not start.	Connection of coupler is not proper.	-
	Setting discharge pressure · discharge amount is not correct.	-
	Breaking of wire.	Repair.
	Damage of electromagnetic valve.	Repair.
Pressure of oil pressure gauge does not go up.	Setting discharge pressure is not correct.	Inspection for setting and readjustment.
	Hydraulic actuation oil is not clean and deteriorated.	Change hydraulic actuation oil.
	Temperature of hydraulic actuation oil is too high.	Refer to 「Temperature of hydraulic actuation oil increases.」
	Air is contained in hydraulic actuation oil because of not enough oil amount.	Add hydraulic actuation oil and do running-in operation for circulation until air is released.
	Hydraulic Hose has cracks or damages.	Change new one.
Abnormal noise comes from Hydraulic Pump.	Air is contained in hydraulic actuation oil because of not enough oil amount.	Add hydraulic actuation oil and do running-in operation for circulation until air is released.
	Damage of Hydraulic Pump.	Repair.
Pressure in Oil Pressure Gauge goes up, but connected Hydraulic Equipment lacks power.	The temperature of hydraulic actuation oil is too low.	Conduct running-in operation of hydraulic actuation oil or replace with cold climate type oil.
	Return Filter Element is not clean.	Change Element. Refer to 「9-【2】3.Inspection and Replacement of Return Filter」.
	Setting discharge amount is not correct.	Inspection for setting and readjustment.
	Power supply capacity is small.	Exchange large capacity of power supply.Refer to 「7-【2】Connection of Power Supply」.
Temperature of hydraulic actuation oil goes up.	The temperature of hydraulic actuation oil is too low.	Add hydraulic actuation oil.
	Return Filter Element is not clean.	Refer to 「7-【3】Connection of Hydraulic Hoses and Water Supply Hoses」.
	Setting discharge amount is not correct.	
	Power supply capacity is small.	Clean the strainer.
	Hydraulic actuation oil amount is not enough.	Change hydraulic actuation oil.

9 . INSPECTION • MAINTENANCE • REPAIR

【1】 Checking Before Operation

1. Check the damage for Electric Motor • Power Supply Box • Power Supply Cable coated part and Remote Control Box.
2. Check the oil leak for piping area such as hydraulic actuation oil tank, hydraulic pump and hydraulic hose Assy.
3. Check hydraulic actuation oil.
 - 1) Place Hydraulic Unit at flat position.
 - 2) Make sure hydraulic actuation oil amount is between HI~LOW sign on oil level gauge. Also make sure that hydraulic actuation oil is clean.
 - 3) When hydraulic actuation oil amount is below LOW sign of oil level gauge, add hydraulic actuation oil. In case hydraulic actuation oil is not clean or viscosity is not enough, change hydraulic actuation oil.

⚠ CAUTION

When filling up hydraulic actuation oil, be careful that dust do not enter through oil filler port. If oil spills out, wipe it.

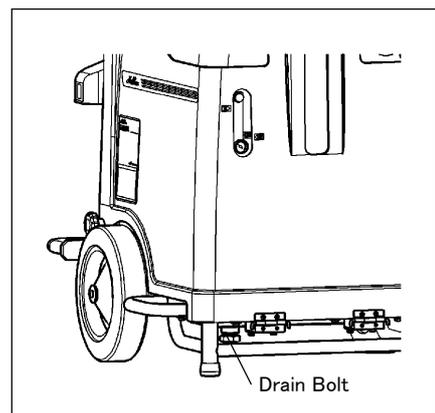
POINT

When staying connected Hydraulic hose, setting pressure will not be shown on Oil Pressure Gauge.

【2】 Maintenance and Regular Servicing

1. Clean and Maintenance after the operation.
 - 1) Clean all surfaces of Hydraulic Hoses Assy.
 - 2) Clean all surfaces of Power Supply Box.
 - 3) Clean remote control switch.
2. Change hydraulic actuation oil.
 - ◎ Foreign materials such as water and metallic powder are accumulated at the bottom of hydraulic actuation tank. Remove the drain bolt of tank bottom regularly by Single-ended Wrench 36mm and drain hydraulic actuation oil and change new one.

Hydraulic actuation oil should be changed every three months according to frequency in use.



- ◎ Hydraulic actuation oil is concerned "Industrial Waste". Contact to the licensed industrial waste disposal contractor, then dispose. or contact to 「CONSEC's sales (service) representative」.
- ◎ When changing hydraulic actuation oil, also clean or change the suction filter in the tank.

Use mineral abrasion hydraulic actuation oil ISO-VG46. (When it is shipped from factory, 「Shell tellus S2M46」 is contained.) When using different supplier's oil, contact to supplier or 「CONSEC sales (service) representative」

 WARNING	
1. When changing hydraulic actuation oil, change it after decreasing of oil temperature. If changing the high temperature, you may be burned.	
2. When changing Hydraulic actuation oil, always wear protective equipment in order to preventing from contacting the skin and eyes.	
◎ When getting Hydraulic actuation oil in your eyes, cleanse with clean water at least 15 minutes and see the doctor. When contacting Hydraulic actuation oil to the skin, wash with water and soap.	
3. When changing Hydraulic actuation oil, go to no fire and well-ventilated safe place.	
◎ When supplying from the container to Hydraulic actuation oil, always use pump. Do not absorb by mouth using narrow tube.	
4. Storage at no direct sunlight and well-ventilated place.	

POINT	
During severe winter in cold area, use following hydraulic actuation oil for cold area.	

Viscosity	←High viscosity		Low viscosity→
Area (temperature)	Cold area		Severely cold area
	Above -10°C area	-10°C~-20°C area	-20°C following areas
Mineral abrasion hydraulic actuation oil	ISO-VG32	ISO-VG22	ISO-VG15

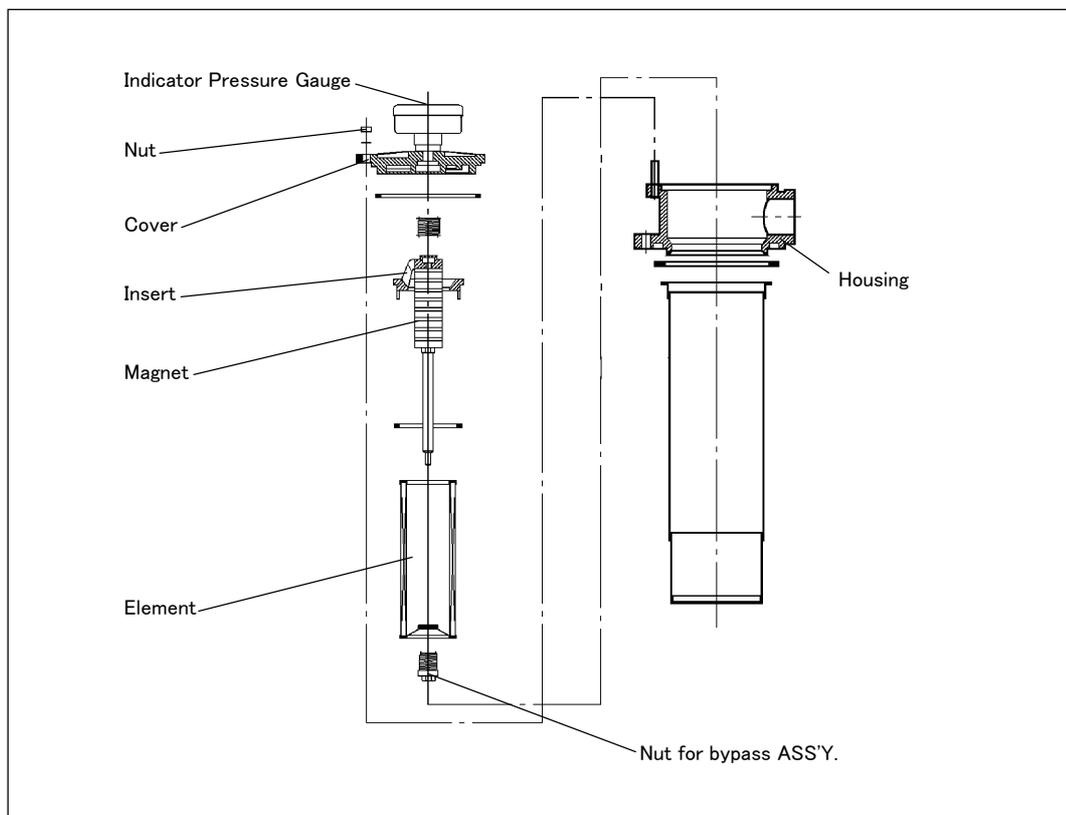
3. Inspection and change for Return Filter.

Return Filter (TTF-06-35-G-10) is installed for filtering of hydraulic actuation oil's dirt and foreign materials. When clogging the element of return filter, red lights up on upper part of return filter of pressure indicator.

1) Cleaning Slide Block (Clamp and Feed)

After starting Hydraulic Unit, change Element if indicator pressure gauge indicates red zone (Above 0.12Mpa).

2) How to change Element.



2-1) Loosen Nut and remove Cover

2-2) Lift up insert, carefully pull out Element (TXX2-10).

2-3) As for changing Element, fix insert, loosen Nut for bypass Assy. and remove Element. When doing this, wash magnet.

2-4) Assembling should be done in reverse procedure. .

2-5) Insert assembled Element in housing and tighten Nut.

⚠ CAUTION

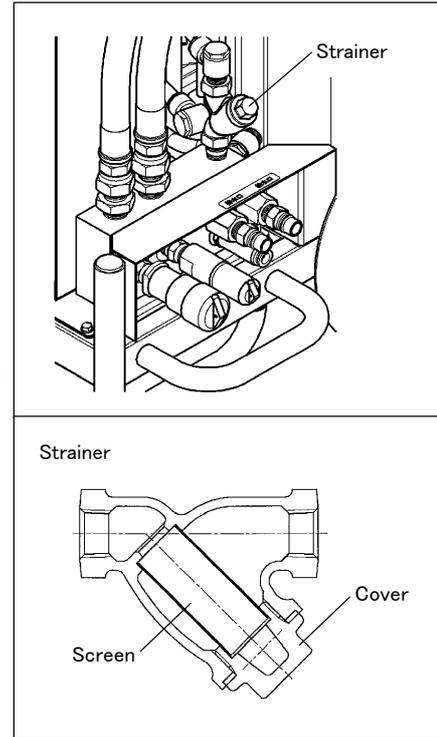
When tightening Nut, tighten them securely.

4. Clean for strainer.

Strainer is installed at the water supply conduit to filter foreign materials in the cooling water. If water supply amount is not enough, strainer could be clogged. Check regularly and clean the strainer.

©How to clean strainer.

Open the strainer cover by Single-ended Wrench 19mm and pull out the cylindrical screen and remove foreign materials. After cleaning, put screen into the strainer and tighten cover by Single-ended Wrench.



⚠ CAUTION

Tighten the Strainer Cover securely. If not, it will cause water leak.

【3】 Starting Procedure of Hydraulic Unit After Long Storage Period.

First conduct 「【1】 Checking before operation」 in page 19.

- 1) Starting by inching Conduct inching by remote control switch (Instantly pushing starting button and stop button alternately) approximately ten times. Then start Hydraulic Unit. When inching extremely for a short time, Hydraulic Unit might not start even though wiring correctly. Do inching by taking interval.
- 2) Removal of air Refer to 「【6】Running-in operation of hydraulic actuation oil」 in page 14.
- 3) Running-in operation
of Hydraulic Equipment Connect Hydraulic Equipment with Hydraulic Unit. Adjust discharge at minimum discharge flow and run Hydraulic Equipment for approximately 10~20 minutes by pushing cutting button on remote control switch. During running-in, check for abnormal noise or oil leakage.

【4】 Repairs

- ◎ This machine is manufactured by exact measure of precision. If it does not operate properly, do not repair by yourself. Contact 「CONSEC sales (service) representative」
- ◎ Please feel free to contact 「CONSEC sales (service) representative」 for use.

10 . HOW TO STORAGE THE MACHINE

Storage for products and accessories.

Storage for products and accessories at safety and dry place when the products and the accessories are not in use. And, avoid to storage them as following.

- ◇Out of reach of children
- ◇Unlocked place
- ◇Rain and humidity
- ◇Sudden change the temperature
- ◇Direct sunlight
- ◇Placed volatile substances such as flammable and explosive

Do not store such places.

The product information such as appearance in this instruction manual could be changed without informing advance notice.



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