



OPERATORS MANUAL



SEMI-AUTOMATIC COLUMN COLD SAW

Model: CS-C425SA

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CS-C425SA INDEX

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THANK YOU & WARRANTY

1. Thank you for your purchase of a Baileigh Industrial Cold Saw. We hope that you find it productive and useful to you for a long time to come.

2. **Inspection & Acceptance.** Buyer shall inspect all Goods within a reasonable period of time after delivery, not to exceed ten (10) days. If Buyer rejects any Goods, Buyer must first obtain a Return Authorization Number (“RAN”) before returning any goods to Seller. Goods returned without a RAN will be refused. Seller will not be responsible for any freight costs, damages to goods, or any other costs or liabilities pertaining to goods returned without a RAN. Seller shall have the right to substitute a conforming tender. Buyer will be responsible for all freight costs to and from Buyer and repackaging costs, if any, if Buyer refuses to accept shipment. If Goods are returned in unsaleable condition, Buyer shall be responsible for full value of the Goods. Buyer may not return any special order Goods. Any Goods returned hereunder shall be subject to a restocking fee equal to 30% of the invoice price.

3. **Specifications.** Seller may, at its option, make changes in the designs, specifications or components of the Goods to improve the safety of such Goods, or if in Seller’s judgment, such changes will be beneficial to their operation or use. Buyer may not make any changes in the specifications for the Goods unless Seller approves of such changes in writing, in which event Seller may impose additional charges to implement such changes.

4. **Limited Warranty.** Seller warrants to the original end-user that the Goods manufactured or provided by Seller under this Agreement shall be free of defects in material or workmanship for a period of twelve (12) months from the date of purchase, provided that the Goods are installed, used, and maintained in accordance with any instruction manual or technical guidelines provided by the Seller or supplied with the Goods, if applicable. The original end-user must give written notice to Seller of any suspected defect in the Goods prior to the expiration of the warranty period. The original end-user must also obtain a RAN from Seller prior to returning any Goods to Seller for warranty service under this paragraph. Seller will not accept any responsibility for Goods returned without a RAN. The original end-user shall be responsible for all costs and expenses associated with returning the Goods to Seller for warranty service. In the event of a defect, Seller, at its sole option, shall repair or replace the defective Goods or refund to the original end-user the purchase price for such defective Goods. The foregoing warranty is Seller’s sole obligation, and the original end-user’s exclusive remedy, with regard to any defective Goods. This limited warranty does not apply to: (a) die sets, tooling, and saw blades; (b) periodic or routine maintenance and setup, (c) repair or replacement of the Goods due to normal wear and tear, (d) defects or damage to the Goods resulting from misuse, abuse, neglect, or accidents, (f) defects or damage to the Goods resulting from improper or unauthorized alterations, modifications, or changes; and (f) any Goods that has not been installed and/or maintained in accordance with the instruction manual or technical guidelines provided by Seller.

5. EXCLUSION OF OTHER WARRANTIES. THE FOREGOING LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED. ANY AND ALL OTHER EXPRESS, STATUTORY OR IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE ARE EXPRESSLY DISCLAIMED. NO WARRANTY IS MADE WHICH EXTENDS BEYOND THAT WHICH IS EXPRESSLY CONTAINED HEREIN.

6. LIMITATION OF LIABILITY. IN NO EVENT SHALL SELLER BE LIABLE TO BUYER OR ANY OTHER PARTY FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES (INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR DOWN TIME) ARISING FROM OR IN MANNER CONNECTED WITH THE GOODS, ANY BREACH BY SELLER OR ITS AGENTS OF THIS AGREEMENT, OR ANY OTHER CAUSE WHATSOEVER, WHETHER BASED ON CONTRACT, TORT OR ANY OTHER THEORY OF LIABILITY. BUYER'S REMEDY WITH RESPECT TO ANY CLAIM ARISING UNDER THIS AGREEMENT IS STRICTLY LIMITED TO NO MORE THAN THE AMOUNT PAID BY THE BUYER FOR THE GOODS.

7. Force Majeure. Seller shall not be responsible for any delay in the delivery of, or failure to deliver, Goods due to causes beyond Seller's reasonable control including, without limitation, acts of God, acts of war or terrorism, enemy actions, hostilities, strikes, labor difficulties, embargoes, non-delivery or late delivery of materials, parts and equipment or transportation delays not caused by the fault of Seller, delays caused by civil authorities, governmental regulations or orders, fire, lightning, natural disasters or any other cause beyond Seller's reasonable control. In the event of any such delay, performance will be postponed by such length of time as may be reasonably necessary to compensate for the delay.

8. Installation. If Buyer purchases any Goods that require installation, Buyer shall, at its expense, make all arrangements and connections necessary to install and operate the Goods. Buyer shall install the Goods in accordance with any Seller instructions and shall indemnify Seller against any and all damages, demands, suits, causes of action, claims and expenses (including actual attorneys' fees and costs) arising directly or indirectly out of Buyer's failure to properly install the Goods.

9. Work By Others; Safety Devices. Unless agreed to in writing by Seller, Seller has no responsibility for labor or work performed by Buyer or others, of any nature, relating to design, manufacture, fabrication, use, installation or provision of Goods. Buyer is solely responsible for furnishing, and requiring its employees and customers to use all safety devices, guards and safe operating procedures required by law and/or as set forth in manuals and instruction sheets furnished by Seller. Buyer is responsible for consulting all operator's manuals, ANSI or comparable safety standards, OSHA regulations and other sources of safety standards and regulations applicable to the use and operation of the Goods.

10. **Remedies.** Each of the rights and remedies of Seller under this Agreement is cumulative and in addition to any other or further remedies provided under this Agreement or at law or equity.

11. **Attorney's Fees.** In the event legal action is necessary to recover monies due from Buyer or to enforce any provision of this Agreement, Buyer shall be liable to Seller for all costs and expenses associated therewith, including Seller's actual attorneys' fees and costs.

12. **Governing Law/Venue.** This Agreement shall be construed and governed under the laws of the State of Wisconsin, without application of conflict of law principles. Each party agrees that all actions or proceedings arising out of or in connection with this Agreement shall be commenced, tried, and litigated only in the state courts sitting in Manitowoc County, Wisconsin or the U.S. Federal Court for the Eastern District of Wisconsin. Each party waives any right it may have to assert the doctrine of "forum non conveniens" or to object to venue to the extent that any proceeding is brought in accordance with this section. Each party consents to and waives any objection to the exercise of personal jurisdiction over it by courts described in this section. EACH PARTY WAIVES TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW THE RIGHT TO A TRIAL BY JURY.



PLEASE READ THIS OPERATORS MANUAL CAREFULLY

It contains important safety information, instructions, and necessary operating procedures. The continual observance of these procedures will help increase your production and extend the life of the equipment.



WARNING:

Baileigh Industrial is not responsible for any damage caused by wiring up to an alternative 3-phase power source other than direct 3-phase. If you are using an alternate power source, consult a certified electrician or contact Baileigh Industrial prior to energizing the machine.

SAFETY INSTRUCTIONS

LEARN TO RECOGNIZE SAFETY INFORMATION

This is the safety alert symbol. When you see this symbol on your machine or in this manual, **BE ALERT TO THE POTENTIAL FOR PERSONAL INJURY!**



Follow recommended precautions and safe operating practices.

UNDERSTAND SIGNAL WORDS

A signal word – **DANGER**, **WARNING**, or **CAUTION** is used with the safety alert symbol. **DANGER** identifies a hazard or unsafe practice that will result in severe **Injury or Death**.



Safety signs with signal word **DANGER** or **WARNING** are typically near specific hazards.



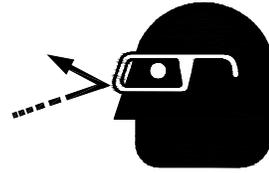
General precautions are listed on **CAUTION** safety signs. **CAUTION** also calls attention to safety messages in this manual.





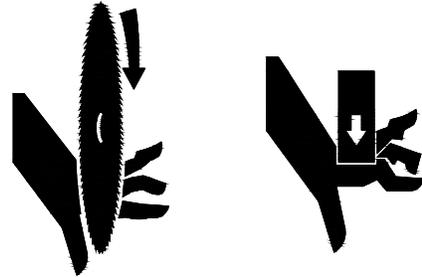
PROTECT EYES

Wear safety glasses or suitable eye protection when working on or around machinery.



BEWARE OF CUT AND PINCH POINTS

Keep hands and fingers away from the saw blade when the machine is in operation.



HIGH VOLTAGE

USE CAUTION IN HIGH VOLTAGE AREAS.

DO NOT assume the power to be off.

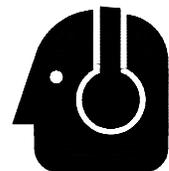


(MAKE SURE PROPER LOCKOUT PROCEDURES ARE FOLLOWED)



PROTECT AGAINST NOISE

Prolonged exposure to loud noise can cause impairment or loss of hearing. Wear suitable hearing protective devices such as ear muffs or earplugs to protect against objectionable or uncomfortable loud noises.



1. SPECIFICATIONS LIST

MODEL	CS-C425SA	CS-C485SA
Main Drive Motor	A: 5HP/3HP 2/4pole (std.) LOW: 50Hz/60Hz 70/35rpm HIGH:50Hz/60Hz 120/60rpm	A(Opt.) 5 HP 2pole B(Std.) 5 HP 4pole
Blade Speed	B: 3HP 6pole (opt.) 50Hz 35/20rpm 60Hz 42/23rpm	A L: 40rpm~140rpm (Opt.) H: 70rpm~240rpm B L: 20rpm~70rpm (Std.) H: 35rpm~120rpm
Frequency Inverter	-	5 kw / 7.5HP(Opt)
Head Swivel	45° / 90° / 30°	
Clamping Vise	Single	
Coolant Pump Motor	1/8 HP 40W	
Saw Blade Size (Diameter)	HSS Ø250~ Ø425mm Standard Ø350mm	
Bore	Ø32mm	
Pin Hole	2×Ø11mm×PCD63mm	
Hydraulic Pump Motor	2 HP 4P	
Operation Pressure	20 ~ 30 kg/cm ²	
Machine Dimensions (L×W×H)mm	1300 × 140 × 1900	
Packing Dimensions (L×W×H)mm	760(30") × 1100(44") × 2200(87")	
Net Weight	650 kgs (1430 lbs)	660 kgs (1452 lbs)
Gross Weight	850 kgs (1870 lbs)	850 kgs (1892 lbs)

Standard Equipment	motor、 Switch、 Complete cooling system、 Adjustable stop、 Service tools
Optional Equipment	Saw-blade、 Movable safety guard、 Cutting fluid

※ CUTTING CAPACITY

MODE		<u>CS-C425SA</u>			CS-C485SA		
<u>Saw-blade size</u>		Ø350mm			Ø400mm	Ø425mm	
<u>Head Swivel</u>		<i>90°</i>	45°	30°	<i>90°</i>	45°	90°
●	mm	70	60	50	75	65	80
■	mm	65 × 65	55 × 55	45 × 45	65 × 65	55 × 55	75 × 75
○	mm	125	115	130	125	115	130
	mm	110×110	100×100	75×75	125×125	120×120	125×125
	mm	110×110	100×100	75×75	125×125	120×120	125×125
	mm	110×110	100×100	75×75	125×125	120×120	125×125
	mm	120×50	100×50	70×50	160×60	150×50	160×80

※ RECOMMENDED PITCH OF SAW-BLADE

Solid Bar	Pitch	Pipe	Pitch
Ø10~ Ø15	4~6	Thin Pipe	3~6
Ø 15~Ø20	6~8	Medium Pipe	6~8
Ø 20~Ø30	8~10	Thick Pipe	8~12
Ø 30~Ø50	10~12	Choose correct pitch of saw-blade for perfect cutting	
Ø50~ Ø70	12~14		
Ø 70~Ø80	14~16		

2. A BRIEF DESCRIPTION FOR CS-C425SA

This operation manual provides the instructions for the machine installation, operation and maintenance. We are confident that this machine will help you save considerable working time and facilitate your cutting operations.

Try to understand all parts assemblies and the electrical controls on the machine, as well as proper preparation before operation.

The appendix drawings illustrate the assemblies and their applications for the CS-C425SA , and enable you to solve any problems while operating, doing daily maintenance, or simple trouble shooting

Your machine is designed and manufactured to work smoothly and efficiently. Following proper maintenance instructions will help ensure this. Try and use original spare parts, whenever possible, and most importantly; **DO NOT** overload the machine or make any unauthorized modifications.

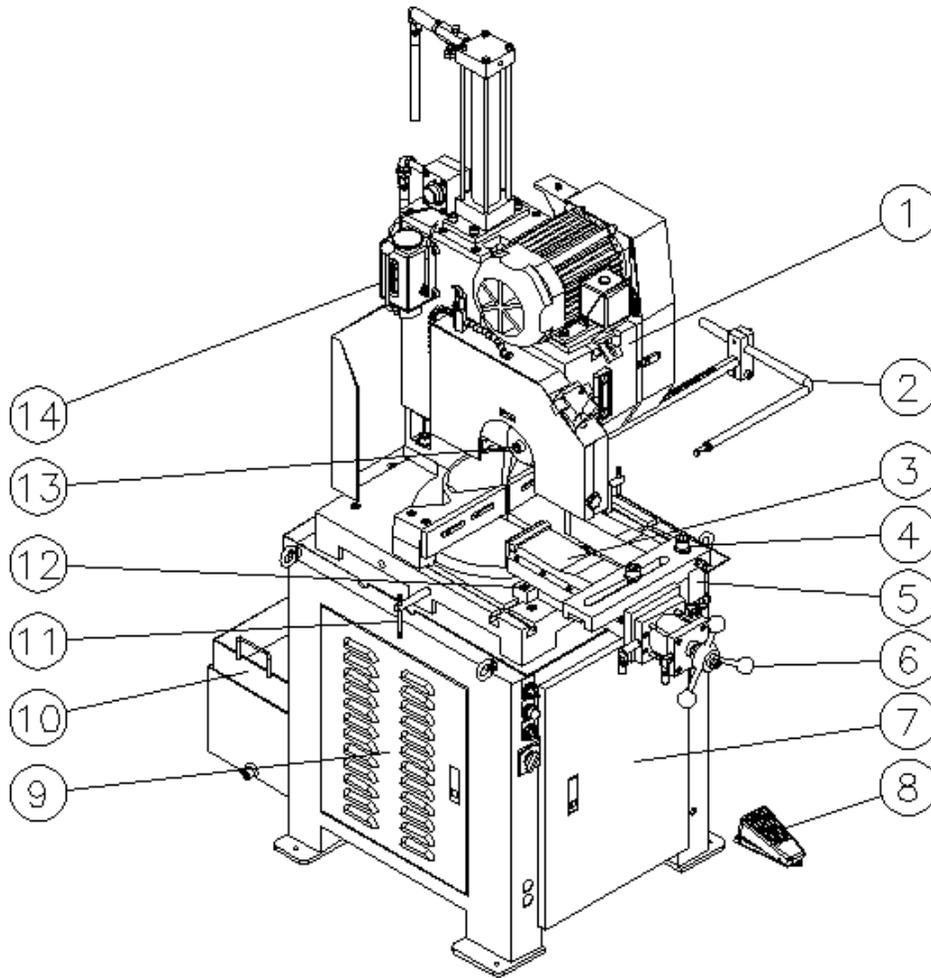
TECHNICAL SUPPORT

Our technical support department can be reached at **920.684.4990**, and asking for the support desk for purchased machines. Tech Support handles questions on machine setup, schematics, warranty issues, and individual parts needs.

For specific application needs or future machine purchases contact the Sales Department.

at: sales@bii1.com or phone: 920.684.4990

FIG-2.1 FRONT VIEW OF THE MACHINE



1. ALUMINUM SAW HEAD COVER.

2. LENGTH STOP LEVER.

It is located at the right side of the vise. The length of cut can be set by feeding the stock from the left side of the vise against this stopper lever.

3. MAIN VISE.

For clamping the work-piece.

4. ADJUSTMENT SCREW.

It is used to fix the auxiliary vise.

5. ADDITIONAL VISE.

An auxiliary vise.

6. VISE ADJUSTMENT LEVER.

For the adjustment of the vise opening width.

7. FRONT DOOR.

Built inside with coolant and chip removing tank.

8. SWITCH.

Cutting feed control.

9. SIDE DOOR A SIDE SAEFTY GUARD.

(Oil tank in side).

10. CHIP TANK.

11. FIX LEVER.

For the adjustment of angles.

12. CHEARANGE ADJUSTMENT SCREW.

For the adjustment of the sliding clearance of the vise.

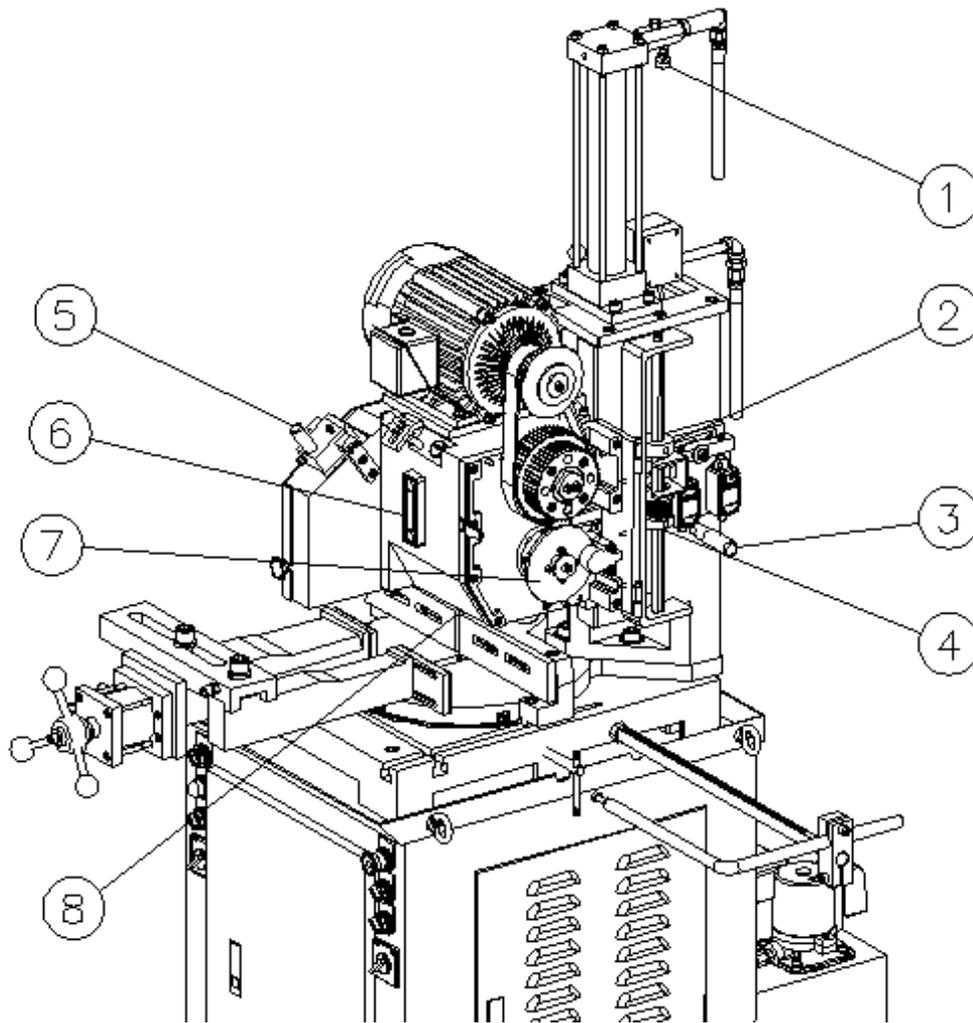
13. SAW-BLADE LOCK SCREW.

Saw-blade clamp.

14. LUBRICATOR

For controlling oil in/out.

FIG-2.2 RIGHT SIDE VIEW OF THE MACHINE



1. SPEED REGULATOR VALVE.

For adjustment of down feed speed.

2. LOWER STROKE LIMIT NUT.

For setting the stroke limit for saw-head lowering.

3. UPPER STROKE LIMIT NUT.

For setting the stroke limit for saw-head raising.

4. ANGULAR CUT LEVER.

An auxiliary lever for angle setting.

5. STEEL BRUSH WHEEL.

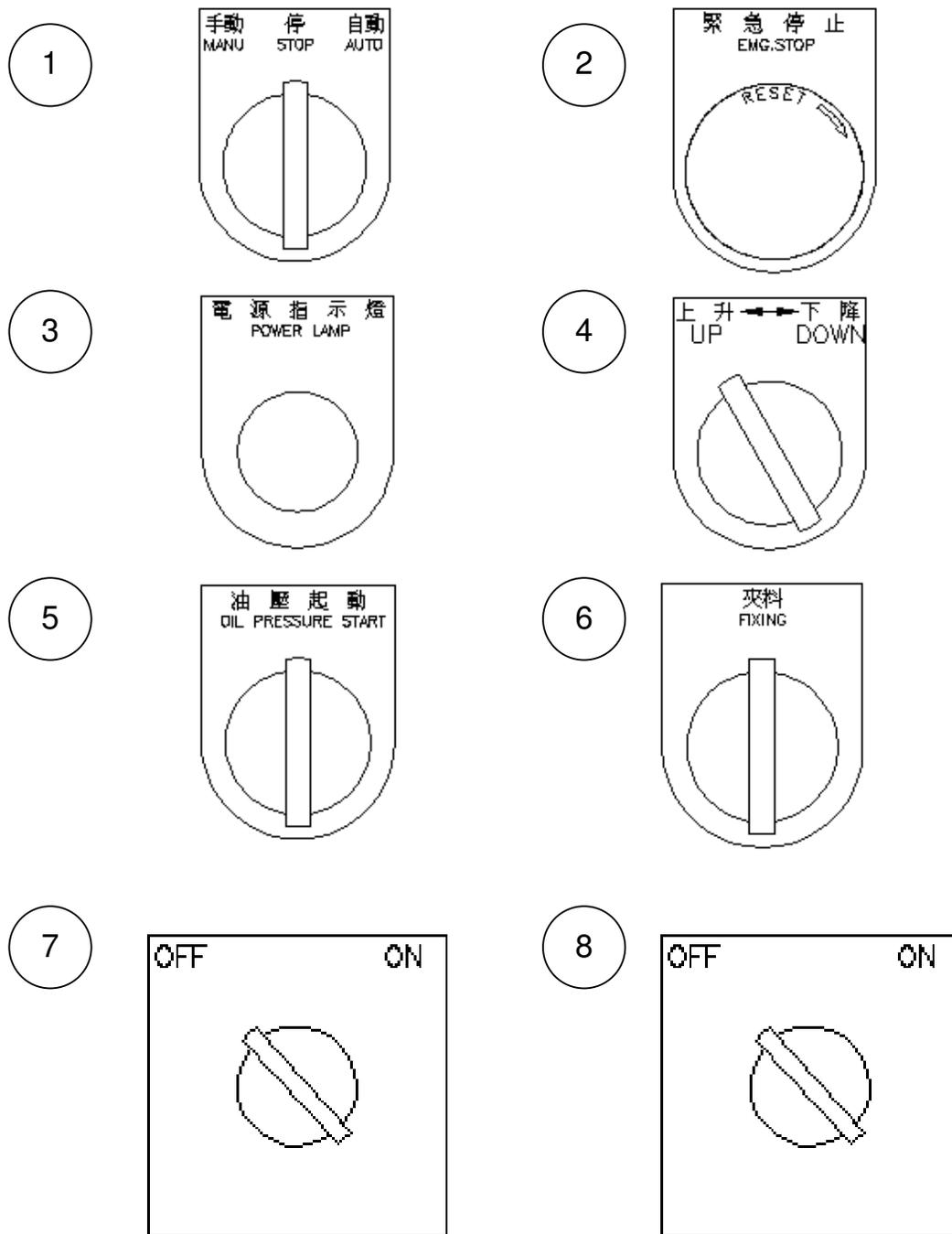
6. OIL SIGHT WINDOW.

7. BRAKE

8. OIL RELEASE PORT.

Release used oil.

FIG-2.3 A DESCRIPTION FOR PUSHBUTTON SWITCHES



1. Turn on power source ⑦ ,The power indication lamp ③ will light up.
2. Depress hydraulic pump start switch ⑤ .

3. Check if the saw-blade running direction is correct. The saw-blade should run clockwise as indicated by the arrow on the blade guard.
The switch ⑥ used for manual clamping of the work-piece.
4. Switch ④ is used for saw-head raising or lowering.
5. Depress switch ⑥ for clamping the stock.
6. Switch ④ is used for raising or lowering the saw-head.
7. Set the switch ① at left side for manual operation mode. Set it at right side for automatic operation mode. When set at the middle position, the saw-head cannot raise or lower, and the vise will not operate.
8. Depress switch ② for stop all motions in the event of any emergency or abnormal conditions.

3. INSTALLING THE MACHINE

- Three phase 220Vac.
- It is necessary to leave a proper working space in front of the machine. (FIG.3.1)

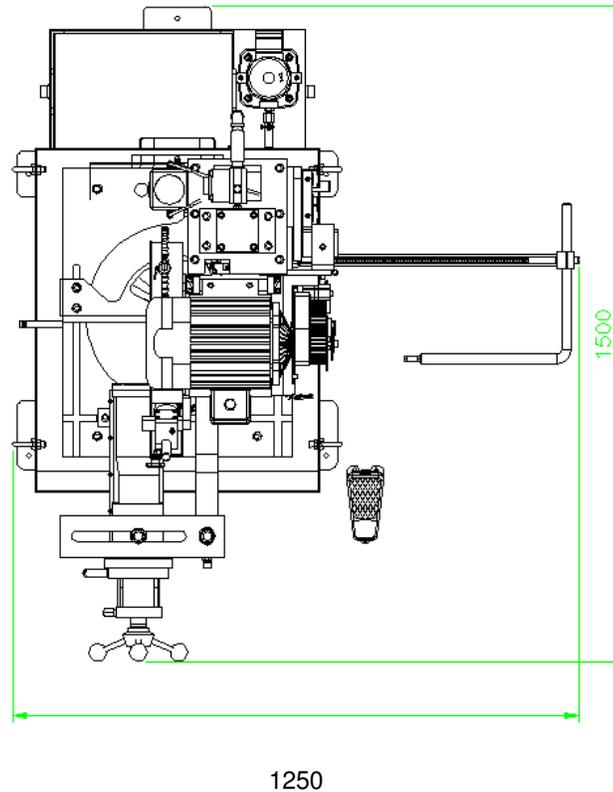


FIG. 3.1 TOP VIEW OF THE CIRCULAR COLD SAW

● INSTALLATION PROCEDURES :

1. Move the machine to the desired work site with a fork lift.
Carefully place the machine on to the floor.
2. Level the machine using a precision level gauge.
3. The green earth wire should be properly grounded to avoid an electrical shock.

4. Make the power source wire connections. Connect to fused breaker or a knife switch.

Start motor running , and check to see if the saw-blade running direction is the same as the arrow on the guard, clockwise. If not, change any two of the three power source wires, however the green earth wire should not be changed in position.

5. Do not change speed while the machine is running. Change speed can be made only after the spindle comes to a complete stop. This will prevent any damage to the gears in the saw-head.

6. Install the saw-blade with teeth in the correct direction to avoid saw-blade breakage. Tighten the lock screw in the opposite direction of the red arrowhead. Make certain the saw-blade has been tightened securely before starting the spindle. A loose saw-blade may cause bodily injury or blade breakage.



4. OPERATION INSTRUCTIONS

1. Turn on the power source.
2. Turn the manual control switch to manual position. Turn on oil pump. Adjust the clamp to a proper cutting position.

⌘ **NOTE** : Have the work-piece moved to the center of the saw-head.
3. Adjust the main vise to a proper cutting position according to the work-piece size and width variation. Adjust the parallels between the feed vise and main vise.
4. Adjust the saw-head and stroke so that the saw-blade correctly cuts off the stock. Care should taken so as not to have the saw-blade cut against the vise or machine bed. Adjust the saw-head lower stroke limit nut until it touches the limit switch. Move the saw-head upward so that it just leaves the work-piece. Adjust the upper stroke limit nut until it touches the limit switch.
5. Open the vise, remove the work-piece, and turn off the power.
6. Close the flow control valve by turning it clockwise. Turn on the power source. Depress the feed switch on the control panel. Slowly loosen the flow control valve by turning it counter clockwise until the desired feed speed is obtained.

7. Depress the pushbutton switches to test motions

and see if all motions are operating normally..

8. Place the work-piece to be cut. Set the machine on automatic operation mode. Turn on the coolant switch. Test the cutting operation using semi-automatic operation mode, and the machine will perform a cutting cycle and then stop automatically. Check the work-piece and make adjustments if necessary. If the cutting operations are normal, then an automatic cutting operation can be started.

※OPERATION SEQUENCES :

Feeding stock (Manual control) → Treadle on foot switch →

Remove the stock after cut.

※CUTTING SEQUENCES :

Clamp → Down feed the saw-head → Open the vise

5. MAINTENANCE

1. REPLACING OIL.

The oil should be changed after the first 15 days of operation, with the second oil change made at 90 days of operation. Thereafter the oil should be changed every 180 days of operation. When changing the oil, open the oil release port, release the used oil completely, wind the leak-proof tape around the oil plug, and replace it.

Open the oil inlet port, and refill with new oil. The proper quantity of oil has been reached when the oil level reaches the center of the oil sight window. Insufficient oil may cause unnecessary gear wear. Too much oil not only results in excessive drag force on the motor, but also wastes oil.

2. ELIMINATING GEAR BACKLASH.

After the machine has been operated for a substantial period, the gears inside the saw head may wear slightly resulting in a clearance between the gears. This will cause saw-blade chattering, that not only affects the cutting accuracy, but causes saw-blade breakage.

Therefore, it is very important to check the saw-blade periodically. Check for saw-blade chattering by shifting the saw-blade in an up and down motion. Always remember to disconnect the machine from the power source before checking for saw-blade chattering. The chattering can be eliminated by adjusting the backlash elimination screw. Turn the screw until the chatter is eliminated.

3. SLIDEWAYS LUBRICATION.

There is an automatic lubricator and a main vise slide way lubricator provided for lubricating the vise slide ways, and the saw-head slide ways.

6. APPENDIX

ELECTRICAL PARTS SECTION :

TABLE.6.1 Electrical parts list

FIG.6.2A Electrical wiring diagram.

FIG.6.2B Electrical wiring diagram.

FIG.6.3 Hydraulic circuit drawing.

TABLE6.2. CS-C425SA Hydraulic Oil Tank

FIG.6.4 Hydraulic Oil tank.

CS-C425SA PARTS DRAWINGS :

CS-C425SA-01

CS-C425SA-02

CS-C425SA-03

Table.6.1 CS-425SA Electric Parts List

No	Description	Specification	Q'ty
1.4.5.6	Selection switch	SS.25Ø	4
2	Emergency stop switch	25Ø	1
3	Indication lamp	25Ø, 110V	1
7	Power source switch	ON/OFF, 3A	1
8	Saw-head switch	ON/OFF, 2A	1
9	Switch	FS-3A-T	1
10	Micro-switch	7101	1
A1	Transformer	450AV	1
A2	Fuse & casing	2P, 1P, 10A	2
A3	Timer	AH ₂ -N, 110V, 6S	1
A4	Timer	AH ₃ -1, 110V, 1S	1
A5	Relay	MK-3P	1
A6~A11	Relay	MK-2P	6
A12	Magnetic switch	HNO-11, 2HP	1
A13	Magnetic switch	HNO-11, 1/8HP	1
A14	Magnetic switch	CN-11	1
A15	Terminal channel	12P, 25A	1
A16	Terminal channel	12P, 15A	3

A17	No fuse switch	3P, 30A	1
	Fuse	5A	2
	Fuse	2A	1
	Mark	25Ø	6
	Wire channel	480×360	1
	Buffer	25×45	1.5

FIG.6.2A ELECTRICAL WIRING DIAGRAM

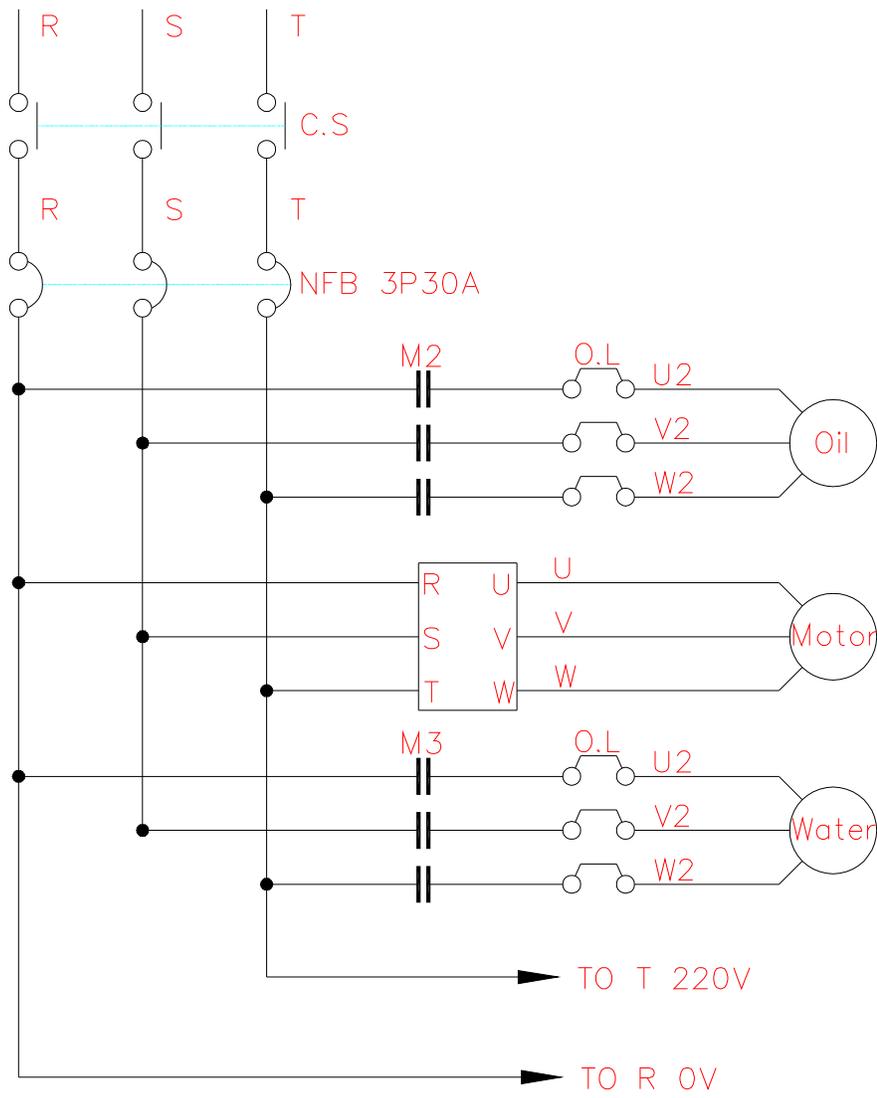
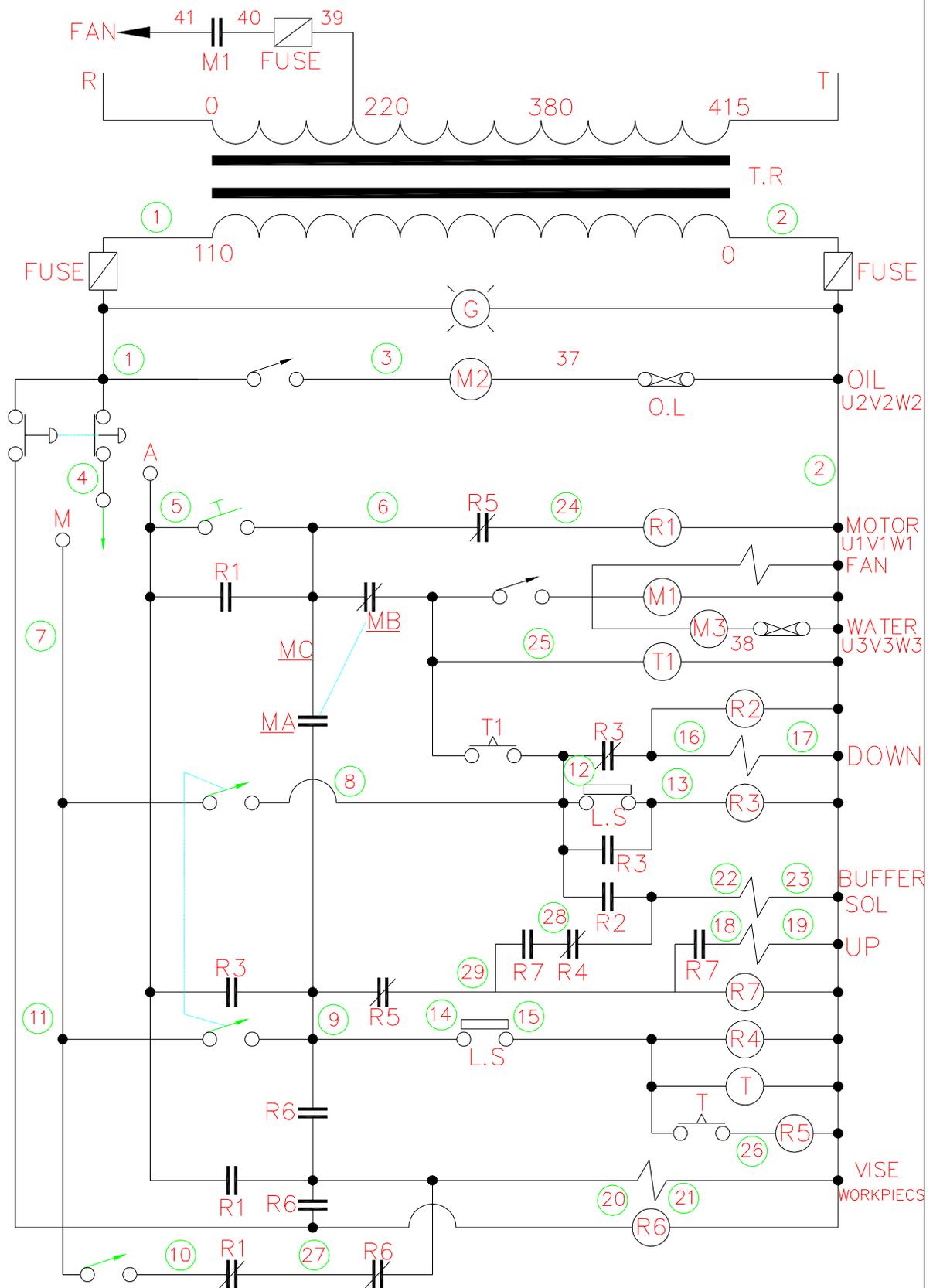


FIG.6.2B ELECTRICAL WIRING DIAGRAM



CS-C425SA

FIG.6.3 HYDRAULIC CIRCUIT DRAWING

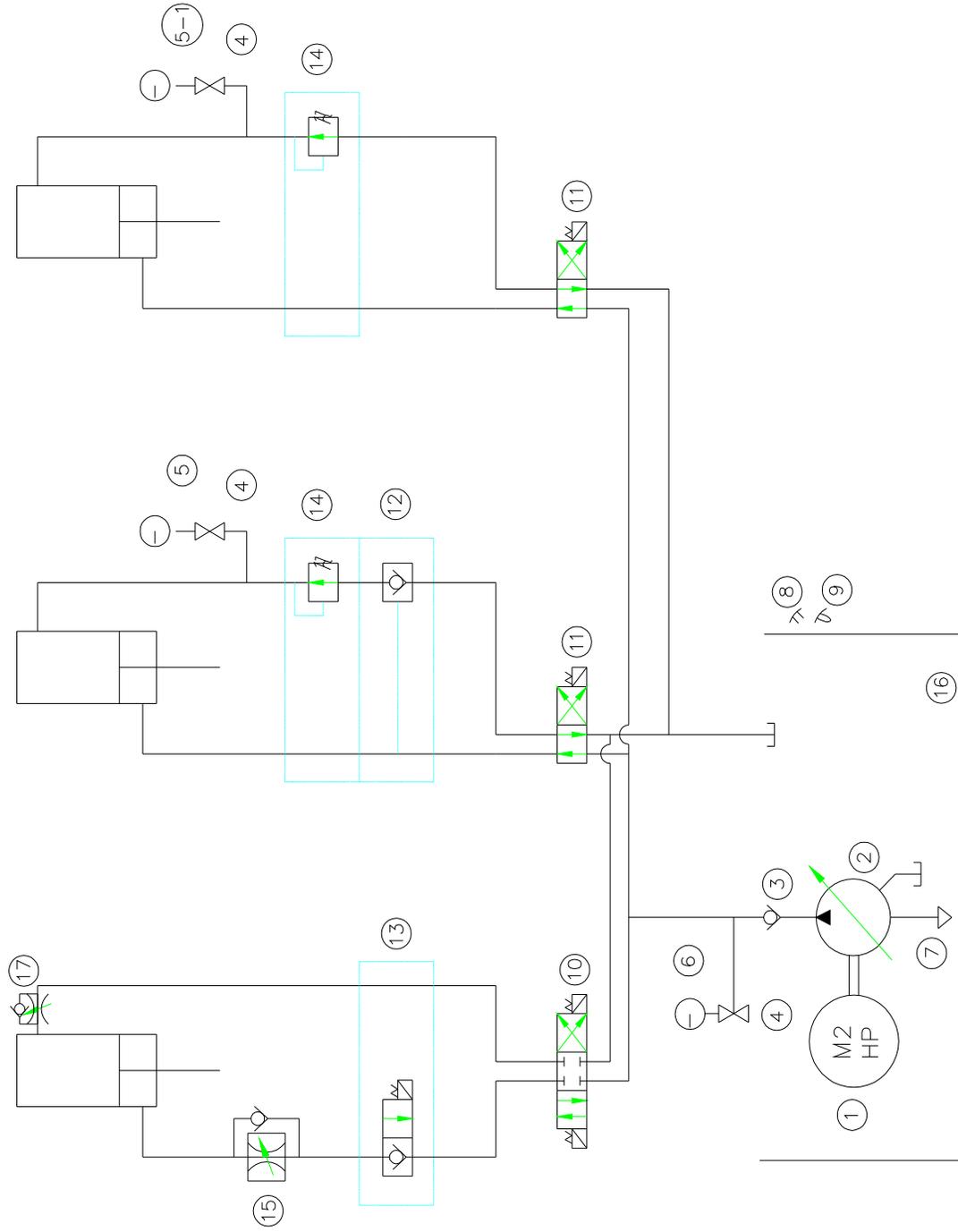
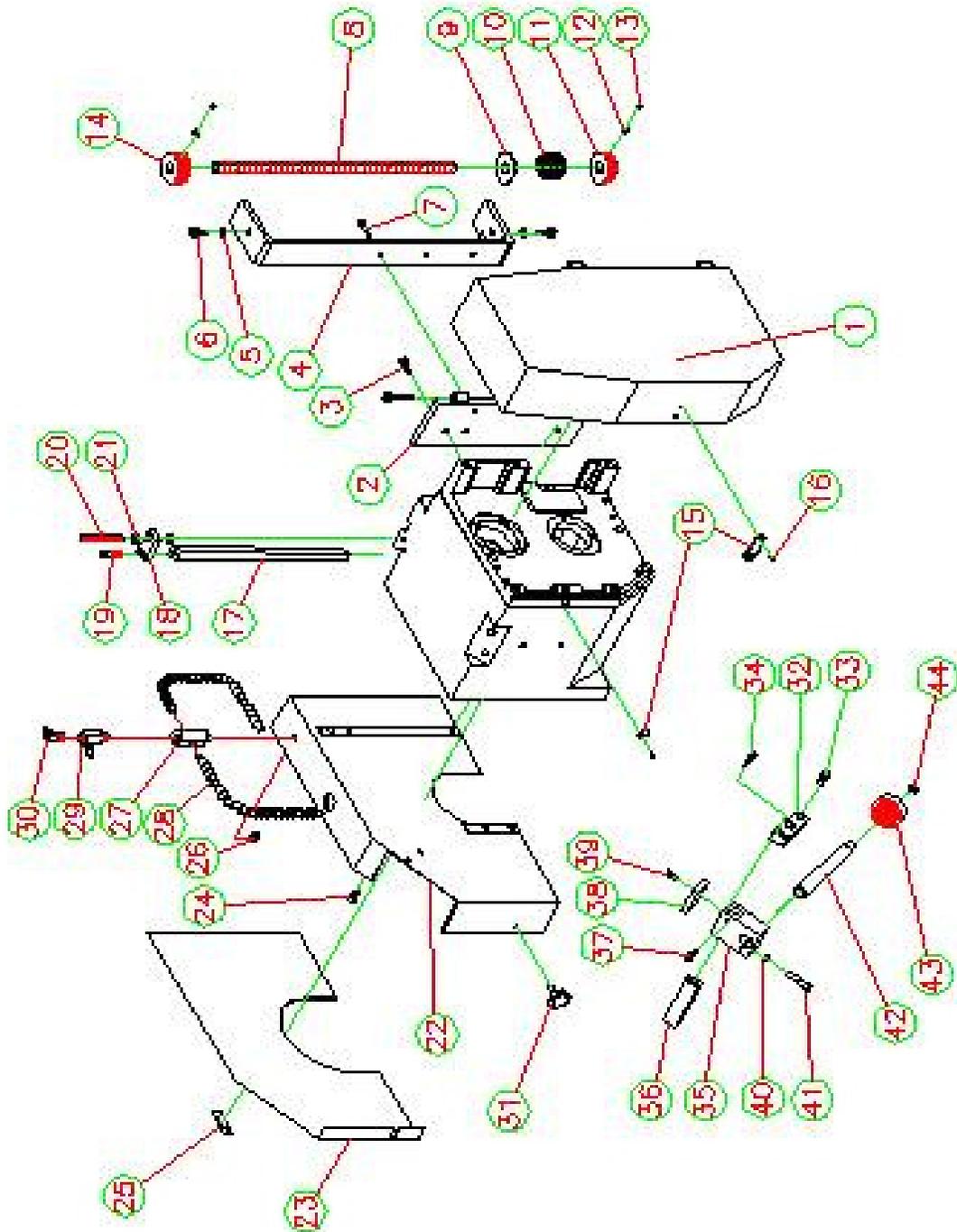


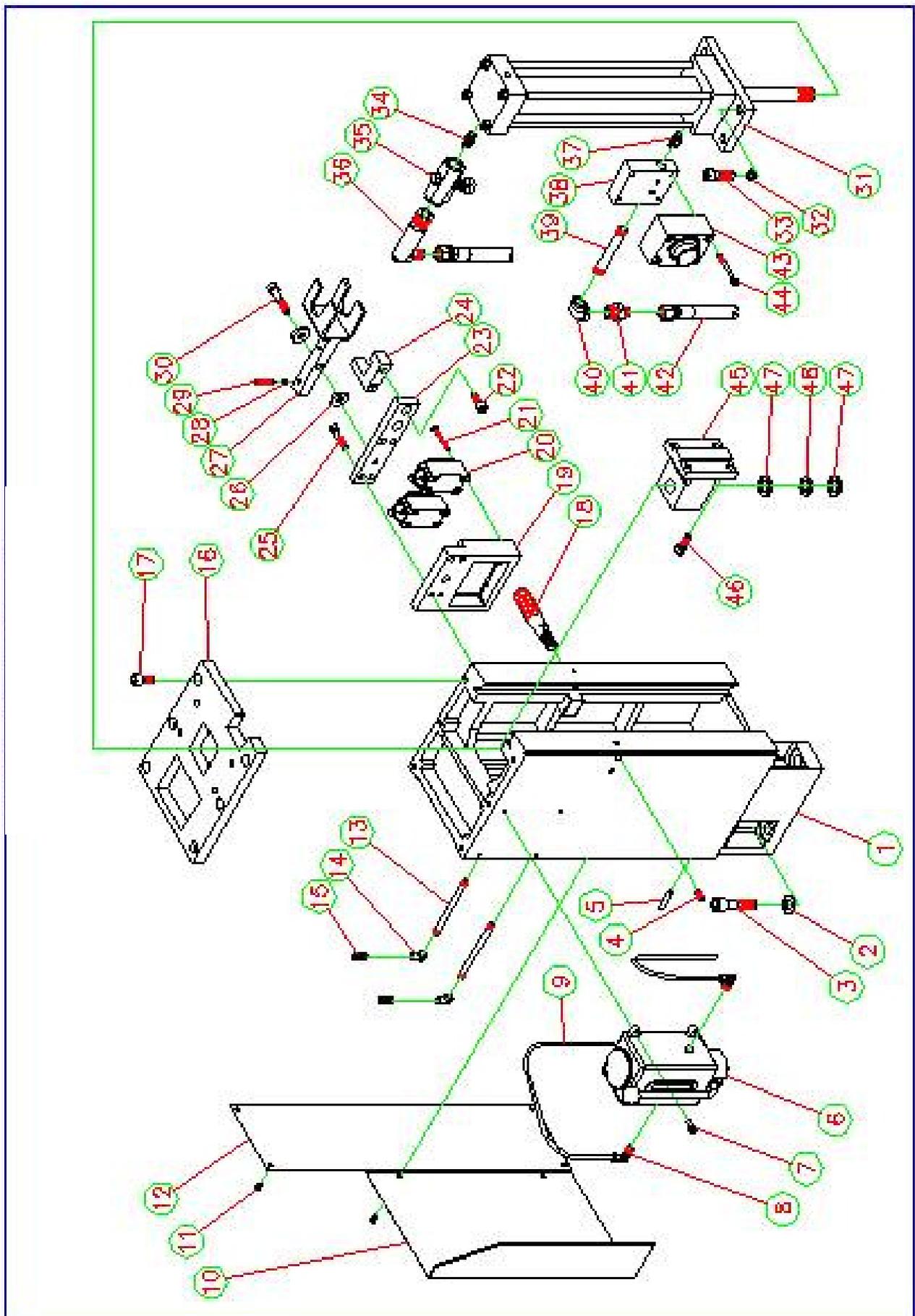
Table.6.2 CS-C425SA Hydraulic Oil Tank Parts List

No	Description	Specification	Q'ty	Remarks
1	Motor	M2-P3/4-SE V20	1	
2	Pump	PVF-20-55	1	
3	Choke valve	CVI-03	1	
4	Stop valve	GUV-02	3	
5	Pressure meter	SA2-70	1	
5-1	Pressure meter	SA2-10	1	
6	Pressure meter	SA2-150	1	
7	Lubricator	MF-06	1	
8	Level indicator	OF-3T	1	
9	Filter screen	AB-1163	1	
10	Single solenoid valve	SWH-G02-C2-A110	1	
11	Double solenoid valve	SWH-G02-B2-A110	2	
12	Pilot choke valve	V2070-M02-A110	1	
13	Hydraulic circuit plate	PCV-02M-B-30	1	
14	Pressure reducing valve	BRV-02MB-30	2	
15	Flow control valve	FNC-G03-2-01-NO	1	
16	Manifold	O2/3	1	
17	Current regulating valve	TVC-04	1	

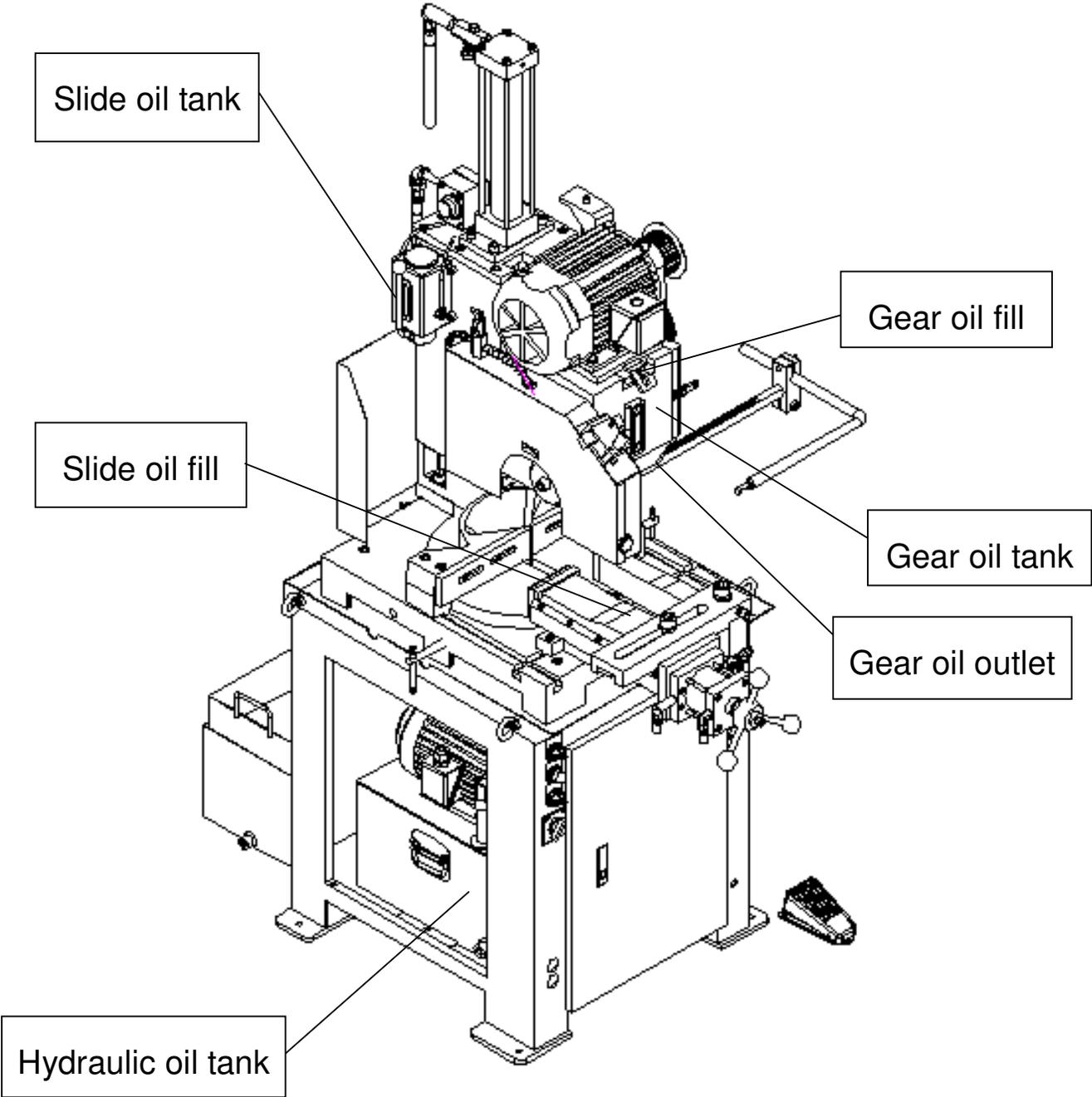
CS-C425SA-02



CS-C425SA-03



Location of Oil Type



□ Lubrication Oil Table 1

□ Above 28□

	Hydraulic Oil	Gear Oil	Slideway Oil
Change freq Brand	1 ST time after one month of operation. 2 ND time every 6 Months.	1 ST time after initial operation of 30 hours. 2 ND time after one month of operation. 3 RD time every 3 months of operation.	Fill 2 liters oil . Shot oil once every 60 minutes. shot volume about 6 CC .
CPC	Hydraulic Oil 68AW	E.P Lubricant HD 460	Machine Way Lubricant 220
ESSO	Nuto H 68	Spartan EP 460	Febis K220
MOBIL	DTE XL 68,DTE 16M	Mobilgear 634,SHC 460	Mobil Vactra Oil No.4
SHELL	Shell Tellus Oil 68	Shell Omala Oil 460	Shell Tonna Oil T 220
IDEMITSU	Daphne Super Hydro 68A	Daphne Super Gear Oil 460	Daphne Multiway 220C
NIPPON OIL	Super Hyrando 68	Bonnoc M 460	Uniway CX 220
	Air System	Grease	
Change freq Brand	1 ST time after one month of operation. 2 ND time every 6 Months.	Shoot every 16 hours. Max. 48 hours.	
CPC	CPC Spindle Oil R12	Multi-Purpose Grease No 1	
ESSO	Spinesso 10	Ronex MP Beacon 2	
MOBIL	Mobil DTE 21	Mobil UX2 EPO	
SHELL	Shell Carnea Oil 10	Aluania Greaser 1	
IDEMITSU	Diana Fresia G-9	Daphne Eponex	
NIPPON OIL	-	Multinoc Grease 1	

 **CAUTION**

Follow oil instruction for each brand, do not use unknown brand of oil to avoid chemical reaction or even a damage to the machine. Consult expert if you have any question.

□ Lubrication Oil Table 2

□ Under 28□

	Hydraulic Oil	Gear Oil	Slideway Oil
Change freq Brand	1 ST time after one month of operation. 2 ND time every 6 Months.	1 ST time after initial operation of 30 hours. 2 ND time after one month of operation. 3 RD time every 3 months of operation.	Fill 2 liters oil . Shot oil once every 60 minutes. shot volume about 6 CC .
CPC	Hydraulic Oil 46AW	E.P. Lubricant HD 220	Machine Way Lubricant 220
ESSO	Nuto H 46	Spartan EP 220	Febis K220
MOBIL	DTE XL 46,SHC 525	Mobilgear 630,SHC 220	Mobil Vactra Oil No.4
SHELL	Shell Tellus Oil 46	Shell Omala Oil 220	Shell Tonna Oil T220
IDEMITSU	Daphne Super Hydro 46A	Daphne Super Gear Oil 220	Daphne Multiway 220C
NIPPON OIL	Super Hyrando 46,Z 46	Bonnoc M 220	Uniway CX 220
	Air System	Grease	
Change freq Brand	1 ST time after one month of operation. 2 ND time every 6 Months.	Shoot every 16 hours. Max. 48 hours.	
CPC	CPC Spindle Oil R12	Multi-Purpose Grease No 1	
ESSO	Spinesso 10	Ronex MP Beacon 2	
MOBIL	Mobil DTE 21	Mobil UX2 EPO	
SHELL	Shell Carnea Oil 10	Aluania Greaser 1	
IDEMITSU	Diana Fresia G-9	Daphne Eponex	
NIPPON OIL	-	Multinoc Grease 1	