.EC MACHINERY DIRECTIVE 89/392/EEC
OPERATION MANUAL

PRESERVE THIS MANUAL FOR
FUTURE REFERENCE AND USE

MACHINE NAME: HORIZONTAL SURFACE GRINDING MACHINE

BRAND: ACER

MODEL: AHDII SERIES

MANUFACTURE: ACER GROUP.

ADDRESS: NO.101, LANE 506, SENG TSO RD, TAICHUNG COUNTY, TAIWAN.

TELEPHONE: 886-4-2520-4120

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VERSION: 1
DATE OF ISSUE : Nov 2003
FILE NO.: AHD Ⅱ Series

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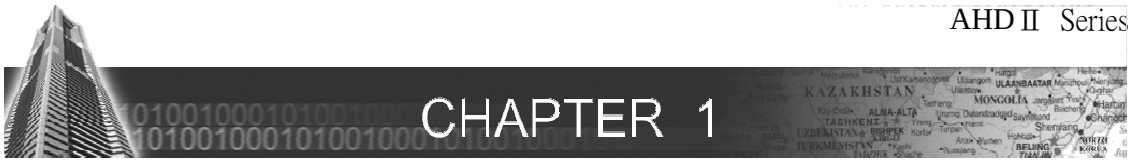
CONTENT

Approved by: Checked by: Prepared by:

VERSION:1 Date:



SAFETY PRECAUTIONS

Safety first!

We're glad to provide the information for using machines safely, to assist and keep safety while you're working, and to help avoiding any damage to the machine. We have two different kinds of manuals:

1) OPERATIONAL MANUAL

2) ELECTRICAL MANUAL

Please check if there's any pages missing in your manual as soon as you receive the machine. Let us or the agent nearby know if there's any insufficiency.

Put your manual near the machine in case you want to read it. Also keep the manual carefully so that you will be able to read it any time you wish.

Please use your experience and the information from this manual to obtain the safest working circumstance.

1. General operating safety precautions:

1.1 : Machine usage ---- Obey every message that is from the manuals.

1.2 : Only an operator who is well trained for grinding machines should operate and maintain the machine.

1.3 : Please read and understand the manuals before using the machines.

1.4 : Keep the work area clean, and leave no oil spot.

1.5 : Do not wear gloves while operating machines.

1.6 : Please wear suitable outfit while operating machines. Tie up your sleeve links and don't wear any necktie.

1.7 : Do not touch any moving or rotating parts of machine.

1.8 : Do not touch or open the parts where we have the electric sign on them, such as electrical box.

1.9 : Turn off the power before maintenance or leaving machine unattended.

1.10: Make sure you have enough light in your working area.

1.11: Propose non-electric-conductor fire extinguisher (dry powder) for preparation.

1.12: Stop machine immediately if anything unexpected happens.

2. Safety precautions for operating machine

For using this machine safely, please ask every operator, maintenance man, or any other persons to obey the safety precaution. To obey the safety precautions below will reduce the danger of any possible damage.

2.1 : This machine can only grind metallic work piece. But do not grind magnesium or magnesium alloy.

2.2 : This machine cannot be used in a place where there is gas which is easy to burn or explode.

2.3 : Do not disassemble any protective guard before use.

2.4 : Please read and understand your manual before operation.

2.5 : Check the position of emergency stop buttons and other stop button before operation.

2.6 : Confirm the function of the buttons before operation.

2.7 : Wear safety glasses.

2.7 : Make sure every switch is in the position of "OFF" before operation.

2.9 : Require people with experiences to balance and install the grinding wheel.

2.10: Check the running direction of the grinding wheel before operating.

2.11: Turn on the power to make the grinding wheel for run about five minutes at least, then start to work.

2.12: Check if the work piece is secured on the table or magnetic chuck and is very steady before operation.

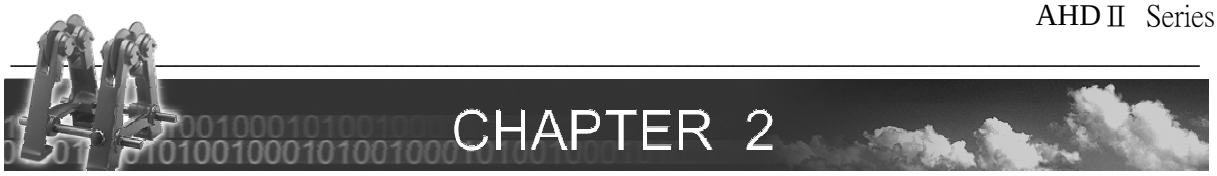
2.13: Stop the movement of the table before adjusting the travel of cross or longitudinal movement.

2.14: Before changing the procedure of grinding, make sure the machine has stopped totally first.

2.15: Never use any coolant liquid that is easy to burn or poisonous.

2.16: The grinding wheel of this machine should be able to handle at least 2000M/min speed.

2.17: Do not grind on the side of the grinding wheel.
2.18: Obey precautions as other chapters describbed.
2.19: Please wait until machine has stopped to clean and set-up.
2.20: Do not change anyelectrics or parts of machines.
2.21: Require a qualified person to maintain the electric parts of machines.
2.22: Do not tear the warning signs on the machines. If they are not clear, please contact your agent or our sales department for your replacement.
2.23: Never mount a work-piece too large for the machine.
2.24: Use the correct lifting equipment for handling .
2.25: Never use excessive depth of grinding or feed rate.
2.26: Do not run the machine unattended.
2.27: No person shall mount any grinding wheel unless he has been TRAINED.
2.28: Do turn off coolant before stopping the wheel.
2.29: Do not grind material for which the wheel is not designed.
2.30: Do dress the wheel regularly to avoid loading.



GRINDER DESCRIPTION

2.1 : Introduction to the AHDⅡ surface grinding machine:

The **X** axis of the grinder (moves from left to right) can be driven hydraulically or manually. The **Y** axis (up and down) is using high efficiency AC motor and stepping motor to control downfeed movement. The Z axis, front or rear, is using high efficiency DC motor to control rapid and step crossfeed grinding. It is capable to control the speed for auto step crossfeed or auto constant infeed.

1. COLUMN:(1020 above)

Enlarged, honeycomb-ribbed column especially suitable for heavy duty grinding.

1(a). ENLARGED COLUMN AND BASE:(618/818)

Enlarged column and base create high stability and rigidity. The height of column is increased up to 18" (460mm) from table surface to the center line of spindle.

2. CONSTRUCTION:

Construction of table, saddle and base is casted with high grade casting iron, strongly ribbed.

3. SPINDLE:(1020~1640)

Enlarged spindle set is supported by 4 pieces of pre-loaded precision angular contact ball bearings for heavy duty.

3(a). HIGH PRECISION CARTRIDGE WHEEL SPINDLE: (618/818)

High precision cartridge type spindle is supported by two preloaded precision angular contact ball bearings & one NN type Roller bearing and driven by V3 class motor that allow high accurate grinding performance.

(Supra-618/818 series are driven by 2.0HP motor.)

4. SLIDEWAY

Vertical, cross double vees and longitudinal one vee & one flat slide-ways are coated with Turcite-B, provide stable movement and durable accuracy.

5. AUTOMATIC CONTINUOUS LUBRICATION SYSTEM:

All slide-ways and screws are fully oiled by automatic continuous lubrication system to eliminate slide-ways & screws.

6. CROSS FEED:

Ball screw for cross travel, powered by DC servo motor.

7. HYDRAULIC TABLE:

Table speed ranges 60Hz,1-25m/min.50Hz,1-21m/min. With rack and pinion table drive for hand operation.

8. PROXIMITY SWITCH:

Provide built-in-type (hidden) proximity switch, easy operation.

9. TABLE SPEED CONTROL:(1020 above)

Presettable hydraulic table speed control allows operator to pre-set speed rate, enable to get same speed rate when engaging hydraulic table every time.

10. THE FOLLOWING ARE WORKPIECE MATERIALS WHICH CAN USED ON THE

grinders:STEELS [carbon steel, alloy steel], stainless steel, cast iron,copper, aluminum. DO NOT grinding magnesium. Do not dry grinding and do not grind non-magnetic material on the magnetic chuck.

11. OPERATOR MUST BE HAVE UNDERGONE TRAINING.

Note: AHDⅡ means grinder with auto downfeed, table movement by hydraulic and motorized cross-feed.

2.2 : Noise level and operator position

The noise level of this machine is under 75dB. To test noise level:

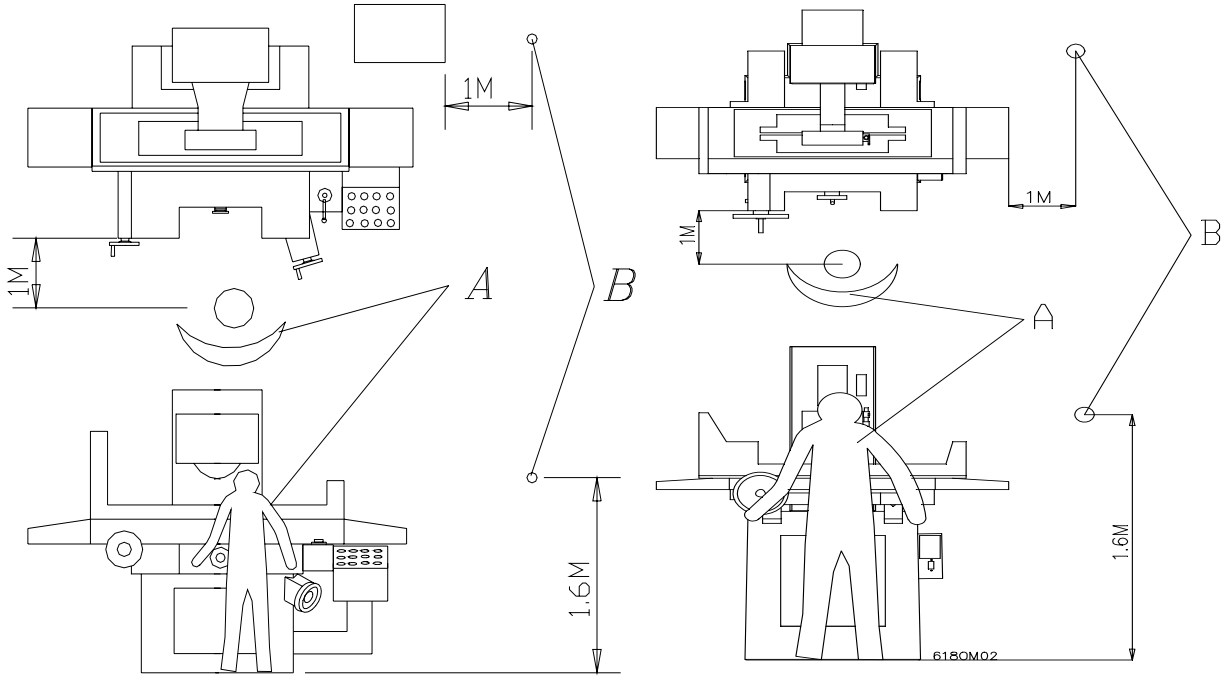
(1) Background noise: under 60 dB.

(2) To test the status of your machine: At a distance of 1 meter from

the surface of grinder and at a height of 1.6 meter from the floor.

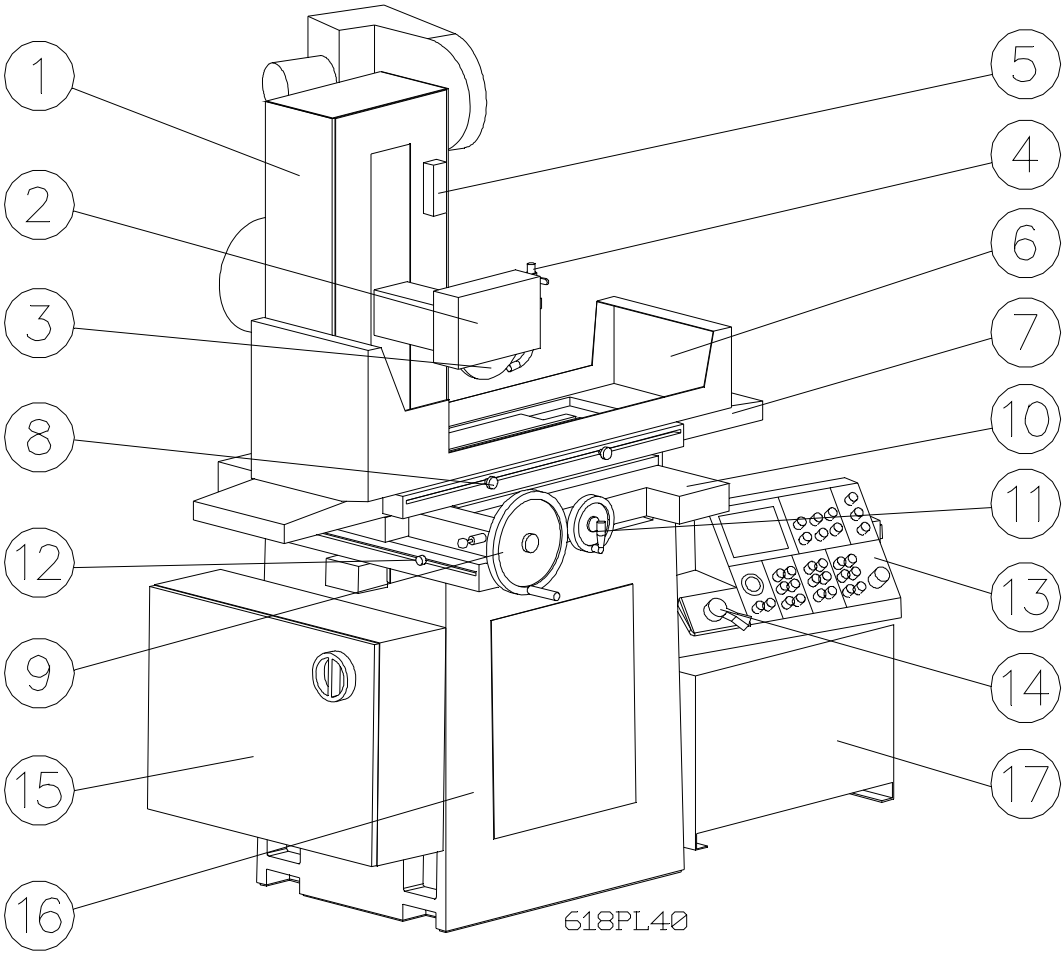
(3) Apparatus:Qualified for IEC 651, noise meter for TYPE 1.

Set in : FAST .



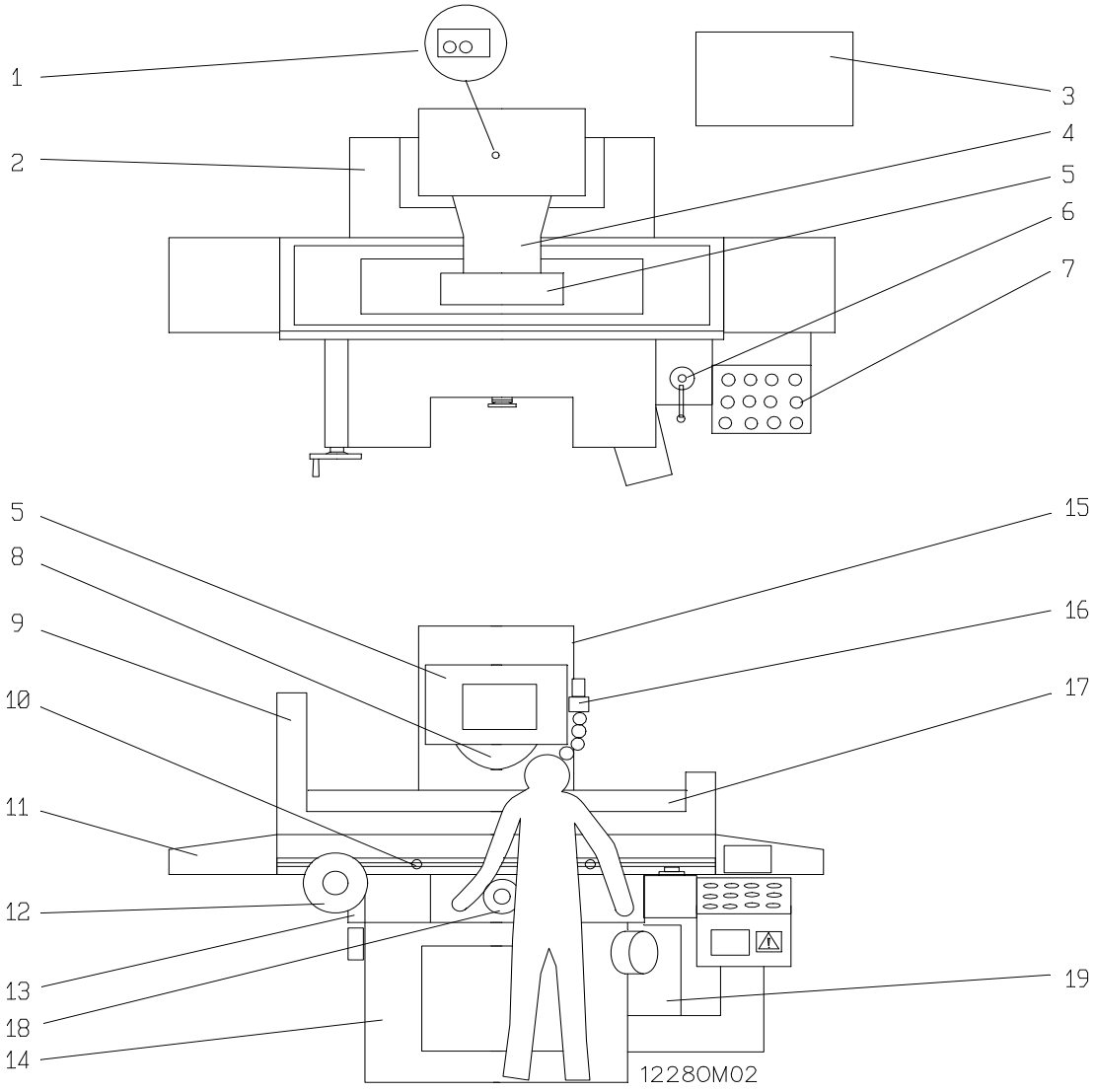
2.3 : The main parts of machine, and the position of operator (618/818 AHDII)

NO	UNIT NAME	NO	UNIT NAME
1.	Column	10.	Saddle
2.	Grinding wheel guard	11.	Cross feed handwheel
3.	Grinding wheel	12.	Cross travel
4.	Coolant valve&nozzle	13.	Control panel
5.	Oil sight	14.	Table speed control unit
6.	Splash guard	15.	Electric box
7.	Table	16.	Base
8.	Longitudinal travel limits	17.	Hydraulic oil tank
9.	Longitudinal handwheel		

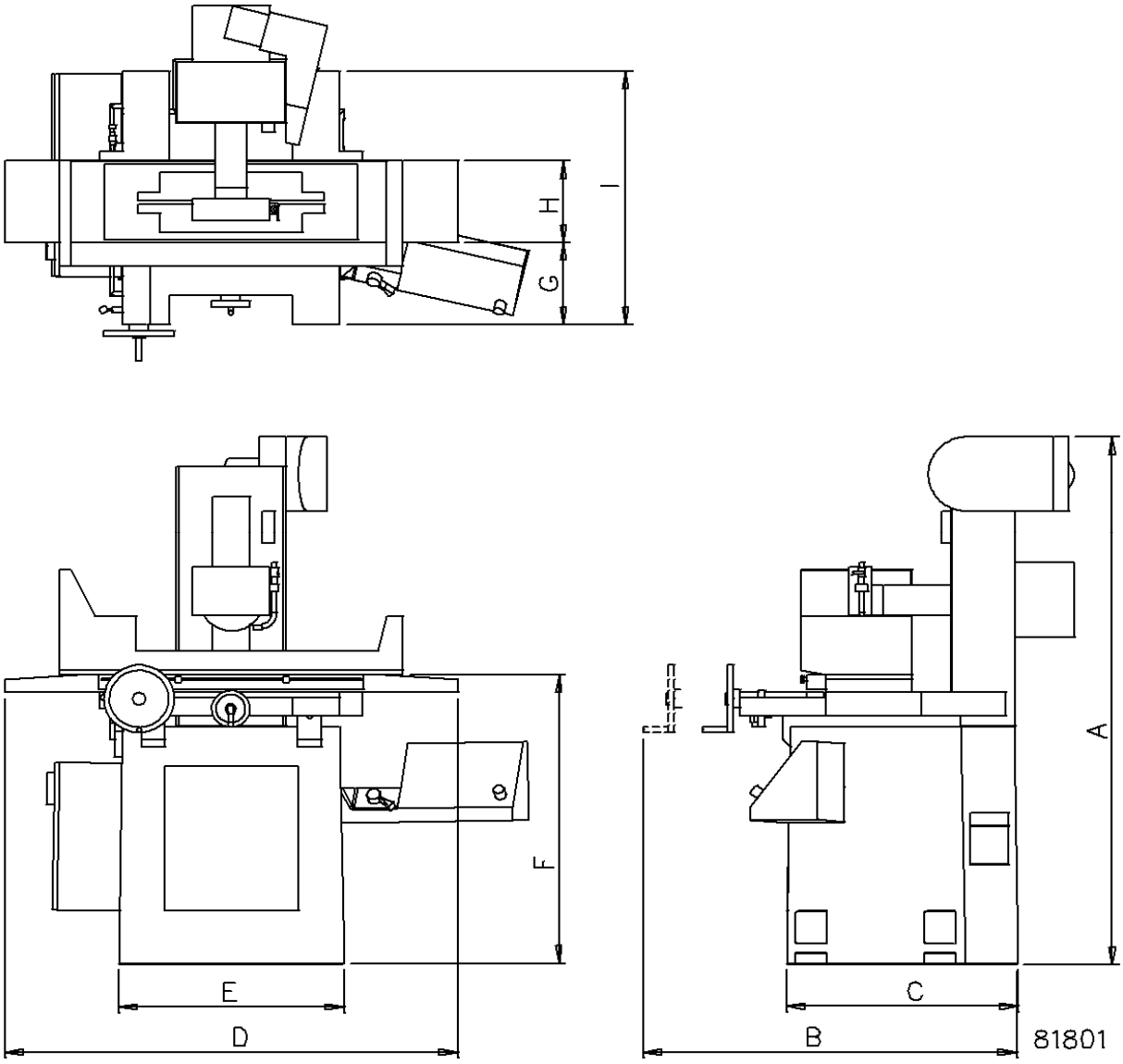


2.3.1 The main parts of machine, and the position of operator (1020/1224/14/16 AHDII)

NO	UNIT NAME	NO	UNIT NAME
1.	Lubricant oil tank	11.	Table
2.	Saddle	12.	Table hand feed handwheel
3.	Hydraulic oil tank	13.	Cross travel
4.	Spindle seat	14.	Base
5.	Grinding wheel guard	15.	Column
6.	Table speed control unit	16.	Coolant valve
7.	Control panel	17.	Plate for splash guard
8.	Grinding wheel	18	Cross feed handwheel
9.	Splash guard	19	Electric box
10.	Longitudinal travel limits		



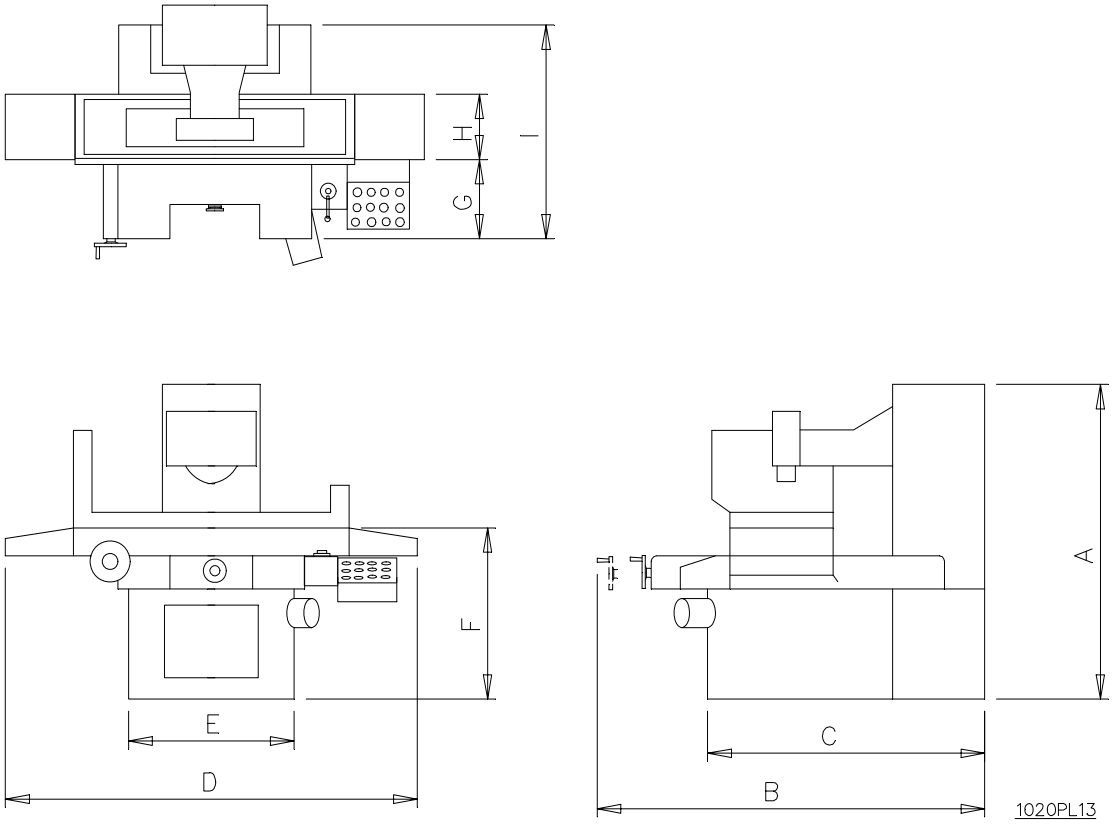
2.4. : Dimensions and floor requirement for 618/818 AHDⅡ series



818AHDⅡ	A	B	C	D	E	F	G	H	I
UNIT=MM	1608	1305	720	1408	700	1020	270	280	860
UNIT=INCH	63.3"	51.4"	28.3"	55.4"	27.6"	39.8"	10.6"	11"	33.8"

618AHDⅡ	A	B	C	D	E	F	G	H	I
UNIT=MM	1608	1105	645	1308	635	1010	230	280	695
UNIT=INCH	63.3"	43.5"	25.4"	51.5"	25"	39.8"	9.1"	11"	27.4"

2.4.1 : Dimensions and floor requirement for 1020,1224 AHDⅡ series



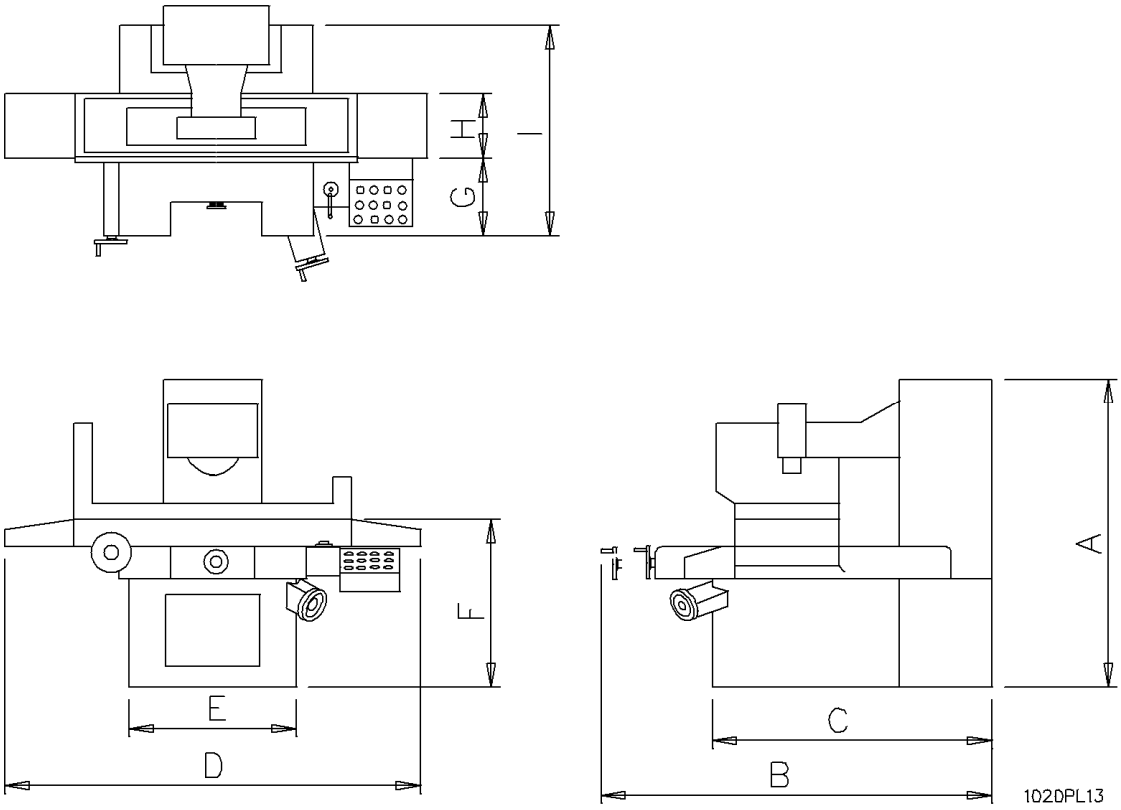
UNT=MM

SERIES	A	B	C	D	E	F	G	H	I
1020 AHDⅡ	1700	1500	1605	1755	760	950	350	345	1037
1224 AHDⅡ	1800	1555	1065	1935	760	950	365	385	1087

UNT=INCH

SERIES	A	B	C	D	E	F	G	H	I
1020 AHDⅡ	67”	59”	41.9”	69”	29.9”	37.4”	13.8”	13.5”	40.8”
1224 AHDⅡ	70.8”	61”	41.9”	76”	29.9”	37.4”	14.3”	15”	42.7”

2.4.3 Dimensions and floor requirement for 14 AHDⅡ series



14 AHDⅡ	A
Standard Column	1940mm(76.4")
Special High Column	2040mm(80.3")

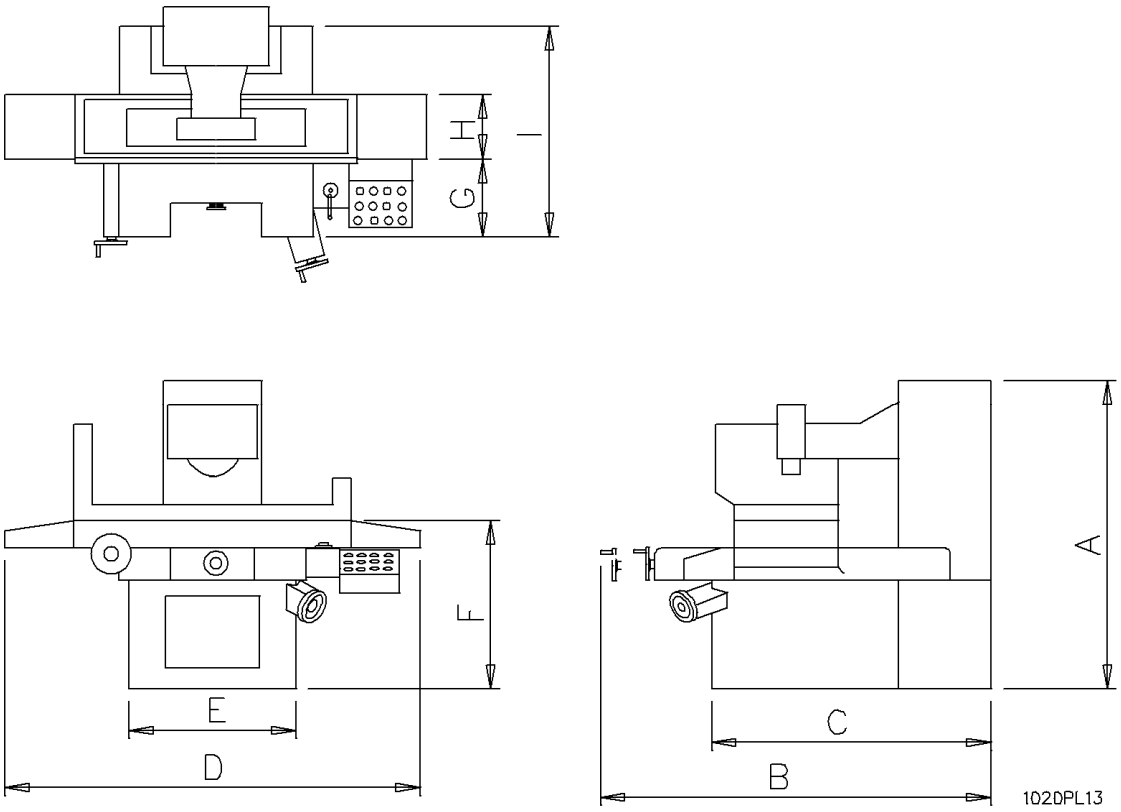
UNT=MM

SERIES	A	B	C	D	E	F	G	H	I
1428AHDⅡ	1940/2040	1920	1315	2120	1050	950	410	430	1240
1436AHDⅡ	1940/2040	1920	1315	2550	1050	950	410	430	1240

UNT=INCH

SERIES	A	B	C	D	E	F	G	H	I
1428AHDⅡ	76.4"/80.3"	75.6"	51.8"	83.5"	41.3"	37.4"	16.2"	16.9"	48.9"
1436AHDⅡ	76.4"/80.3"	75.6"	51.8"	100.3"	41.3"	37.4"	16.2"	16.9"	48.9"

2.4.4 Dimensions and floor requirement for 1632/1640 AHDⅡ series



16 AHDⅡ	A
Standard Column	1940mm(76.4”)
Special High Column	2040mm(80.3”)

UNT=MM

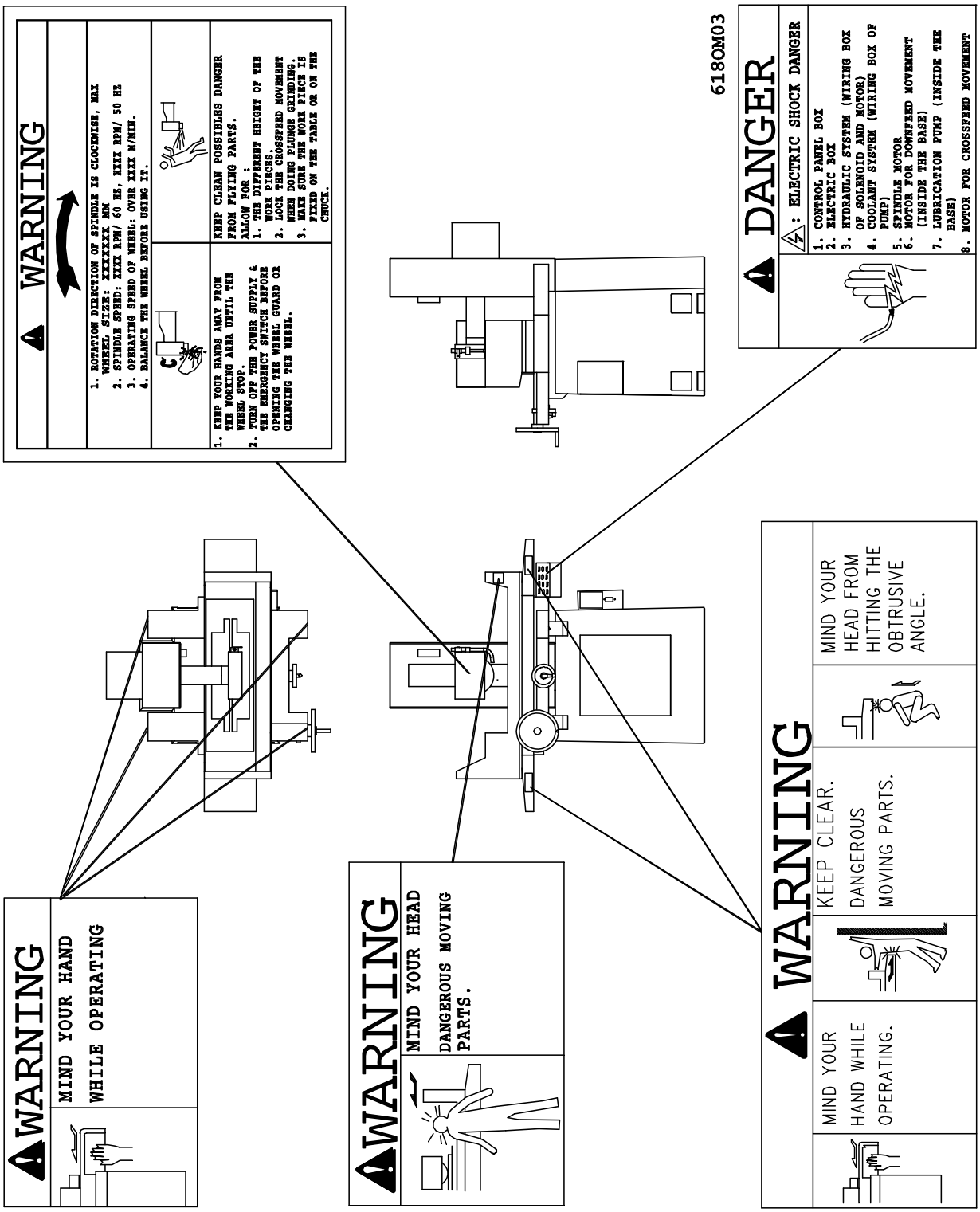
SERIES	A	B	C	D	E	F	G	H	I
1632AHDⅡ	1940/2040	2185	1500	2360	1050	950	490	535	1520
1640AHDⅡ	1940/2040	2185	1500	2720	1450	950	490	535	1520

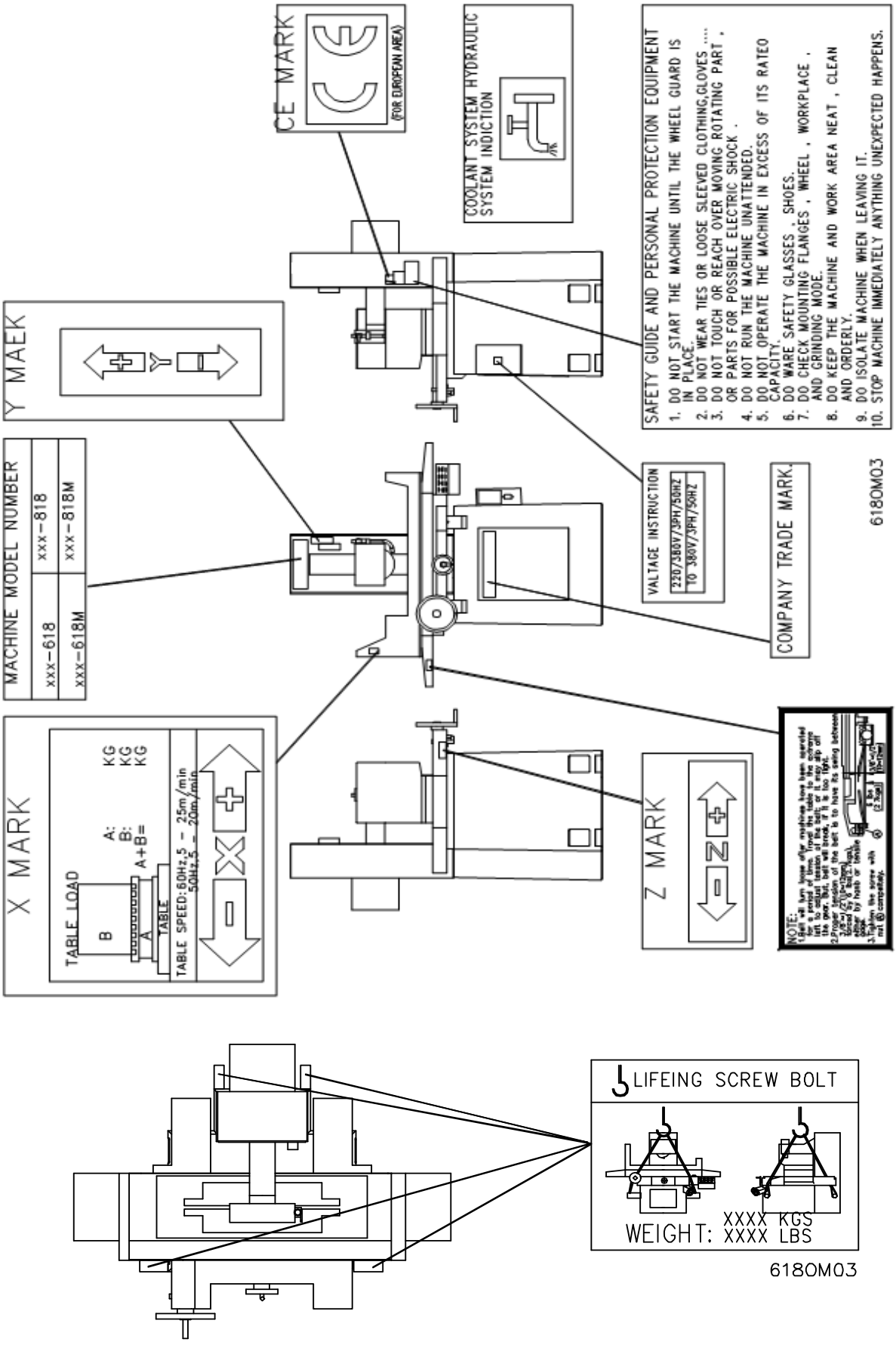
UNT=INCH

SERIES	A	B	C	D	E	F	G	H	I
1632AHDⅡ	76.4”/80.3”	86.0”	59.1”	92.9”	41.3”	37.4”	19.3”	21.1”	59.9”
1640AHDⅡ	76.4”/80.3”	86.0”	59.1”	107”	57.1”	37.4”	19.3”	21.1”	59.9”

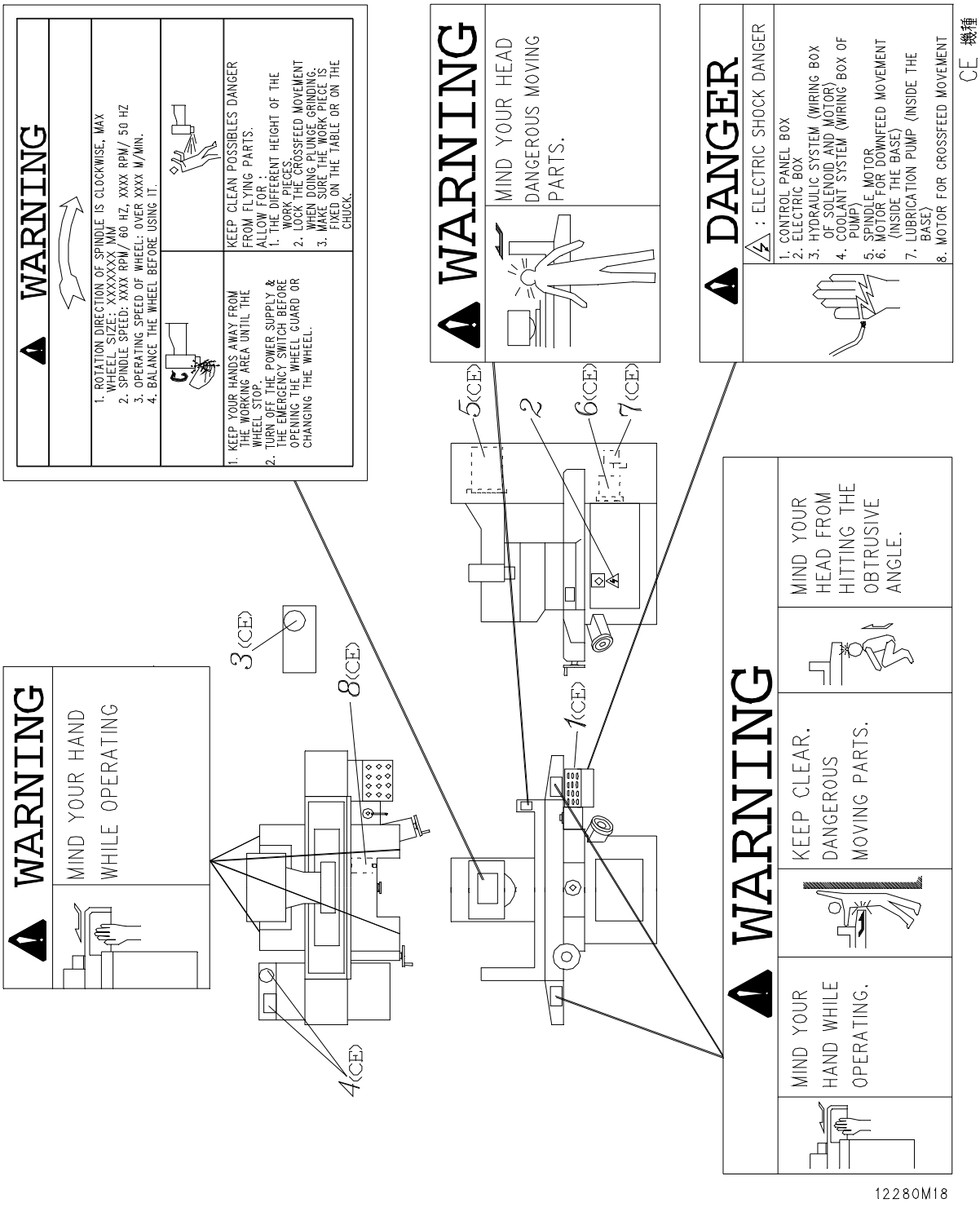
2.5 : The warning sign for 618/818AHDII Series

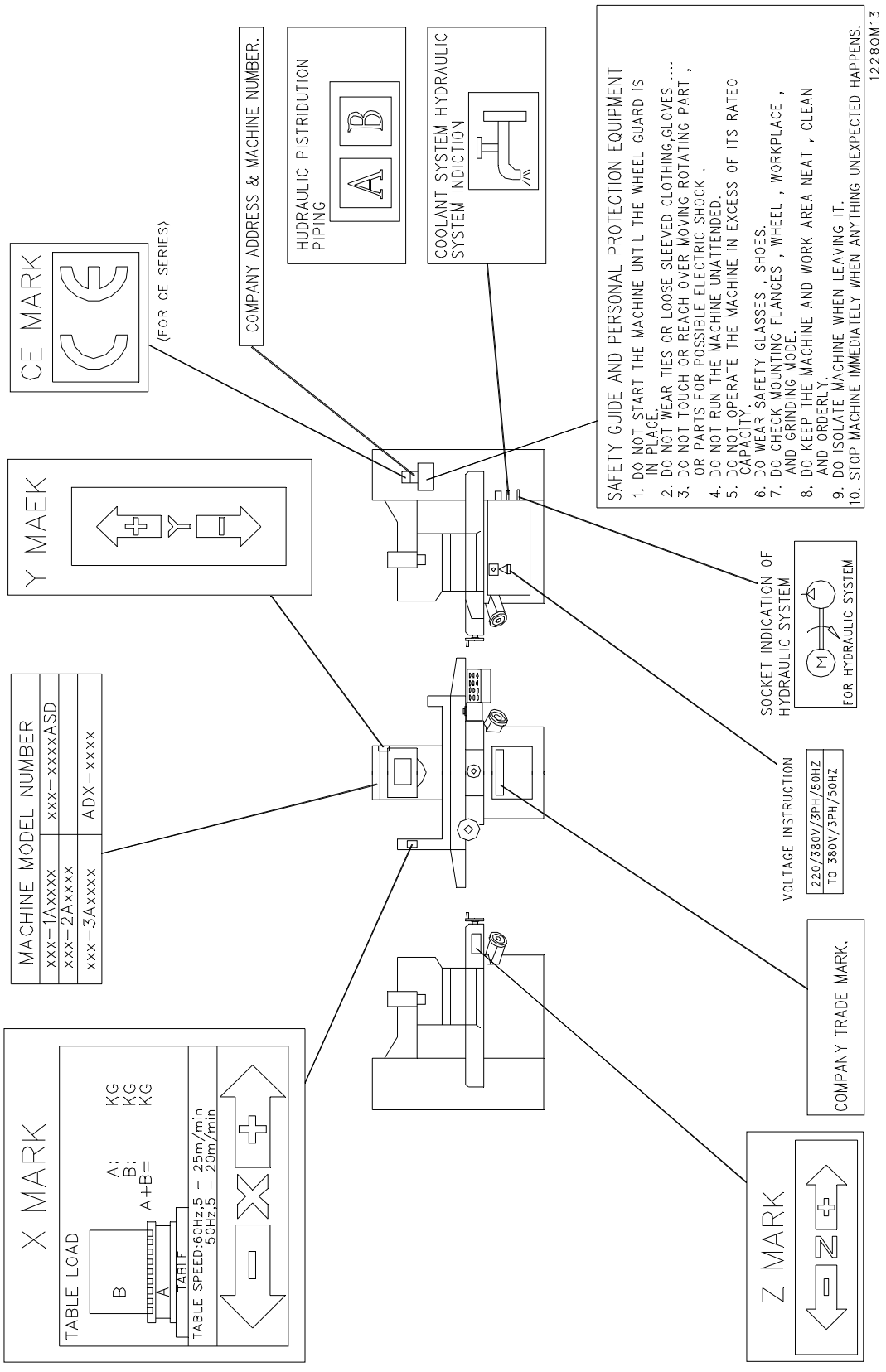
There are warning signs on this machine to warn you every possible danger to keep your safety. Please read and fully understand the warning sign before operating.



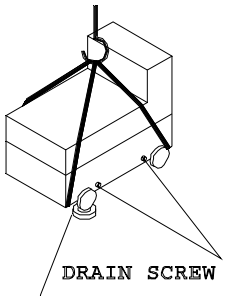

CE MARK
(FOR EUROPEAN AREA)
COOLANT SYSTEM HYDRAULIC SYSTEM INDICTION
SAFETY GUIDE AND PERSONAL PROTECTION EQUIPMENT
1. DO NOT START THE MACHINE UNTIL THE WHEEL GUARD IS IN PLACE.
2. DO NOT WEAR TIES OR LOOSE SLEEVED CLOTHING,GLOVES ....
3. DO NOT TOUCH OR REACH OVER MOVING ROTATING PART , OR PARTS FOR POSSIBLE ELECTRIC SHOCK .
4. DO NOT RUN THE MACHINE UNATTENDED.
5. DO NOT OPERATE THE MACHINE IN EXCESS OF ITS RATED CAPACITY.
6. DO WARE SAFETY GLASSES , SHOES.
7. DO CHECK MOUNTING FLANGES , WHEEL , WORKPLACE , AND GRINDING MODE.
8. DO KEEP THE MACHINE AND WORK AREA NEAT , CLEAN AND ORDERLY.
9. DO ISOLATE MACHINE WHEN LEAVING IT.
10. STOP MACHINE IMMEDIATELY ANYTHING UNEXPECTED HAPPENS.
6180M03
Y MAEK
MACHINE MODEL NUMBER
xxx-618
xxx-818
xxx-618M
xxx-818M
VALTAGE INSTRUCTION
220/380V/3PH/50HZ
TO 380V/3PH/50HZ
COMPANY TRADE MARK.
X MARK
TABLE LOAD
A:
B:
A+B=
KG
KG
KG
TABLE
TABLE SPEED:60Hz,5 ~ 25m/min
50Hz,5 ~ 20m/min
Z MARK
NOTE:
LIFEING SCREW BOLT
WEIGHT: XXXX KGS
XXXX LBS
6180M03

The warning sign for 1020/1224/14/16 AHDII Series




CE MARK
(FOR CE SERIES)
COMPANY ADDRESS & MACHINE NUMBER.
HUDRAULIC PISTRIDUTION PIPING
A
B
COOLANT SYSTEM HYDRAULIC SYSTEM INDICTION
SAFETY GUIDE AND PERSONAL PROTECTION EQUIPMENT
1. DO NOT START THE MACHINE UNTIL THE WHEEL GUARD IS IN PLACE.
2. DO NOT WEAR TIES OR LOOSE SLEEVED CLOTHING,GLOVES ....
3. DO NOT TOUCH OR REACH OVER MOVING ROTATING PART , OR PARTS FOR POSSIBLE ELECTRIC SHOCK .
4. DO NOT RUN THE MACHINE UNATTENDED.
5. DO NOT OPERATE THE MACHINE IN EXCESS OF ITS RATED CAPACITY.
6. DO WEAR SAFETY GLASSES , SHOES.
7. DO CHECK MOUNTING FLANGES , WHEEL , WORKPLACE , AND GRINDING MODE.
8. DO KEEP THE MACHINE AND WORK AREA NEAT , CLEAN AND ORDERLY.
9. DO ISOLATE MACHINE WHEN LEAVING IT.
10. STOP MACHINE IMMEDIATELY WHEN ANYTHING UNEXPECTED HAPPENS.
12280M13
Y MAEK
MACHINE MODEL NUMBER
xxx-1Axxxx
xxx-xxxxASD
xxx-2Axxxx
xxx-3Axxxx
ADX-xxxx
SOCKET INDICATION OF HYDRAULIC SYSTEM
FOR HYDRAULIC SYSTEM
VOLTAGE INSTRUCTION
220/380V/3PH/50HZ
TO 380V/3PH/50HZ
COMPANY TRADE MARK.
X MARK
TABLE LOAD
B
A
A:
B:
A+B=
KG
KG
KG
TABLE
TABLE SPEED:60Hz,5 - 25m/min
50Hz,5 - 20m/min
Z MARK

COOLANT TANK



SPECIFICATION

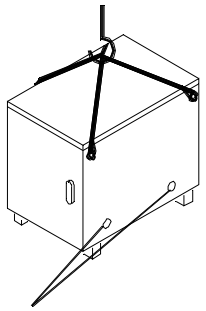
PUMP POWER : 1/8 HP/3P
FLOW RATING : 26 L/MIN
TANK CAPACITY : 130 LITRES
TANK WEIGHT : 100 KG
TOTAL WEIGHT : 220 KG
VOLTAGE : ☐ V

RECOMMENDED BRANDS OF COOLANT:
SUN,SHOWA,ESSO,BP,SHELL,MOBIL,CASTROL CASTROL , ARAL . Such as CASTROL SYNTILO , R coolant or MOBIL SOLVAC 1535 coolant for ferrous metal grinding .

WARNING :
1. DRAIN WATER WITH THE PUMP .
2. DRAIN THE REMAINING COOLANT FROM THE TANK BOTTOM .

* MAKE SURE TO PUT THE ANTI-SLIPPINT BLOCKS AGAINST THE TANK WHEELS AFTER CLEANING .

TABLE HYDRAULIC BOX



VOLOTAGE: ☐ V
HYDRAULIC MOTOR : 3 HP/6P
PUMP SPEC : VPNC 36-2-20
VOLUMN DELIVERY: 42 L/MIN/60HZ,35 L/MIN/50HZ
WORKING PRESSURE : 15 - 18 KG
TANK VOLUME: 95 LITERS
TANK WEIGHT : 133 KG
COOLANT WEIGHT: 92 KG
TOTAL WEIGHT: 225 KG

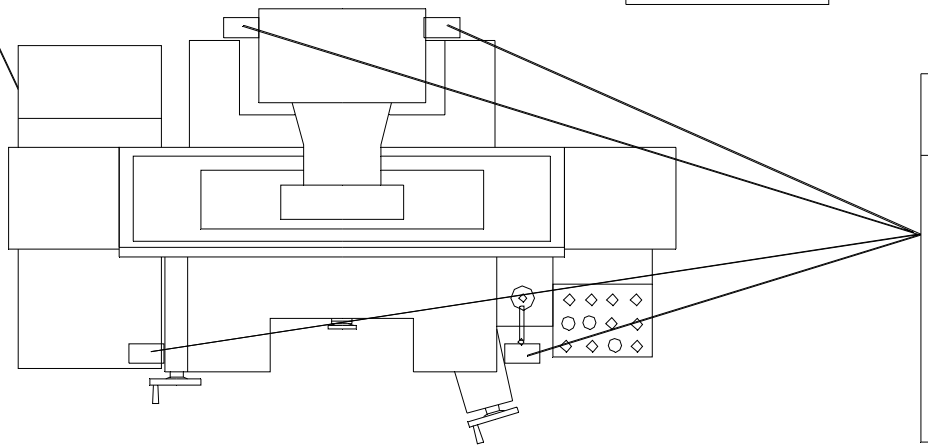
SUGGESTED HYDRAULIC OIL :

ESSO: UNIVIS32	BP : ENERGO SHF32
SHELL : TELUS32	TOTAL : EQUIVIS ZS32
MOBIL : D.T.E.24	SHOWA : A-R32
CASTROL : HYSPIN , AWH32	

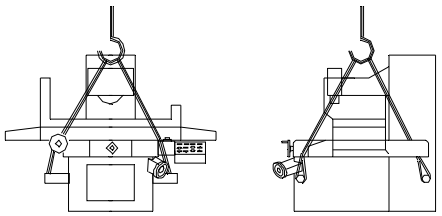
RENEWING OIL NOTICE

1. DRAIN THE OIL WITH THE PUMP.
2. DRAIN THE REMAINING OIL FROM THE DRAIN SCREW BOLTS.

NO DRAINING THE OIL FROM (A) WHEN THE TANK IS FULL TO PREVENT THE OIL SPLASHING FROM (A) .



LIFTING SCREW BOLT

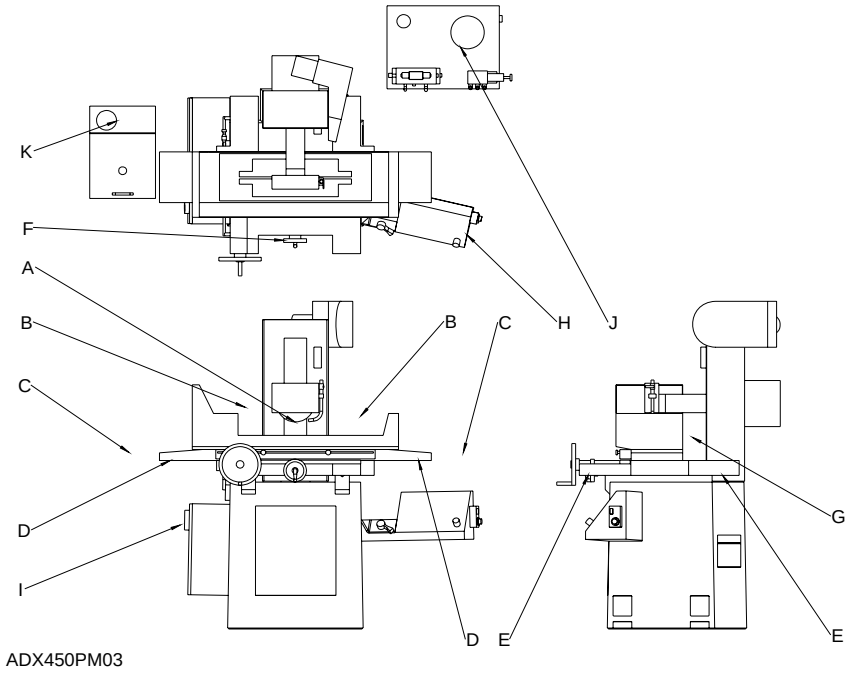


WEIGHT: XXXX KGS
XXXX LBS

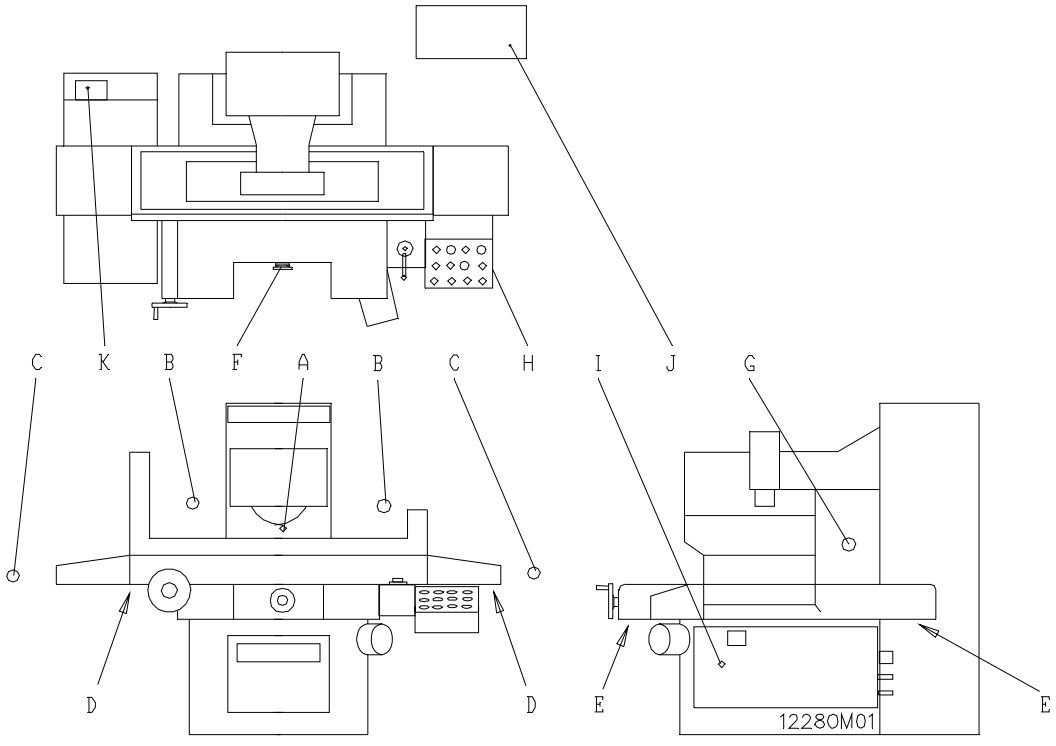
12280M11

2.6 : Potential hazards area

This machine is designed for grinding metallic work piece; therefore,there are many electric devices and equipments in this machine. Don't open them on purpose or go near these dangerous area while operating or during maintenance.



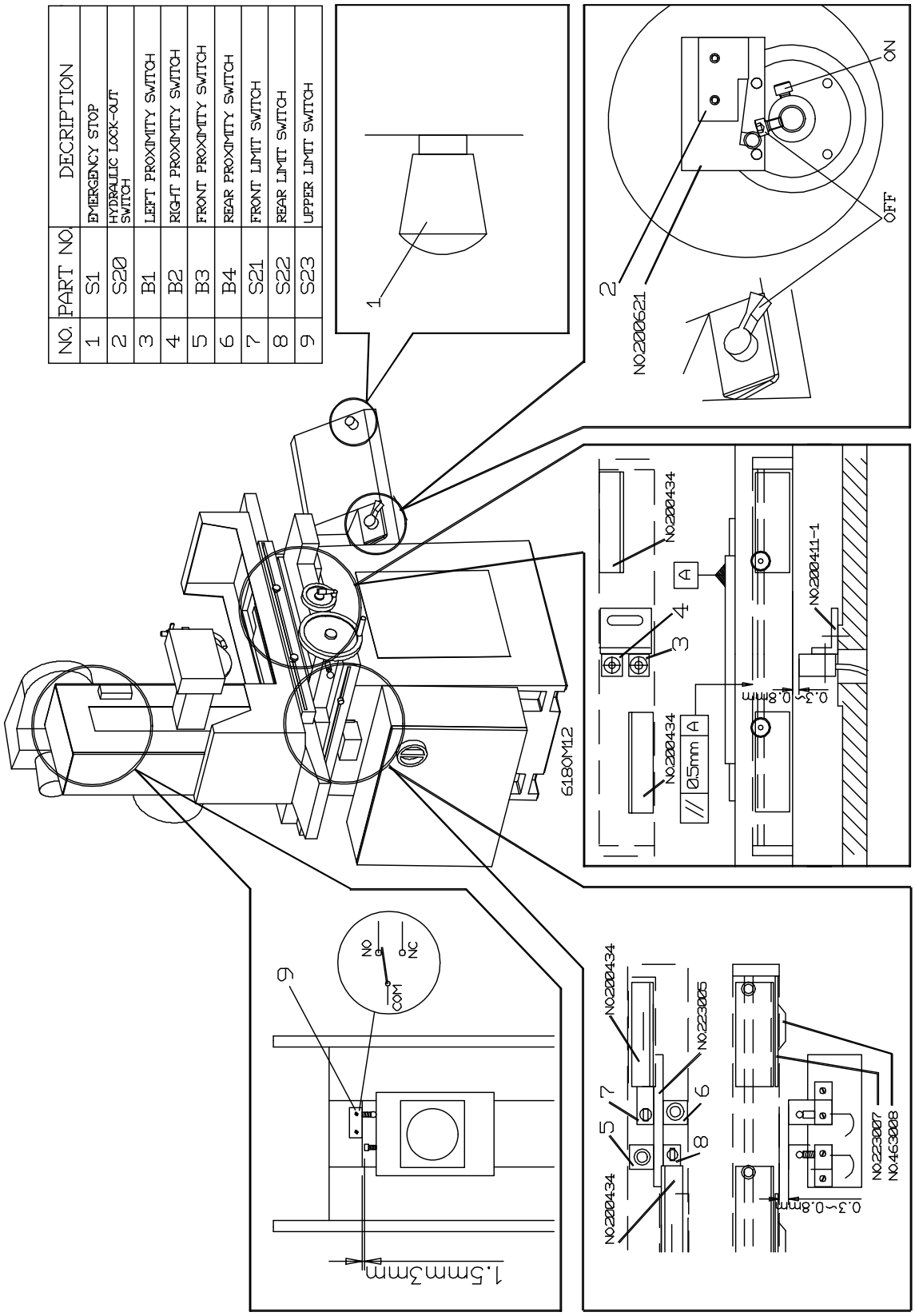
ADX450PM03



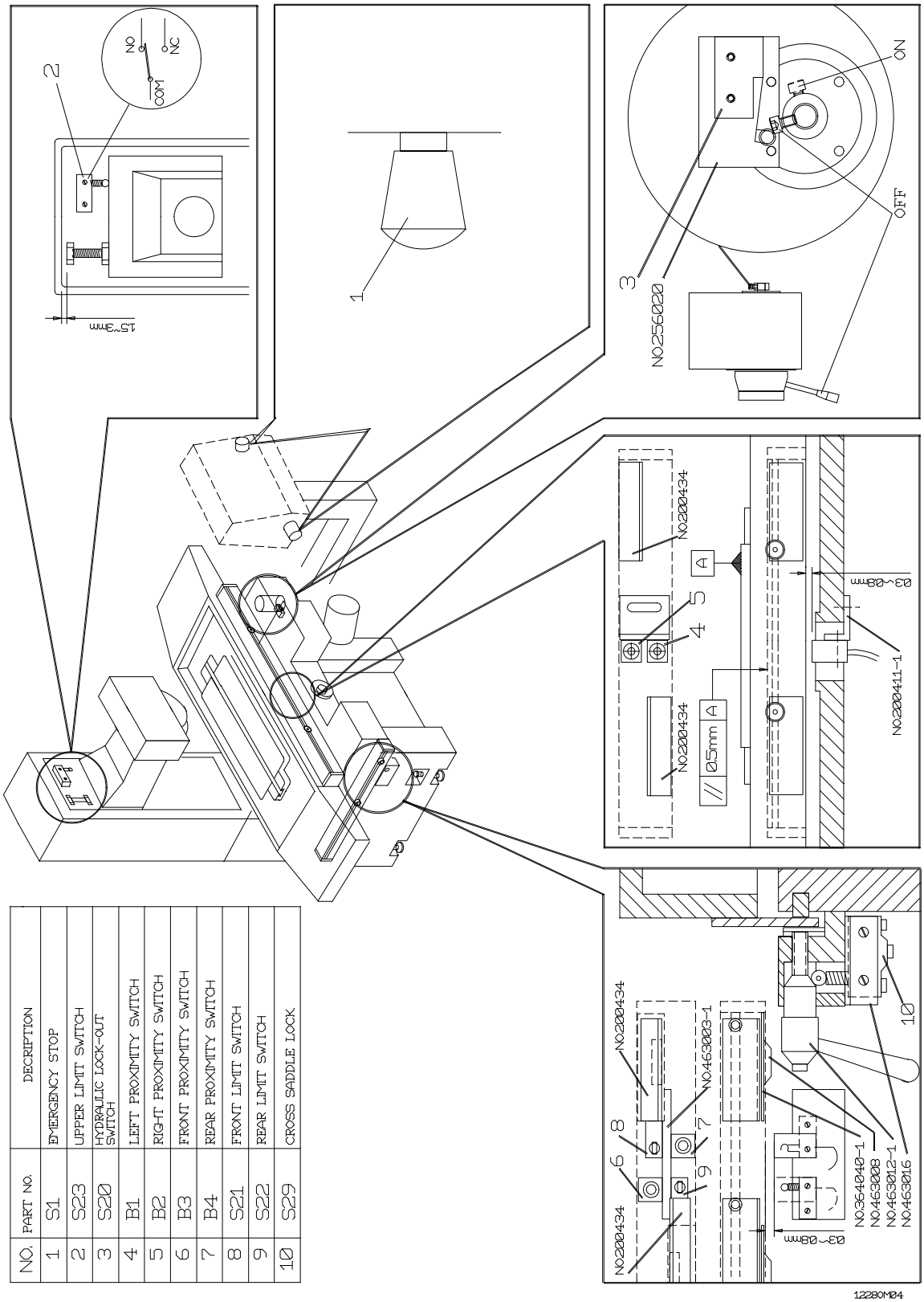
DANGER ZONE	DESCRIPTION
A	CUTTING DANGER: PUT HAND IN THE WORKING AREA OF RUNNING SPINDLE WHEEL
B	HITTING DANGER: PUT HEAD INTO THE WORKING AREA OF TABLE TO CHECK
C	SQUEEZING DANGER: PASSING THOUGH THE WORKING OF TABLE
D	SQUEEZING DANGER: PUT HAND INTO THE WORKING AREA OF TABLE
E	SQUEEZING DANGER: PUT HAND INTO THE WORKING AREA OF SADDLE
F	TANGLE DANGER: WEARING LOOSEN OR WIDE CLOTHE BENEATH THE WORKING AREA OF SADDLE
G	SQUEEZING DANGER: OTHERS START THE SADDLE WHILE DOING NAINTANANCE
H	ELECTRIC SHOCK DANGER: PEOPLE WITHOUT PROFESSIONAL KNOWLEDGE TO OPEN THE CONTROL BOX
I	ELECTRIC SHOCK DANGER: PEOPLE WITHOUT PROFESSIONAL KNOWLEDGE TO OPEN THE ELECTRICAL BOX
J	ELECTRIC SHOCK DANGER: PEOPLE WITHOUT PROFESSIONAL KNOWLEDGE TO OPEN THE MOTOR COVER OR THE WIRE CONNECTING COVER OF SOLENOID FROM THE OIL TANK
K	ELECTRIC SHOCK DANGER: PEOPLE WITHOUT PROFESSIONAL KNOLEDGE TO OPEN THE WIRE CONNECTING BOX FROM THE COOLANT TANK

2.7 : The position of safety limit switch on grinder for 618/818 AHDII

NO.	PART NO.	DECRIPTION
1	S1	EMERGENCY STOP
2	S20	HYDRAULIC LOCK-OUT SWITCH
3	B1	LEFT PROXIMITY SWITCH
4	B2	RIGHT PROXIMITY SWITCH
5	B3	FRONT PROXIMITY SWITCH
6	B4	REAR PROXIMITY SWITCH
7	S21	FRONT LIMIT SWITCH
8	S22	REAR LIMIT SWITCH
9	S23	UPPER LIMIT SWITCH

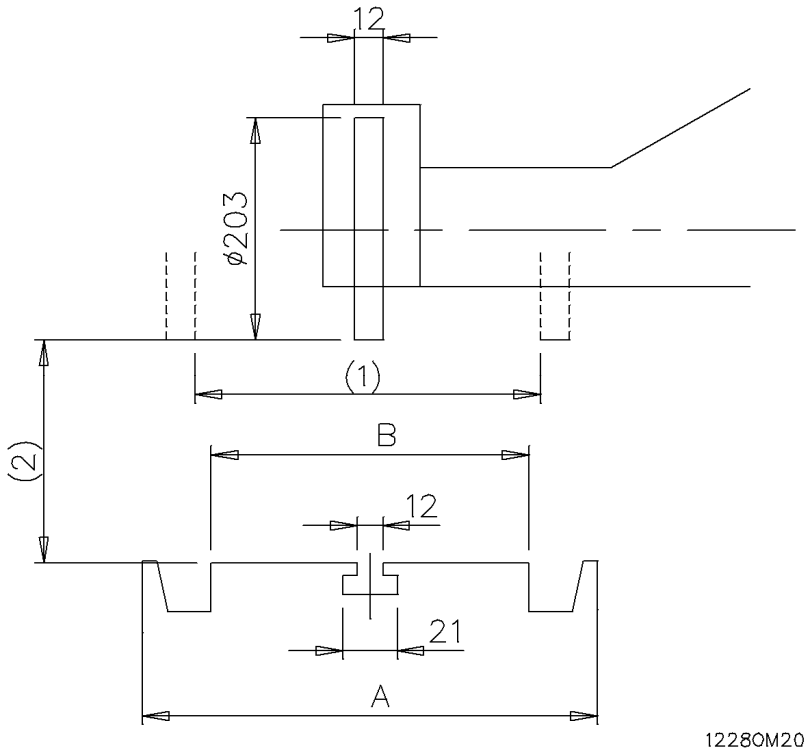


2.7.1 The positions of safety limit switch on grinder for 1020/1224/14/16 AHDII



NO.	PART NO.	DECRIPTION
1	S1	EMERGENCY STOP
2	S23	UPPER LIMIT SWITCH
3	S20	HYDRAULIC LOCK-OUT SWITCH
4	B1	LEFT PROXIMITY SWITCH
5	B2	RIGHT PROXIMITY SWITCH
6	B3	FRONT PROXIMITY SWITCH
7	B4	REAR PROXIMITY SWITCH
8	S21	FRONT LIMIT SWITCH
9	S22	REAR LIMIT SWITCH
10	S29	CROSS SADDLE LOCK

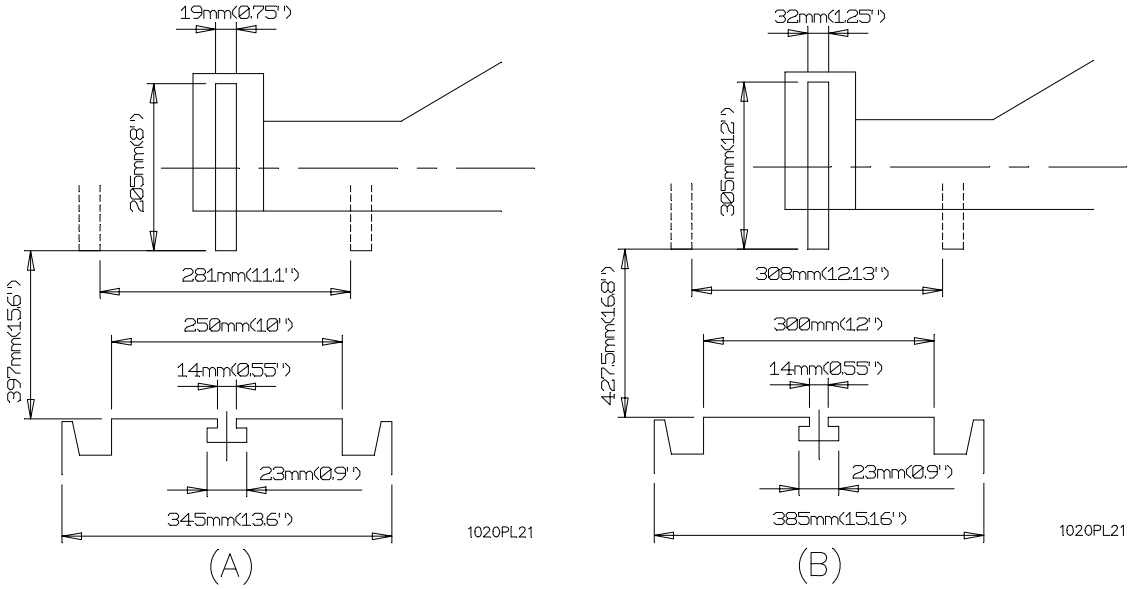
2.8: Working area for 618/818 AHDII Series



NOTE: THE TABLE LOAD IS NOT INCLUDED THE WEIGHT OF CHUCK.

UNIT:MM/INCHES	618AHDII	818AHDII
1. OVERALL GRINDING WIDTH	168mm/6.63"	228mm/11"
2. OVERALL GRINDING HEIGHT	208mm/14.1”	208mm/14.1"
3. OVERALL GRINDING LENGTH	480/19"	480/19"
4. TABLE LOAD	45KG	70KG
5. TABLE SPEED	5-28M/MIN(60HZ) 5-23M/MIN(50HZ)	5-28M/MIN(60HZ) 5-23M/MIN(50HZ)
6. SIZE OF CHUCK (CHUCK IS OPRION)	150mmx450mm (6"x18")	250mmx450mm (8"x18")
A.	210mm	275mm
B.	154mm	212mm

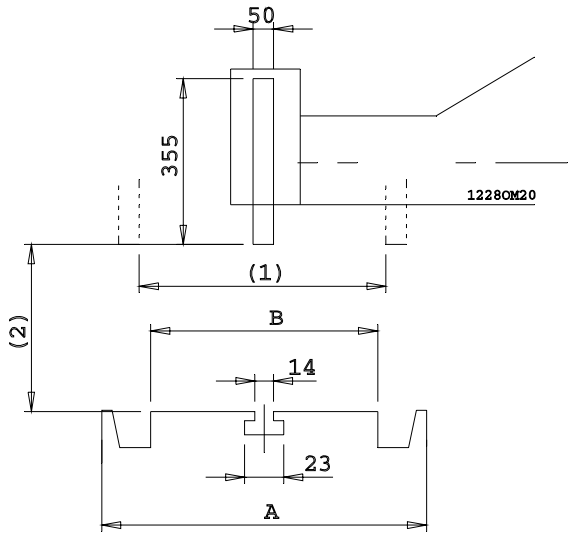
2.8.1 Working area(1020/1224 AHDⅡ)



UNIT	1020 AHDⅡ (A)	1224 AHDⅡ (B)
1. OVERALL GRINDING LENGTH	630mm/24.8"	630mm/24.8"
2. TABLE LOAD	380KG	425KG
3. TABLE SPEED	5-25 M/MIN	5-25 M/MIN
4. SIZE OF CHUCK (CHUCK IS OPRION)	250x500mm/10"x20"	250x500mm/12"x24"

NOTE: THE TABLE LOAD DOES NOT INCLUDE THE WEIGHT OF CHUCK.

2.8.3 Working area for 14/16 AHDII



UNIT:MM	1428AHDⅡ	1436AHDⅡ
1.OVERALL GRINDING WIDTH	330/12.99"	330/12.99"
2.. OVERALL GRINDING HEIGHT(STANDARD COLUMN)	450/17.72"	450/17.72"
2.. OVERALL GRINDING HEIGHT(HIGH COLUMN)	540/28.35"	540/28.35"
3. OVERALL GRINDING LENGTH	712/28.03"	915/36.02"
4. TABLE LOAD	470 KG	520 KG
5. TABLE SPEED	5-25M/MIN(60HZ) 5-20M/MIN(50HZ)	5-25M/MIN(60HZ) 5-20M/MIN(50HZ)
6. SIZE OF CHUCK (CHUCK IS OPTION)	300x700	300x900
A.	430/16.93"	430/16.93"
B.	305/12"	305/12"

NOTE: THE TABLE LOAD DOES NOT INCLUDE THE WEIGHT OF CHUCK.

UNIT:MM	1632AHDⅡ	1640AHDⅡ
1. OVERALL GRINDING WIDTH	410/16.14"	410/16.14"
2.. OVERALL GRINDING HEIGHT(STANDARD COLUMN)	450/17.72"	450/17.72"
2. OVERALL GRINDING HEIGHT(HIGH COLUMN)	540/28.35"	540/28.35"
3. OVERALL GRINDING LENGTH	813/32"	1020/40.16"
4. TABLE LOAD	617KG	675KG
5. TABLE SPEED	5-25M/MIN(60HZ) 5-20M/MIN(50HZ)	5-25M/MIN(60HZ) 5-20M/MIN(50HZ)
6. SIZE OF CHUCK (CHUCK IS OPTION)	400x800	400x1000
A.	535/21.06"	535/21.16"
B.	406/15.98"	406/15.98"

2.9 : Assembly drawing of wheel flange and spindle for 618/818 AHDII

2.9.1 : Assembly drawing of wheel flange and spindle

(1) Specification of wheel flange:

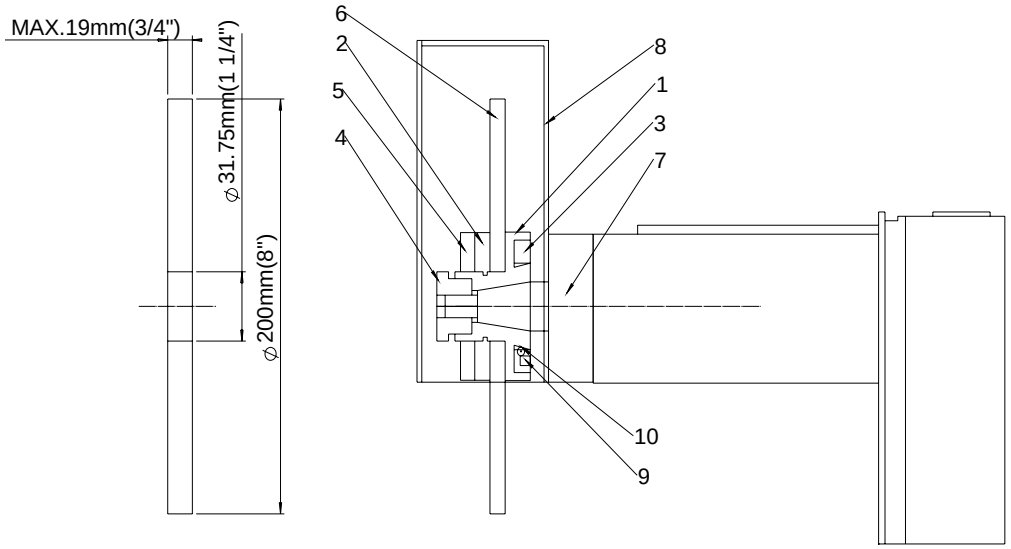
Outer diameter: ϕ 203 mm(ϕ 8"). Inner diameter: ϕ 31.75 mm(ϕ 1.25")

Width: 12mm-19 mm(0.75").

The flange must be able to handle wheel speed about 2200 m/min.

(2) Flange is equivalent to ISO-R666.

NO.	Parts	Parts no.	Q'TY	Remark
1	Flange	NO.100114	1	
2	Flange block	NO.100116-1	1	
3	Balance block	NO.100119	3	
4	Flange nut	NO.100115-2	1	1/2"x12NC,Left-hand
5	Wheel tighten screw	NO.100117-1	1	
6	Grinding wheel		1	200/12/31.75
7	Spindle	NO.1011	1	
8	Wheel cover	NO.1012	1	Guard, 3mm thickness
9	Screw		3	M4x0.7Px4L(mm)
10	Steel ball		3	Hardness: 60 HRC,4mm



ADX450PM05

2.9.1 Assembly drawing of wheel flange and spindle for 1020 AHDII

Assembly drawing of wheel flange and spindle

(1) Specification of wheel flange:

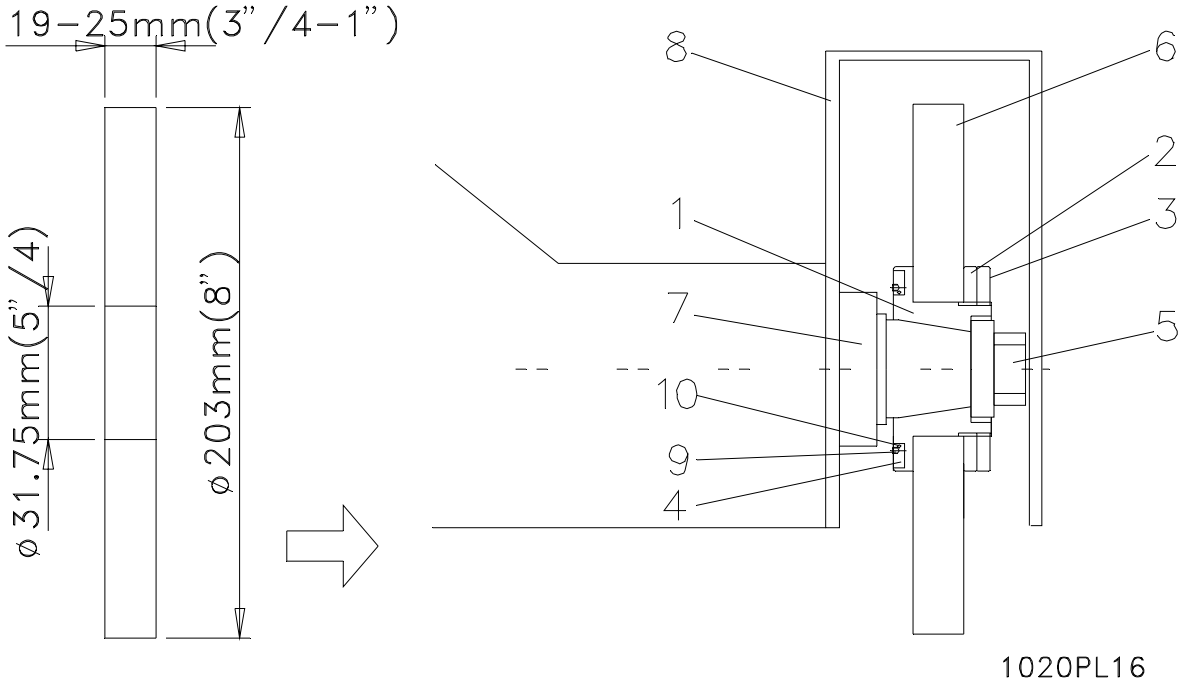
Outer diameter: ϕ 203 mm(ϕ 8"). Inner diameter: ϕ 31.75 mm(1.25")

Width: 19~25 mm(0.75"~0.98").

The flange must be able to handle wheel speed about 2200 m/min.

(2) Flange is equivalent to ISO-R666.

NO.	Parts	Parts no.	Q'TY	**Remark**
1	Flange	NO.251018	1	
2	Flange block	NO.251019	1	
3	Wheel tighten screw	NO.251020	1	
4	Balance block	NO.251021	3	
5	Flange nut	NO.251016	1	M18*P1.5,,Left-hand
6	Grinding wheel	OD/ID/Width	1	200/19~25/31.75 mm
7	Spindle	NO.2511	1	
8	Wheel cover	NO.2512	1	Guard, 3mm thickness
9	Screw		3	M4x0.7Px4L(mm)
10	Steel ball		3	Hardness: 60 HRC,4mm



2.9.2 Assembly drawing of wheel flange and spindle for 1224 AHDII

(1) Specification of wheel flange:

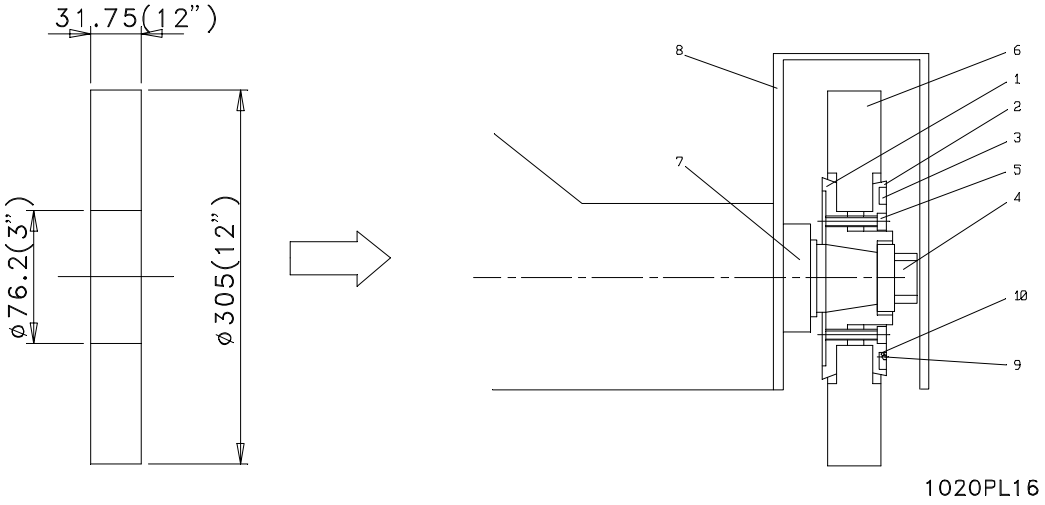
Outer diameter: ϕ 305 mm(ϕ 12"). Inner diameter: ϕ 76.2 mm(ϕ 3")

Width: 31.75 mm(1.25").

The flange must be able to handle wheel speed about 1650 m/min.

(2) Flange is equivalent to ISO-R666.

NO.	Parts	Parts no.	Q'TY	**Remark**
1	Flange	NO.251018L	1	
2	Flange block	NO.251019L	1	
3	Balance block	NO.251021L	3	
4	Flange nut	NO.251016L	1	M18*P1.5,,Left-hand
5	Flange screw		6	M8*P1.25
6	Grinding wheel	OD/ID/Width	1	305/31.75/76.2 mm
7	Spindle	NO.2511L	1	
8	Wheel cover	NO.2512L	1	Guard, 3mm thickness
9	Screw		3	M4x0.7Px4L(mm)
10	Steel ball		3	Hardness: 60 HRC,4mm



2.9.3 Assembly drawing of wheel flange and spindle for 14/16 AHDII

(1) Specification of wheel flange:

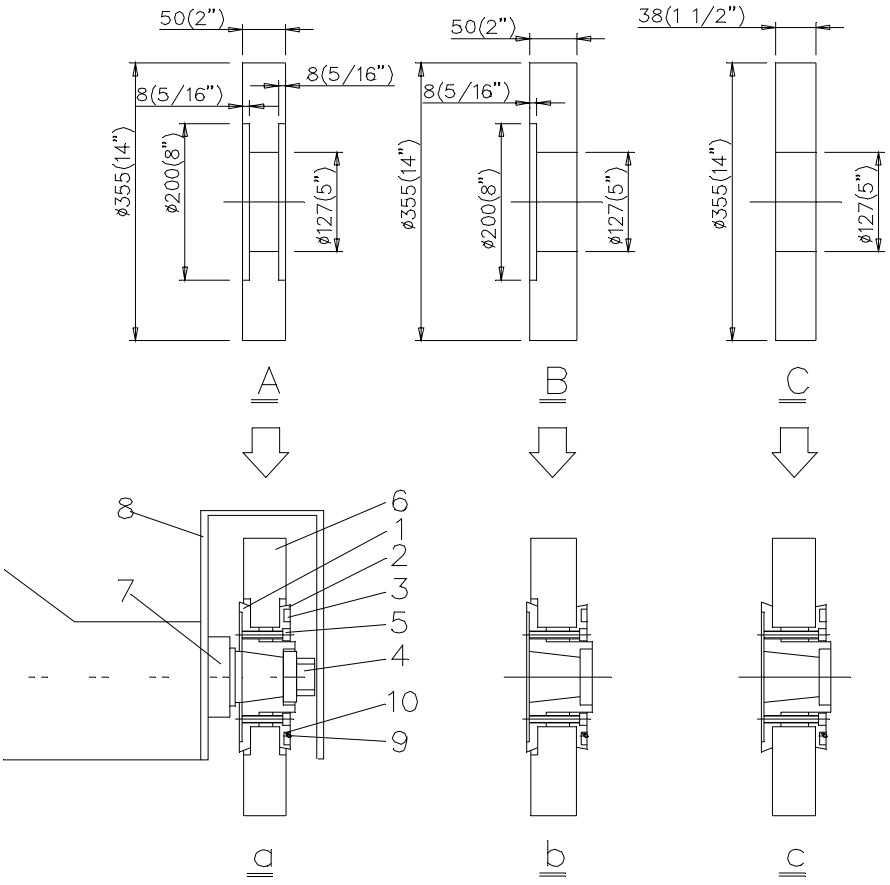
Outer diameter: ϕ 355 mm(ϕ 14"). Inner diameter: ϕ 127 mm(ϕ 5")

Width: 38 - 50 mm(1 1/2" – 2").

The flange must be able to handle wheel speed about 2000 m/min.

(2) Flange is equivalent to ISO-R666.

NO.	Parts	Parts no.	Q'TY	**Remark**
1	Flange	NO.381019	1	
2	Flange block	NO.381020	1	
3	Balance block	NO.381021	3	
4	Flange nut	NO.381017	1	M18*P1.5,,Left-hand
5	Flange screw		6	M8*P1.25
6	Grinding wheel	OD/ID/Width	1	355/50/127 mm
7	Spindle	NO.381A	1	
8	Wheel cover	NO.381B	1	Guard, 4mm thickness
9	Screw		3	M4x0.7Px4L(mm)
10	Steel ball		3	Hardness: HRC 60 ,4mm



2.10 Specification for 618/818 AHDⅡ series

DESCRIPTION		818 AHDⅡ	618 AHDⅡ
Table size		200x450mm(8”x18”)	150x450mm(6”x18”)
Max. grinding length	Longitudinal	480mm(19”)	
Max. grinding width	crosswise	228mm(9”)	168mm(6 5/8”)
Max .distance from table surface to spindle center		460mm(18”)	
Standard magnetic chuck size		200x450mm(8”x18”)	150x450mm(6”x18”)
Longitudinal movement of table	Max. travel, hydraulic	480mm(19”)	
	Max. travel, manual	500mm(20”)	
	Table speed	60Hz,5-25m/min;50Hz,5-20m/min	
Cross transverse travel	Auto transvers increment	1-10mm(0.04”-0.4”)	
	Auto constant feeding speed	20-320mm/min	
	Max. auto transvers travel	235mm(9 1/4”)	180mm(7”)
	Max. manual transverse travel	250mm(9 3/4”)	195mm(7 1/2”)
	Handwheel per revolution	5mm(0.2”)	
	Handwheel per graduation	0.02mm(0.0005”)	
Wheelhesd vertical infeed	* Automatic infeed	0.001～0.050mm (0.00005”~0.0025”)	
	* Step feed(JOG)	0.001mm(0.00005”)	
	Rapid travel approx.	250mm/min	
	* Slow travel approx.	6mm/min	
	Handwheel per revolution	Min.display value:0.001mm(1/10000") (No elevating handwheel)	
	Handwheel pergraduation		
Grinding spindle	Speed	60Hz,3450rpm;50Hz,2850rpm	
	Power rating	2.0HP; 3.0HP Opt.	
Standard grinding wheel	DxWxB	203/12/31.75mm(8”x1/2”x11/4”) MAX:203/19/31.75(8"x3/4"x11/4")	
Hydraulic motor	Power rating	1HPx6P	
Weights	Net weight	1060Kgs(2574Lbs)	
	Gross weight	1210Kgs(2948Lbs)	
Packing Dimensions	L x W x H	1890x1630x1930mm (75"x64"x76")	1890x1420x1930mm (75"x56"x76")

NOTE: The manufacture reserves the right to modify the design, specification, etc., to improve the performance of the machine without notice. All the specifications shown are just reference

2.10.1 Specification for 1020&1224 AHDII series

DESCRIPTION		1020 AHD Ⅱ	1224 AHD Ⅱ
Table size		254x508mm(10”x20”)	300x600mm(12”x24”)
Max. grinding length	Longitudinal	520mm(20.5”)	600mm(24”)
Max. grinding width	crosswise	280mm(11”)	300mm(12”)
Max .distance from table surface to spindle center		500mm(20")	585mm(23")
Standard magnetic chuck size		250x500mm(10”x20”)	300x600mm(12”x24”)
Longitudinal movement of table	Max. travel, hydraulic	580mm(22.75”)	650mm(25.56”)
	Max. travel, manual	620mm(24.63”)	730mm(28.75”)
	Table speed	60HZ,1-25M/min(50HZ,1-21M/min)	
Crossfeed Transverse Travel	Auto transverse increment(jog)	1-13mm(0.04-0.5”)	1-19mm(0.04-0.75”)
	Auto Constant Feeding Speed	60-320mm/min(2.5-13”/min)	
	Max auto transverse travel	270mm(10.6")	310mm(12.2")
	Max. manual transverse travel	300mm(24”)	340mm(13.4”)
	Handwheel per revolution	5mm(0.2”)	
	Handwheel per graduation	0.02mm(0.001”)	
Wheelhead vertical infeed	* Automatic infeed	Rough grinding:0.001~0.050mm(1~25/10000") Fishing grinding:0.001~0.009mm(0.05~9/10000")	
	* Step feed(JOG)	Jogging doenfeed:0.001mm(0.000025") Jogging step increment:0.001~0.050mm(1~25/10000")	
	Rapid travel approx.	150mm(6")min	
	* Slow travel approx.	6mm(0.25)/min	
	Handwheel per revolution	Min.display value:0.001mm(1/10000") (No elevating handwheel)	
	Handwheel per graduation		
Grinding spindle	Speed	60HZ,3450rpm:50HZ,2850 rpm	60HZ,1750rpm:50HZ,1450 rpm
	Power rating	Standard:5.0HP	Standard:5.0HP
Standard grinding wheel	DxWxB	205mm(8")x19mm(0.75")x 31.75mm1.25")	305mm(12")x32mm(1.25 ")x76.2mm(3")
Hydraulic motor	Power rating	2HP	
Crossfeed motor	Power rating	120W/DCV	
Elevating motor	Power rating	200W/DCV	
Total space required(LxWxH)		2400x1450x1750mm (94.5"x57"x68.9")	2700x1600x1850mm (106.5"x63x73")
Weights	Net weight	1810kgs(3982lbs)	1990kgs(4378lbs)
	Gross weight	2160kgs(4752lbs)	2290kgs(5038lbs)
Rated power approx		8 1/4HP	8 1/4HP

NOTE: The manufacture reserves the right to modify the design, specification, etc., to improve the performance of the machine without notice. All the specifications shown are just reference

2.10.2 Specification for 1428&1436 AHDII series

DESCRIPTION		**1428 AHD Ⅱ**	**1436 AHD Ⅱ**
Table size		305x712mm(12”x28”)	305x915mm(12”x36”)
Max. grinding length	Longitudinal	712mm(28”)	9154mm(36”)
Max. grinding width	crosswise	330mm(13”)	
Max .distance from table surface to spindle center		Standard column: 630mm(24.75”), Optional high column: 720mm(28.4”)	
Standard magnetic chuck size		300x700mm(11.75”x27.5”)	300x900mm(11.75”x38.4”)
Longitudinal movement of table	Max. travel, hydraulic	760mm(30”)	960mm(37.75”)
	Max. travel, manual	830mm(32.6”)	1000mm(37.75”)
	Table speed	60HZ,1-25M/min(50HZ,1-21M/min)	
Crossfeed Transverse Travel	Auto transverse increment(jog)	1-25mm(0.04-1”)	
	Auto Constant Feeding Speed	20-320mm/min(2.5-13”/min)	
	Max auto transverse travel	350mm(13.75”)	
	Max. manual transverse travel	380mm(15”)	
	Handwheel per revolution	5mm(0.2”)	
	Handwheel per graduation	0.02mm(0.001”)	
Wheelhead vertical infeed	* Automatic infeed	Rough grinding:0.001~0.050mm(1~25/10000") Fishing grinding:0.001~0.009mm(0.05~9/10000")	
	* Step feed(JOG)	Jogging doenfeed:0.001mm(0.000025") Jogging step increment:0.001~0.050mm(1~25/10000")	
	Rapid travel approx.	150mm(6")min	
	* Slow travel approx.	6mm(0.25)/min	
	Handwheel per revolution	Min.display value:0.001mm(1/10000") (No elevating handwheel)	
	Handwheel per graduation		
Grinding spindle	Speed	60HZ,1750rpm:50HZ,1450rpm	
	Power rating	Standard:7.5HP	
Standard grinding wheel	DxWxB	355/50/127mm(14”x2”x5”)	
Hydraulic motor	Power rating	3HP	
Crossfeed motor	Power rating	120W/DCV	
Elevating motor	Power rating	200W/DCV	
Total space required(LxWxH)		2500x2290x2220mm (99”x90”x88”)	2780x2290x2220mm (110”x90”x88”)
Weights	Net weight	3020Kgs	3330gs
	Gross weight	3520Kgs	3700Kgs
Rated power approx		11 1/2HP	

NOTE: The manufacture reserves the right to modify the design, specification, etc., to improve the performance of the machine without notice. All the specifications shown are just reference

2.10.3 Specification for 1632&1640 AHDII series

DESCRIPTION		**1632 AHD Ⅱ**	**1640 AHD Ⅱ**
Table size		406mmx813mm(16”x32”)	406mmx1020mm(16”x40”)
Max. grinding length	Longitudinal	813mm(32”)	1020mm(40”)
Max. grinding width	crosswise	410mm(16”)	
Max .distance from table surface to spindle center		STANDARD COLUMN: 630mm(24.75”) OPTIONAL HIGH COLUMN: 720mm(28.31”)	
Standard magnetic chuck size		400x800mm (15.68x31.5”)	400x1000mm (15.68x39.25”)
Longitudinal movement of table	Max. travel, hydraulic	890mm(35”)	1060mm(41.68”)
	Max. travel, manual	930mm(36.5”)	1100mm(43.25”)
	Table speed	60HZ,1-25M/min(50HZ,1-21M/min)	
Crossfeed Transverse Travel	Auto transverse increment(jog)	1-25mm(0.04”-1”)	
	Auto Constant Feeding Speed	20-320mm/min(2.5-13”/min)	
	Max auto transverse travel	430mm(17”)	
	Max. manual transverse travel	460mm(18”)	
	Handwheel per revolution	5mm(0.2”)	
	Handwheel per graduation	0.02mm(0.001”)	
Wheelhead vertical infeed	* Automatic infeed	Rough grinding:0.001~0.050mm(1~25/10000") Fishing grinding:0.001~0.009mm(0.05~9/10000")	
	* Step feed(JOG)	Jogging doenfeed:0.001mm(0.000025") Jogging step increment:0.001~0.050mm(1~25/10000")	
	Rapid travel approx.	150mm(6")min	
	* Slow travel approx.	6mm(0.25)/min	
	Handwheel per revolution	Min.display value:0.001mm(1/10000") (No elevating handwheel)	
	Handwheel per graduation		
Grinding spindle	Speed	60HZ,1750rpm:50HZ,1450rpm	
	Power rating	Standard: 7.5 HP	
Standard grinding wheel	DxWxB	355/50/127mm(14”x2”x5”)	
Hydraulic motor	Power rating	3HP	
Crossfeed motor	Power rating	120W/DCV	
Elevating motor	Power rating	200W/DCV	
Total space required(LxWxH)		2800x2290x2220mm (110”x90”x88”)	3250x2290x2220mm (128”x90”x88”)
Weights	Net weight	3400kgs	4000kgs
	Gross weight	4000kgs	4500kgs
Rated power approx		11 1/2HP	

NOTE: The manufacture reserves the right to modify the design, specification, etc., to improve the performance of the machine without notice. All the specifications shown are just reference

2.11: Standard accessories and optional accessories

Standard accessories:

(1) Tool box with tools……1 SET
(2) Wheel extract screw & nut……1 PCS
(3) Wheel balancing arbor ……1 PCS
(4) Leveling screw with blocks…..1 SET
(5) Grinding wheel……..1 PCS
(6) Wheel flange……..1 PCS
(7) Touch-up paint……..1 CAN
(8) Auto. lubrication equipment (fitted with the grinder)
(9) Diamond dresser……1 PCS
(10)Encoder, digital display……1 PCS
(11)Sweeping plate……..1 PCS(for 1020 above)
(12)Cross teed ball screw(fitted with the grinder)

Optional accessories for 618/818 AHDII Series

C0105….Electric magnetic chuck 150x450MM
C0105A……..Electric magnetic chuck 200x450MM
C1001……..Chuck control with demagnetizer
C0201……..Coolant and dust unit
C0207……..Coolant system with magnetic separator
C0202……..Coolant system
C0203……..Dust collector
C0301……..Balancing stand
C0502……..Splash guard
C0601……..Spare wheel flange
C1101RA12……Spare grinding wheel
C0701……..Manual parallel dressing attachment
203SN……..Micro crossfeed

Optional accessories for 1020/1224 AHDII Series:

C0108....Electric magnetic chuck 250x500MM(for 1020 AHDⅡ series).

C0109....Electric magnetic chuck 300x600MM(for 1224 AHDⅡ series).

C0201.... Coolant and dust unit(volumn:30 litters).

C0202....Coolant system (volumn:25 litters).

C0202....Dust collector.

C0204....Coolant system with manual paper feeding device.

C0205....Coolant system with auto paper feeding device.

C0206....Coolant system with auto paper feeding device and magnetic separator.

C0301.... Balancing wheel stand(suitable for ϕ 225mm grinding sheel).

C0302....Balancing wheel stand(suitable for ϕ 305mm grinding sheel).

C0403 ... Work light.

C0503 ... Splash guard.(for 1020 AHDⅡ series)

C0509 ... Splash guard.(for 1224 AHDⅡ series).

C0603.... Spare wheel flange(suitable for ϕ 205 mm grinding wheel).

C0605.... Spare wheel flange(suitable for ϕ 305 mm grinding wheel).

C0701A.. Manual parallel dressing attachment(for 1020 AHDⅡ series)

C0702A..Manual parallel dressing attachment(for 1224 AHDⅡ series)

C0704A..Parallel dressing attachment by electrical motor driven. (for 1020 AHDⅡ series)

C0704B.. Parallel dressing attachment by electrical motor driven. (for 1224 AHDⅡ series)

C1002....Chuck control with de-magnetizer.

C1102....Spare wheel(suitable for ϕ 205 mm grinding wheel).

C1103....Spare wheel(suitable for ϕ 225 mm grinding wheel).

C1104....Spare wheel(suitable for ϕ 355 mm grinding wheel).

C1511.... Splash guard baffle(for 1020 AHDⅡ series).

C1512 ... Splash guard baffle(for 1224 AHDⅡ series)

363S ..... Micro crossfeed (metric).

363AS....Micro crossfeed (inch)

Optional accessories for 14/16AHDII Series:

C0111....Electric magnetic chuck 300x700MM(for 1428AHDⅡ series).

C0113....Electric magnetic chuck 300x900MM(for 1436AHDⅡ series).

C0116....Electric magnetic chuck 400x800MM(for 1632AHDⅡ series).

C0117....Electric magnetic chuck 400x1000MM(for 1640AHDⅡ series).

C0204....Coolant system with manual paper feeding device.

C0204M .Coolant system with manual paper feeding device and magnetic spearator..

C0205....Coolant system with auto paper feeding device.

C0205M. . Coolant system with auto paper feeding device and magnetic separator.(Volumn:80 litters).

C0206....Coolant system with auto paper feeding device and magnetic separator.

C0206M. . Coolant system with auto paper feeding device and magnetic separator.(Volumn:120 litters).

C0302..... Balancing stand

C0302R... Roller type balancing stand

C0402..... Work light.

C0602.... Spare wheel flange(suitable for ϕ 355 mm grinding wheel)

C0702....Manual parallel dressing attachment (suitable for ϕ 355 mm grinding wheel).

C0704....Parallel dressing attachment by electrical motor driven. (suitable for ϕ 355 mm grinding wheel).

C0802..... Diamond dresser.

C1002....Chuck control with de-magnetizer.

C1103....Spare wheel(suitable for ϕ 355 mm grinding wheel).

C1513..... Splash guard baffle(1428AHDⅡ).

C1515..... Splash guard baffle(1436AHDⅡ)

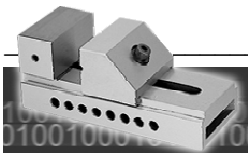
C1517..... Splash guard baffle(1632AHDⅡ)

C1518..... Splash guard baffle(1640AHDⅡ)

C1601....Manual pulse generator (Micro downfeed movement,AHD series)

363S..... Micro crossfeed (metric).

363AS.... Micro crossfeed (inch)



CHAPTER 3

REQUIREMENT OF MACHINE

3.1 : Space requirement

The minimum space for the machines:
For your convenience to operate, please take the walkway into consideration. Therefore, the ideal space for the machines should be:

	618AHDII	818AHDII	1020AHDII	1224AHDII
Length	1810mm(71”)	1810mm(71”)	3385mm(133.3")	3565mm(140.4")
Width	1133mm(45”)	1285mm(50.5”)	2645mm(104.1")	2710mm(106.7")
Height	1660mm(65”)	1680mm(66”)	2750mm(108.3")	2750mm(108.3")

	1428AHDⅡ	1436AHDⅡ	1632AHDⅡ	1640AHDⅡ
Length	3950mm(155.5”)	4550mm(179.1”)	4290mm(168.9”)	4820(189.8”)
Width	2970mm(116.9”)	2970mm(116.9”)	3235mm(127.4”)	3235mm(127.4”)
Height	3000mm(118.1”)	3000mm(118.1”)	3000mm(118.1”)	3000mm(118.1”)

Note: TO KEEP THE MACHINE FROM THE ENVIRONMENT WHICH MIGHT CAUSE ANY EXPLOSION.

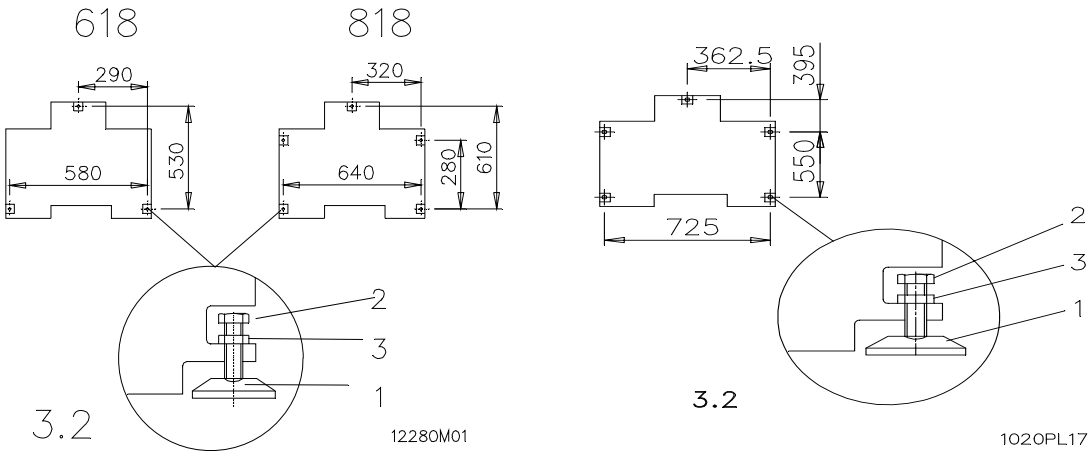
3.2 : Requirement of the ground

Firm, steady, good constructed ground, and a well levelness of machine are the essential conditions for precision grinding. The heat from sunshine, and vibration might also influence precision grinding.

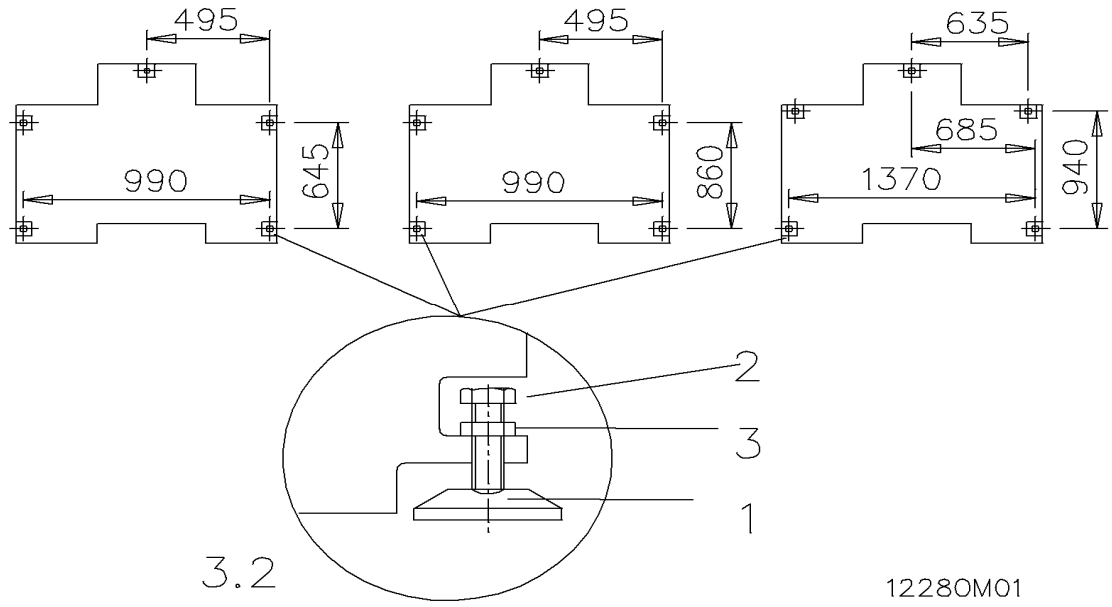
The foundation for the machine needs:

(1) The bearing strength for machine should be more than 2 TONS/M^2.
(2) Avoid letting the sun shine directly on the grinder.
(3) Avoid locating machine near other machines, such as press.
(4) Good ventilation.
(5) Please install your machine base on the foundation plan..
(6) Foundation drawing refer to the following:

618/818AHDII **1020/1224AHDII**



1428AHD, 1436AHDⅡ **1632AHDⅡ** **1640AHDⅡ**



	Part name	Part no.	Q,TY (618AHDII)	Q,TY (818/1020/1224/ 14/16AHDII)
1	Leveling block	100506-1	3	5
2	Leveling screw	100505	3	5
3	NUT	M22*2.5P	3	5

Note: The grinder should be properly adjusted as levelness within 0.02mm/M.

3.3 : Requirement of the environment

As there is no anti-explosion electrical device, this machine cannot be used in a potentially explosive environment. The requirement of the environment for this machine are as below:

(1) Temperature: 5--40℃ ; however, if you are doing veryprecise grinding, please keep the temperature near 20℃ .

(2) Relative Humidity: 30%--95%, no dew allowed.

(3) The height of sea levelness:please contact the manufacture.

(4) Atmosphere: Don't allow dust,corrosive fumes, salt, or acidic air in the neighbourhood.

(5) Avoid any vibrations environment.

(6) Avoid letting sun shine directly on the machine.

(7) Avoid the disturbance from electromagnetism.

(8) Light level: above 300 Lux.

3.4 : Requirement of the electricity

(1) Voltage: 3 Phases, AC voltage which is decided by customers, rated voltage: 0.9--1.1.

(2) Frequency: 50/60 HZ, 0.99--1.01 rated frequency.

(3) Voltage for electromagnetic chuck: MAX. DC 110V(optional parts).

(4) Electricity consumption: 3or4 KVA(618/818AHDII)
Electricity consumption: 6.5~8 KVA(1020/1224/14/16AHDII)

(5) Connecting wire: 2mm(L1, L2, L3, PE)for(618/818 AHDII).
Connecting wire: 3.5mm(L1, L2, L3, PE)for(1020/1224AHDII).
Connecting wire: 5.5mm(L1, L2, L3, PE)for(14/16 AHDII).

3.5 : The specification of coolant water, hydraulic oil, and lubrication oil:

(1) Coolant water: Depends what the customer chooses.

Don't choose any low point combustion liquid or any harmful liquid.

Capacity for coolant water:_40 _Liters for 618/818 AHDII .

Capacity for coolant water:_100 _Liters for 1020/1224/14/16 AHDII .

Please exchange the coolant water every month.

(2) Hydraulic oil: ISO CB32 or HL32.

Capacity :_72 _ Liters for 618/818 AHDII .

Capacity :_110 _ Liters for 1020/1224/14/16 AHDII .

Please exchange every six months. Also please check the level of the oil gauge everyday.

(3) Lubrication oil: ISO G68.

Capacity :_ 2 _ Liters for 618/818 AHDII .

Capacity :_ 20 _ Liters for 1020/1224/14/16 AHDII .

Please check the level of the oil gauge everyday.

Note: Diseases of the skin may be produced by continuous contact with oil ,particularly with neat oil, and also with soluble oil. The following 1020/1224/14/16 AHDIIs' precautions should be taken:

1: Avoid unnecessary contact with the oil.
2: Wear protective clothing.
3: Use protective shields .
4: Do not wear oil soaked or contaminated clothing.
5: After work thoroughly wash all parts of the body that have come into contact with oil.
6: Change the oil regularly.
7: Dispose of the used oil correctly.

CHAPTER 4

LIFTING

4.1 : Lifting by the crane

4.1.1 :Procedure to lift the case

(1) Gross weight of the case: It is showed on the case, or please check the list below:

MODEL	**618AHDⅡ**	**818AHDⅡ**	**1020 AHDⅡ**	**1224 AHDⅡ**
Weight	1000Kgs	1375 Kgs	2180Kgs	2300Kgs
MODEL	**1428AHDⅡ**	**1436AHDⅡ**	**1632AHDⅡ**	**1640AHDⅡ**
Weight	3520Kgs	3700Kgs	4000Kgs	4500Kgs

(2) The capacity of the crane must be over the gross weight of the case.

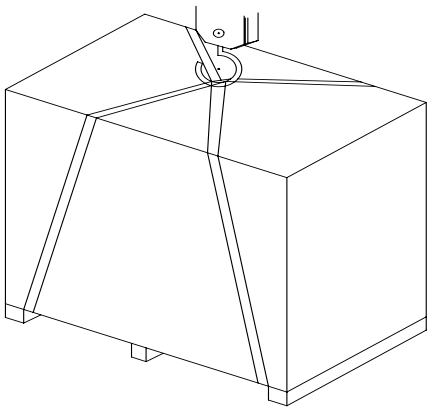
(3) Prepare suitable slings.

(4) Re-check your slings before lifting and moving.

(5) Please check Drawing 4.1.1 to put the slings into position.

(6) Operators should keep away when lifting, and be sure not to allow any person to stand under the wooden case.

(7) Operator must be qualified.



4.1.1

Note: We recommend the following for lifting:

1. All equipment should be examined by one person only.
2. Lay sling on a flat surface in a well lit area.
3. Examine both sides of the sling.
4. Slings must be examined over the whole length and in the eyes.

4.1.2 : Procedure for moving machine

(1) Weight of machines as below:

MODEL	**618AHD Ⅱ**	**818AHD Ⅱ**	**1020 AHD Ⅱ**	**1224 AHD Ⅱ**
Weight	850 kgs	1205 kgs	1930Kgs	2050Kgs
MODEL	**1428AHD Ⅱ**	**1436AHD Ⅱ**	**1632AHD Ⅱ**	**1640AHD Ⅱ**
Weight	3520Kgs	3700Kgs	4000Kgs	4500Kgs

(2) The capacity of the crane must be over the gross weight of the machine.

(3) Prepare suitable slings.

(4) Please re-check your slings before lifting the machine.

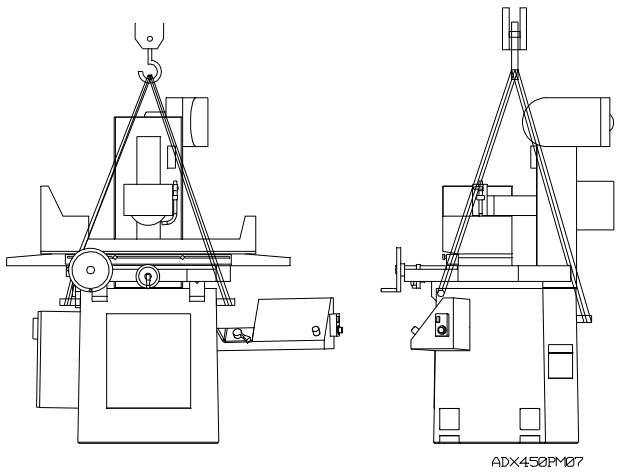
(5) Check the position of slings on Drawing **4.1.2**(618/818AHDII);**4.1.3**(1020/1224) **4.1.4**(14/16AHDII) again, not to let the ropes ruin the finish of machines.

(6) Re-check all the clamps again, please take drawing **4.3** for your reference.

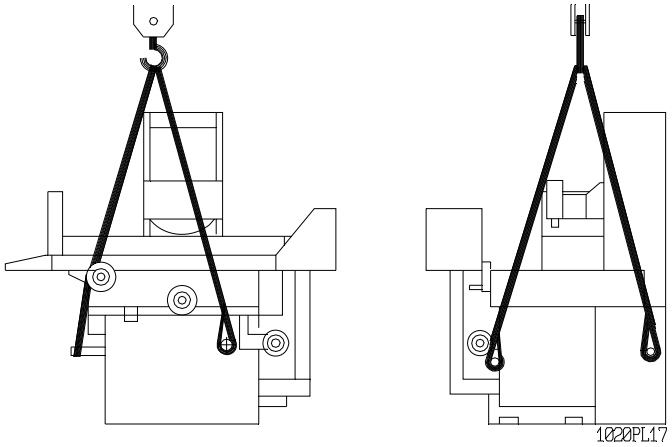
(7) Check the lifting screw.

(8) Operators should keep away when lifting, and be sure not to allow any person to stand under the machine.

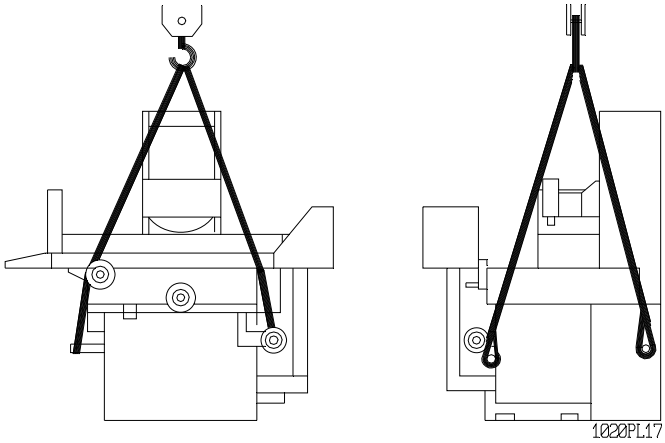
(9) Operator must be qualified.



4.1.2(618/818AHDII)



4.1.3(1020/1224 AHDII)



4.1.4(14/16 AHDII)

4.2 :Moving by fork lift

4.2.1 :When moving the whole wooden case by using a fork lift, check:

(1) Gross weight of case: Showed on the case, or please check the following list.

MODEL	**618AHD Ⅱ**	**818AHD Ⅱ**	**1020 AHD Ⅱ**	**1224 AHD Ⅱ**
Weight	1000kgs	1375kgs	2180Kgs	2300Kgs
MODEL	**1428AHD Ⅱ**	**1436AHD Ⅱ**	**1632AHD Ⅱ**	**1640AHD Ⅱ**
Weight	3520Kgs	3700Kgs	4000Kgs	4500Kgs

(2) Make sure load capacity of the fork lift is over gross weight of the case.

(3) The way to lift the case is as drawing **4.2.1**, the fork of the fork lift should be over the length of machine .

(4) Do not lift up more than 120 mm (5").

(5) Operators should be qualified.

4.2.2 :When moving the machine by using a fork lift, please check

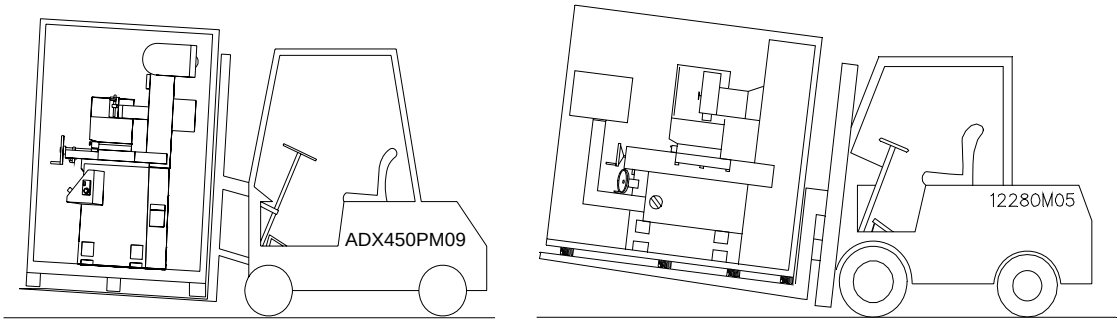
(1) Weight of machines as below:

MODEL	**618AHD Ⅱ**	**818AHDII**	**1020 AHD Ⅱ**	**1224 AHD Ⅱ**
Weight	850kgs	1205kgs	1930Kgs	2050Kgs
MODEL	**1428AHD Ⅱ**	**1436AHD Ⅱ**	**1632AHD Ⅱ**	**1640AHD Ⅱ**
Weight	3020Kgs	3330Kgs	3400Kgs	4000Kgs

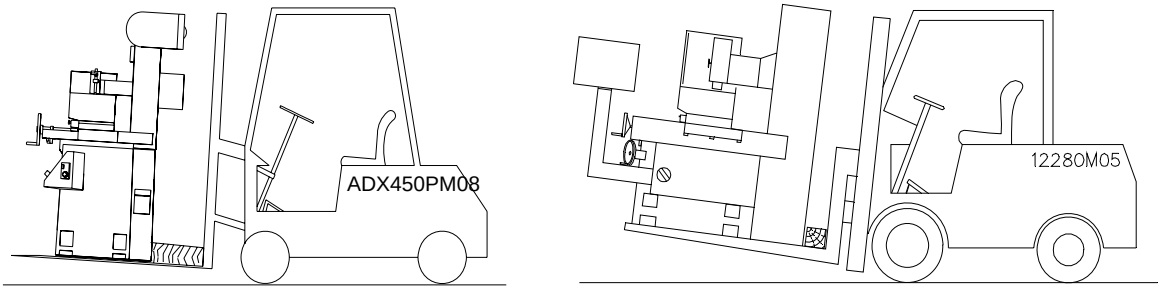
(2) Make sure load capacity of the fork lift is over gross weight.

(3) The way to lift the machine is as drawing **4.2.2**, the fork of the fork lift should be over the length of machines.

(4) Re-check all the clamps again, please refer to drawing **4.3**.



4.2.1



4.2.2

(5) Operator should be qualified.

4.3 : Clamping for machine

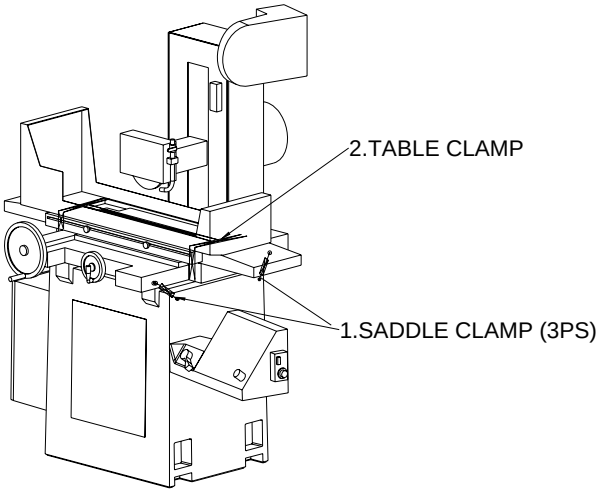
Before moving the machine, all the clamps must be screwed upon the machine to make the machine steady.

As the drawing below shows, the screw for the clamps is M8*1.25P.

NO.1	Clamps for front saddle Part NO.(363022)	NO.3	Clamps for front saddle Part NO.(364043)
NO.2	Clamps for front saddle Part NO.(363022)	NO.4	Clamps for front saddle Part NO.(364045)

Keep the clamps in order to make it easy to move the machine at a later day.

618/818AHDII



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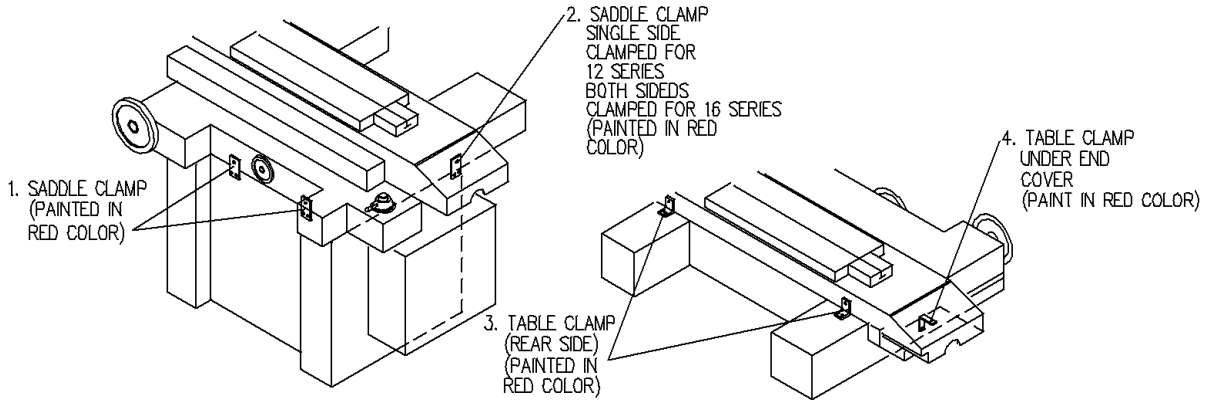
1020/1224/14/16AHDII



4.3

4.4 : Installation of machine

4.4.1 : Environment for installation

The environment of installation will affect the precision of grinding machines.Since the purpose of grinding machines is to have precise working result, you have to be careful on the environment of installation. Basically, you have to take vibration, temperature into consideration. And if you want to grind the precision parts, you have to control the temperature. We would like to suggest the temperature for 20℃ ±2℃ .

4.4.2 : Installation

Place the machine on the ground which is more than 2 TON/M^2.and screw up the fixing bolt. Please refer to the drawing 3.2. Please use hammer to tap every leveling block to check if they are supporting the machine.

4.5 : Adjust the leveling of machines

Please adjust the leveling very carefully because the first installation will affect the precision and the life of machine ,and will surely affect the precision of your work piece.

The accuracy of the level gage is 0.02mm/M, and please adjust the levellness of machine within 0.02mm/M.The procedure of adjustment is as below:

(1) : As the drawing below, put the leveling gauge on the table. Make sure the table is in the center of machine, place level gage (A) in crosswise direction, and put the level gage (B) in the longitudinal direction.

(2) : Check the chapter 4.4.2, adjust the fixing bolts NO. 4,5, until the bubble of level gage (B) comes to the center , then adjust the fixing bolt (1) until the bubble of level gage (A)comes to the center on the level gauge.

(3) : Screw up the fixing nuts (NO. 6) on the fixing bolts O.1,4,5.

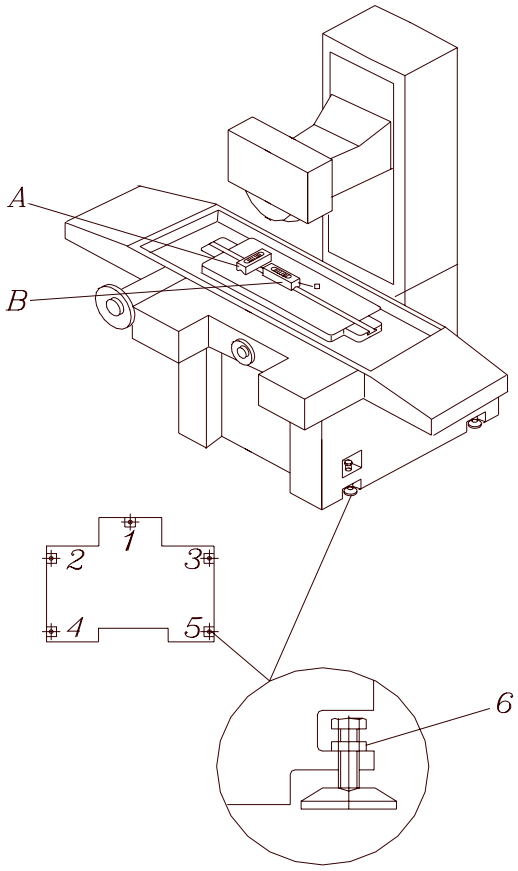
(4) : Screw up the fixing bolts NO. 2,3. Make sure they had touched leveling block, and the bubble of the level gage on the machine doesn't move, then screw up the nut NO. 6.

(5) : Turn the hand wheel of table, make the table to left or right, then check if the bubble of level gage (B) is changing within 0.02mm/M.

(6) : Turn the hand wheel of saddle, check the bubble in level gage (A), see if it is changing within 0.02mm/M.

(7) : If the bubble of level gauge in procedure (5) & (6) is over 0.02mm/M, please adjust according procedure (1), (2),(3), &(4).

(8) : Please use hammer to tap the flat-regulating cushion again after all the procedure had done.



CHAPTER 5

PREPARATION BEFORE OPERATING MACHINE

5.1 : To remove desiccant and clean the anti-rust oil:

The machine had coated with the anti-rust oil and hanged desiccant to prevent rusting. The brown film on the surface of machine is anti-rust oil. We coat the anti-rust oil on the table, nose of spindle...., etc., and the desiccant will be put inside the electrical box, or hang on the table...., etc. After installation , please take off the desiccant and use cleaning rag with diesel to wipe the anti-rust oil. Do not use any liquid that might corrode metal to wipe anti-rust oil.Note: Do not eat desiccant which is silica gel.

5.2 : Remove the clamp

Take ch. 4.3 for your reference, please remove the clamp after installation, then turn on the machine. Do not cast away the lamp for the use of next transportation.

5.3 : Fill the lubrication oil

Fill the lubrication oil before use. Suggested lubrication oil is as below:

MOBIL: VACTRA,#1. GULF: slide-way 32.

ESSO: FEBIS, K32. CASTROL: Magna BD 32.

SHELL: TONNA, T32.

The capacity of oil tank is 2 liter.

5.4 : Installation of hydraulic system

Please check the drawing below about the oil inlet and outlet of hydraulic system. First, please place the hydraulic tank in the right and beside the machine. Second, connect the hydraulic pipes according to the drawing below. Pipe A is for oil outlet , and pipe B is for oil inlet.As the hydraulic tank is empty, please fill the hydraulic oil. The capacity of hydraulic tank is 72 gallon, please fill about 60 liters to make the scale of oil level gage D achieve 4/5 scale.Suggested hydraulic oil:

ESSO: UNIVIS 32 BP:ENERGO SHF32

SHELL: TELUS 32 TOTAL: EQUIVIS ZS32

MOBIL:D.T.E. 24 SHOWA: A-R32

CASTROL: HYSPIN, AWH32

To ensure the performance of hydraulic system, please obey bellows:

(1) First-time oil replacement should be done after 3 months operation.

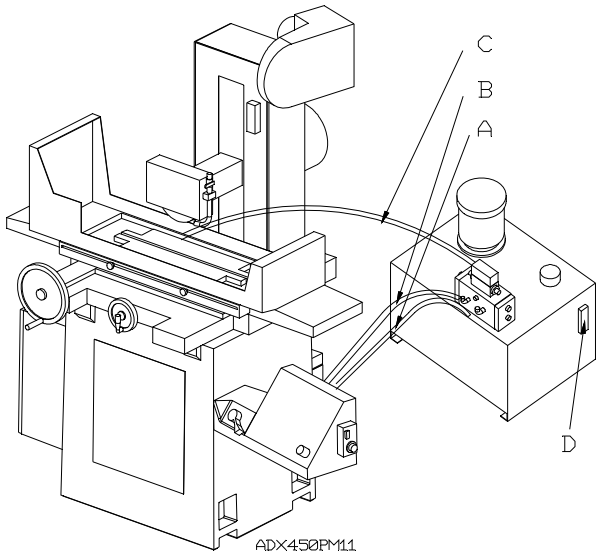
(2) Replace oil at a interval of 6 months after the first replacement.

(3) Check the pressure of pump within16Kg/cm^2(618/818AHDII); 16 Kg/cm^2(1020/1224/14/16AHDII).※ Hydraulic system is properly-adjusted before shipment. Unless it is necessary, please don't re-adjust this hydraulic system.※

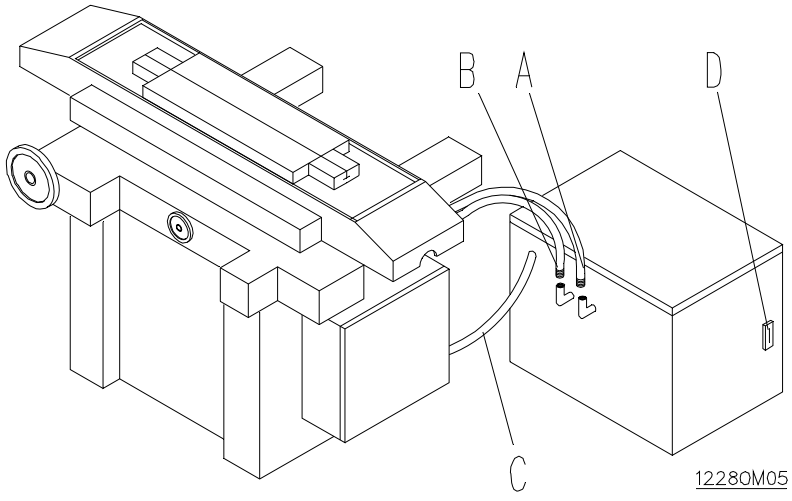
(4) Clean the filter of hydraulic tank every six months.

Please discard the waste material according to the government sanitation or environment law.

618/818AHDII



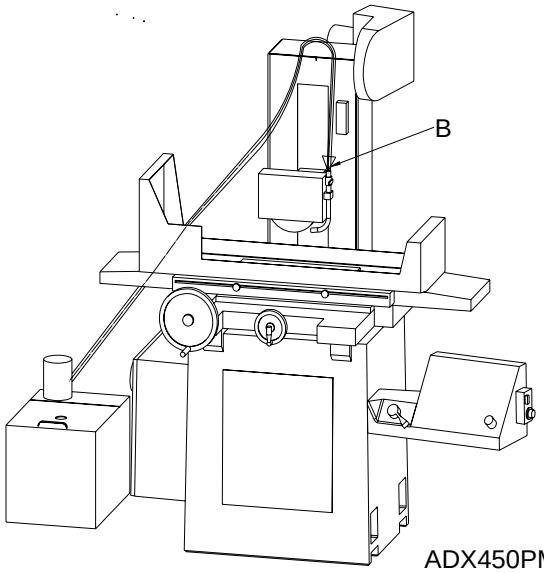
1020/1224/14/16 AHDII



5.5 : Coolant system connection

1. Place coolant system at the left side of the machine, connect (A, B) pipe to the machine as below drawing shows.
2. Coolant fluid:
   a. Please select the one which meets the government sanitation law,and no harm for human body.
   b. Consult with local oil products suppliers about proper coolant by specifying material of work-piece, grinding wheel.
   c. For combination percentage of water and coolant , read the direction first, or consult with the supplier. (common percentage for combination of water and coolant is 25 -40:1).
   d. Always fill properly-mixed coolant into coolant tank, instead of adding water, or coolant respectively.
   e. Replace all the coolant liquid in coolant tank every month, it is very important for grinding to keep coolant clean.
   f. Recommended brands of coolant(soluble water coolant):SUN, SHOWA, ESSO, BP, SHELL, MOBIL, CASTROL, ARAL, Such as CASTROL SYNTILO,R coolant or MOBIL SOLVAC 1535 coolant for ferrous metal grinding.
3. Capacity of coolant system:
   C0201 Coolant and dust unit: 40 liters.
   C0207 Coolant system with magnetic separator: 40 liters.
   C0202 Coolant system: 40 liters.
   C0206 Coolant system with auto paper feed device :120 liters.
   C0206M Coolant system with auto paper device and magnetic separator:120 liters.
4. Please cast the waste oil away according to the government sanitation law.
5. When you replace old coolant on the coolant tank, please start the coolant pump and drain to the other tank by hose B.

618/818AHDII



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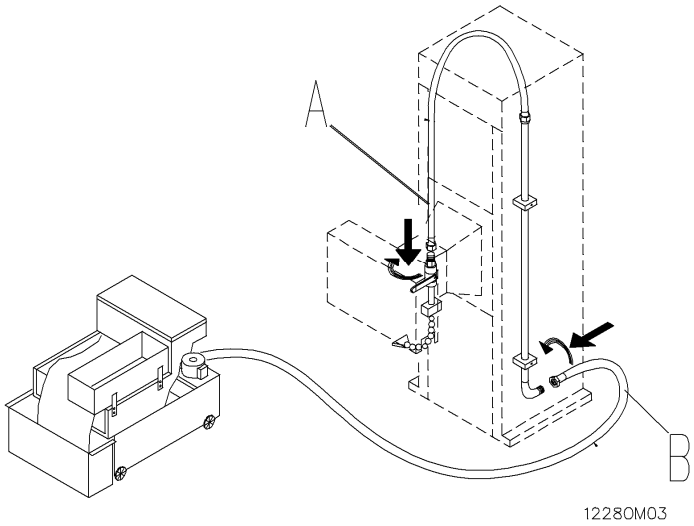
1020/1224/14/16AHDII



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5.6 : Power connection

Please check voltage & frequency according to chapter 3.2 for the reference of power source. Also please connect the power of hydraulic system, coolant system, electromagnetic system.

The total power consumption is 3or4 KVA(618/818AHDII); 6.5~8.5 KVA(1020/1224/14/16AHDII)

Please use the formula below to calculate the electric current:

$$A = \frac{KVA \times 1000}{V \times \sqrt{3}} \text{ (AMPERE)}$$

A : Electric current

V : Voltage

KVA: Total power consumption

Below is the relationship of voltage, total power consumption and and the electric current.

618/818AHDII

	220v	230V	340V	380V	415V	440V	460V	575V
KVA	15A		10A					

1020/1224/14/16AHDII

H.P. Voltag / Amp	220v	230V	340V	380V	415V	440V	460V	575V
5Hp	25A	25A	20A	15A	15A	15A	15A	10A
7.5Hp	30A	30A	20A	20A	20A	15A	15A	15A
10Hp	40A	40A	30A	25A	25A	20A	20A	20A

Please check the local law about the size of electric power line. If there's no PE line in the power system, please use grounding copper bar. The grounding resistance should be 100 OHMS. Please check the drawing below to connect the power.

1. Connect cord of coolant system (cord A), plug into the socket which labeled __A__.
2. Connect cord of hydraulic system (cord B), plug into the socket which labeled __B__.
3. Connect cord of electromagnetic chuck (cord C), connect to terminals (89),(90) inside the electric box, the voltage is DC 110 Volt.
4. Connect cord of the external power (cord D) to the terminals L1,L2, L3, PE. Do not connect neutral line

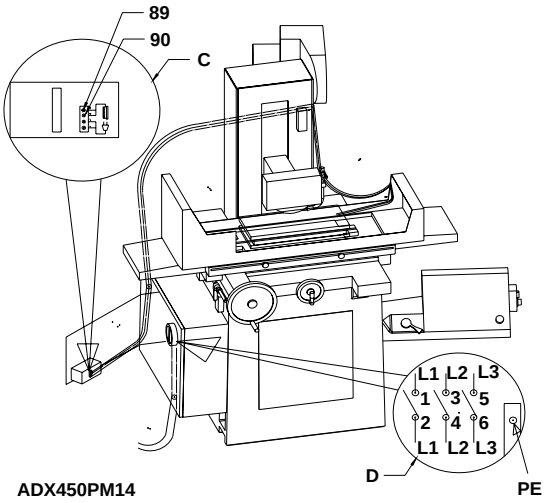
to PE terminal. If you don't have the PE line, please set grounding copper bar instead.

5. Phase examination: The spindle will run clockwise when you push the button for spindle motor, or if you push the button of coolant system, the coolant will come out....., .etc., they are all the signs of correct phase .If the phase is not correct, please push

POWER OFF immediately, also turn off the main power switch. Then

change respectively the position of power line L1, L3.

618/818AHDII



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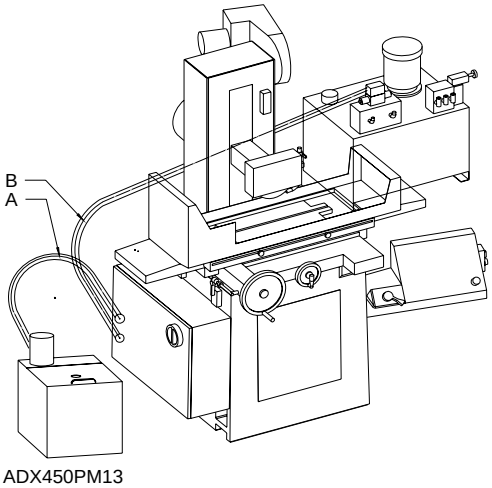

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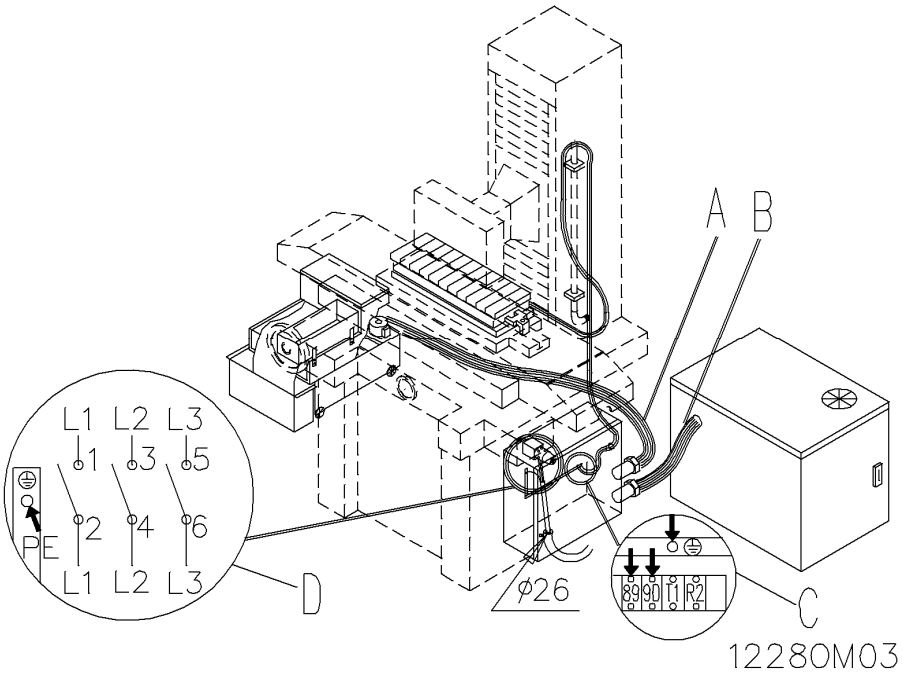
1020/1224/14/16AHDII



5.7 : Re-check before operation

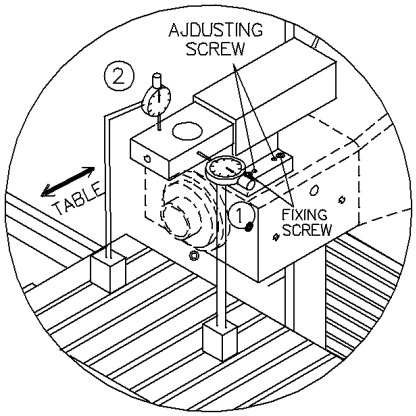
For your safety's sake, please check the following steps before starting to operate in the first time.

(1) Fill enough lubrication oil into the lubrication tank.
(2) Fill enough hydraulic oil into the hydraulic tank.
(3) Fill enough coolant liquid into the coolant tank.
(4) Take off the clamp on the machine.
(5) Remove all the anti-rust oil from the machine.
(6) Take off the desiccant hung on the machine.
(7) Connect the power-cords of hydraulic system and power to the machine.
(8) Connect power-cords of coolant system and power to the machine.
(9) Connect power of electromagnetic system to the machine.
(10) Make sure the table speed control is in the OFF position.
(11) Confirm the position of EMERGENCY STOP (E-STOP) button.
(12) Confirm the installation of grinding wheel in the spindle.
(13) Confirm the voltage and frequency.
(14) Confirm the power-cords.
(15) Confirm the phase of the power.
(16) Confirm the fixing bolt is supporting the machine, and the levelness is within 0.02mm/M.
(17) Confirm the wheel guard which is closed.

5.7.1:Dismantling procedure of the machine

The dismantling procedure is the reversed procedure of the installation.

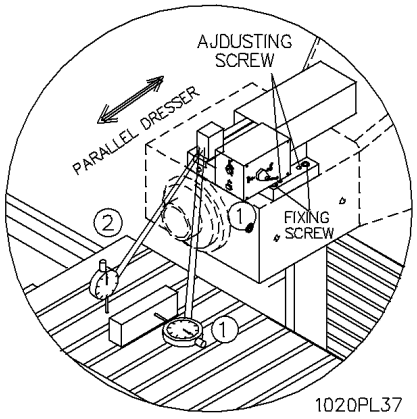
5.8: The way adjust parallel sresser: (Optional)



THE WAY TO ADJUST MANUAL PARALLEL DRESSER:

(1)FIX THE METER ON THE SURFACE OF TABLE OR CHUCK.TURN THE NEEDLE OF METER TO THE SIDE OF DRESSER AS DRAWING ← SHOWED.MOVE TABLE AND MEASURE IF THE ACCURACY IS WITHIN 0.0002”(0.005mm).

(2)FIX THE METER ON THE SURFACE OF TABLE OR CHUCK.TURN THE NEEDLE OF METER ON THE LONGITUDINAL WAY OF PARALLEL DRESSER,AS DRAWING ↑ SHOWED.MOVE THE TABLE,MAKE SURE THE ACCURACY IS WITHIN 0.00008”(0.002mm).



THE WAY TO ADJUST ELECTRO ıRALLEL DRESSER:

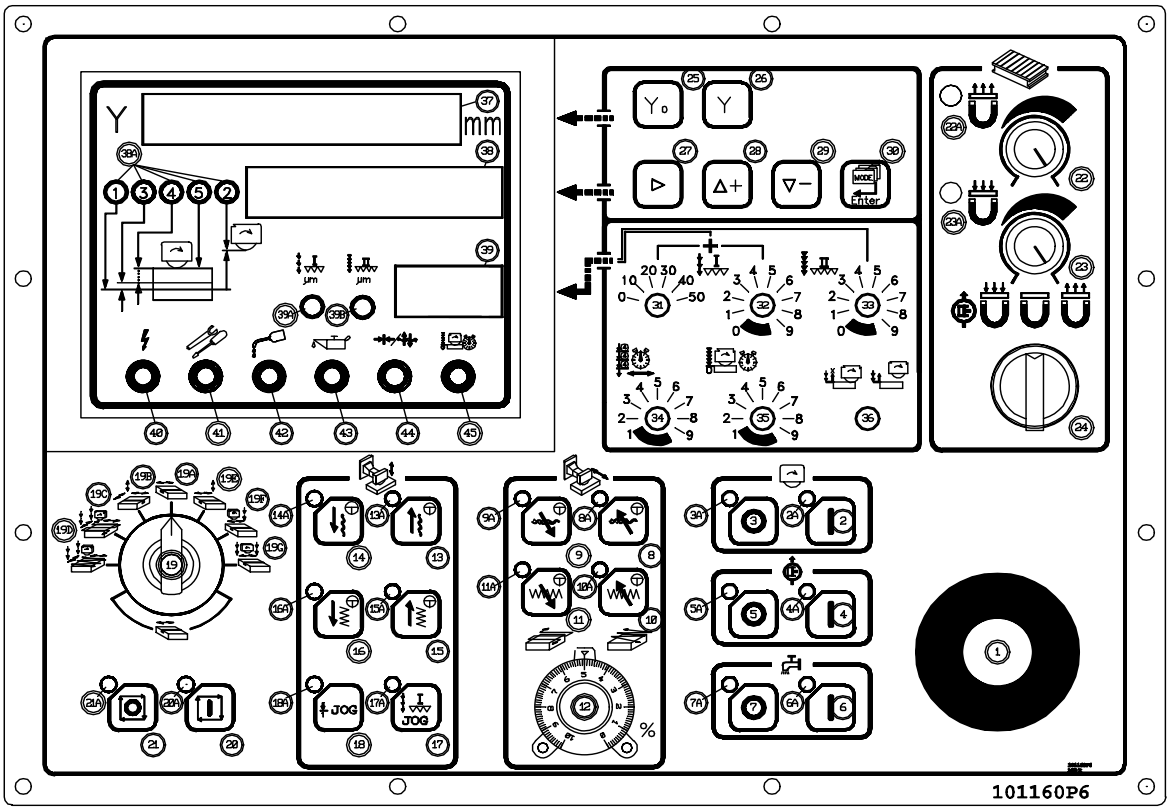
(1)FIX THE METER ON THE PARALLEL DRESSER.PUT A WORK-PIECE THAT IS ALREADY BEEN GROUND ON THE SURFACE OF CHUCK.TURN THE NEEDLE OF METER ON THE SIDE OF WORK-PIECE AS DRAWING ← SHOWED.TURN ON ELECTRO PARALLEL DRESSER AND MEASURE IF THE ACCURACY IS WITHIN 0.0002”(0.005mm).

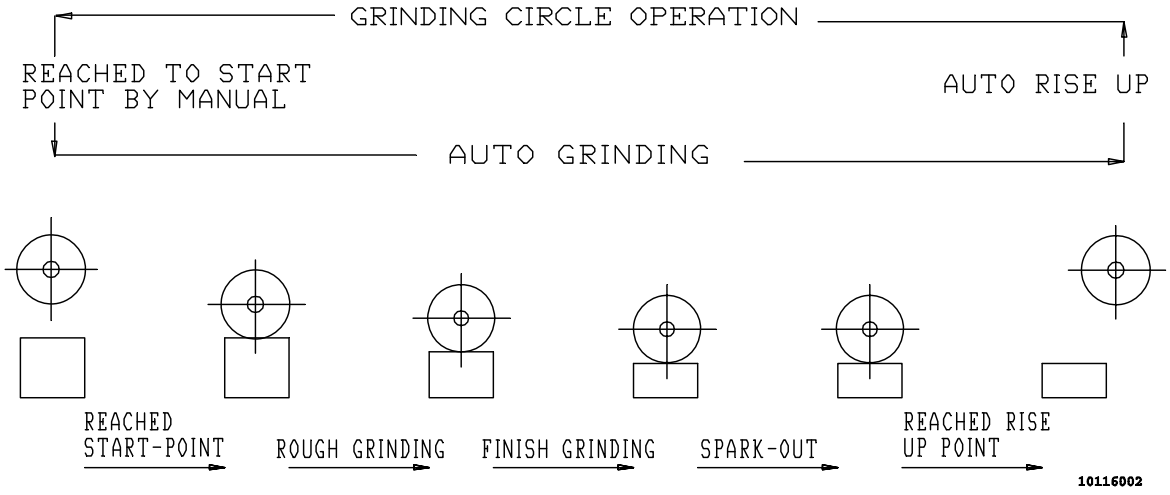
(2)FIX THE METER ON THE PARALLEL DRESSER,AND TURN THE NEEDLE OF METER ON THE SURFACE OF TABLE OR CHUCK AS DRAWING ↑ SHOWED.TURN ON ELECTRO PARALLEL DRESSER AND MEASURE IF THE ACCURACY IS WITHIN 0.00008”(0.002mm).

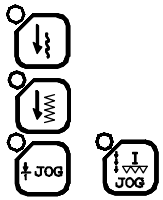
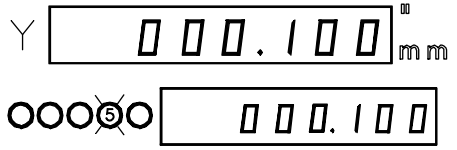
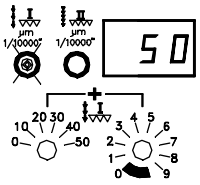
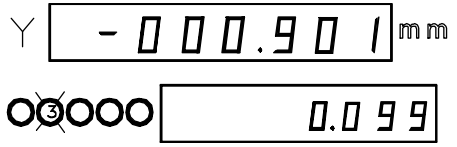
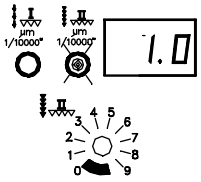
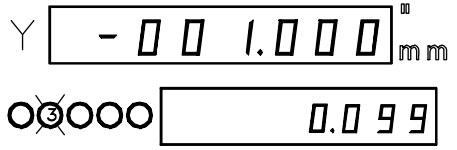
CHAPTER 6

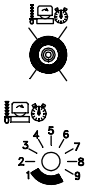
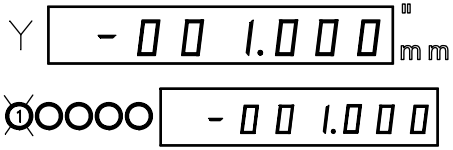
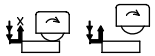
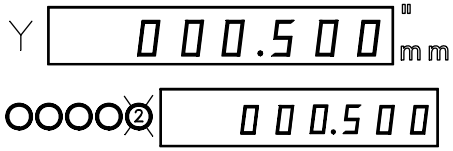
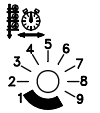
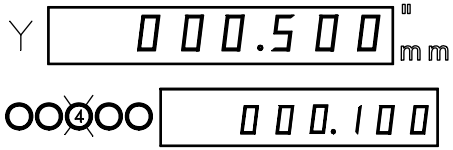
HOW TO OPERATE THE MACHINE

6.1 :Control panel for AHD Ⅱ series





SUBJECT	DESCRIPTION	BUTTON CONTROLLER & GRINDING FEED	INSTRUCTION READOUT
To start point by manual	Relative button: ''14'' rapid down ''16'' slow down ''17'' step increment (''39'' readout screen) ''18'' JOG/0.001mm(0.5/10000'')jogging downfeed		
Rough grinding	A.Rough grinding volume:Rough grinding range is the target digit number ''38A-1'' deduct finish grinding volume ''38A-3'' B.Rough grinding feeding:The light 39A indicate the feeding for each downfeed volume showed on screen ''39'' C.Rough grinding range:0.001-0.050mm(1-25/10000'')		
Finish grinding	A.Finish grinding volume:The light ''38A-3'' indicate the finish grinding volume showed on screen ''38''.Finish grinding runs after rough grinding. B.Finish grinding feeding:The light ''39B'' indicate the feeding job for each downfeed volume showed on screen ''39'' C.Finish grinding range:0.001-0.009mm(0.5-4.5/10000'')		

SUBJECT	DESCRIPTION	BUTTON CONTROLLER & GRINDING FEED	INSTRUCTION READOUT
Spark-out	A.Spark-out point:When the current digit on ''37'' reached the set digit on ''38A-1'',the finish grinding completed, then spark-out started. B.Spark-out times:The light ''45'' indicate the working of spark-out which the times already set on switch ''35''. C.Spark-out times range:1-9 times.		
Reached rise up point	A.When the current digit on ''37'' reached the set digit on ''38A-1'' finally do the spark-out, then auto rise up to the digital set on ''38A-2''. B.Selector switch:Switch 36 is to select rise up or not after spark-out.		
Intermittent Spark-out	A.Intermittent spark-out is spark-out in between start point on ''38A-5'' to target point on ''38A-1'', and according to certain distance by digit set on screen ''38-4''(on every set point during downfeed for rough grinding). B.Intermittent spark-out times:Select by switch 34. C.Intermittent spark-out range:1-9 times.		

6.2 AHDⅡ Control Panel:

NO	Symbolic definition	Description
1	Emergency stop button	Turn off the control power in urgent condition. 〔off：push the button. Back to normal：switch clockwise and pull〕
2	Spindle start button	Make the wheel run.〔CE standard：works after the hydraulic system on〕
2A	Spindle start indicator〔green〕	The spindle is working when the light ison〔CE standard：works after the hydraulic Start：Don't touch the running wheel〕
3	Spindle stop button	Stop the wheel.
3A	Spindle stop indicator〔red〕	The spindle waits for command when the light is on.
4	Longitudinal hydraulic start button	Hydraulic system for longitudinal movement is on.〔Turn off the longitudinal throttling valve handle, turn on the power of maghetic switch 24〕
4A	Longitudinal hydraulic start indicator〔green〕	Hydraulic system is working when the light is on.
5	Longitudinal hydraulic stop button	Stop hydraulic system for longitudinal movement.
5A	Longitudinal hydraulic stop indicator〔red〕	The light on：1.hydraulic system for longitudinal movement stops working. 2.hydraulic system stand by〔The light off means that the throttling valve system doesn't stop properly or the switch 24 doesn't switch to magnetism.
6	Coolant start button	Coolant system is on.
6A	Coolant start indicator〔green〕	Coolant system is working when the light is on.
7	Coolant stop button	Coolant system stops working.
7A	Coolant stop indicator〔red〕	Coolant system waits for command when the light is on.
8	Saddle rapid inward button〔to change to inward directionis available inauto cross feedmode 〔press 2 seconds〕	1. Move the saddle rapidly. 2. Force the saddle change direction to move inward.
8A	Green：available to do rapid inward movement Orange:working on rapid Inward movement	1. The functions of button no.8 wait for command when light is green〔refer to button 8 description〕 2. The functions of button No.8 are in action when light is orange.

9	Saddle rapid out ward button 〔to change to outward direction is available in auto cross feed mode (press 2 seconds)〕	1. Move the saddle outward rapidly. 2. Force the saddle change direction to move outward 〔in crossfeed step increment mode〕
9A	Green：available to do rapid outward movement Orange：Working on rapid Out inward movement	1. The functions of button No.9 wait for command when light is green〔refer to button 9 discription〕 2. The functions of button No.9 are in action when light is orange.
10	Saddle slow inward button〔to change to inward direction is available in auto cross feed mode (press 2 seconds)	1. Move the saddle inward slowly〔speed is adjusted by switch 12〕 2. Force the saddle change direction to move inward. 〔in cross feed constant feed mode〕
10A	Green：Available to doslow inward movement Orange：Working on slow inward movement	1. The functions of button No.10 wait for command when light is green.〔refer to button 10 discription〕 2. The functions of button No.10 are in action when light is orange.
11	Saddle slow outward button〔to change to outward direction is available in auto cross feed mode (press2 seconds)〕	1. Move the saddle outward slowly 〔speed is adjused by switch 12〕 2. Force the sadde change direction to move outward. 〔in cross feed constant feed mode〕
11A	Green：Available to do slow Outward movement Orange：Working on slow Outward movement	1. The functions of button No.11 wait for command when light is green〔refer to button 11 discription〕 2. The functions of button No.11 are in action when light is orange.
12	Cross feed variable step increment switch / crossfeed speed adjustable switch / cross constant feed speed adjustable switch	1. Cross feed step increment adjustment. 2. Speed control for crossfeed. 3. Speed control for adjustable constant feed.
13	Rapid up button	Move the wheel head up rapidly.
13A	Green：Available to do rapid up movement	1. The functions of button No.13 wait for command when light is green.〔refer to button 13 discription〕

	Orange：Working on rapid up movment	2. The functions of button No.13 are in action when light is orange.
14	Rapid down button	Move the wheel head down rapidly.
14A	Green：Available to do rapid down movement Orange：Working on rapid down movement	1. The functions of button No.14 wait for command when light is green.〔refer to button 14 description〕 2. The functions of button No.14 are in action when light is orange.
15	Slow up button	Move the wheel head up slowly.〔interrupt and life during auto down feed cycle.〕
15A	Green：Available to do slow up movement Orange：Working on slow up movement	1. The functions of button No.15 wait for command when liger is green.〔refer to button 15 description〕 2. The functions of button No.15 are in action when light is orange.
16	Slow down button	Move the wheel head down slowly.
16A	Green：Available to do slow down movement Orange：Working on slow down movement	1. The functions of button No.16 wait for command when light is green.〔refer to button 16 description〕 2. The functions of button No.16 are in action when light is orange.
17	Step downfeed button〔see the digital in display No.39〕	Intermittent step downfeed according to the digital of display No.39〔in manual & auto mode, this button will help step downfeed to meet with grinding demand.
17A	Green：available to do step downfeed Orange：working on step downfeed	1. The functions of button No.17 wait for command when light is green〔refer to button 17 discription〕 2. The functions of button No.17 are in action when light is orange.
18	1μm/0.00005”jogging downfeed	Intermittent jogging down feed, each press down feed 1 μ m or 0.00005”
18A	Green：available to do jogging downfeed Orange：working on jogging downfeed	1. The functions of button No.18 wait for command when light is green. 2. The functions of button No.18 are in action when light is orange.
19	Grinding mode selector	Select the grinding mode according to the grinding way.
19A	1：Longitudinal hydraulic 2：Crossfeed manual	The mode only for 1：longitudinal hydraulic movement 2：crossfeed manual movement

19B	Manual surface grinding	1. Light of 21A on：longitudinal hydraulic on / button 8.9.10.11 crossfeed motorized / crossfeed manual / button 13.14.15.16 vertical feed motorized / button17.18do the intermittent downfeed. 2. Light of 20A on：longitudinal hydraulic on / auto crossfeed step infeed〔switch No.12 to control the value〕 / 8.9force direction change in crossfeed movement / button15 motorized slow up / button 17.18 do the intermittent downfeed.
19C	Crossfeed step infeed auto surface grinding	1. Light of 21A on:longitudinal hydraulic on / button 8.9.10.11 crossfeed motorized / crossfeed manual / button15 motorized slow up / button 17.18do the intermittent. 2.1Light of 20A on:longitudinal hydraulic on / auto crossfeed step infeed〔switch No.12 to control the value〕/ auto vertical infeed, spark out grinding〔do the rough grinding according to the digital set in No.39 between two points inward & outward; when the digtal of No.37 reaches the digital set in No.38A-3 then do the finish grinding according to the digital set in No.39〕,until the digital of No.37 reaches the digital set No.38A-1,finally do the spark-out times according to the selection at switch No.35,After complete the setting measure grinding, the hydraulic system, running wheel & coolant system stopped. The wheel head will be raising up automatically according to the digital set in No.38A-2. 2.2Other auxiliary control system：button 8.9 force direction change in crossfeed movement / button 15 slow up / button 17.18do the intermittent downfeed .
19D	Crossfeed constant infeed auto surface grinding	1. Light of 21Aon:longitudinal hydraulic on / button 8.9.10.11 motorized crossfeed / manual crossfeed / button 15 slow up / button 17.18 do the intermittent downfeed. 2.1Light of 20Aon:longitudinal hydraulic on / auto crossfeed constant infeed〔switch No.12 to control the speed〕/ vertial auto downfeed spark out grinding〔do the rough grinding according to the digital set in 39 between two points inward & outward,

		when the digital of No.37 reaches the digital set in No.38A-3 the do the finish grinding according to the digital set in No.39〕until the digital of No.37 reaches the digital set in No.38A-1, finally do the spark out times according to the selection at switch No.35, After complete the setting measure grinding the hydraulic system running wheel & coolant system stoped. The wheel head will be raising up automatically according to the digital set in No.38A-2. 2.2Other auxiliary control system：button 10.11 force direction chang in crossfeed movement button 15 slow up / button 17.18 do the intermittent downfeed.
19E	Manual plunge grinding	1. Light of 21Aon:longitudinal hydraulic on / manual crossfeed / button 13.14.15.16 motorized vertical feed / button 17.18 do the intermittent downfeed. 2. Light of 20Aon:longitudinal hydraulic on / button 15 motorized up / button 17.18 do the intermittent downfeed.
19F	Plunge grinding right side auto infeed	1. Light of 21Aon:longitudinal hydraulic on / manual crossfeed / button 15 motorized slow up / button 17.18 do the intermittent downfeed. 2.1 Light of 20Aon:longitudinal hydraulic on / vertical auto downfeed, spark-out grinding do the downfeed on the setting point of the right side of the work piece and the rough grinding & finish grinding according to the digital set No.39. until the digital of No.37 reaches the digital setting in No.38A-1, do the spark-out times according to the selection at switch No.35. After auto grinding, hydraulic system, running wheel & coolantsystem stoped. The wheel head will be raising up automatically according to the digital set in no.38A-2. 2.2Other auxiliary control system：button 15 motorized slow up / button 17.18. do the intermittent down feed.
19G	Plunge grinding double side auto infeed	1. Light of 21Aon :longitudinal hydraulic on / manual crossfeed / button 15 Motorized slow up / button 17.18. do the intermittent downfeed.

		2.1 Light of 20Aon:longitudinal hydraulicon / vertical auto downfeed, spark-out grinding 〔 do the downfeed in the two setting points of the right & left side of the workpiece, and do the rough & finish grinding according to the digital set in No.39 until the digital of No.37 reaches the digital set in No.38A-1, then do the spark-out times according to the selection at switch No.35 After auto grinding, hydraulic system, running wheel & coolant system stoped. The wheel head will raising up automagically according to the digital set in No.38A-2. 2.2 Other auxiliary control system.button 15 motorized slow up / button 17.18 do the intermittent downfeed.
20	grinding mode confirmation	Confirm the No.19 grinding mode selector what mode selector choose.
20A	grinding mode confirmed indication lamp 〔 green 〕	Lamp lighted when procedure is working
21	grinding mode stop	Stop the procedure
21A	grinding mode stop indication lamp 〔 red 〕	Lamp lighted when procedure is stopped
22	Demagnetizing time adjust switch	Turn No.24 selector switch to demagnetizing position, it will go demagnetizing depends on the time you choose. clock wisely turn the switch, the time for demagnetizer will be longer. 〔 If the work piece is big, the demagnetizing time will be longer, If the work piece is smaller, the time for demagnetizing will be shorter. 〕
22A	Demagnetizing indication lamp 〔 red 〕	Turn No.24 selector switch to demagnetizing position.This lamp will be flashed depends on the time of demagnetizer 〔 stop flashing or stop lighting means demagnetizing is completed. 〕
23	Magnetizing power adjust switch	Turn No.24 selector switch to magnetizing position. It will go magnetizing depends on the power you choose. To turn the switch clockwisely, the power for magnetizing will be bigger. 〔 If the work piece is big, the magnetizing power will be weaker. If the work piece is smaller, the magnetizing power will be stronger. To check the work piece by hand. To make sure it is hold 〕

23A	Magnetizing indication lamp 〔 green 〕	Lamp lighted means magnetizing is working.
24	Magnetize/demagnetize selector switch	1. Switch on the position of demagnetize： Demagnetizing on the time where No.22 switch set. 2. Switch on the position of magnetize： Magnetizing on the volume of power where No.23 switch set. *The electric circulation of table hydraulic system is interlocked with magnetize switch and table speed control 〔 longitudinal throttle valve. 〕
25	Zero positioning for Y axis 〔 zero onNo.37 〕	To zero positioning for Y-axis, make No.37 display screen showed “zero”.
26	Current position value setting 〔 value change in No.37 〕	You can also set the current position on Y axis 〔 vertical 〕 .Press this button and change the figure by pressing No.28.29&No.30.
27	Change digital position	Press this button and the digital on No.38 will flash. Push this button for position of digital figure, skip places to where it should be amended then amended by pressing No.28 & 29. and press No.30 to read the figure into system.
28	Digital amend up	Amend up the digital on No.38→0123456789
29	Digital amend down	Amend down the digital on No.38→ 9.8.7.6.5.4.3.2.1.
30	Selecting mode / read the changed figure 〔 screen 37 or 38 〕	1. Choose to see what figure on No.38A every mode. 2. Read the changed figure on No.38A every mode in to the system. 3. Read the changed figure on No.37 in to the system.
31	auto downfeed step increment selector switch 〔 rough grinding 〕	Select rough grinding volume with No.32 switch. Metric: 〔 0.10.20.30.40.50/μm 〕 maxinum 50 Inch: 〔 0..50.10.15.20.25X1/10000” 〕 maxinum025
32	auto downfeed step increment selector switch 〔 rough grinding 〕	Select rough grinding volume with No.31 switch. Metric： （0~9μm） Inch： （0、0.5、1、1.5、2、2.5、3、3.5、4、4.5 X 1/10000”）
34	Intermittent spark-out times selector switch 〔 by the digital set in 38A-4 〕	When the Y axis reaches the digital set in No. 38A-4, it goes intermittent spark-out according to the selection at switch No.34 〔 1-9 times 〕

35	Spark-out grinding times selector switch.	When Y axis reaches the digital set in No. 38A-1, then do the spark-out according to the selection at switch No.35.〔1-9 times〕
36	Wheel head auto rise up after grinding procedure finished selector switch.	After spark-out. The wheel head will be raising up automatically or stay.
37	Current value of Y axis〔vertical axis〕	Show the current position of the spindle.
38	Figure display screen of positioning modes.	Show the target point, rise up point. finish grinding volume, intermittent spark-out point, and start point.
38A	1：Target point indication lamp. 2：Rise up point indication lamp after cycle completed. 3：Value of finish grinding indication lamp. 4：Intermittent spark-out point indication lamp. 5：start point indication lamp.	1. light of 38A-1 on：the figure that shown on the display screen 38 means the position of target point in auto mode. 2. light of 38A-2 on：means the position of rising-point. 3. light of 38A-3 on：means the value of finish grinding. 4. light of 38A-4 on：the figure that shown on the display screen 38 means the accumulated in feed value during grinding process set for intermittent spark-out. 5. light of 38A-5 on：means the start grinding point of the work piece.
39	Value of rough / finish grinding display screen.	1. light of 39A on：rough grinding value. light of 39B on：finish grinding value〔controlled by switches 31+32&33.〕
39A	Working on the value of rough grinding indication lamp.	Could do the auto downfeed step feed / rough grinding〔according to the value select on switch 31+32〕
39B	Working on the value of finish grinding indication lamp	Could do the auto downfeed jog feed / finish grinding〔according to the value select on switch 33〕
40	Power indication lamp〔red〕	To indicate the power for control system is ok〔press No.1 emergency stop button to stop the power〕
41	Power overload lamp〔spindle, hydraulic &coolant〕〔red〕	Lamp lights up indicating the power of electric magnetic switch of spindle, hydraulic system or coolant system is overloaded.
42	Lubrication working lamp〔green〕	For 1020 above modes: Lamp lights up indicates the system is normal on the lubrication system〔lubrication pump is activated by starting hydraulic system.〕
43	Lubrication oil not	For 1020 above modes:

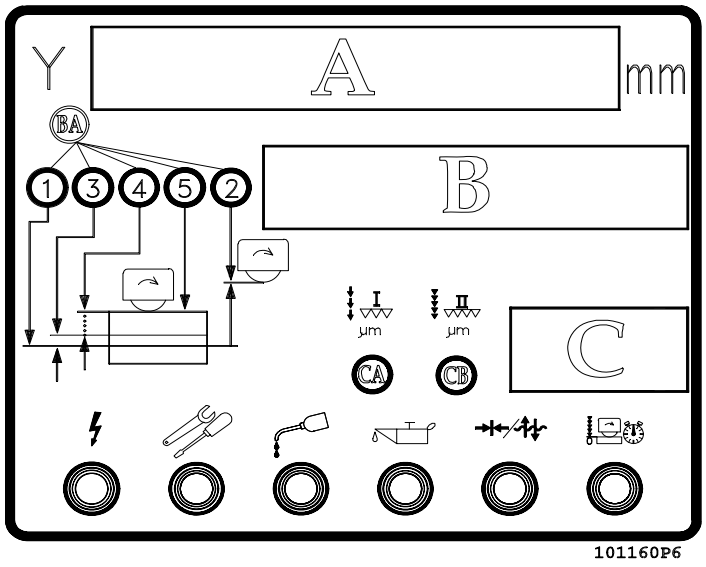
	enough lamp.	Lamp lights up indicating the low level of lubrication oil. Please stop the grinding cycle immediately and fill enough lubrication oil to avoid any possible demage.
44	Crossfeed locking lamp〔red〕	For 1020 above models：If you lockon the crossfeed locking handle, this lamp will be lighted, and crossfeed motor will interlock and stopped working〔If crossfeed motor cannot work, please check crossfeed locking handle to see if it is in locking position〕
45	Spark-out indication lamp	When the Y axis reaches the digital set in No.38A-1, this lamp will be lighted and do the spark-out grinding.

6.3: Vertical movement for AHD Ⅱ

vertical movement is controlled by a high efficiency AC motor as rapid up/down movement and a stepping motor for downfeed jogging, slow up / down movement and stepping vertical infeed. As for vertical positioning, position display are all controlled and output digital by an Encoder.

Digital display screen for vertical axis position :

A:	To show the current position of spindle head.
B:	Digital display screen for every setting point.
BA:	Indication lamp for every digital setting point〔value display in screen B.〕
C:	Display screen for rough & finish grinding increment
CA:	Indication lamp for rough grinding〔value display in screen C.〕
CB:	Indication lamp for finish grinding 〔value display in screen C.〕



6.3.1:Vertical auto downfeed setting in auto grinding

1.Every setting point on control panel

A：To show the current position of spindle head〔+for upward,－for downward

B：Digital display screen for every setting point

BA: Indication lamp for every digital setting point〔value display in screen B.〕

BA1：indication lamp for target point

BA2：indication lamp for rise up point

BA3：indication lamp for total finish grinding volume

BA4：indication lamp for intermittent spark-out grinding

BA5：indication lamp for start point

C: Display screen for rough & finish grinding increment

CA：Indication lamp for rough grinding〔value display in screen C.〕

CB：Indication lamp for finish grinding〔value display in screen C.〕

*** Example for operation**

suppose some workpiece, the a is the highest before grinding and the b is the highest after grinding.

Grinding condition：Rough grinding infeed set at 0.015mm/each time〔0.0005”/each time〕

Finish grinding infeed set at 0.001mm/each time〔0.00005”/each time〕

spark-out set at 5 times.

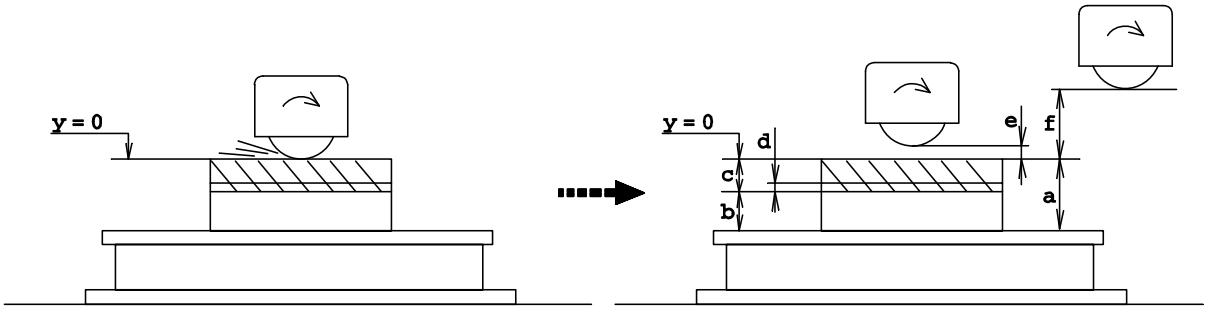
finish grinding volume set at 0.05mm〔0.005”〕

start point set e for grinding wheel to reach the work piece.

Wheel head auto rise up point set at F for surface of wheel above the work piece.

A. Zero point：Surface of workpiece is a.

Set the highest point of workpiece as the first workpiece. when the surface of grinding wheel touch the surface of work piece, set the correct value of spindle head as “zero”. Check the numbers as below：



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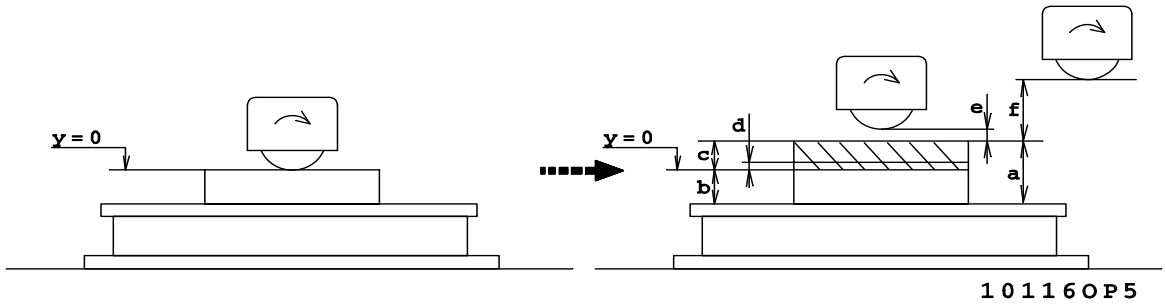
Item	Lamp	Setting position	Setting range	Setting number	Others
Current Value of spindle head		A	_	0	Zero positioning the current value of spindle head when the surface of grinding wheel touches that of work piece.
Target point	BA 1	B	_	-c	a-b=c The target point is below zero point, so the value should be“-c”.
Wheel head rise up point	BA 2	B	_	f	Value F should be between 0.1~1mm〔0.004”~0.04”〕close to the surface of work piece.
Total value of finish grinding	BA 3	B	0-0.099/mm (0-0.0099/inch)	0.05(mm) 0.005(inch)	Set this value so there would be enough space to do finish grinding〔“d” in drawing〕.
Intermittent Spark-out	BA 4	B	-	0.1(mm) 0.01(inch)	When the accumulated infeed reach the setting value then do the intermittent spark-out.
Grinding start point	BA 5	B	_	e	Set value “e” in case the other work piece is higher than this one.
Rough grinding infeed	CA	C	1-50 μm (1-25/10000”)	15(μm) 05(inch)	
Finish grinding infeed	CB	C	1~9 μm (0.00005-0.00045”)	1(μm) 0.00005”	
Time for spark out		D	1-9 times	5 times	

B. Zero point：Surface of basic work piece as b.

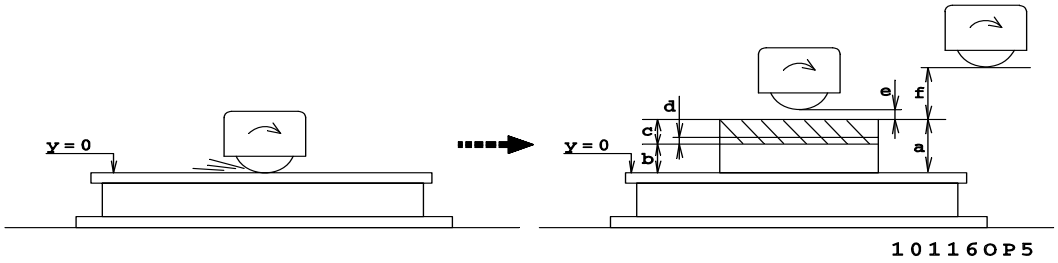
Set the surface of finished work piece as a basic work piece.
Zero positioning the current position
Of spindle head when the surface of grinding wheel touches that of the work piece. Check the numbers as below：



Item	Lamp	Setting position	Setting range	Setting number	Others
Current value of spinde head		A	–	0	Zero positioning the current value of spindle head when the surface of grinding wheel touches that of work piece.
Target point	BA 1	B	–	0	Target point and current value is the same position as “zero” so please set the value as “zero”.
Wheel head rise up point	BA 2	B	–	c+f	Value f should be between 0.1~1mm〔0.004”~0.04”〕close to the surface of work piece.〔c=a-b〕
Total value of finish grinding	BA 3	B	0-0.099/mm (0-0.0099/inch)	0.05(mm) 0.005(inch)	Set this value so there would be enough space to do finish grinding〔“d” in drawing〕
Intermittent Spark-out	BA 4	B	-	0.1(mm) 0.01(inch)	When the accumulated infeed reach the setting value then do the intermittent spark-out.
Grinding start point	BA 5	B	–	c+e	Set value “e” in case the other work piece is higher than this one 〔c=a-b〕
Rough grinding infeed	CA	C	1-50μm (1-25/10000”)	15μm 0.0005”	
Finish grinding infeed	CB	C	1-9μm (0.00005”/0.00045”)	1μm 0.0005”	
Time for spark out		D	1-9times	5times	

C. Zero point：Surface of table magnetic chuck

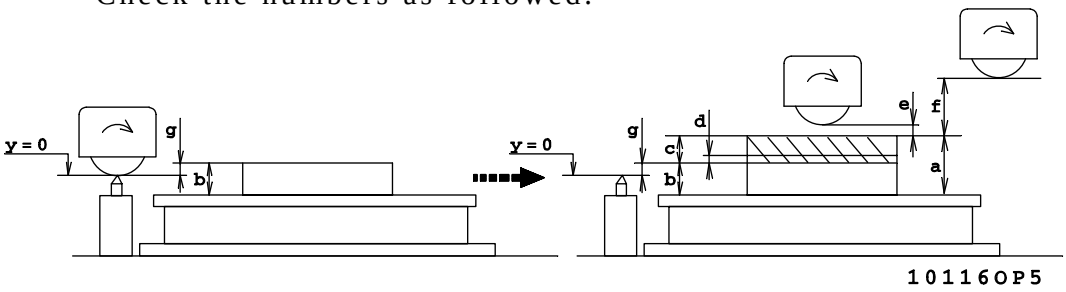
Set the surface of table or magnetic chuck as zero point zero positioning the current value of spindle head after grinding wheel touches table or magnetic chuck and finish grinding the surface of table or magnetic chuck.Check the numbers as below：



Item	Lamp	Setting position	Setting range	Setting number	Other
Current value of spindle head		A	_	0	Zero positioning the current value of spindle head when the surface of grinding wheel touches that of table.
Target point	BA 1	B	_	b	The current “zero” point is below work piece. Therefore. The target point is the same as the. Height of completed work piece set as “b”.
Wheel head rise up point	BA 2	B	_	a+f	Value “f” should be between 0.1~1mm〔0.004” ~0.04”〕close to the surface of work piece.
Total value of finish grinding	BA 3	B	0-0.099/mm (0-0.0099/inch)	0.05(mm) 0.005(inch)	Set this value so there would be enough space to do finish grinding〔“d” in drawing〕
Intermittent Spark-out	BA 4	B	-	0.1(mm) 0.01(inch)	When the accumulated infeed reach the setting value then do the intermittent spark-out.
Grinding start point	BA 5	B	_	a+e	Set value “e” in case the other work piece is higher the this one
Rough grinding infeed	CA	C	1-50 μm (1-25/10000”)	15(μm) 05(inch)	
Finish grinding infeed	CB	C	1-9 μm (0.00005”~0.00045”)	1 μm 0.0005”	
Time for spark out		D	1-9times	5times	

D. Zero point: on the point of dresser (Target point is above the position of dresser)

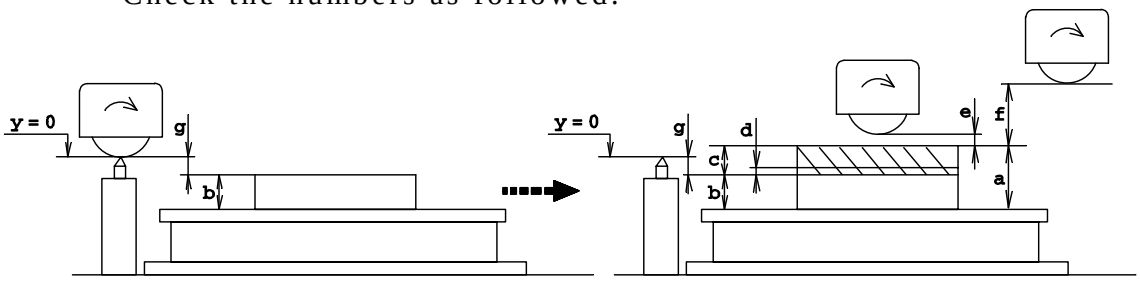
Put a dresser on the surface of table or magnetic chuck. Make the surface of grinding wheel touches the dresser (same point on left or right). After complete dressing the grinding wheel on the dresser, set the current position of spindle head as “zero”. Check the numbers as followed.



Item	Lamp	Setting position	Setting range	Setting number	Other
Current value of spindle head		A	–	0	Zero positioning the current value of spindle head after complete wheel dressing.
Target Point	BA 1	B	–	g	Move up and down to make the surface of grinding wheel touches that of work-piece. Check the current value and deduce total grinding value “c”. This is the target point (Y-c=g). Please note the value should be “+”.
Wheel-Rise-Up-Point	BA 2	B	–	g+c+f	Value f should be between 0.1~1mm (0.004”~0.04”) close to the surface of work-piece.
Total value of finish grinding	BA 3	B	0-0.099/mm (0-0.0099/inch)	0.05(mm) 0.005(inch)	Set this value so there would be enough space to do finish grinding (“d” in drawing).
Intermittent spark-out	BA 4	B	-	0.1(mm) 0.01(inch)	When the accumulated infeed reach the setting value then do the intermittent spark-out.
Grinding-Start-Point	BA 5	B	–	g+c+e	Set value “e” in case the other workpiece is higher than this one.
Rough grinding infeed	CA	C	1-50 μ m (1-25/10000”)	15(μ m) 0.0005”	
Finish grinding infeed	CB	C	1-9 μ m 0.00005”~0.00045”	1 μ m 0.00005”	
Time for spark out		D	1-9times	5times	

E. Zero point: on the point of dresser (Target point is below the position of dresser)

Put a dresser on the surface of table or magnetic chuck. Make the surface of grinding wheel touches the dresser (same point on left or right). After complete dressing the grinding wheel on the dresser, set the current position of spindle head as “zero”. Check the numbers as followed.



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Item	Lamp	Setting position	Setting range	Setting number	Other
Current value of spindle head		A	–	0	Zero positioning the current value of spindle head after complete wheel dressing.
Target Point	BA 1	B	–	-g	Move up and down to make the surface of grinding wheel touches that of work-piece. Check the current value and deduce total grinding value “c”. This is the target point (Y-c=g). Please note the value should be “-”.
Wheel-Rise-Up-Point	BA 2	B	–	f+c-g	Value f should be between 0.1~1mm close to the surface of work-piece.
Total value of finish grinding	BA 3	B	0-0.099/mm (0-0.0099/inch)	0.05(mm) 0.005(inch)	Set this value so there would be enough space to do finish grinding (“d” in drawing).
Intermittent Spark-out	BA 4	B	-	0.1(mm) 0.01(inch)	When the accumulated infeed reach the setting value then do the intermittent spark-out.
Grinding-Start-Point	BA 5	B	–	e+c-g	Set value “e” in case the other workpiece is higher than this one.
Rough grinding infeed	CA	C	1-50 μ m (1-25/10000”)	15(μ m) 0.0005”	
Finish grinding infeed	CB	C	1-9 μ m 0.00005”~0.00045”	1 μ m 0.00005”	
Time for spark out		D	1-9time	5times	

6.4 : The operation of grinding machine

It is the same for every kind of machine, you have to learn the steps of operation then start to use safely. Usually there would bean operating manual for grinder; therefore, please follow the steps to operate the machine.In the meantime, it would be much easier to operate if you memorize every parts for the machine.

6.4.1 :Operating safety precautions

Know how to stop the machine before starting it.

Stop the machine as soon as anything unexpected happens.

Never take depths of grind beyond the machines capacity.

Never attempt to grind on the wheel by hand.

Do not use the wheel flange without checking their compatibility with ACER Group.

Keep all guards and covers in place and ensure cabinet doors are closed.

Do not reach over moving or rotating parts of the machine.

Isolate the machine when it is unattended.

Do not grind material for which the wheel is not designed.

Note: Unintended use,

Under no circumstances must the machine be used to grind the following materials as the process may generate highly toxic fumes or dust and potentially inflammable waste:

Carbon, Magnesium alloy, Plastics, Ceramic, Low flash point grinding fluids, Dry grinding process.

6.4.2 :Precautions for use of the machine

(1) Please turn off thepower before assemble or disassemble the wheel from the spindle.

(2) Do not operate any grinder without wheel guard. Never open the wheel guard while operating.

(3) Never put your hand in the table or try to take the work piece when the wheel is running.

(4) Make sure the work-piece has stuck on the table very firmed.

(5) Do not try to use your hand to take or feed the work-piece.

(6) Make sure the width, length, and the weight will not overload the capacity of machine.

(7) Use the correct condition and keep the wheel sharp.

(8) Please keep your hands and clothes away from machine while operation.

(9) Do not connect any power cord if you are not familiar with electric equipment in case of electric shock. And it also might damage the machine immediately or cause any incorrect movement.

(10) Test the wheel for five minutes. Do not stand in the danger zone while testing. Use the wheel if test is OK.

(11) DO NOT operate dry grinding.

(12) Do not overpass the maximum allowance peripheral speed of wheel.

(13) Confirm if the wheel guard door had really closed before starting the wheel.

(14) Don't set the volume of in-feed too high, it might cause the motor to reduce the rotation, and the workpiece might too hot.

(15) Remove the wheel from machine when you don't need to use it.And keep the wheel safely to protect and prolong the life of wheel.

(16) Make sure the turning direction of wheel is as the direction showed on the label which is stuck on the wheel guard.

(17) Check every switches and buttons to see if they are all on the position of OFF before operation.

(18) Operators should all wear glasses during operation.

(19) Stop the longitudinal hydraulic device while adjust the travel of longitudinal movement.

(20) Turn off the spindle power after job finished and then start to clean the table.

(21) Don't dress the side of wheel. (except for form grinding).

6.5 : Rotation test of wheel

If you want to change a new wheel, you have to do the rotation test on the new wheel to make sure the safety. The key of test as below:

(1) Confirm the status of wheel guard:
Make sure if the wheel guard is closed after the replacement of wheel, also it is very important to screw up the fixing bolt of wheel guard.

(2)Adjust and confirm the water nozzle:
Please confirm the position of water nozzle after the replacement of wheel. See if the coolant can water the wheel correctly. Also check if the fixing bolt of nozzle had screwed up to make sure there would be no danger during operation.

(3) Check before operation:
Use your hand to turnthe grinding wheel before start to see if there's any run-out on the wheel.

(4) Make the rotation test of wheel:
Before turning on the switch, please check where the people stand. It is very dangerous to stand in the running direction of wheel since there is a possibility for a new wheel to break. Close and screw the wheel guard, and turn on the switch of wheel. However, please push the buttons of "ON" & "OFF" repetitious for the grinding wheel, then slowly speed up the wheel. Let the wheel rotation more than 3 minutes; in the meantime,please check if the grinder have the situation of vibration,abnormal noise or run-out on the wheel, and if there are any abnormal sign of electric current or hydraulic pressure.

(5) Dressing the wheel
If everything's correct in the test rotation test, then fix the wheel dresser on the grinder to proceed dressing. Relative references will be found in the following chapters.

(6) Checking the wheel
After dressing, stop the wheel, use your hand to turn the wheel and check if there's any damage or crack on the wheel. The rotation test above is what you must do. The safety of wheel can be strictly checked from its appearance or sound test; however,it is necessary to check every steps above. Do not ignore them, or it might cause tremendous injury.

6.6 : Table movement (Longitudinal movement)

1. The table is driven by hydraulic system. The table moves stable and smoothly.
2. For safety reason there are two interlocks for hydraulic system start:

Interlock 1:

To start hydraulic system, power control for electric magnetic chuck must be switched to ON-position. otherwise ,to start hydraulic is prohibited by interlock 1.

This interlock can keep work-pices from slipping off from magnetic chuck when grinding process starts but the operator forgets to set electric magnetic chuck power on before grinding

Interlock 2:

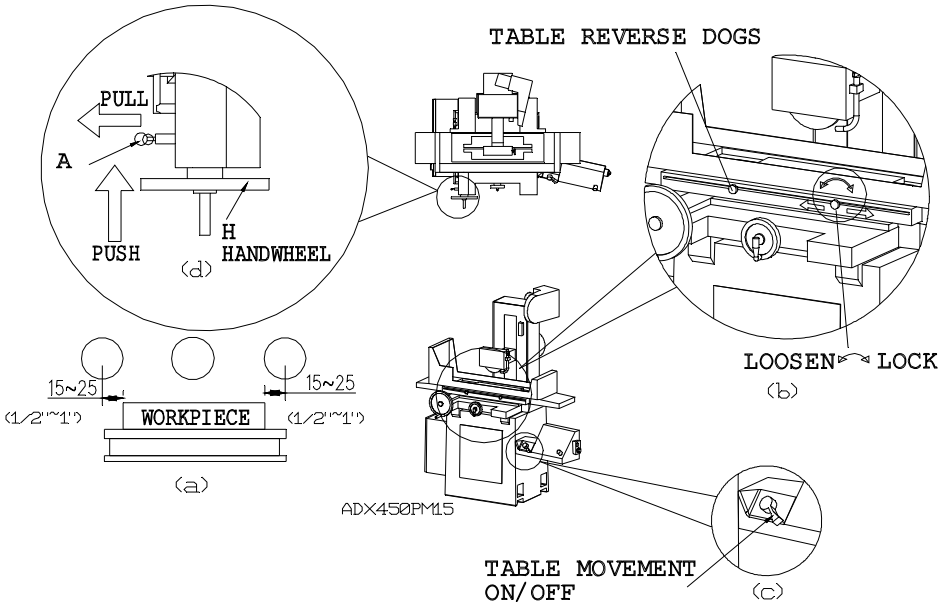
Turn hydraulic table speed control to OFF position, which makes hydraulic system to be ready for start

3. The proper longitudinal travel for grinding process is limited within 15-25mm(1/2"-1") over workpiece by grinding wheel as shown fig(a).

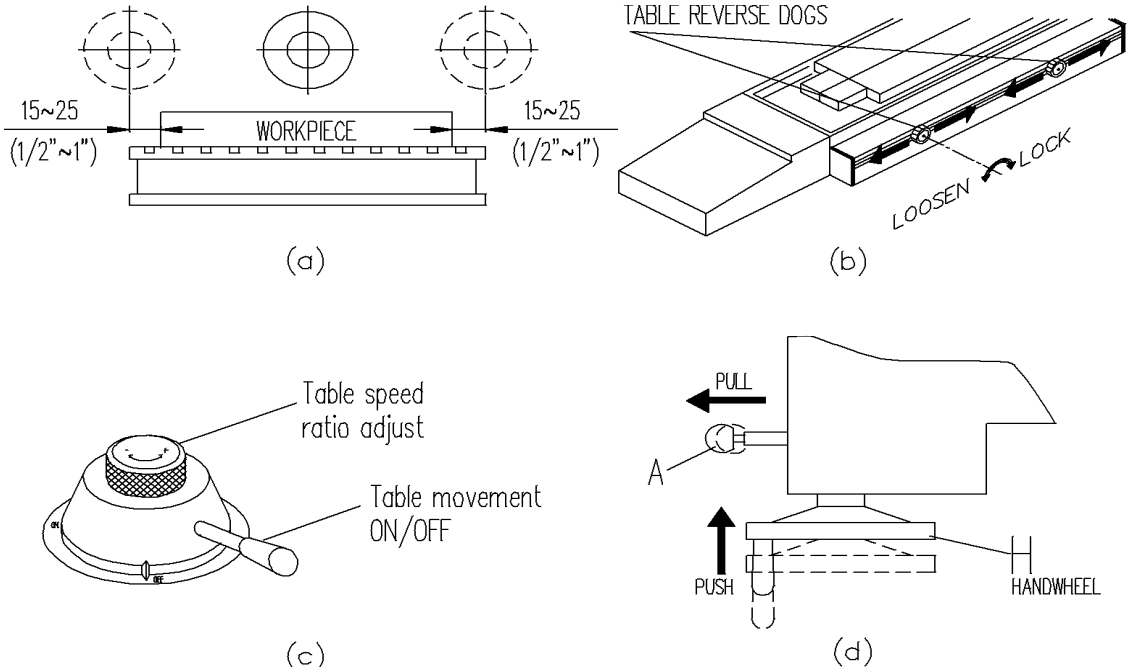
Longitudinal travel relates to the position of the two table reverse dogs (fig. (b)).

4. To move the table by handwheel, pull out A and hold it, push in handwheel (fig. (d)). To disengage handwheel, pull out handwheel. be sure to pull out hand wheel after using it.

618/818 AHDII



1020/1224/14/16 AHDII



6.7 : Saddle movement (cross movement)

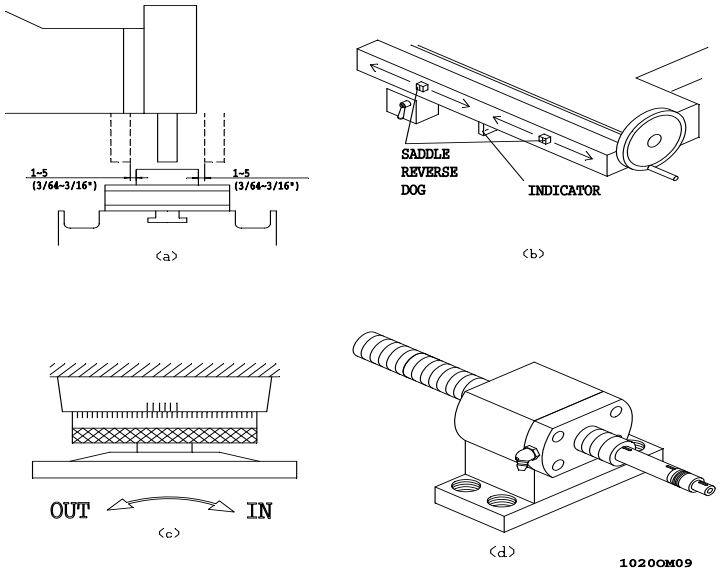
1. Saddle movement is driven by ball screw and DC motor, controlled by PC board, crossfeed movement can be driven by handwheel manually. Auto step infeed surface grinding mode and auto speed adjustable constant infeed grinding mode are available on the control panel.

2.a. For better finish (accuracy, flatness) it is essential for grinding wheel to grind over both ends of workpiece on cross movement, as shown in fig (a) the proper extra distance is 1-5mm (3/64-3/16")for both ends.

2.b. The required cross feed travel is set up by moving the two saddle reverse dogs as shown in fig (b).

2.c. To operation cross feed manually, disable automatic feed first, then use handwheel to feed the saddle (fig (c)). Automatic cross feed function only available when hydraulic table is active.

3. Every 3~6month, cleam up the residual grease on the ball screw brfore filling in new grease from the filling hole(fig(d)).



6.8 : Grinding wheel engaging/disengaging procedure

WARNING:

Isolate the machine before engaging or disengaging the wheel.

1. Engaging wheel and flange set

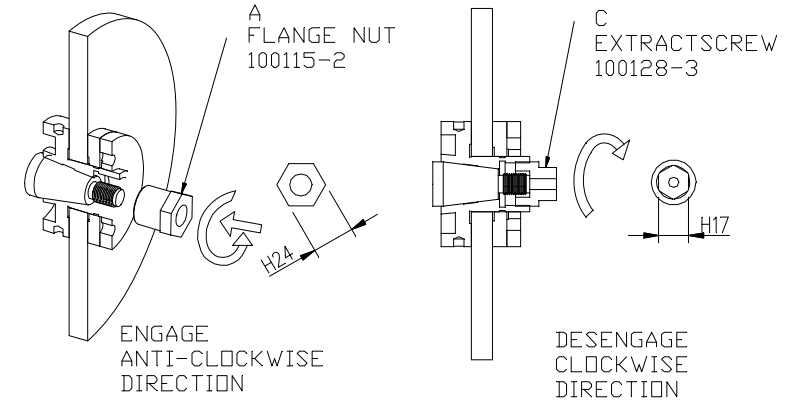
   Clean surface of spindle taper and inner hole of wheel flange, then put wheel & flange set on spindle.

   Screw up fixture screwA (anti-clockwise) to fasten wheel & flange set on spindle.

2. Disengaging wheel and flange set

   First, screw out fixture screw (A), Then screw in extract screw (C)to draw out wheel & flange set from spindle. Use open wrench or hexagonal closed double head wrench and monkey wrench as tools.

618/818 AHDII



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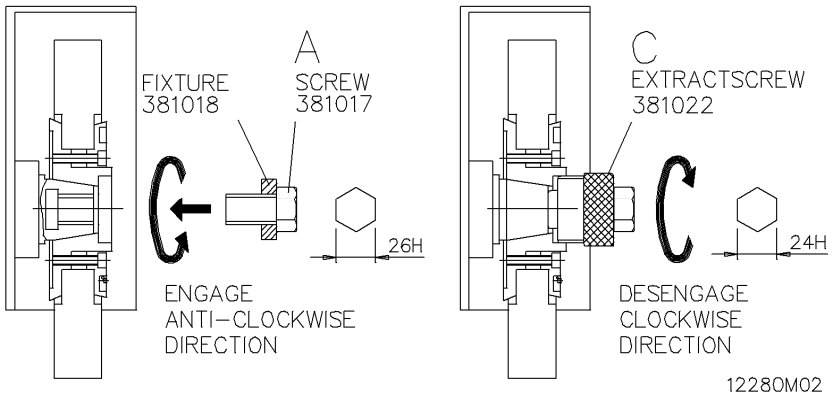


6.9 : Grinding wheel dressing procedure

a. Dress the wheel with diamond dresser when it is filled with chips or when a poor surface finish is obtained.

b. The installation of a diamond dresser should be inclined it to An angle 5-10° from the wheel centerline. When the diamond bit become dull, just turn the diamond collar to the required angle, shown in above drawing.

c. Due to the hardness or weakness of the diamond, do not dress the wheel too deep at one time. The correct way to dress the wheel is to start from the center of the wheel.

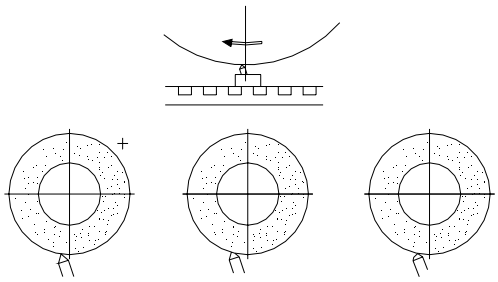
d. Recommended dressing speeds

F=2.5*1000/d*n

F:crossfeed speed(mm/min)

D: grind diameter (4)

N: R.P.M.of the



grain size	10	12	14	16	20	-	24	30	36	46	54	60	70	80	90	100	120	-	150	180	220
grain diameter (mm)	2.0	1.7	1.4	1.2	1.0	0.8	0.7	0.6	0.5	0.3	0.3	0.25	0.2	0.17	0.14	0.12	0.10	0.08	0.07	0.06	0.05

Example: grind wheel diameter 510 mm grain size 60, velocity 2000mm/mm

speed 124.8mm/min.(4.9 IPM)

d = 0.25 mm = 250 (grain size 60, refer to the table,, d=0.25)

$N=1248\ r.p.m\ (N=\frac{velocity\ of\ wheel}{3.1416xD}) \Rightarrow (N=\frac{2000x11000}{3.1416x510})$

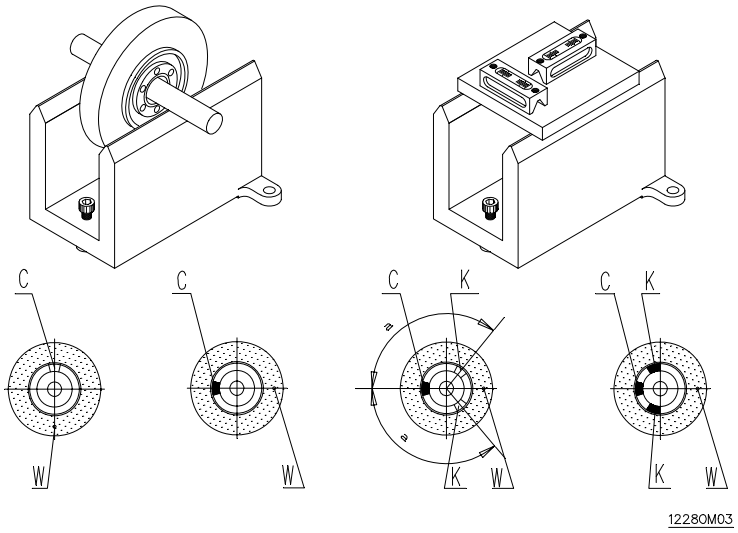
$F=\frac{dxN}{2.5x1000}=\frac{250x2118}{2.5x1000}=121.mm/mim(4.9ipm)$

6.10 : Balancing grinding wheel procedure

To obtain fine surface finish, the grinding wheel must be checked and rebalaned periodically.A standard and balanced grinding wheel is supplied with the grinder from manufacturer.

Please note the following procedures for balancing.

1. Let the wheel roll freely on the stand to find out it's gravity center "W" and mark it with a chalk.
2. Insert a balancing block on the opposite side "C" of "W", rotate the wheel 90 to find out "W" or "C" said is heavier.
3. Insert additional balancing block on heavier side "K" which are of the same arc from "C" point.
4. Turn the wheel 90 to check the balance of the wheel. if it is still out of balance, re-adjust 2 blocks "K" position until grinding Wheel is really balanced. When grinding workpiece with different materials, change the wheel together with its flange to save the time for balancing the wheel.



6.11 : Setting grinding wheel into flange

(1) Choosing grinding wheel and sound test

Decide which grinding wheel is suitable for your production, please check the below:

a. Check if there's any crack, damage or notch in the wheel.

b. See if there's any label or paper on the wheel.

c. Check if there's anything between flange and wheel.

d. See if the wheel had deformed.

To treat the wheel if (b), (c)situations happen. Abandon the wheel if (a),

(d) situations happen. Finally, the sound test, check if the wheel is good or not. Tap the wheel with wooden hammer, listen if there's any metal sound, also change the place you tap to listen if there's any different sound. Crack of the wheel are revealed by the different sound.

(2) Setting flange

(a) Clean and check the flange

Confirm below points before using the flange.

a. Is the outer diameter of flange bigger than the 1/3 outer diameter of wheel?

b. Is the material of flange made by steel alloy? Does it havebeen through the mechanical treatment? Does it balance properly?

c. Is the outer diameter of flange the same as inner diameter of grinding wheel?

d. If you want touse the other brand's flange, please confirm with us about the size and specification.

After confirming all above, please clean the flange as drawing 6.11.1. Check if there are parts such as balancing block, fixed bolt.

Confirm the pitch of setting bolt, bolt hole, contact area of flange, balance slot, andtaper hole. If there's any abnormal situation, please change the flange.

(b) Set the wheel into flange(for 618/818/1020 AHDII)

(1) Confirm if there are any labels or papers on flanges, set the wheel into flange as drawing FIG 6.11.2, Do not press the wheel into flange with too much force. Get rid of the burs on wheel hole so that you can put the wheel into flange smoothly.

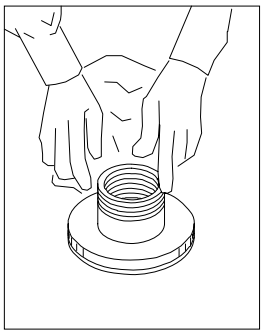


Fig6.11.1

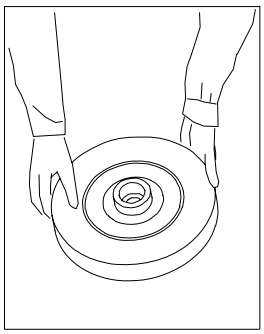


Fig6.11.2

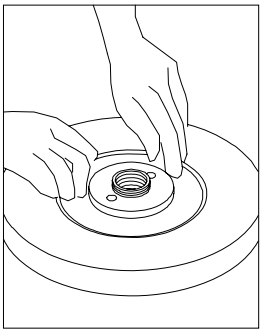


Fig6.11.3

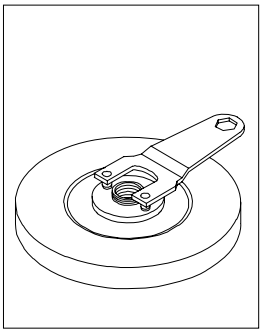


Fig6.11.4

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(2) Put the grinding wheel pressing plate and locking the grinding wheel hub lock nut as drawing FIG 6.11.3.

(3) Use the Y type spanner to lock the grinding wheel hub lock nut tightly (clockwise-loosen counter-clockwise-lock) as drawing FIG 6.11.4

(c) Set the wheel into flange(for 1224/14/16 AHD Ⅱ)

(1) Confirm if there are any labels or papers on flanges, set the wheel into flange as drawing FIG 6.11.6, Do not press the wheel into flange with too much force. Get rid of the burs on wheel hole so that you can put the wheel into flange smoothly.

(2) Set into the sliding pad

Make sure not to damage the fixed flange while putting into sliding pad. Confirm if you had adjusted the position of bolt and bolt assembling hole properly as drawing FIG 6.11.7.

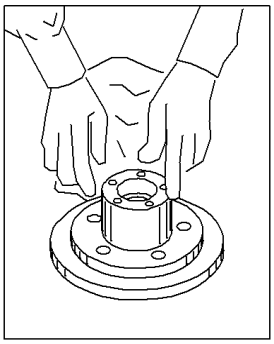


FIG 6.11.5

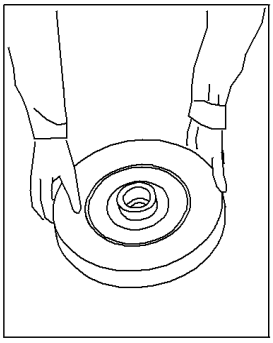


FIG 6.11.6

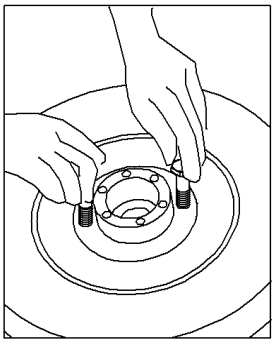


FIG 6.11.7

12280M04

(3) Turn the sliding pad

Please try to turn the sliding pad FIG 6.11.8 and see if it can move smoothly. Also check if the sliding pad is flatness inside and if theclearance between sliding pad and fixed flange is proper.

(4) Check the gap between wheel and flange

Remove the sliding pad, push the wheel to the side of the drawing FIG 6.11.9, and then use thickness gauge to test the gaps between wheel and flange as drawing FIG 6.11.10.

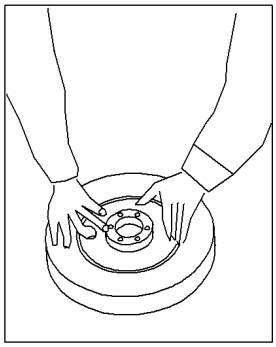


FIG 6.11.8

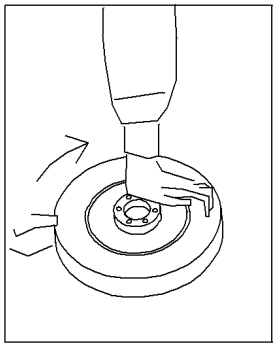


FIG 6.11.9

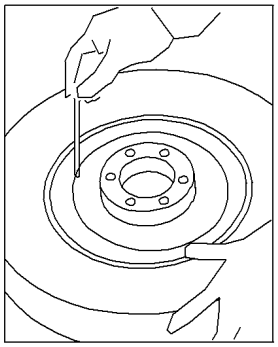


FIG 6.11.10

12280M03

(5) Make the wheel have the same gaps everywhere

Use the thickness gauge which had already setting on the gap

of 1/2 thickness to correct the installation position of wheel. So that all the gaps between wheel and flange are all the same. Which make the center of wheel match with the center of flange.

(6) Pre-lock the bolt

Do as the drawing FIG 6.10.11, install sliding pad, put the fixed bolt into the hole while they match. Then operate as drawing FIG 6.11.12, use wrench to tighten the bolt a little bit. Please lock the bolt diagonally as the order of drawing FIG 6.11.13.

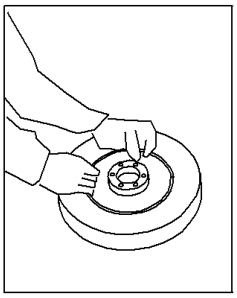


FIG 6.11.11

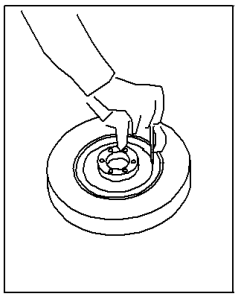


FIG 6.11.12

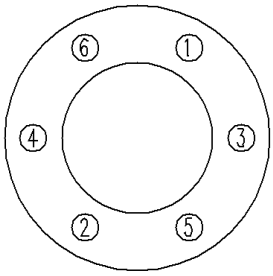


FIG 6.11.13

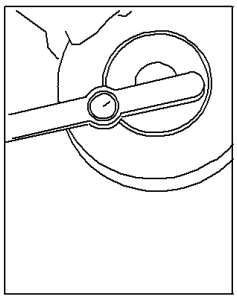


FIG 6.11.14

(7) Locking the bolt

Do as the drawing FIG6.11.14, use the wrench with torsion meter to lock the bolt tightly.

Lock the bolt to torsion 2/3 degree in the first time, a little bit smaller torsion in the second time, and lock to the locking torsion in the third time.

The locking torsion is calculated according to the bolt diameter, the bolt numbers, and the contact area between grinding wheel and flange $A_f(cm^2)$ to change. Therefore, please calculate as the following formula:

$$Mo = \frac{0 \cdot 2 \times d \times p \times A f}{n}$$

$P(Kg/cm^2)$ is the contact pressure betweengrinding wheel and flange. This will be changed according to the types, shapes, sizes of the wheel and the types of flange.

Wheel Size(D)	P(Kg/cm^2)
305 mm below	0.05 D
305 mm over	0.035D or 40 Kg/cm^2

We suggest the contact pressure as the chart and contact with the wheel supplier.

The installation for wheel to put into flange is ok now, please practice over and over again to get used to it.

The key of this operation is as below:

1. Do not install flange in the wrong way as drawing FIG 6.11.15.

2. Please check as chapter FIG A. While the wheel is setting into the flange.

3. Usually there would be clearances while putting the wheel into flange. Please adjust the clearances of circumference and make them even while fixing the wheel.

4. Use the wrench with torsion meter to lock to the level of

locking torsion step by step while tighten the bolts of the flange.

5. If the locking power is too small, the wheel might resist and slide which might cause the damage of wheel.

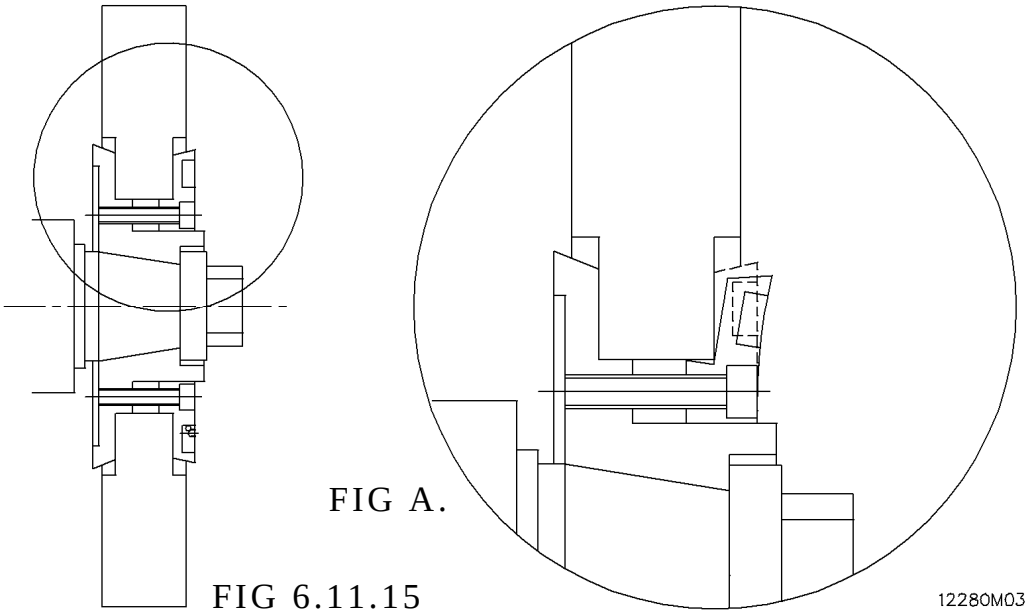


FIG A.

FIG 6.11.15

6. If the locking power is too big, the flange will become deformed, making the wheel unable to be tightened, and that's the reason to make the wheel broken.

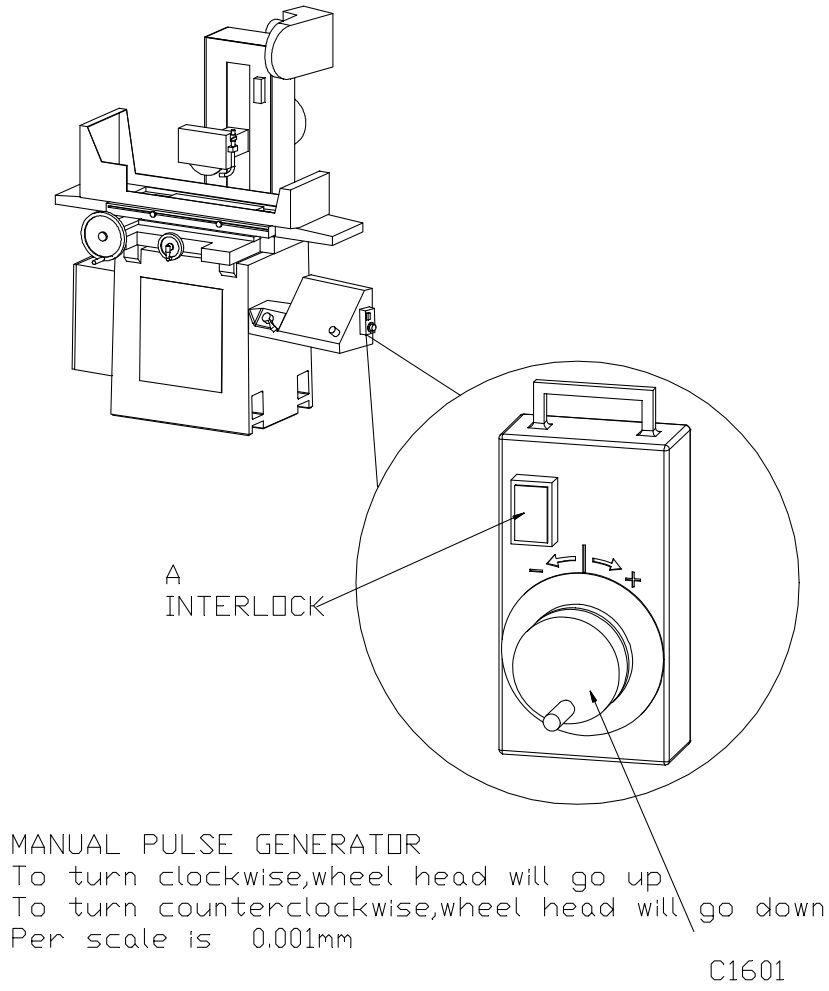
7. The labels of wheels would become wet and loosen by pouring coolant water after a period of time. So, please tighten the wheel again after using the wheel about 1-2 days. if it not been done, please remove the labels.

WARNING:

THE TWO SURFACE OF THE WHEEL HAVE TWO SHEETS OF ABSORBENT PAPER USED AS A FLEXIBLE PAD BETWEEN THE WHEEL AND FLANGE.

6.12 :Manual pulse generator for vertical ovement(special accessory)

6.12.1 For 618/818 AHDII



Push “A” interlock when you use manual pulse generator, wheel head will start to work by this way.
The maximun speed is 60 RPM/MIN.

MANUAL PULSE GENERATOR :

To turn clockwise, wheel head will go up

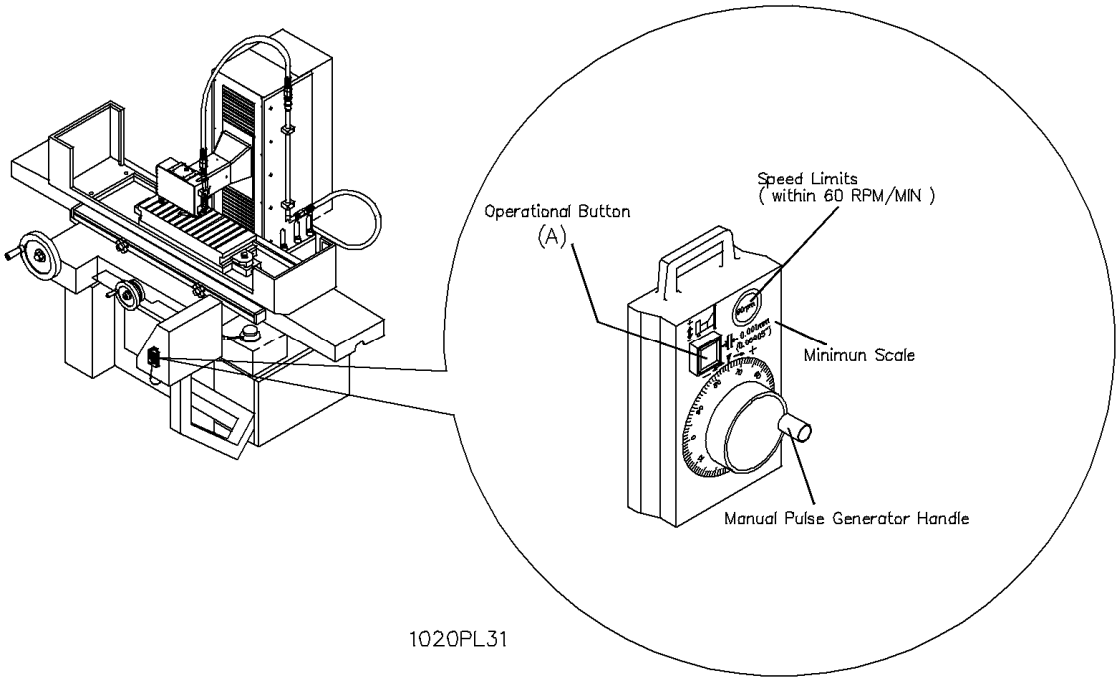
To turn counterclockwise, wheel head will go down

Per scale is 0.001mm(0.00005”)

6.12.2 For1020/1224/14/16 AHDII

Push “A” interlock when you use manual pulse generator, wheel head will start to work by this way.

The maximun speed is 60 RPM/MIN.



MANUAL PULSE GENERATOR :

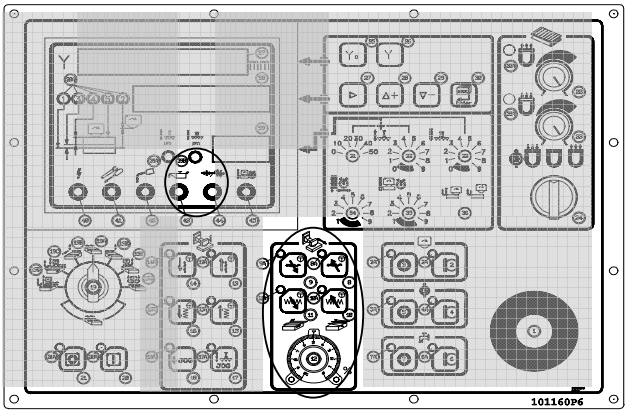
To turn clockwise, wheel head will go up

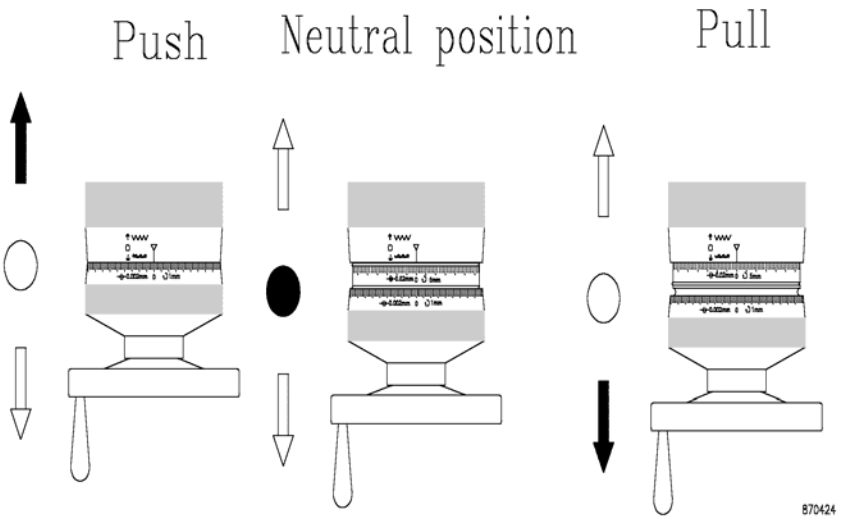
To turn counterclockwise, wheel head will go down

Per scale is 0.001mm(0.00005”)

6.13 Micro crossfeed control(for 1020/1224/14/16 AHDII)

(SPECIAL ACCESSORIES,253SN,253ASN)





(A) (B) (C)

HOW TO OPERATE THE MICRO CROSSFEED SYSTEM

When lamp of (44) is on, it represent crossfeed locked mode. At this time, it Could be done manual control.

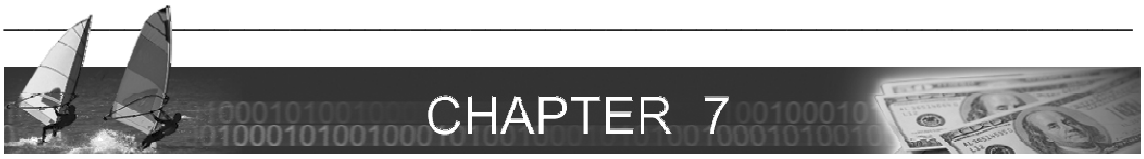
When lamp of (44) is off, it represent normal mode. At this time, it could be done auto- matic or rapid movement control.

The three modes of micro crossfeed control.

(1) To push handwheel inward to bottom (figure A). At this time, it could be done manual micro crossfeed control.

(2) To pull handwheel outward to neutral position (figure B). At this time, it could be done automatic or rapid movement.

(3) To pull handwheel outward to bottom (figure C). At this time, it could be done standard manual control



CHOOSEING AND STORING GRINDING WHEEL

7.1 Standard wheel markings

Order of marking	0	1	2	3	4	5	6
	Type of abrasive *	Nature of abrasive	Grain size	Grade	Structure *	Nature of bond	Type of bond etc. *
Example	51	A	36	L	5	V	23

Aluminum abrasives	A
Silicon carbide abrasives	C

V	Vitrified
S	Silicate
R	Rubber
B	Resigned (Synthetic resins)
BF	Resigned (Synthetic resins) Reinforced
E	Shellac
Mg	Magnesia

Coarse	Medium	Fine	Very fine
8	30	70	220
10	36	80	240
12	46	90	280
14	54	100	320
16	60	120	400
20		150	500
24		180	600

Spacing from the closest to the most open	
0	8
1	9
2	10
3	11
4	12
5	13
6	14
7	Etc.

Soft											Medium											Hard			
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z

* Optional symbols

The symbols 0 and 6 are the manufacture's own

7.2 : Recommended list of grinding wheel

Material Being Ground			Hardness (Rockwell HRC)	Wheel Specs
STEEL	Cardon Steel	Steel Plates Carbon Steel Carbon Steel Tubing Carbon Steel Tubing Carbon Steel Tubing	HRC 25 and below	WA 46H WA 46J
			HRC 25 and above	WA 46J
	Alloy Steel	Nickel-Chromium Steel Nickel-Chromium Alloy Steel Chromium Steel Chrome-Moly Steel Aluminum Chrome-Moly Alloy Steel High-Carbon Chromium Alloy Bearings Stainless Steel Alloy Tool Carbon Steel	HRC 55 and below	WA 46J
			HRC 55 and beiow	WA 46I
	Tool Steel	High Speed Tool Steel Steel Alloy Tool Steel	HRC 60 and below	WA 46I
			HRC 60 and above	WA 46H
	Stainless Steel	Stainless Steel Heat Resistant Steel		WA 46I
				WA 36J
IRON	Cast Iron	Grey Cast Iron		C46J
		Special Cast Iron		GC461
		Cold Forged Cast Iron		…
		Malleable Cast Iron		WA46K
	Non-Ferrous Metals	Brass		C30J
		Bronze		A46K
		Aluminum Alloy		C30J
		Sintered Carbide		GC60-100HI

The above is only for your reference, please consult with the wheel producer to know the specification about the wheel which is more precise and have higher quality.

7.3 : Storing the grinding wheel:

1. The way to put the grinding wheel:

(a) Put the big, and heavy wheel in the lower part of the wheel

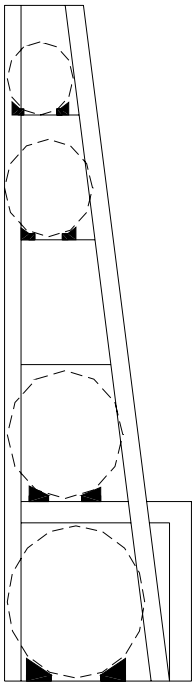
shelf, and the small, light ones in the higher part. Be careful not to let the wheel roll out of the shelf, please put a bar on the shelf to stop the wheels coming out.

(b) Use a board to block the wheels from falling down when putting the wheel vertically.

(c) Please confirm with the wheel company if you want to pile the wheel horizontally.

a) Put the absorbent paper between wheels if piling them horizontally.

b) Confirm with the wheel company to see how high for the pile that the wheels can stand.



2. The place to store the wheel

It is very necessary that you should put the wheels in the place where temperature changes little, and not humid. Meanwhile, use old wheels first to keep the storage not so long.

It is essential to follow the rules below for keeping the wheels.

Do not roll the wheel.

Do not throw the wheel.

Do not hit the wheel.

7.4 Sound test of wheel

The points you should notice about testing the wheel:

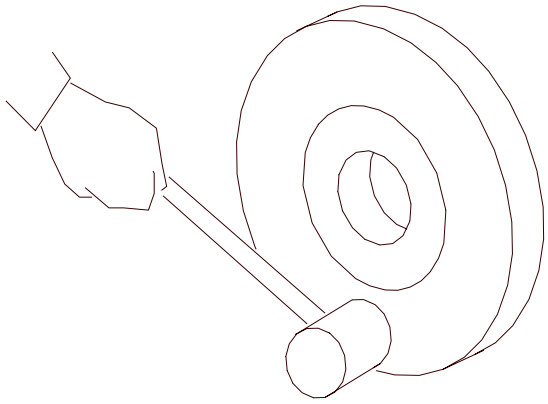
Sound test:

It is very important to check if there are any damages or cracks on the wheels. To do the test please support the wheel with fingers or sticks, use wooden hammer or handle of screw driver to tap from the outer line of the wheel about 20mm to 50mm. It would be dull sound coming out if there's any crack in the wheel.

The key of sound test is as below:

(1) Use wooden hammer or handle of screw driver as the tool.

(2) The hitting point should be as drawing showed, in the left and right declination 45° parts, 20 mm to 50 mm from the outer line of the grinding wheel as shown in below drawing.



(3) Please check all parts of the wheel about the cracks.

(4) The wheel would sound metallic if there's no cracks in the wheel. And it would sound very dull if there's cracks in the wheel.

(5) The resin wheel would sound duller if there's cracks inside.

(6) There would have no difference sound everywhere you tap if there's no cracks inside.

(7) The wheel would have abnormal sound if the inner sleeve is loosen or the wheel is damp.

(8) The wheel might have some defects or damages if you tap the wheel too hard. Therefore, please tap the wheel with your smallest force.

Confirm there's no cracks in the wheel after the sound test, then put the wheels into the wheel shelf. During the transportation of the

wheels, please notice not to fall down or hit the wheel to keep the wheel from damages. Also don't roll the big wheel on the ground, use carriage is the best way to transport.

Since the wheels would be very easy to be damaged if you pile them up; therefore, please put waviness thick papers between them and gather them vertically.

7.5 : Choosing the wheel by knowing the wheel speed (D:203 mm)

Make sure the peripheral speed of wheel is bigger than the rotation speed of standard spindle (this machine is 3450 rpm/60 HZ) before choosing the grinding wheel.

$S = \frac{\pi xD(mm)xrpm}{1000}$ where: S: wheel peripheral speed

Take the specification of this machine for example, D = 203 mm, rotation speed = 3450 rpm (while 60 HZ), the wheel speed is:

$$S = \frac{\pi \text{ x203x3450}}{1000} = 2200M/min$$

Wheel peripheral speed should be more than 2200M/min even with this machine (if 60 HZ).

Choosing the wheel by knowing the wheel speed (D: 305 mm)

Make sure the peripheral speed of wheel is bigger than the rotation speed of standard spindle (this machine is 1750 rpm/60 HZ) before choosing the grinding wheel.

$S = \frac{\pi xD(mm)xrpm}{1000}$ where: S:wheel peripheral speed

Take the specification of this machine for example, D = 305 mm, rotation speed = 1750 rpm (while 60 HZ), the wheel speed is:

$$S = \frac{\pi \text{ x305x1750}}{1000} = 1677M/min$$

Wheel peripheral speed should be more than 1700M/min even with this machine (if 60 HZ).

Choosing the wheel by knowing the wheel speed (D: 355 mm)

Make sure the peripheral speed of wheel is bigger than the rotation speed of standard spindle (this machine is 1750 rpm/60 HZ) before choosing the grinding wheel.

$S = \frac{\pi x D(mm) x rpm}{1000}$ where: S:wheel peripheral speed

Take the specification of this machine for example, D = 355 mm, rotation speed = 1750 rpm (while 60 HZ), the wheel speed is:

$S = \frac{\pi \text{ x355x1750}}{1000}$ =1952M/min

Wheel peripheral speed should be more than 2000M/min even with this machine (if 60 HZ).

MAINTENANCE

8.1 : Daily maintenance for the operator

WHEN	NO	POINTS	METHOD	MAINTENANCE METHOD
BEFORE OPERATION	1	Are every parts of the machine clean ?	View	Clean
	2	Is the wheel guard complete ?	View	Complete
	3	Are all these switches normal ?	Press	Normal, please check ch. 6.
	4	Grinding wheel	View	No damage, 3 cm away from the workpiece.
	5	Is the lubrication condition on the slideway good ?	View	there's lubrication oil on the slideway.
	6	Is the coolant water enough ?	View	Above the lower limit.
	7	Is the workpiece steady ?	Push	Workpiece is very steady.
During operation	1	Is the value normal on the electric current meter ?	View	
	2	Is there any abnormal sound in the wheel and bearings ?	Listen	Judge by experience
	3	Is there any abnormal vibration in every part of machine ?	Touch	Judge by experience
	4	Are the sparks normal when grinding workpiece ?	View	Judge by experience
	5	Is the magnetic chuck power normal when grinding ?	View	Judge by experience

WHEN	NO	POINTS	METHOD	MAINTENANCE METHOD
After Operation	1	The lubrication oil level.	View	Above the lower limit of oil gauge.
	2	Position of every switches.	View	In the position of "off".
	3	Spindle wheel	View	No damages, 3 cm away from the workpiece.
	4	Coolant water level .	View	Above the lower limit of indicator.
	5	Clean every parts of machine.	View	Turn off the power, clean the table --.
	6	Position of main power.	View	On the position of "off".

REMARK: If there's any abnormal signs during operation, please stop to check immediately.

8.2 Monthly maintenance

Area	Key point	REMARKS
Appea-rance	(1) Is the wheel balanced? (2) Is there any rust or damage in the grinding spindle taper? (3) Is the electric wire complete? (4) Is there any rust or damage in the guide-way? (5) Is there any consumption or shortage for theoil wipers sheet? (6) Is there any rust or damage on the flange?	If the wire protector (3) had broken, please check inside.
		Check if oil wiper sheet (5) had some spots?
		* If (7) had any bulgy part on table or chuck, please grind evenly.
	(7) Is there any bulgy part on the surface of the table or magnetic chuck?	
	(8) Are the warning labels or other labels clear?	

electric parts	(1) Is the cover of switch complete? (2) Is there coolant water or dust inside the electric box? (3) Is the connectors of the switches damaged? (4) Are there specified fuses in the control box? (5) Is ground copper bar installed? (when the power line is not used PE line). (6) Is the insulation of motor or wire become degradation? (7) Are the connecting wires loosen? (including grounding wires). (8) Are any fuses burned out? (9) Are all the switches normal? (10) Is every lamp normal? (11) Is there any abnormal sign with the electric current meter & volt meter? (12) Is there any abnormal sound or heat on motor? (13) Is the magnetic chuck normal? (14) Will the lamp be lighted?	* Please check item (1) to (8) with power off. * If item (3) damaged slightly ,please grind gently. * write down the capacity of fuses in the electric box while check item (4). * Make sure the ground resistance of copper bar is under 100 ohms in item (5). * every terminators in item (6) should take the ohms value to know the insulation value which should be over 1 M ohms . * The loosen connection wire of item (7) are usually the reason to become exothermic. * Switches contain push bottom * Check item (13) by the demagnetized device.

Lubricating oil	(1) Does the lubrication oil tank contain enough oil? (2) Does lubrication oil become degrading? (3) Is the oil supply enough for the place that should be lubricated ? (4) Is the lubrication oil condition good for the slide-way and screws? (5) Is the oil inlet blocked? (6) Is the pressure of hydraulic oil normal? (7) Does the oil leak from the joining of oil tube ? (8) Does it block in the filter? (9) Do you change the coolant water regularly? Does it degrade?	* Check the place of oil inlet in item (1) where there are suitable oil, suitable volume of oil, & the time for exchange. Also please check the oil gauge. * Notice the oil color from oil tank. * Check the oil gauge to see if the lubrication oil is flowing normally? * Notice the decrement situation of item (5) from lubrication oil inlet. * Check if there is any strange sound or vibration near the pump.

8.3 : Hydraulic oil pressure adjust

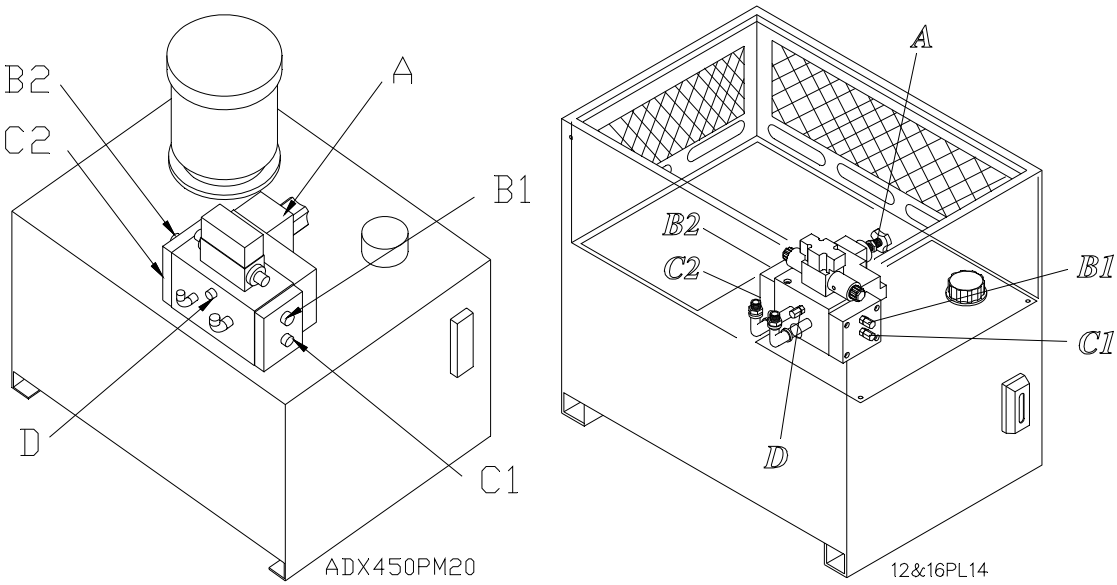
Parts Name:

A: OIL Pressure adjust valve

B1, B2: Table reversing pressure adjust valve for single side (speed-up time).

C1, C2 : Valve to adjust the length of table transverse (braking distance).

618/818 AHDII **1020/1224/14/16 AHDII**



D: Table reversing pressure adjust (effect both sides together).

1. A valve is properly-adjusted before shipment. Unless it is necessary, please don't re-adjust this valve. To increase the pressure, screw in ;To decrease the pressure, screw out.

   Table speed limit: 28 meters/per minute (power supply: 60 Hz)

   23 meters/per minute (power supply: 50Hz)

2. B1, B2 valve, use these to valves to the same reversing pressure at table-direction-reversing action, to ensure smooth table movement. Please note that not to adjust any of the two valves unless obvious difference occurs on reversing.

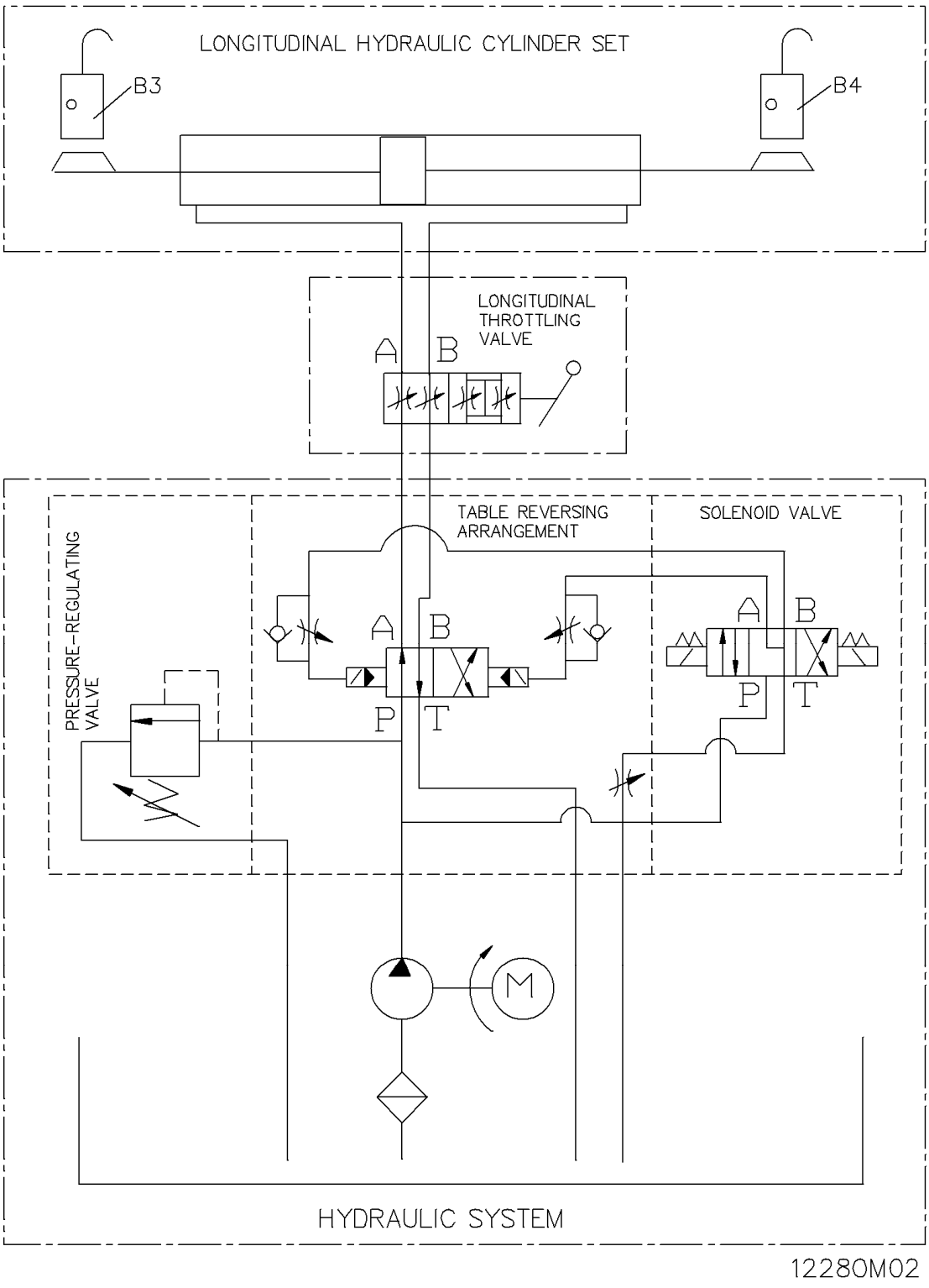
3. C1,C2 valves are braking length of table transverse. Only when the length of both sides are different, it’s necessary to adjust. To adjust clockwisely will shorten the distance; to adjust counter-clockwisely will enlarge the distance. We’ve adjusted the distance within 35 ~ 65mm in factory.

4. D valve is to adjust the impulse force. This valve should only be adjusted when all above valves are adjusted well. To adjust D valve clockwisely will make the impluse force smaller; to adjust counter-clockwisely will make the force larger. Please note to adjust D valve will affect the impluse force immediately.

8.4 : Trouble shootings when grinding workpiece

PROBLEM	CAUSE	REMEDY
Frequent wave on the surface of the work-piece	Vibration of the machine	1. Check the level of the machine and the sturdiness of the floor. 2. Check the spindle.
	Grinding wheel is unbalanced.	1. Dress the wheel again. 2. Balance the wheel.
	Wheel is too hard	1. Use a soft wheel. 2. Use a rough wheel. 3. Reduce the feed amount.
Minor scratch on the surface	Improper operation	1. Dress the wheel. And make sure that the wheel is parallel with work piece. if not, adjust the parallel dresser. 2. Slow the crossfeed speed. 3. Block in the work piece to prevent from slipping.
	improper dressing the wheel	1. Slow the dressing speed. 2. Tighten the dresser well. 3. Use the proper dressing speed. 4. Don't dress too deep at a time.
Burning spots and cracks	Improper operation	1. Reduce the feeding amount. 2. Use the proper crossfeed speed.
	Improper heat treatment	Re-heat treat
	Unsuitable grinding wheel	1.Dress the wheel finely and frequently. 2.Use a softer and rougher wheel.
Poor grinding ability, and wheel clogs and workpiece shown burn	Wheel is too hard	1. Increase the table speed and crossfeed speed. 2. Slow the wheel revolution, (reduce the wheel diameter or width). 3. Use the sharp diamond to dress the wheel. 4. Chose a rougher wheel.
Wheel dulls and the grit talks off	Wheel is too soft	1. Reduce the table speed and crossfeed speed. 2. Increase the wheel revolution speed. or enlarge the wheel diameter, if possible. 3. Dress the wheel grit and .

8.5 : Piping of hydraulic system


LONGITUDINAL HYDRAULIC CYLINDER SET
B3
B4
LONGITUDINAL THROTTLING VALVE
A
B
PRESSURE-REGULATING VALVE
TABLE REVERSING ARRANGEMENT
SOLENOID VALVE
P
T
M
HYDRAULIC SYSTEM
12280M02