

***CE. MACHINERY DIRECTIVE 89/392/EEC***  
***PARTS LIST***

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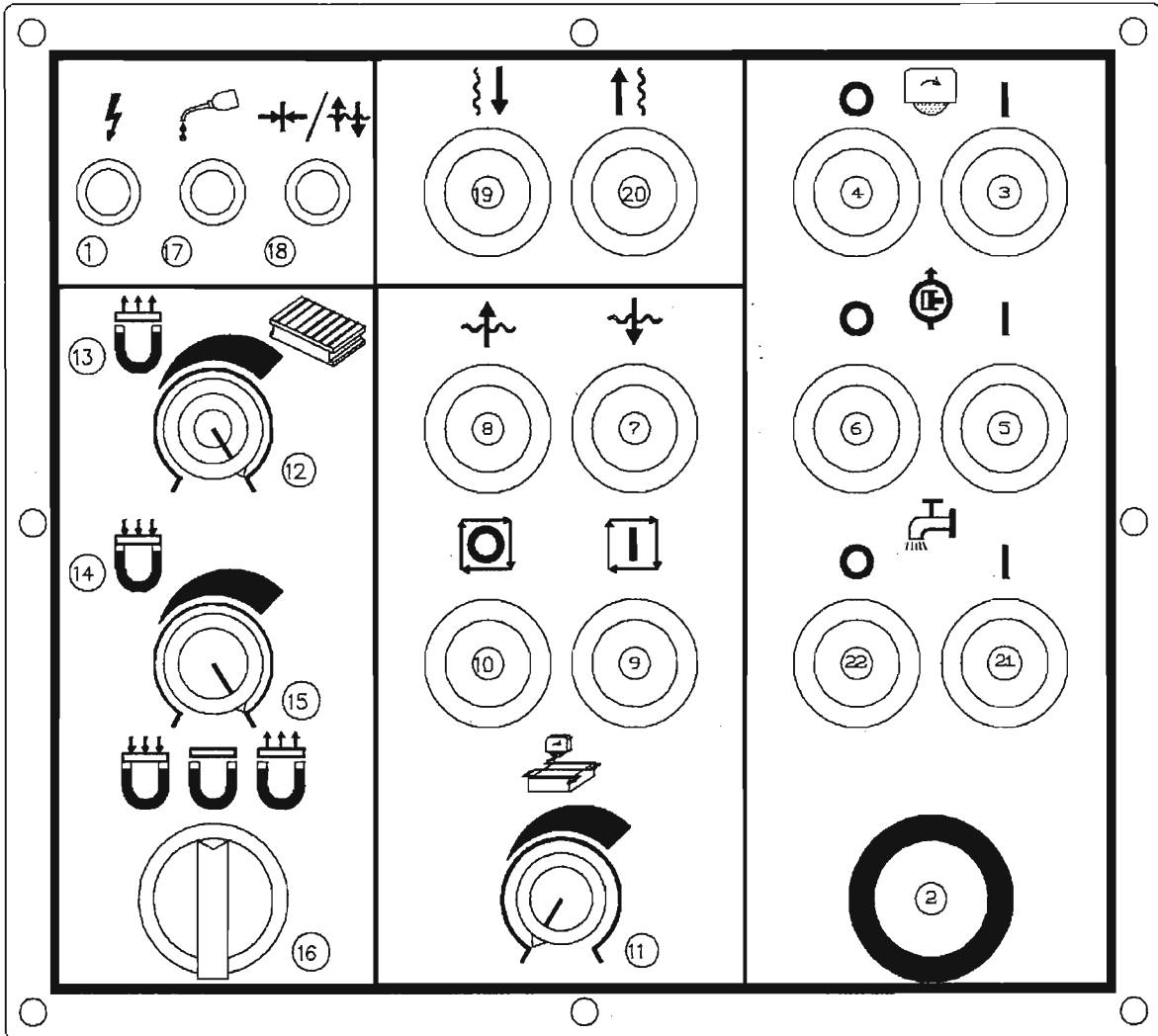
**MACHINE NAME: HORIZONTAL SURFACE GRINDING  
MACHINE**

**MODEL: SUPRA-1428AHD**  
**SUPRA-1632AHD**  
**SUPRA-1640AHD**

# CHAPTER 6

## HOW TO OPERATE THE MACHINE

### 6.1 :Control panel FOR 3A Series

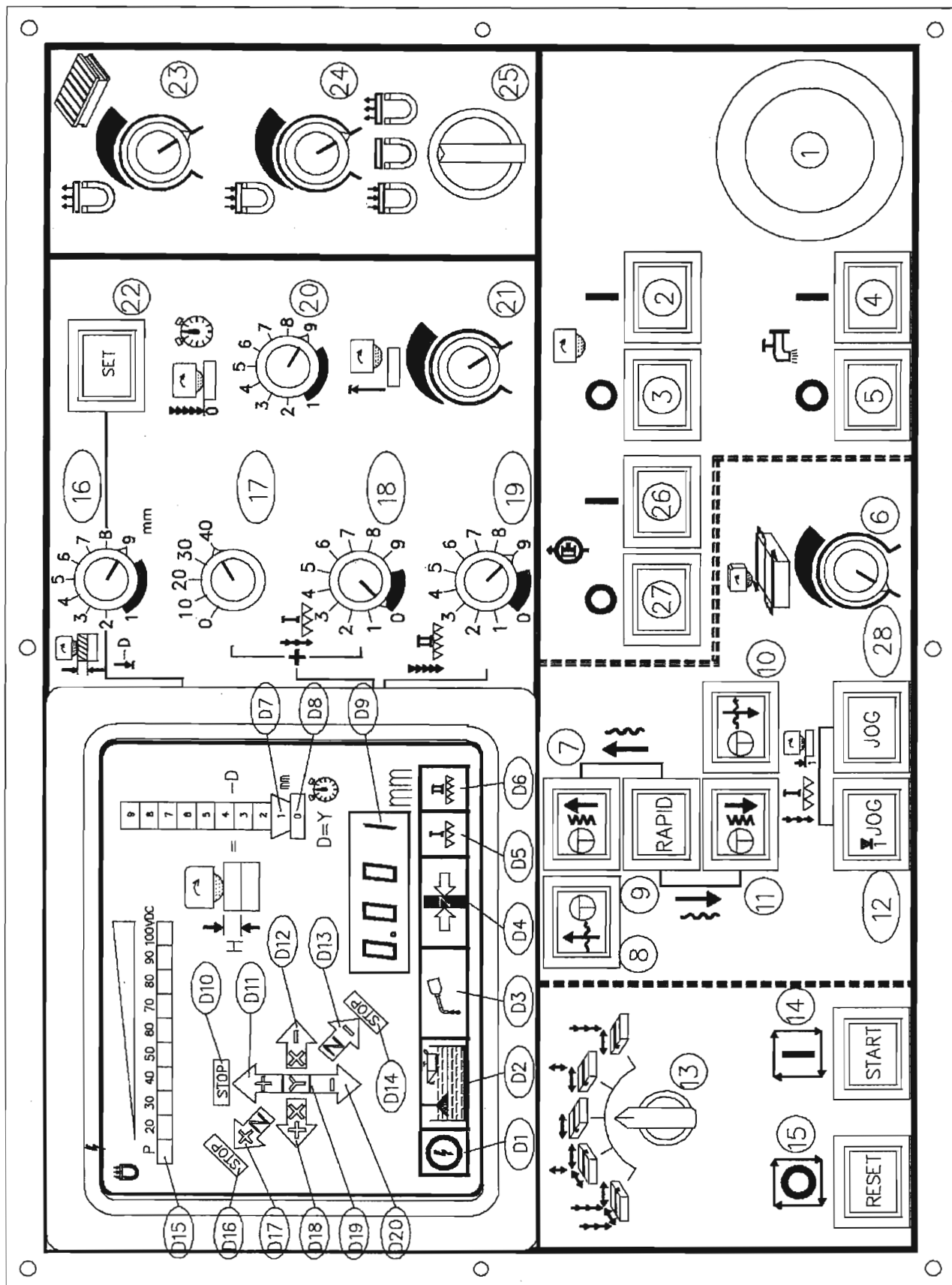


1.1:Description of 3A control panels (Operation instruction)

NO.	PART NO.	SYMBOLIC DEFINITION	DESCRIPTION
1.	C72-LED-R	Power Indication Lamp	To indicate power is on or off.
2.	C23-25R1B	Emergency stops button.	To stop all motors and functions.
3.	C36-G	Spindle (wheel-head)start button	To start the spindle.
4.	C36-R	Spindle (wheel-head) stops button	To stop the spindle
5.	C36-G	Hydraulic start button	To start the hydraulic system
6.	C36-250G24V	Hydraulic stops buttons	To stop the hydraulic system
7.	C101-PW2A	Rapid outward button	To change to the outward direction (available in auto crossfeed mode)
8.	C101-PW2A	Rapid inward button	To change to the inward direction (available in auto crossfeed mode)
9.	C30	Start button	To confirmed the working mode selection.
10.	C36-R	Reset button	To cancel the working mode selection confirmed by start button.
11.	C79-VR1A	Variable step increment of crossfeed selector switch	To select required step increment of crossfeed in auto mode.
12.	C99-VR500RB	Demagnetizing time adjust switch	To adjust demagnetizing time. Larger work-pieces, and high carbon containing work-pieces like tool steel,SKD,SKH,SKS,SCM,SNM,etc.take longer time to demagnetizing.
13.	C72-LED-G	Demagnetizing indication lamp	To indicate the function of demagnetizing power adjust switch is working.
14.	C72-LED-R	Magnetizing indication lamp	To indicate the function of magnetizing power adjust switch is working.
15.	C99-VR50KB	Magnetizing power adjust switch	To adjust magnetizing power of chuck.

16. C93 Magnetizing/demagnetizing selector switch
- (a) On position: To magnetizing, use power-adjust-switch (14) to adjust power of magnetizing.
  - (b) Middle position: To stop chuck functions and the hydraulic system.
  - (c) OFF position: To demagnetize, use time-adjust-switch (12) to adjust time of demagnetizing.
17. C72-LED\_G Lubricant performance status indication lamp
- Light-on represents normal lubricant oil supply lubricant pump is activated by starting hydraulic system).
- Light off could be caused by:
- 1. Lubricant pump is not started.
  - 2. Oil filter is blocked.
  - 3. Oil pressure is not enough.
  - 4. Power supply for lubricant pump is cut off.
  - 5. Lubricant pump is out of order.
18. C72-LED-R Crossfeed locked indication lamp
- To indicate the movement of crossfeed is not able.
19. C101-PW2A Rapid down pushes button
- To go downward rapidly.
20. C010-PW2A Rapid up pushes button
- To go upward rapidly.
21. C36-G Coolant pump start button
- To start the coolant system.
22. C36-R Coolant pump stop button
- To stop the coolant system.

6.2: CONTROL PANEL LAYOUT FOR AHD (in metric) SERIES



6.2.1 Description of control panel for AHD series (Operation instruction)

NO.	ELECTRICAL CODE NO.	P/N	SYMBOLIC DEFINITION DESCRIPTION
1	S0	C25-22R1B	Emergency stop button To stop all motors and functions.
2	S1	C20-161A1BG1	Spindle (wheel-head) start push button To start the spindle (wheel head).
3	S2	C20-161A1BR1	Spindle (wheel-head) stop push button To stop the spindle (wheel head).
4	S6E	C20-161B1BG1	Coolant pump start button To start the coolant system.
5	S7E	C20-161B1BR1	Coolant pump stop button To stop the coolant system.
6	R2	C79-VR105A	Variable step increment of crossfeed selector switch To select required step increment of crossfeed in auto mode.
7	S15E	C19-162A2BW1	Wheel-head slow up button (a) Slow up movement activated by button (7). (b) Rapid up movement activated by button (7) and (9) – Push the two buttons together.  * Available only in manual surface/plunge modes selector switch (13).
8	S16E	C20-161A1BW1	Rapid inward crossfeed movement button (a) To move saddle inward, available only in manual surface mode (by switch (13)) and light of reset button (15) is on. (b) To toggle outward crossfeed movement to inward, available only in auto/manual surface modes and when light of start button (14) is on.
9	S17E	C19-162A2BW2	Rapid up/down confirm push button (a) Push (9) and (7) together to get rapid up movement, push (9) and (11) together to get rapid down movement.  * Push (9) only will get no movement.
10	S4E	C19-162A2BW3	Rapid outward crossfeed movement push button (a) Available only in manual surface mode selected on (13) and light of reset push button (15) is on. Toggle inward movement to outward under auto/manual surface mode (available only when light of start push button (14) is on).

11	S5	C19-162A2BW4	Wheel-head slow down push button Push (11) to get slow down. Push (11) and (9) together to get rapid down movement. * Available only under manual surface/plunge modes (13).
12	S18E	C20-161A1B2	Downfeed jogging push button In metric, 0.001mm downfeed increment per push.
13	S8	C03-5SW-2	Grinding mode selector switch Five selector as follows A. Auto surface mode In this mode, automatic feeds in 3 axis, hydraulic feed, crossfeed, vertical feed are provided. (a) When light of buttons (15), (25) is on 1.Rapid in/out by (8), (10). 2.Wheel-head up/down movement by button (7), (9), (11). 3.Jogging by button (12). (b) When light of button (14) is on, automatic grinding cycle is activated, the wheel-head is raised and all motors are automatically stopped upon completion of grinding cycle. 1.Step increment of crossfeed by selector switch (6). 2.Jogging by button (12). 3.Crossfeed in/out direction control by button (8), (10). 4.Downfeed functions by selector switch (16), (17), (18), (19), (20) and (21). B. Manual surface mode: (a) When light of button (15) is on, below functions are available: 1.Rapid in/out by (8), (10). 2.Rapid/slow up/down is by (7), (9) and (11). Jogging is by (12). (b) When light of button (14) is on, start hydraulic table by turning table speed control, adjust selector switch (6) to get required step increment of crossfeed.

1. Crossfeed in/out direction control by button (8), (10).

2. Wheel-head up/down movement by button (7), (9), (11).

C. For hydraulic table turns to the middle position of switch (13).

D. Manual plunge mode:

In this mode, only manual wheelhead feed is on cross travel is available auto step feed, rapid in/out saddle motion are disable.

1. jogging by push-button (12)

2. rapid/slow, up/down by push-button (7), (9) and (11)

E. Auto plunge mode,

In this mode:

(a) When light of button (14), (25) is on, automatic grinding cycle is activated. The wheelhead downfeed will start when table motion is abled for grinding cycle.

1. Jogging by push-button (12).

2. Selector switch

(16), (17), (18), (20), (21) and (22)

Note: When changing the position of the button, it will effect the auto cycle.

The wheelhead is raised, and all motors are automatically stopped after completion of spark-out grinding.

(b) When light of push-button is on

1. Jogging by push-button (12).

2. Rapid up/down, rapid in/out not available.

14	S12E	C20-161A1BG2	Confirmation button for selector switch (13) To confirm the selection by select switch (13).
15	S13E	C20-161A1BR2	Function cancellation for selector switch To cancel the function selection by select switch (13).
16		DIS-16002	Total amount (downfeed increment) selector switch (in metric). Use selector switch (16) together with downfeed dial ring to set required downfeed amount. (Please refer to p.21) max. Auto downfeed amount=9 mm (in metric) push button (22) to confirm the total amount set



			by selector switch (16).
17/18	DIS-16002		Rough grinding step increment selector switch (in metric). Rough grinding step increment=0.001mm~0.04mm(at interval of 0.001mm). Setting on (17)+setting on (18)=rough grinding step increment. (Maximum is 0.04mm)
19	DIS-16002		Finish grinding step increment selector switch (in metric). Finish grinding step increment=0.001mm~0.009mm(at interval of 0.001mm). Finish pass will start for the last 0.1mm of total amount.  * To reset this function, switch to zero position.
20	S14	C04-12SW-1	Spark-out selector switch Spark-out 1~9 times, to ensure a fine finish of workpiece.
21	R3	C79-VR105A	Variable elevation amount adjust switch To preset rising amount for the wheelhead, The wheelhead is raised up on completion of grinding cycle.
22		C20-161A1B3	Set button (input confirmation button) To confirm the settings on selector switch (16). The m/c will act according to new settings by pushing button (22). Do not use this button during the auto grinding cycle proceeding unless you want to change total downfeed setting.  Usage: <ol style="list-style-type: none"><li>1. Before starting the grinding cycles, make the m/c to accept downfeed settings.</li><li>2. During grinder cycle, if a change of downfeed amount is needed. Rotate selector switch 16, and reconfirm with push button 22.</li></ol>
23		C99-VR500KB	Demagnetizing time adjust switch To adjust demagnetizing time  Larger work-piece, and high carbon containing work-pieces like tool

steel,SKD,SKH,SKS,SCM,CNCM,ect.take longer  
time to demagnetize.

- 24 C99-VR50KB Magnetizing power adjust switch  
To adjust magnetizing power,  
Status of power shown on (D15)
- 25 C93-30SW2A1B Magnetize/demagnetize selector switch  
(a) On-position is to magnetize. Use  
adjusting switch (24) to adjust power of  
magnetism.  
(b) Middle-position is to stop chuck  
function and the hydraulic system.  
(c) Off-position is to demagnetize. Use  
adjusting switch (23) to adjust time of  
demagnetizing.
- 26 S16 C20-161A1BG1 Hydraulic start push-button  
To start hydraulic system for the table.  
\* Hydraulic system starts interlocked with  
chuck control and table parking.  
\* See Operation manual P.41
- 27 S15 C20-161A1BR1 Hydraulic stop push-button
- 28 C20-161A1BW3 Step increment jog push-button  
\* Jogging amount can be pre-set, range is  
from 0.001mm to 0.04mm. Please select the  
amount by changing rough grinding step  
increment selector switch (17) and (18).  
This function is available while the light  
of push-button (14) is on. Increment amount  
is related to the setting on selector  
switch (17) and (18).

Operation method:

Hold push-button (28), then push (12).

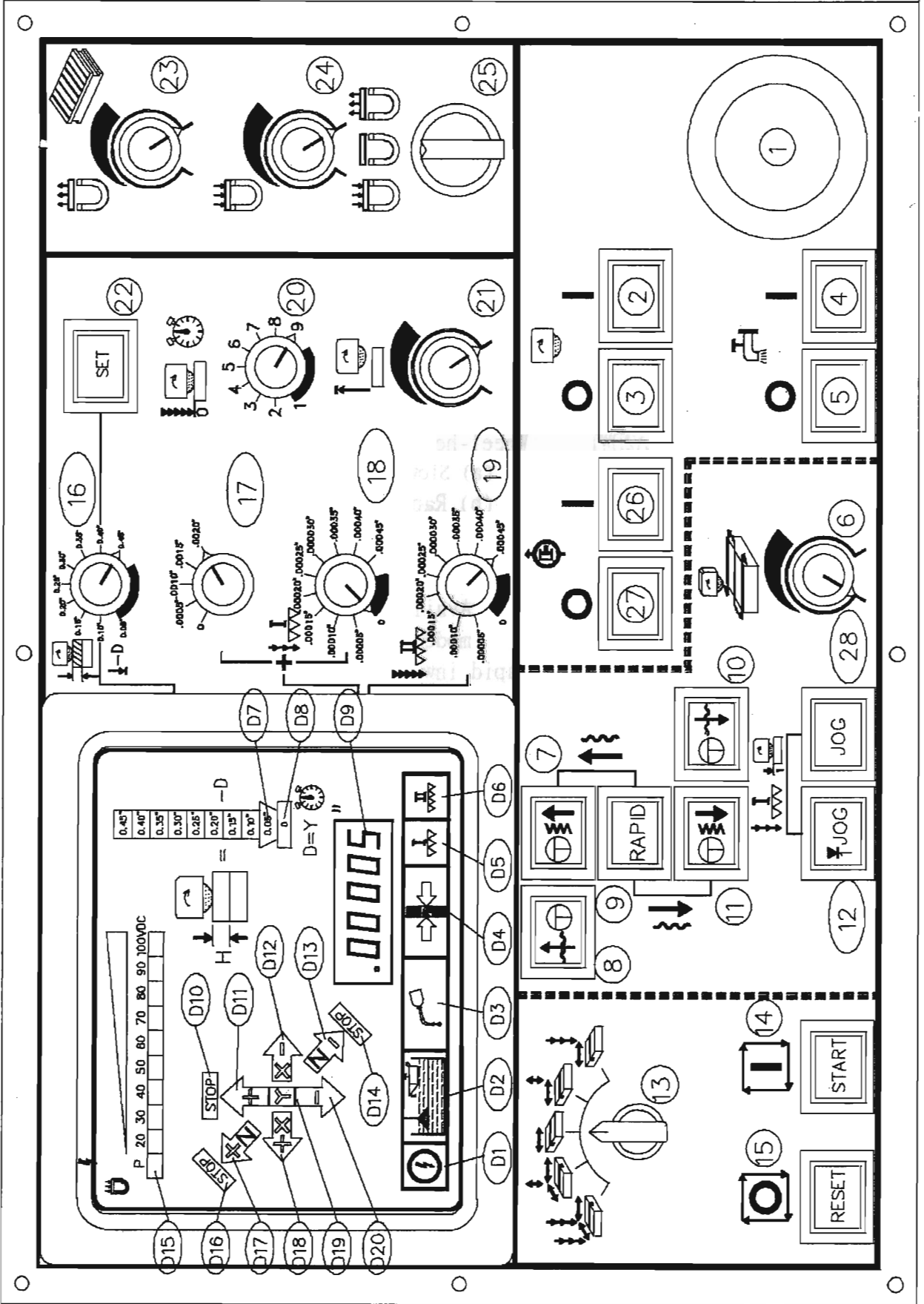
Description of DISPLAY SCREEN for AHD series (OPERATION INSTRUCTION)

D1	DIS-16002	Power indicator lamp Light on represents normal power supply.
D2	DIS-16002	Lubricant oil inadequacy indicator lamp Light on represents that lubricant oil is not enough, need to add more.
D3	DIS-16002	Lubricant performance status indicator lamp Light on represents normal lubricant oil supply (Lubricant pump is activated by starting hydraulic system.) Light not on could be caused by: 1.Lubricant pump did not start. 2.Oil filter is blocked. 3.Oil pressure is not enough. 4.Power supply for lubricant pump is off. 5.Lubricant pump is out of order.
D4	DIS-16002	Crossfeed locking indicator To indicate the crossfeed has been locked.
D5	DIS-16002	Rough grinding indicator lamp Light on represents that rough-grinding is proceeding. Step increment is relative to selector switch (17), (18).
D6	DIS-16002	Finish grinding indicator lamp Light on represents that finish-grinding is proceeding. Step increment is relative to selector switch (19). The procedure proceeds for the last 0.1mm of total downfeed amount.
D7	DIS-16002	Total downfeed amount indicator lamp(in metric) To indicate current total downfeed amount. Actual downfeed amount to be proceeded = (total downfeed amount indicated on D6)- (reading on downfeed dial ring.)
D8	DIS-16002	Spark-out indicator lamp Light on represents pre-set spark-out passes, relative to selector switch (20), are being taken. All motors are automatically stopped on completion of spark out passes.
D9	DIS-16002	Downfeed step increment (in metric). Display proceeding downfeed step increment in inches relative to selector switch (17), (18) or (19).

D10	DIS-16002	Upper limits indicator lamp Light on represents the upper limit of vertical travel is reached by the wheel-head, upward movement is automatically turned off.
D11	DIS-16002	Upward movement indicator lamp Light on represents wheel-head upward movement is proceeding.
D12	DIS-16002	Table rightward movement indicator lamp Light on represents table rightward movement is proceeding.
D13	DIS-16002	Saddle inward movement indicator lamp Light on represents the saddle inward movement is proceeding.
D14	DIS-16002	Saddle inner limit indicator lamp Light on represents the saddle inner limits is reached, inward movement is automatically turned off.
D15	DIS-16002	Magnetizing/demagnetizing indicator lamp 10 steps, to indicate magnetizing power, or demagnetizing time. Power supply output voltage range from 20V to 100V.
D16	DIS-16002	Saddle outer limits indicator lamp Light on represents the saddle outer limit is reached, outward movement is automatically turned off.
D17	DIS-16002	Saddle outward movement indicator lamp Light on represents saddle outward movement is proceeding.
D18	DIS-16002	Table leftward movement indicator lamp Light on represents table leftward movement is proceeding.
D19	DIS-16002	Upward/downfeed movement by stepping motor indicator lamp. Light on represents that stepping motor is being activated. 1. Slow upward feed is proceeding:(D11)and (D19) are lightd 2. Slow downfeed is proceeding:(D20)and(D19)are lighted. 3. Jog movement is preceeding:(D19)is lighted.
D20	DIS-16002	Downward movement indicator lamp Light on represent rapid/slow downward movement is proceeding.

Light of (D20) keeps on during auto grinding cycles.

6.2: CONTROL PANEL LAYOUT FOR AHD (in inches) SERIES.



6.2.1 Description of control panel for AHD series (Operation instruction)

NO.	ELECTRICAL CODE NO.	P/N	SYMBOLIC DEFINITION DESCRIPTION
1	S0	C25-22R1B	Emergency stop button To stop all motors and functions.
2	S1	C20-161A1BG1	Spindle (wheel-head) start push button To start the spindle (wheel head).
3	S2	C20-161A1BR1	Spindle (wheel-head) stop push button To stop the spindle (wheel head).
4	S6E	C20-161B1BG1	Coolant pump start button To start the coolant system.
5	S7E	C20-161B1BR1	Coolant pump stop button To stop the coolant system.
6	R2	C79-VR105A	Variable step increment of crossfeed selector switch To select required step increment of crossfeed in auto mode.
7	S15E	C19-162A2BW1	Wheel-head slow up button (a) Slow up movement activated by button (7). (b) Rapid up movement activated by button (7) and (9) – Push the two buttons together.  * Available only in manual surface/plunge modes selector switch (13).
8	S16E	C20-161A1BW1	Rapid inward crossfeed movement button (a) To move saddle inward, available only in manual surface mode (by switch (13)) and light of reset button (15) is on. (b) To toggle outward crossfeed movement to inward, available only in auto/manual surface modes and when light of start button (14) is on.
9	S17E	C19-162A2BW2	Rapid up/down confirm push button (a) Push (9) and (7) together to get rapid up movement; push (9) and (11) together to get rapid down movement.  * Push (9) only will get no movement.
10	S4E	C19-162A2BW3	Rapid outward crossfeed movement pushes button (a) Available only in manual surface mode selected on (13) and light of reset push button (15) is on. Toggle inward movement to outward under auto/manual surface mode (available only when light of start push button (14) is on).

11	S5	C19-162A2BW4	Wheel-head slow down push button Push (11) to get slow down. Push (11) and (9) together to get rapid down movement.  * Available only under manual surface/plunge modes on (13).
12	S18E	C20-161A1B2	Downfeed jogging push button In inches, 0.00005" downfeed increment per push.
13	S8	C03-5SW-2	Grinding mode selector switch Five selections as follows  A. Auto surface mode In this mode, automatic feeds in 3 axis, hydraulic feed, crossfeed, vertical feed are provided. (a) When light of buttons (15), (25) is on 1. Rapid in/out by (8), (10). 2. Wheel-head up/down movement by button (7), (9), (11). 3. Jogging by push button (12). (b) When light of button (14) is on, automatic grinding cycle is activated, the wheel-head is raised and all motors are automatically stopped upon completion of grinding cycle. 1. Step increment of crossfeed by selector switch (6). 2. Jogging by push button (12). 3. Crossfeed in/out direction toggle by button (8), (10). 4. Downfeed functions by selector switch (16), (17), (18), (19), (20) and (21).  B. Manual surface mode: (a) When light of button (15) is on, below functions are available: 1. Rapid in/out by (8), (10). 2. Rapid/slow up/down is by (7), (9) and (11). Jogging is by (12). (b) When light of button (14) is on, start hydraulic table by turning table speed control, adjust selector switch (6) to get required step increment of crossfeed. 1. Crossfeed in/out direction controls by buttons (8), (10).



2.Wheel-head up/down movement by button (7), (9), (11).

C. For hydraulic table turns to the middle position of switch (13).

D. Manual plunge mode:

In this mode, only manual wheelhead feed is on, and cross travel is auto step feed are available.

Rapid in/out saddle motion are disabled.

1.Jogging by push-button (12)

2.Rapid/slow, up/down by push-button (7), (9) and (11).

E. Auto plunge mode,

In this mode:

(a) When light of button (14), (25) is on, automatic grinding cycle is activated. The wheelhead downfeed will start when table motion for grinding cycle.

1. Jogging by push-button (12).

2. Selector switch

(16),(17),(18),(20),(21)and (22)

Note: When changing the position of the button, it will effect the auto cycle.

The wheelhead is raised and all motors are automatically stopped after completion of spark-out cycle.

(b) When the light of push-button is on

1. Jogging by push-button (12).

2. Rapid up/down, rapid in/out are not available.

14	S12E	C20-161A1BG2	Confirmation button for selector switch (13) To confirm the selection by select switch (13).
15	S13E	C20-161A1BR2	Function cancellation for selector switch To cancel the function selection by select switch (13).
16		DIS-16002	Total amount (downfeed increment) selector switch (in inches) Use selector switch (16) together with downfeed dial ring to set the required downfeed amount. (Please refer to p.21) Max. Auto downfeed amount=0.45" (in inches) Pushing button (22) to confirm the total amount set by selector switch (16).
17/18		DIS-16002	Rough grinding step increment selector switch

			(in inches) Rough grinding step increment=0.00005"~0.002"(at interval of 0.00005"). Setting on (17)+setting on (18)=rough grinding step increment. (Maximum is 0.0020")
19		DIS-16002	Finish grinding step increment selector switch (in inches) Finish grinding step increment=0.00005"~0.00045"(at interval of 0.00005") Finish pass will start for the last 0.005" of total amount. * To reset this function, switch to zero position.
20	S14	C04-12SW-1	Spark-out selector switch Spark-out 1~9 times, to ensure a fine finish of workpiece.
21	R3		Variable elevation amount adjust switch To preset rising amount for the wheelhead. The wheelhead is raised up on the completion of grinding cycle.
22		C20-161A1B3	Set button (input confirmation button) To confirm the setting on selector switch (16). The m/c will act according to new settings by pushing button (22). Do not use this button during the auto grinding cycle unless you want to change the total downfeed setting. Usage: 1.Before starting the grinding cycle, make the m/c to accept downfeed setting. 2.After changing total downfeed amount on selector switch (16) during the grinding cycle.
23		C99-VR500KB	Demagnetizing time adjustment switch To adjust demagnetizing time for larger work-piece, and high carbon containing work-pieces, like tool steel,SKD,SKH,SKS,SCM,CNCM,etc. which take longer time to demagnetize.



Description of DISPLAY SCREEN for AHD series (OPERATION INSTRUCTION)

D1	DIS-16002	Power indicator lamp Light on represents normal power supply.
D2	DIS-16002	Lubricant oil inadequacy indicator lamp Light on represents that lubricant oil is not enough, and needs to add more.
D3	DIS-16002	Lubricant performance status indicator lamp Light-on represents normal lubricant oil supply (Lubricant pump is activated by starting hydraulic system.) Light not on could be caused by: 1.Lubricant pump is not started. 2.Oil filter is blocked. 3.Oil pressure is not enough. 4.Power supply for lubricant pump is off. 5.Lubricant pump is out of order.
D4	DIS-16002	Crossfeed locking indicator To indicate the crossfeed has been locked.
D5	DIS-16002	Rough grinding indicator lamp Light on represents that rough-grinding is proceeding. Step increment is indicated by selector switch (17), (18).
D6	DIS-16002	Finish grinding indicator lamp Light on represents that finish-grinding pass is proceeding. Step increment is indicated by selector switch (19). This procedure proceeds for the last 0.005" of total downfeed amount.
D7	DIS-16002	Total downfeed amount indicator lamp (in inches) To indicate current total downfeed amount. Actual downfeed amount to be proceeded = (total downfeed amount indicated on D6)-(reading on downfeed dial ring).
D8	DIS-16002	Spark-out indicator lamp Light on represents pre-set spark-out cycle It's relative to the position of selector switch (20). All motors are automatically stopped on completion of spark out cycle.
D9	DIS-16002	Downfeed step increment (in inches). Display proceeding downfeed step increment in inches. It is indicated by selector

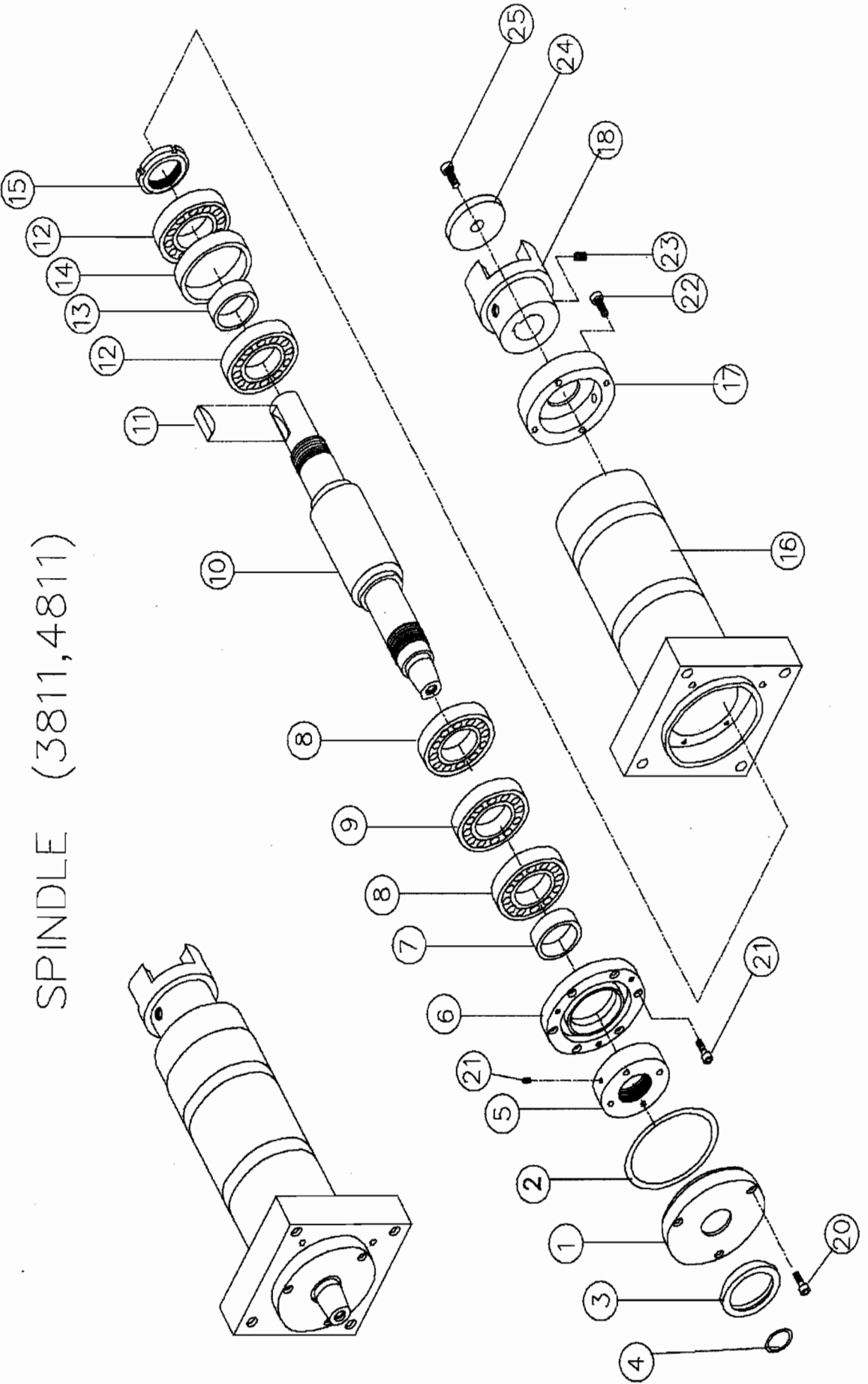
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		switch (17), (18) or (19).
D10	DIS-16002	Upper limits indicator lamp Light on represents the upper limit of vertical travel is reached by the wheel-head. More upward movement is automatically turned off.
D11	DIS-16002	Upward movement indicator lamp Light on represents wheel-head upward movement is proceeding
D12	DIS-16002	Table rightward movement indicator lamp Light on represents table rightward movement is proceeding.
D13	DIS-16002	Saddle inward movement indicator lamp Light on represents the saddle inward movement is proceeding
D14	DIS-16002	Saddle inner limit indicator lamp Light on represents the saddle inner limits is reached. More inward movement is automatically turned off.
D15	DIS-16002	Magnetizing/demagnetizing indicator lamp 10 steps, to indicate magnetizing power, or demagnetizing time. Power supply output voltage ranges from 20V to 100V.
D16	DIS-16002	Saddle outer limits indicator lamp Light on represents the saddle outer limit is reached. More outward movement is automatically turned off.
D17	DIS-16002	Saddle outward movement indicator lamp Light on represents saddle outward movement is proceeding.
D18	DIS-16002	Table leftward movement indicator lamp Light on represents table leftward movement is proceeding.
D19	DIS-16002	Upward/downfeed movement by stepping motor indicator lamp Light on represents that stepping motor is being activated. 1.Slow upward feed is proceeding:(D11)and (D19) are lighted 2.Slow downfeed is proceeding:(D20)and(D19)are lighted. 3.Jog movement is preceeding:(D19)is lighted.
D20	DIS-16002	Downward movement indicator lamp

Light on represent rapid/slow downward  
movement is proceeding.

Light of (D20) keeps on during auto  
grinding cycles.

SPINDLE (3811,4811)

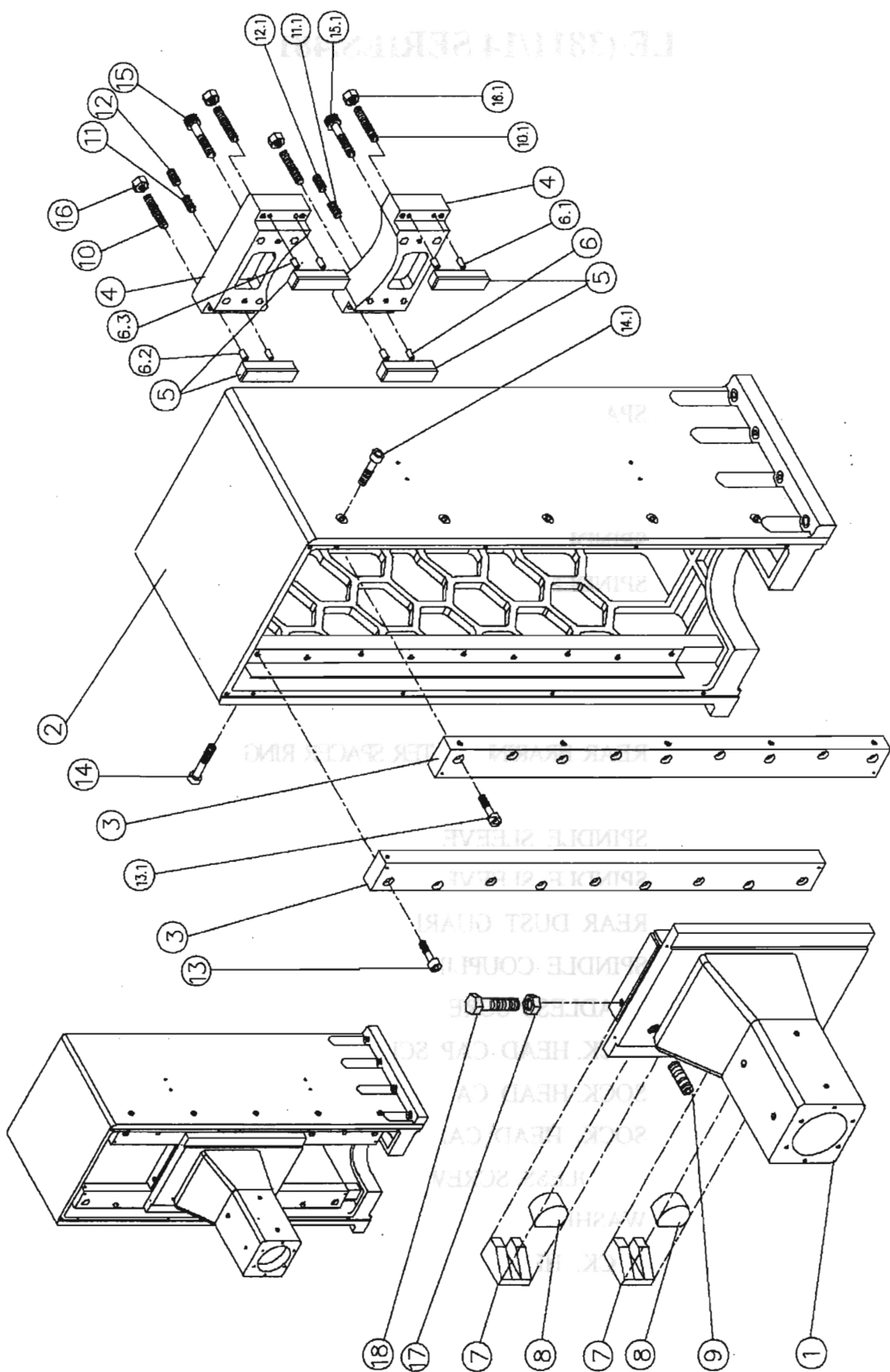


## SPINDLE (3811/14 SERIES,4811/16 SERIES)

NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
1.	381004-1	FRONT DUST GUARD	1	
2.		O-RING	1	P120
3	381039		1	
4		O-RING	1	P45
5.	381005	SPINDLE FRONT NUT	1	
6.	381006-1	FRONT BEARING PRESSING PLATE	1	
7.	381042	SPACER RING	1	
8.		BEARING	2	7210
9.		BEARING	1	NN21OWP6
10	381003	SPINDLE	1	12 SERIES
10	481003	SPINDLE	1	16 SERIES
11.		SETTING KEY	2	R16x10L
12.		BEARING	2	7210
13	381007	INNER SPACER RING	1	
14.	381008	REAR BRARING OUTER SPACER RING	1	
15.	381009	SPINDLE REAR NUT	2	AN16
16.	381002	SPINDLE SLEEVE	1	12 SERIES
16	481002	SPINDLE SLEEVE	1	16 SERIES
17.	381010	REAR DUST GUARD	1	
18.	381011	SPINDLE COUPLING	1	
19.		HEADLESS SCREW	2	M6x8L
20.		SOCK. HEAD CAP SCREW	4	M6x25L
21.		SOCK. HEAD CAP SCREW	6	M6x25L
22.		SOCK. HEAD CAP SCREW	4	M6x30L
23.		HEADLESS SCREW	2	M8x10L
24.	381014	WASHER	1	
25.		SOCK. HEAD CAP SCREW	1	M12x30L



COLUMN (3821,3821H,4821,4821H)



**COLUMN (3821,3821H/14SERIES,4821,4821H/16SERIES)**

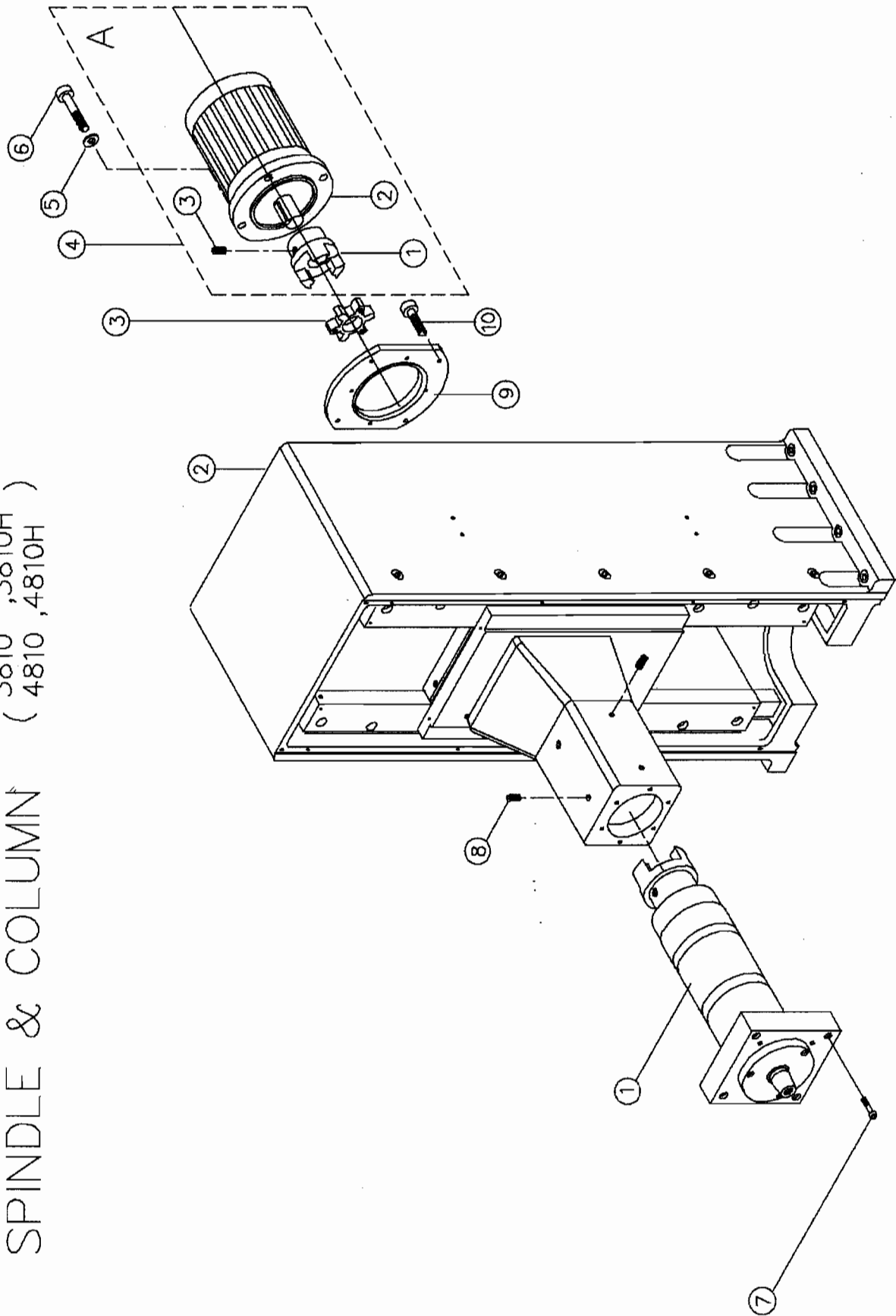
(3821,4821,STANDARD COLUMN/3821H,4821H,HIGH COLUMN)

NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
1.	381001-1	SPINDLE SEAT	1	14 SERIES
1	481001-1	SPINDLE SEAT	1	16 SERIES
2.	382001A	STANDARD COLUMN	1	3821,4821
	382001B	HIGH COLUMN	1	3821H,4821H
3.	382003A	STANDARD COLUMN RAIL	2	3821,4821
	382002B	HIGH COLUMN RAIL	2	3821H,4821H
4.	382002-2	SPINDLE SEAT 'S PRESSING PLATE	2	
5.	252013	VERTICAL BACK SLIDE PLATE	4	
6.		DOWEL PIN	2	D8x20L
6.1		DOWEL PIN	2	D8x20L
6.2		DOWEL PIN	2	D8x20L
6.3		DOWEL PIN	2	D8x20L
7.	382015	VERTICAL SLIDE PLATE	2	
8.	252012	VERTICAL SLIDE PLATE ADJUSTING BLOCK	2	
9.		HEADLESS SCREW	1	M12x25L
10.		HEADLESS SCREW	4	M10x70L
10.1		HEADLESS SCREW	4	M10x70L
11.		HEADLESS SCREW	1	M10x30L
11.1		HEADLESS SCREW	1	M10x30L
12.		HEADLESS SCREW	1	M10x10L
12.1		HEADLESS SCREW	1	M10x10L
13.		SOCK. HEAD CAP SCREW	11	M10x60L(3821,4821)
13.		SOCK. HEAD CAP SCREW	12	M10x60L(4821H,4821H)
13.1.		SOCK. HEAD CAP SCREW	11	M10x60L(3821,4821)
13.1.		SOCK. HEAD CAP SCREW	12	M10x40L(3821H,4821H)
14.		SOCK. HEAD CAP SCREW	6	M10x40L(3821,4821)
14.		SOCK. HEAD CAP SCREW	6	M10x40L(3821H,4821H)
14.1.		SOCK. HEAD CAP SCREW	6	M10x40L(3821,4821)
14.1.		SOCK. HEAD CAP SCREW	7	M10x40L(3821H,4821H)
15.		SOCK. HEAD CAP SCREW	4	M12x100L

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15.1	SOCK. HEAD CAP SCREW	4	M12x100L
16	NUT	4	M10
16.1	NUT	4	M10
17.	NUT	1	M12
18.	HEX SOCKET SCREW	1	M12*70L

SPINDLE & COLUMN ( 3810 , 3810H )  
( 4810 , 4810H )



## SPINDLE & COLUMN

**(3810,3810H/14 SERIES,4810,4810H/16 SERIES)**

**(3810/4810 STANDARD COLUMN,3810H/4810H HIGH COLUMN)**

NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
1.	3811	SPINDLE	1	14 SERIES
1	4811	SPINDLE.1	1	16 SERIES
2	3821(4821)	STANDARD COLUMN	1	PL-02
2	3821H(4821H)	HIGH COLUMN	1	PL-02
3.	382012	RUBBER COUPLING	1	
4.	A	SPINDLE MOTOR	1	
5.		SPRING WASHER	4	φ 12
6.		SOCK. HEAD CAP SCREW	4	M12x40L
7.		SOCK. HEAD CAP SCREW	4	M12x40L
8.		HEADLESS SCREW	8	M10x10L
9.	381037	MOTOR LENGTHENING PLATE	1	(7.5HP/10HP MOTOR USE)
10		SOCK. HEAD CAP SCREW	4	M6x25L(7.5HP/10HP MOTOR USE)

### A. SPINDLE MOTOR

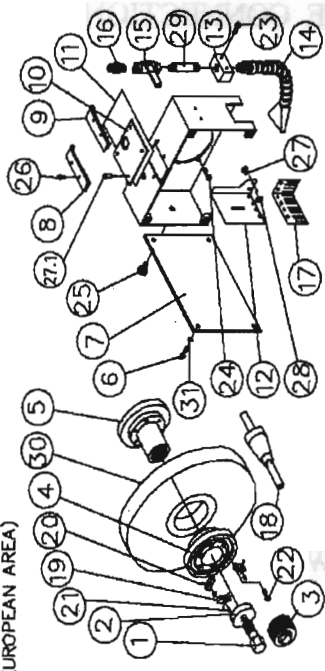
NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
1.	381013A	MOTOR COUPLING	1	
2	7.5HP4PXXX/XXXV	SPINDLE MOTOR	1	7.5HP
2	10HP4PXXX/XXXV	SPINDLE MOTOR	1	10HP
3.		HEADLESS SCREW	2	M8*10L

GRINDING WHEEL & COLUMN ( 3812 ,3813 ,3822,3822H,2512A )  
 ( 3823,3823H,3824,3813E,3813AE )

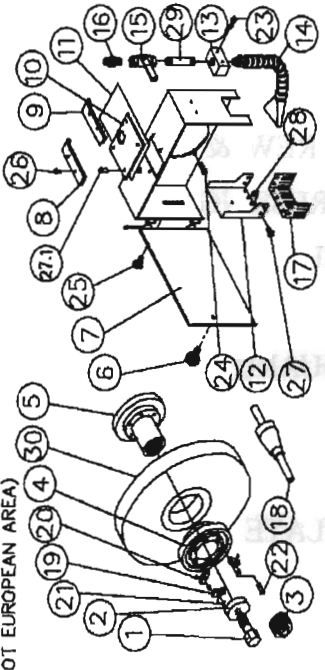
GRINDING WHEEL & WHEEL GUARD

A

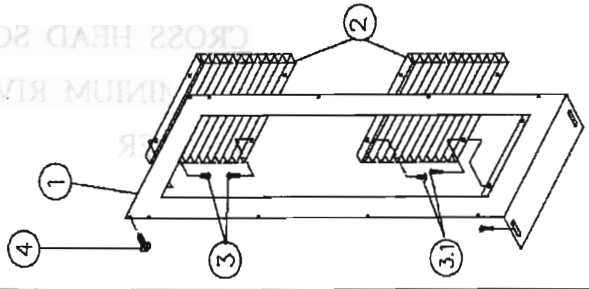
A.1 (FOR EUROPEAN AREA)



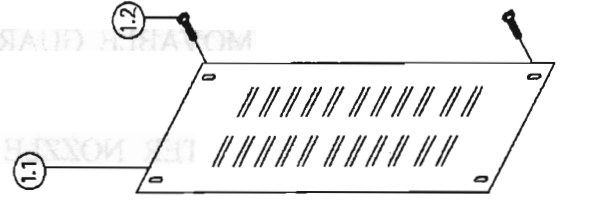
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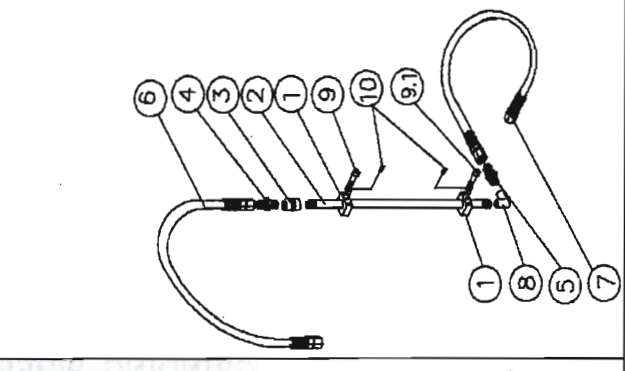
B



C



D



A.1 GRINDING WHEEL & WHEEL GUARD (3812E, 3813E)  
 (FOR EUROPEAN AREA)

NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
1.	381017	LOCK BOLT	1	
2.	381018	WASHER	1	
3.	381022	WHEEL EXTRACT SCREW & NUT	1	
4.	381020	GRINDING WHEEL PRESSING PLATE	1	
5.	381019-1	GRINDING WHEEL HUB	1	
6.		CROSS HEAD SCREW	4	M8x14L
7.	381028E(381040E)	GRINDING WHEEL GUARD	1	
8.	381031	LEFT DUST RAIL	2	
9.	381032	RIGHT DUST RAIL	1	
10.	381029	MOVABLE GUARD PLATE	1	
11.	381030	MOVABLE GUARD SHEET	1	
12.	381033E	SPLASH GUARD	1	
13.	381025	WATER NOZZLE SEAT	1	
14.		WATER NOZZLE	1	1/2PT
15.		BALL VALVE	1	1/2PT
16.		HIGH PRESSURE PIPE CONNECTION	1	1/2PTx3/8PH
17.	381034	DUST RUBBER PIECE	1	
18.	381035	BALANCING ARBOR	1	
19.	381021	BALANCE BLOCK	3	
20.		STEEL BALL	3	D4
21.		HEADLESS SCREW	3	M5x5L
22.		INNER HEX SCREW	6	M6x50L
23.		INNER HEX SCREW	2	M6x12L
24.		INNER HEX SCREW	4	M8x20L
25.		INNER HEX SCREW	1	M6x14L
26.		CROSS HEAD SCREW	4	M6x10L
27.		ALUMINIUM RIVET	8	D3x5L
28.		WASHER	8	M3
29.		WATER PIPE	1	1/2PTx2"L
30.		12" GRINDING WHEEL	1	355x127x50MM

**A.2 GRINDING WHEEL & WHEEL GUARD (3812, 3813)**

(NOT EUROPEAN AREA)

NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
1.	381017	LOCK BOLT	1	
2.	381018	WASHER	1	
3.	381022	WHEEL EXTRACT SCREW & NUT	1	
4.	381020	GRINDING WHEEL PRESSING PLATE	1	
5.	381019-1	GRINDING WHEEL HUB	1	
6.	381024	GRINDING WHEEL GUARD BOLT	1	
7.	381028-1	GRINDING WHEEL GUARD	1	
8.	381031	LEFT DUST RAIL	2	
9.	381032	RIGHT DUST RAIL	1	
10.	381029	MOVABLE GUARD PLATE	1	
11.	381030	MOVABLE GUARD SHEET	1	
12.	381033	SPLASH GUARD	1	
13.	381025	WATER NOZZLE SEAT	1	
14.		WATER NOZZLE	1	1/2PT
15.		BALL VALVE	1	1/2PT
16.		HIGH PRESSURE PIPE CONNECTION	1	1/2PTx1/2PH
17.	381034	DUST RUBBER PIECE	1	
18.	381035	BALANCING ARBOR	1	
19.	381021	BALANCE BLOCK	3	
20.		STEEL BALL	3	D4
21.		HEADLESS SCREW	3	M5x5L
22.		INNER HEX SCREW	6	M6x50L
23.		INNER HEX SCREW	2	M6x12L
24.		INNER HEX SCREW	4	M8x20L
25.		INNER HEX SCREW	1	M6x14L
26.		CROSS HEAD SCREW	4	M6x10L
27.		ALUMINIUM RIVET	8	D3x5L
28.		WASHER	8	M3
29.		WATER PIPE	1	1/2PTx2"L
30.		12" GRINDING WHEEL	1	355x50x127MM



**B. COLUMN FRONT DUST FENDER  
 (3822,3822H/HIGH COLUMN)**

NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
1.	382014A	STANDARD COLUMN FRONT FENDER	1	3822
1.	382014B	STANDARD COLUMN FRONT FENDER	1	3822H
2.	382005	COLUMN FRONT DUST SHEET	2	
3.		CROSS HEAD SCREW	4	M4x10L
3.1		CROSS HEAD SCREW	4	M4x10L
4.		CROSS HEAD SCREW	12	M6x8L

**C. COLUMN REAR DUST FENDER (3823L)**

NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
2.1	382009C-1	COLUMN REAR DUST FENDER (3823L)	1	FOR75/10HPMOTOR
2.2		CROSS HEAD SCREW	4	M6x10L

**D. WATER PIPE (3824)**

NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
1.	382011	WATER PIPE'S FIXING BLOCK	2	
2.	382012	WATER PIPE	1	
3.		INSIDE THREAD STRAIGHT CONNECTION	2	1/2PT
4.		HIGH PRESSURE PIPE CONNECTION	1	1/2PTx1/2PH
5.		HIGH PRESSURE PIPE CONNECTION	1	1/2PTx1/2PH
6.		HIGH PRESSURE PIPE	1	1/2PTx1310L
7.		HIGH PRESSURE PIPE	1	1/2PHx1000L
8.		INSIDE THREAD 90° CONNECTION	1	1/2PT
9.		INNER HEX SCREW	4	M6x55L
10.		INNER HEX HEADLESS SCREW	2	M6x6L



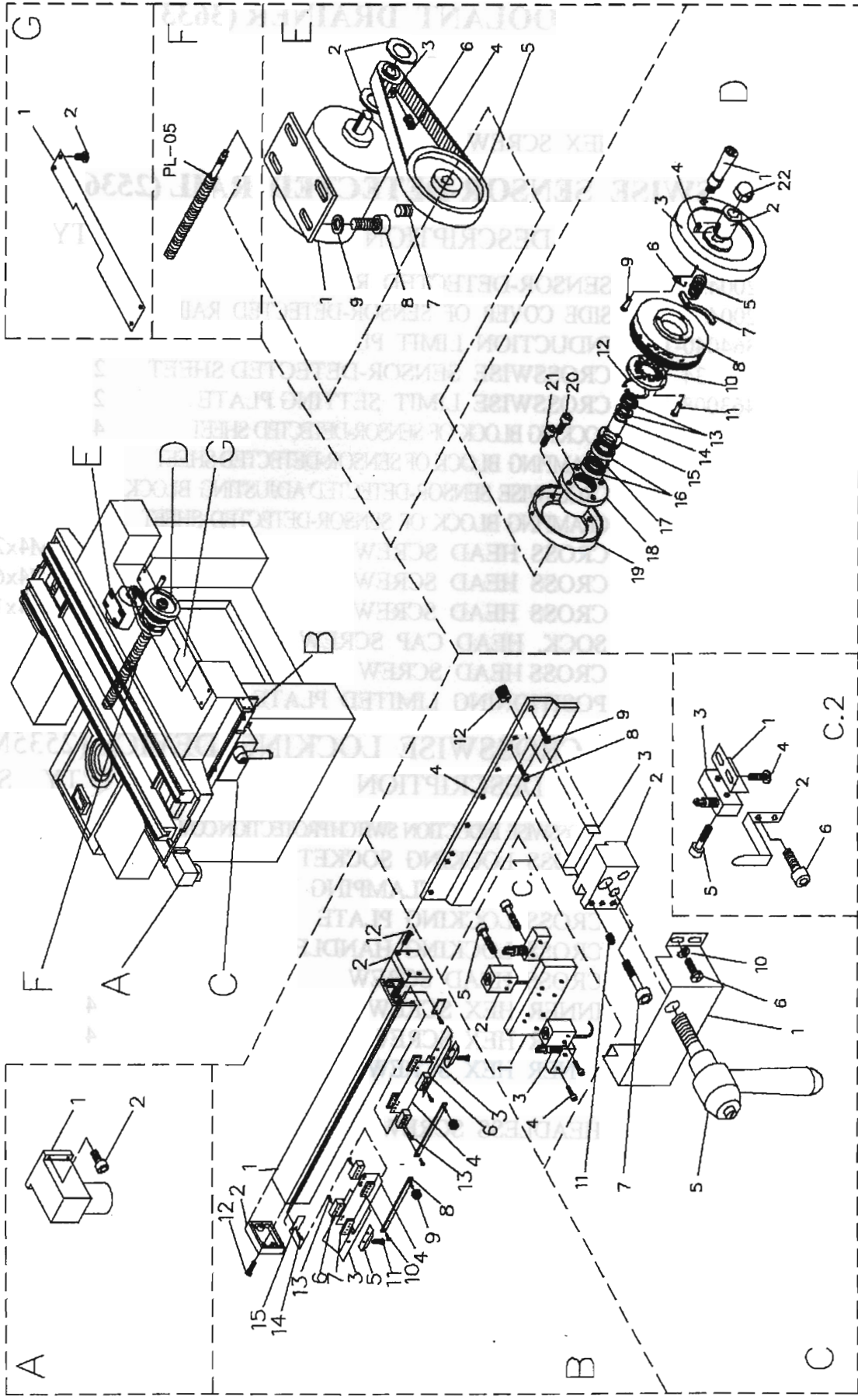
**CROSSWISE SCREW SET (3631,3631N): BALL SCREW (OPTIONAL)**  
 (FOR14 SERIES)

NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
1.	363006-1	NUT SEAT	1	
2.	363002G	CROSSWISE BALL SCREW	1	MM (3631)
2	363002H	CROSSWISE BALL SCREW	1	INCH (3631N)
3.		SETTING KEY	1	5x5x20L
4.		SETTING KEY	1	5x5x10L
5.		SOCKET SCREW	4	M6x16L
6.		SOCKET SCREW	4	M12x35L
7.		WASHER	4	φ 12
8.		SPRING WASHER	4	φ 12

**CROSSWISE SCREW SET (4631,4631N): BALL SCREW (OPTIONAL)**  
 ( FOR 16 SERIES)

NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
1.	363006-1	NUT SEAT	1	
2.	463002G2	CROSSWISE BALL SCREW	1	MM (4631)
2	463002H2	CROSSWISE BALL SCREW	1	INCH (4631N)
3.		SETTING KEY	1	5x5x20L
4.		SETTING KEY	1	5x5x12L
5.		SOCKET SCREW	4	M6x16L
6.		SOCKET SCREW	4	M12x35L
7.		WASHER	4	φ 12
8.		SPRING WASHER	4	φ 12

SADDLE CROSSWISE DRIVE  
 ( 2532,2532N,3634,2536 )  
 ( 3637,3633,3639 )



**A. COOLANT DRAINER (3633)**

NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
1.	364026	COOLANT DRAINER	1	
2.		HEX SCREW	4	M6x16L

**B. CROSSWISE SENSOR-DETECTED RAIL (2536)**

NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
1.	200430	SENSOR-DETECTED RAIL	1	
2.	200431	SIDE COVER OF SENSOR-DETECTED RAIL	2	
3.	364040-1	INDUCTION LIMIT PLATE	2	
4.	200434	CROSSWISE SENSOR-DETECTED SHEET	2	
5.	463008	CROSSWISE LIMIT SETTING PLATE	2	
6.	200432	LOCKING BLOCK OF SENSOR-DETECTED SHEET	4	
7.	200427	CLAMPING BLOCK OF SENSOR-DETECTED SHEET	4	
8.	463011-1	CROSSWISE SENSOR-DETECTED ADJUSTING BLOCK	1	
9.	200427	CLAMPING BLOCK OF SENSOR-DETECTED SHEET	2	
10.		CROSS HEAD SCREW	4	M4x20L
11.		CROSS HEAD SCREW	4	M4x6L
12.		CROSS HEAD SCREW	8	M4x16L
13.		SOCK. HEAD CAP SCREW	8	M4x14L
14.		CROSS HEAD SCREW	2	M4x6L
15.	200437	POSITIONING LIMITED PLATE	2	

**C. CROSSWISE LOCKING DEVICE (2535M)**

NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
1.	463004-1	CROSSWISE INDUCTION SWITCH PROTECTION COVER	1	
2.	463015	CROSS LOCKING SOCKET	1	
3.	463017	CROSS LOCK CLAMPING PLATE	1	
4.	463013-1	CROSS LOCKING PLATE	1	
5.	463012-1	CROSS LOCKING HANDLE	1	
6.		CROSS HEAD SCREW	4	M5x8L
7.		INNER HEX SCREW	4	M8x65L
8.		INNER HEX SCREW	4	M6x16L
9.		INNER HEX SCREW	5	M4x10L
10.		WASHER	4	D5
11.		HEADLESS SCREW	3	M6x8L
12.	463014	FRICITION SCREW	1	M12x15L

C.1 CROSSWISE PROXIMITY SWITCH(2535A1)

NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
1.	463003-1	CROSS PROXIMITY SWITCH SOCKET	1	17x17x28
2.		PROXIMITY SWITCH	2	PNP5MM PL QSP
3.		LIMIT SWITCH	2	Z-15GQ22-B
4.		SOCK. HEAD CAP SCREW	4	M4x25L
5.		CROSS HEAD SCREW	4	M3x25L

C.2 CROSSWISE SAFETY SWITCH(2535A2)

NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
1.	463016	SAFETY SWITCH FIXED PLATE	1	
2.	253025	CROSS TRAVEL INDICATOR	1	
3.		LIMIT SWITCH	1	Z-15GQ22-B
4.		SOCK. HEAD CAP SCREW	2	M5x10L
5.		SOCK. HEAD CAP SCREW	2	M4x25L
6.		SOCK. HEAD CAP SCREW	2	M5x10L

D CROSSWISE SCALE RING & HAND WHEEL  
 ( 2532 B2, 2532M A2 )

NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
1.	100237	FOLDING HANDLE	1	
2.	363051	HANDWHEEL WASHER	1	
3.	363009-2	HAND WHEEL	1	
4.		SETTING KEY	1	6x6x10L
5.	363053	DISK COMPRESSION SPRING	1	
6.	363052	SPRING	1	
7.	363050	SAFE POSITIONING PLATE	1	
8.	363010A1	FEEDING SCALE RING	1	MM (2532 B2)
8	363010E1	FEEDING SCALE RING	1	INCH (2532 A2)
9.		GIB HEADED PIN	1	d6xD9x25L
10.	363011-1	FIXED DISK GEAR	1	
11.		SOCK. HEAD CAP SCREW	1	M5x16L
12.		C-RETAINING RING	1	Cd26
13.	253011	REAR LOCKING NUT	2	
14.	253010	BEARING BUSH	1	
15.	253008	BEARING LOCKING NUT	1	
16.		BEARING	2	
17.	253026	BEARING SPACER	1	
18.	253007	BEARING SEAT	1	
19.	363014A	SCALE INDICATING PLATE	1	MM( 2532 B2)
19.	363014E	SCALE INDICATING PLATE	1	INCH (2532 A2)
20.		SOCK. HEAD CAP SCREW	1	M6x20L
21.		SOCK. HEAD CAP SCREW	1	M6x16L
22.		CUP NUT	1	M12

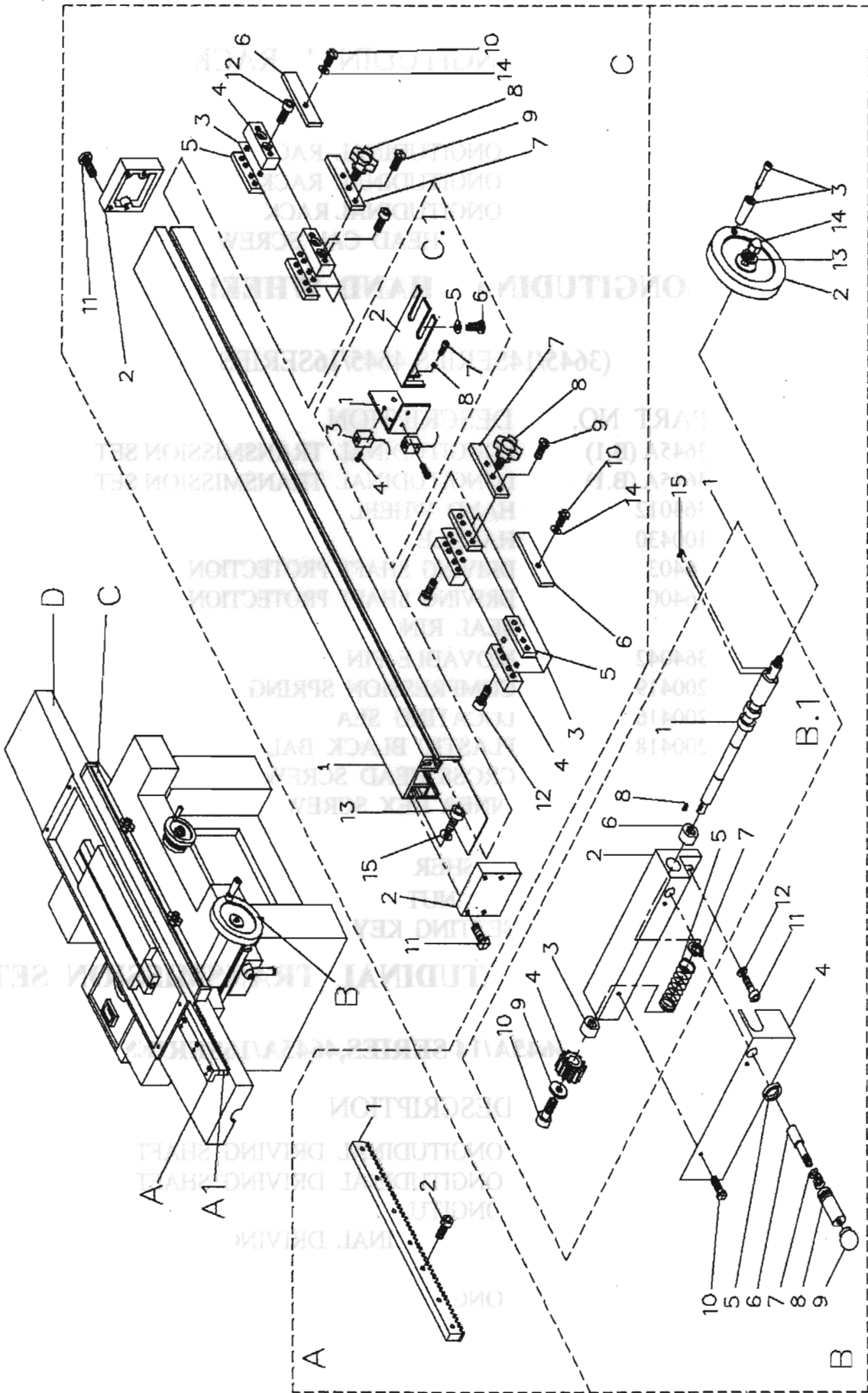
E. CROSSWISE MOTOR SET (2534)

NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
1.	363018	CROSS MOVEMENT MOTOR	1	
2.	200211	RING WASHER	2	
3.	363016	MOTOR PULLEY	1	
4.		TIMING BELT-G	1	200xLx20MM
5.	253015-1	BIG PULLEY	1	
6.		HEADLESS SCREW	2	M5x6L
7.		HEADLESS SCREW	2	M6x10L
8.		SOCK. HEAD CAP SCREW	4	M10x16L
9.		WASHER	4	$\phi$ 10

G. CROSSWISE PROTECTION SET

NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
1.	363019	PROTECTION PLATE	1	1428/1632
1	413002	PROTECTION PLATE	1	1640
2.		CROSS HEAD SCREW	6	M5x8L

TABLE LONGITUDINAL DRIVE





## TABLE LONGITUDINAL DRIVE

### A. LONGITUDINAL RACK SET

NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
1.	373003	LONGITUDINAL RACK	1	1428
1.	384007	LONGITUDINAL RACK	1	1632
1.	414004	LONGITUDINAL RACK	1	1640
2.		SOCK HEAD CAP SCREW	7	M6x20L

### B. LONGITUDINAL HAND WHEEL SET

(3645/14SERIES,4645/16SERIES)

NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
1.	3645A (B.1)	LONGITUDINAL TRANSMISSION SET	1	14 SERIES
1.	4645A (B.1)	LONGITUDINAL TRANSMISSION SET	1	16 SERIES
2.	364012	HAND WHEEL	1	
3.	100430	HANDLE	1	
4.	364035	DRIVING SHAFT PROTECTION COVER	1	14 SERIES
4.	464005	DRIVING SHAFT PROTECTION COVER	1	16 SERIES
5.		SEAL RING	1	$\phi$ 12x $\phi$ 15x3L
6.	364042	MOVABLE PIN	1	
7.	200419	COMPRESSION SPRING	1	
8.	200416	LOCATING SEAT	1	
9.	200418	PLASTIC BLACK BALL	1	
10.		CROSS HEAD SCREW	2	M6x8L
11.		INNER HEX SCREW	2	M8x20L
12.		WASHER	2	$\phi$ 8
13.		WASHER	2	$\phi$ 12
14.		CUP NUT	5	5x12L
15.		SETTING KEY	1	

### B.1 LONGITUDINAL TRANSMISSION SET

(3645A/14 SERIES,4645A/16SERIES)

NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
1.	364010	LONGITUDINAL DRIVING SHAFT	1	14 SERIES
2.	464004	LONGITUDINAL DRIVING SHAFT	1	16 SERIES
2.	364011	LONGITUDINAL DRIVING SEAT	1	14 SERIES
2.	464006	LONGITUDINAL DRIVING SEAT	1	16 SERIES
3.		NEEDLE BEARING	1	RLM1416
4.	200405	LONGITUDINAL DRIVING GEAR	1	
5.		COMPRESSION SPRING	1	1.8x21x150L
6.		NEEDLE BEARING	1	FJ-1712
7.		C-SHAPE RING	1	C17

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8.		SETTING KEY	1	4x12L
9.	200406	GEAR FIXING WASHER	1	
10.		SOCK. HEAD CAP SCREW	1	M5x14L

C. LONGITUDINAL SENSOR-DETECTED SET

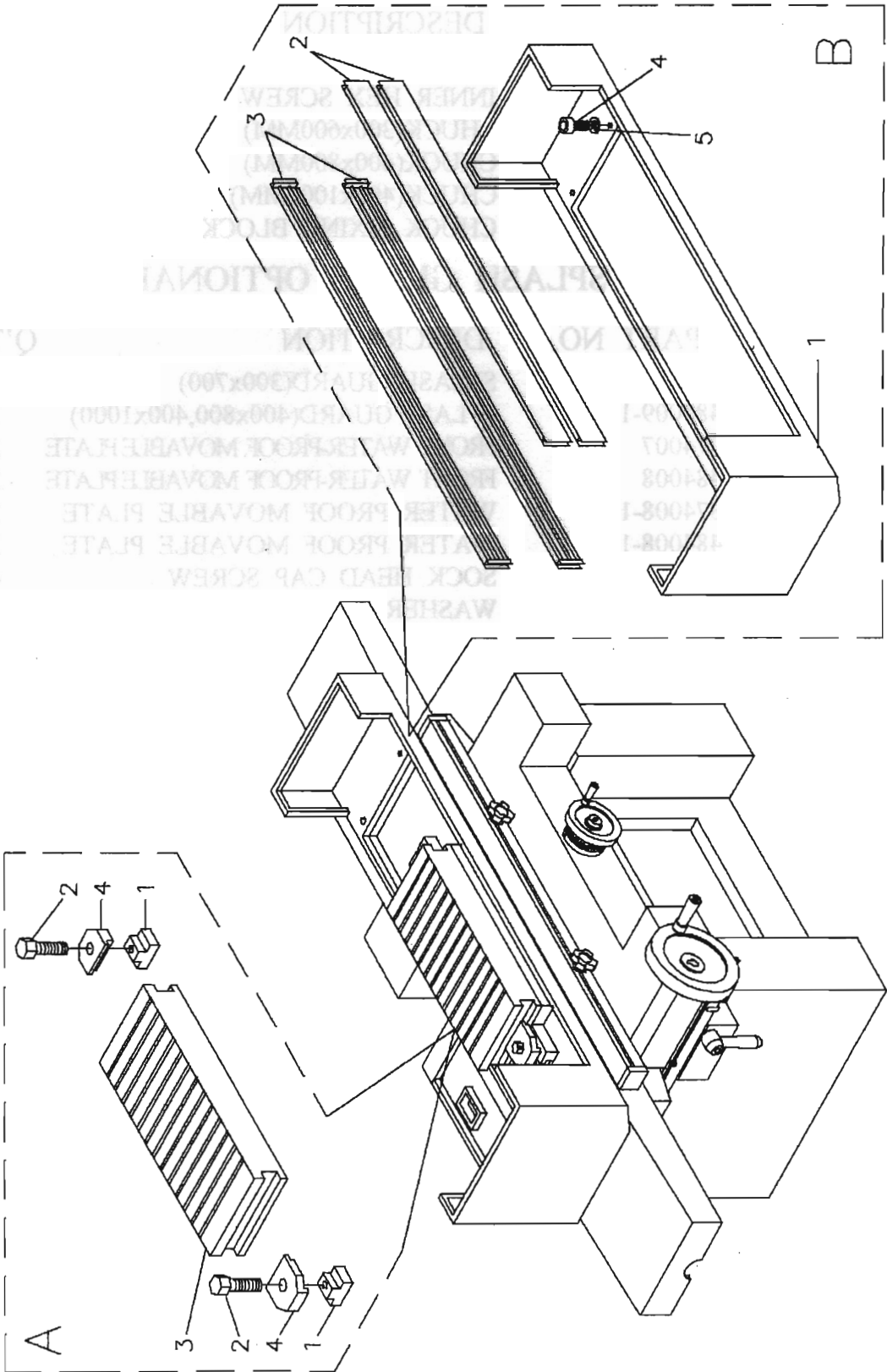
(2544 A1/14 SERIES,3844/16 SERIES)

NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
1.	364004	LONGITUDINAL INDUCTION RAIL	1	1428
1	384003	LONGITUDINAL INDUCTION RAIL	1	1632,1640
2.	200431	SIDE COVER OF INDUCTION RAIL	2	
3.	200434	LONGITUDINAL SENSOR-DETECTED SHEET	2	
4.	200432	LOCKING BLOCK OF SENSOR-DETECTED SHEET	4	
5.	200427	CLAMPING BLOCK OF SENSOR-DETECTED SHEET	4	
6.	200437	LONGITUDINAL LIMIT BLOCK	2	
7.	200428-1	LONGITUDINAL SENSOR ADJUSTING BLOCK	2	
8.	200436	LOBE KNOB	2	
9.		CROSS HEAD SCREW	4	M4x20L
10.		CROSS HEAD SCREW	2	M4x8L
11.		CROSS HEAD SCREW	8	M4x16L
12.		SOCK. HEAD CAP SCREW	8	M5x14L
13.		SOCK. HEAD CAP SCREW	2	M6x16L
14.		SOCK. HEAD PLATE WASHER	2	φ 4
15.		SOCK.HEAD PLATE WASHER	2	φ 6

C.1 PROXIMITY SWITCH (2544A2)

NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
1.	254038	FIXING PLATE	1	
2.	254037	ADJUSTING PLATE	1	
3.		PROXIMITY SWITCH	2	PNP 5MM(17*17*28MM)
4.		CROSS HEAD SCREW	4	M4x10
5.		WASHER	2	φ 5
6.		CROSS HEAD SCREW	2	M5x10L
7.		CROSS HEAD SCREW	2	M4x6L
8.		WASHER	2	φ 4

CHUCK & SPLASH GUARD (2548,3646,4746)



## CHUCK & SPLASH GUARD

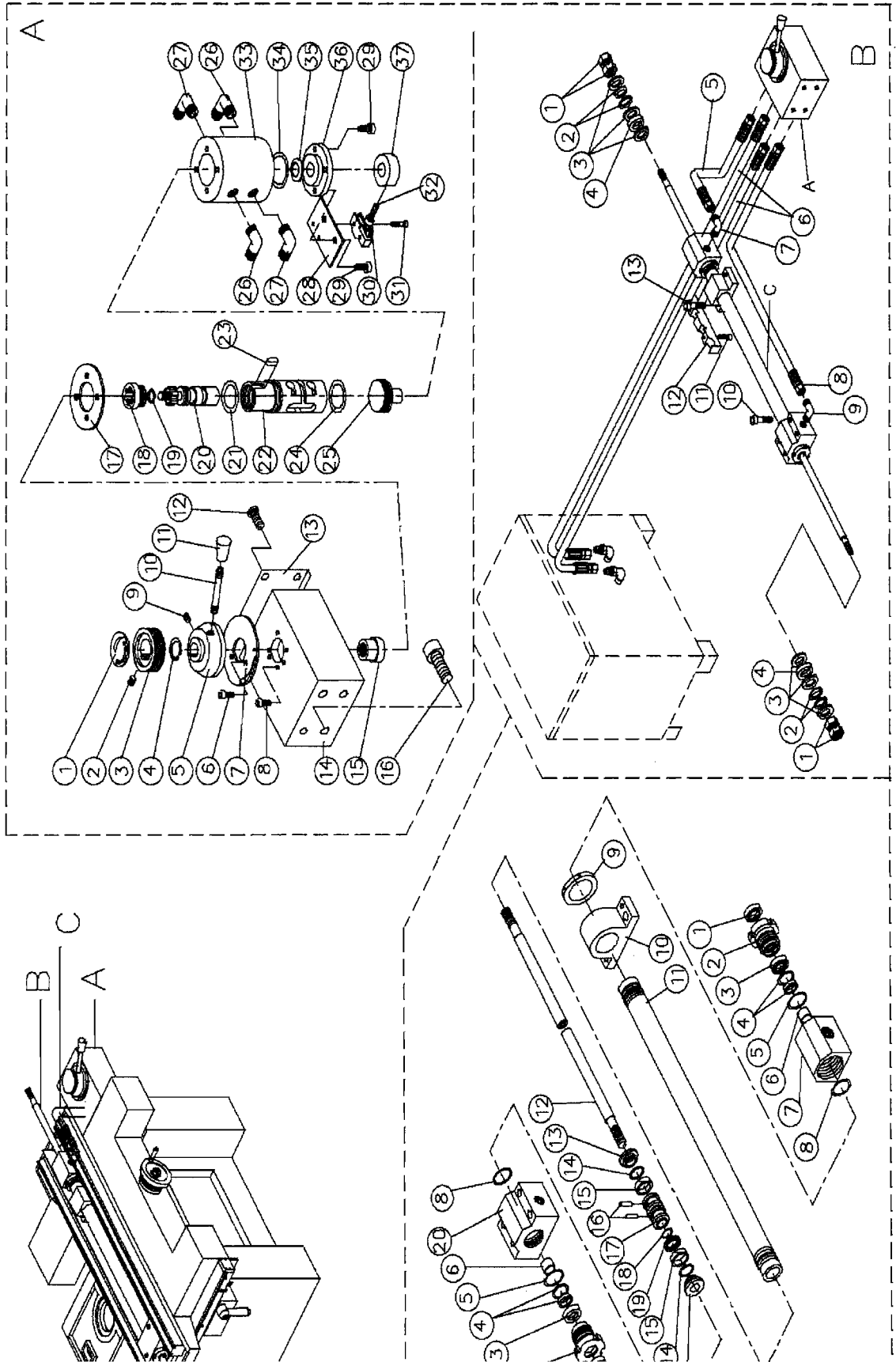
### A. CHUCK OPTIONAL

NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
1.	364034-1	T-NUT	2	
2.		INNER HEX SCREW	2	M12x55L
3.		CHUCK(300x600MM)	1	1428 AHD
3.		CHUCK(400x800MM)	1	1632AHD
3.		CHUCK(400x1000MM)	1	1640AHD
4.		CHUCK FIXING BLOCK	2	

### B SPLASH GUARD OPTIONAL

NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
1.	374013-1	SPLASH GUARD(300x700)	1	1428
1.	484009-1	SPLASH GUARD(400x800,400x1000)	1	1632,1640
2.	374007	FRONT WATER-PROOF MOVABLE PLATE	2	1428
2.	484008	FRONT WATER-PROOF MOVABLE PLATE	2	1632,1640
3.	374008-1	WATER PROOF MOVABLE PLATE	2	1428
3.	484008-1	WATER PROOF MOVABLE PLATE	2	1632,1640
4.		SOCK HEAD CAP SCREW	4	M8x20L
5.		WASHER	4	φ 8

LONGITUDINAL HYDRAULIC SYSTEM



# LONGITUDINAL HYDRAULIC SYSTEM

## A. LONGITUDINAL THROTTLING VALVE(3643)

NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
1.	101063	FLOW CONTROL NAME PLATE	1	
2.		HEADLESS SCREW	1	M6x6L
3.	366023	FLOW CONTROL KNOB	1	
4.		INNER RETAINING RING	1	φ 42
5.	366021	FLOW SWITCH	1	
6.		SOCK. HEAD CAP SCREW	3	M6x12L
7.	101062A	THROTTLING VALVE PANEL	4	
8.		SOCK. HEAD CAP SCREW	4	M6x20L
9.		HEADLESS SCREW	1	M6x6L
10.	366023	THROTTLING HANDLE BAR	1	
11.	200612	THROTTLING HANDLE HEAD	1	
12.		CROSS HEAD SCREW	4	M5x12L
13.	366027	THROTILING SEAT REAR COVER	1	
14.	366004	THROTTLING VALVE SEAT	1	
15.			1	
16.		SOCK. HEAD CAP SCREW	4	M8x20L
17.	366016	UPPER COVER PLATE OF THROTTLING SEAR	1	
18.	200321-1	INSIDE HEXAGONAL SHAFT SLEEVE	1	
19.		O-RING	1	P22
20.	366020	THROTTLING ARBOR	1	
21.		O-RING	1	P42
22.	366018-1	THROTTLING VALVE SHAFT	1	
23.		DOUBLE HEAD FLAT KEY	2	6x6x10L
24.		O-RING	1	P26
25.	366019	SWITCH SHAFT OF THROTTLING VALVE	1	
26.		HIGH PRESSURE PIPE 90° CONNECTION	2	1/2PTx3/4H
27.		HIGH PRESSURE PIPE 90° CONNECTION	2	1/2PTx1/2H
28.	256020	SAFETY SWITCH SEAT	1	
29.		SOCK. HEAD CAP SCREW	2	
30.		SAFETY SWITCH	1	Z-15GW2-B
31.		CROSS HEAD SCREW	2	M4x25L
32.		SOCK. HEAD CAP SCREW	1	M6x10L
33.	256015	THROTTLING VALVE BODY	1	
34.		O-RING	1	P48
35.		O-RING	1	
36.	366017	THROTTLING VALVE REAR COVER	1	
37.	200317	CROSSWISE SETTING BLOCK	1	

**B. HYDRAULIC PIPING**

NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
1.		HEX SOCKET NUT	4	M16
2.		DISC WASHER	4	D16xD32x1.5T
3.	364023	RECOIL CUSHION	6	
4.	364022	WASHER	2	
5.		HIGH PRESSURE PIPE(1/2"PHx510L)	1	1428
5.		HIGH PRESSURE PIPE(1/2"PHx520L)	1	1632
5.		HIGH PRESSURE PIPE(1/2"PHx550L)	1	1640
6.		HIGH PRESSURE PIPE(3/4"PHx1750L)	2	1428
6.		HIGH PRESSURE PIPE(3/4"PHx1830L)	2	1632,1640
7.		HIGH PRESSURE PIPE 90° CONNECTION	1	1/2"PTx1/2"PH
8.		HIGH PRESSURE PIPE(1/2"PHx1400L)	1	1428
8.		HIGH PRESSURE PIPE(1/2"PHx1490L)	1	1632
8.		HIGH PRESSURE PIPE(1/2"PHx1750L)	1	1640
9.		HIGH PRESSURE PIPE 90° CONNECTION	1	1/2"PTx1/2"PH
10.		SOCKET SCREW	4	M8x55L
11.		SOCKET SCREW	2	M6x30L
12.	366032	HIGH PRESSURE PIPE CONNECTION	1	
13.		SOCKET SCREW	2	M8x35L

**C. LONGITUDINAL HYDRAULIC CYLINDER SET**

**(3741/1428 SERIES ,3841/1632SERIES ,4141/1640 SERIES )**

NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
1.		DUST RING	2	DH22.4
2.	364020	OIL SEAL SEAT	2	
3.		OIL SEAL	2	UHS 22.4
4.		OIL SEAL	2	GSW22.4x30x5
5.		O-RING	2	P-42
6.		ANTI-FRICTION RING	2	φ 22.4x6x2.5
7.	364016	RIGHT HYDRAULIC CYLINDER TOP HEAD	1	
8.		O-RING	2	P50
9.	364021	LOCK NUT	1	
10.	364017	FIXING RING OF HYDRAULIC CYLINDER	1	
11.	374005	HYDRAULIC PIPE	1	1428 (3741)
11.	384008	HYDRAULIC PIPE	1	1632 (3841)
11.	414005	HYDRAULIC PIPE	1	1640 (4141)
12.	374006	PISTON ROD	1	1428 (3741)
12.	384009	PISTON ROD	1	1632 (3841)
12.	414006	PISTON ROD	1	1640 (4141)
13.	364019	ANTI-COLLISION SLEEVE	2	
14.		O-RING	2	P30
15.		ANTI-FRICTION RING	2	φ 40x9.5x2.5
16.		TAPER PIN	2	#5x38L
17.	364018	PISTON	1	
18.		O-RING	1	P22.4
19.		OIL SEAL	1	GSP45x35x4

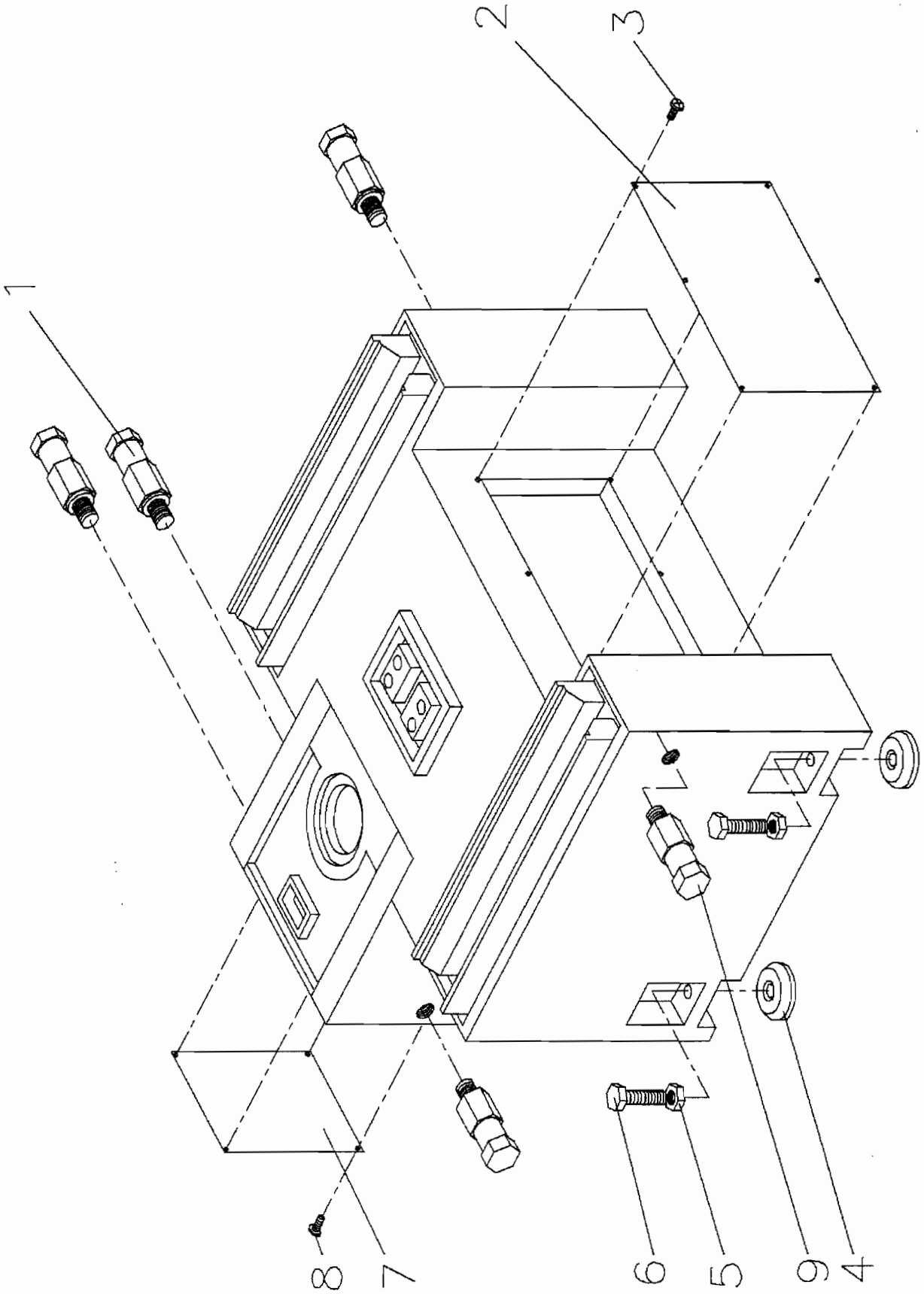


SUPRA1428AHD  
SUPRA1632AHD  
SUPRA1640AHD

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19		OIL SEAL	1	GSP45x35x4
20	364015	LEFT HYDRAULIC CYLINDER TOP HEAD	1	

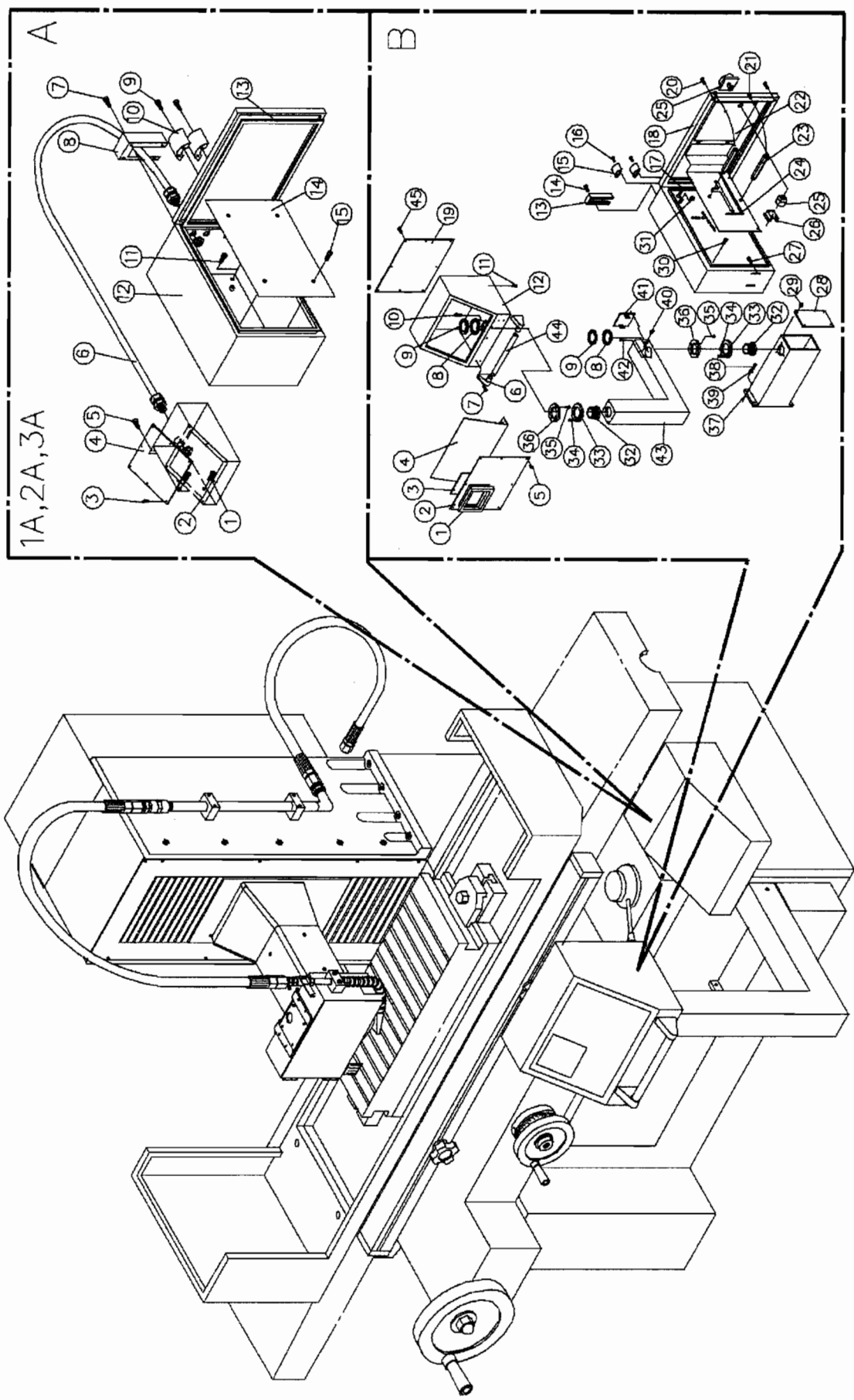
**LIFTING STRUCTURE**



## LIFTING STRUCTURE

NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
1.	365045	HANGING SCREW	4	H41x145L
2.	365042	BASE FRONT SEALED COVER	1	
3.		SOCKET SCREW	8	M6x10L
4.	100506-1	CROSS HEAD SCREW	5	
5.		HEX NUT	5	M22
6.	100505-1	FLAT-REGULATING SCREW	5	M22xP2.5x105L
7.	365043	BASE REAR SEALED SCREW	1	
8.		CROSS HEAD SCREW	4	M6x10L
9.	365046	HANGING SCREW	1	H41x195L

ELECTRICAL AND CONTROL BOX



**A ELECTRICAL AND CONTROL BOX**  
**( 3A3695, FOR 3A SERIES)**

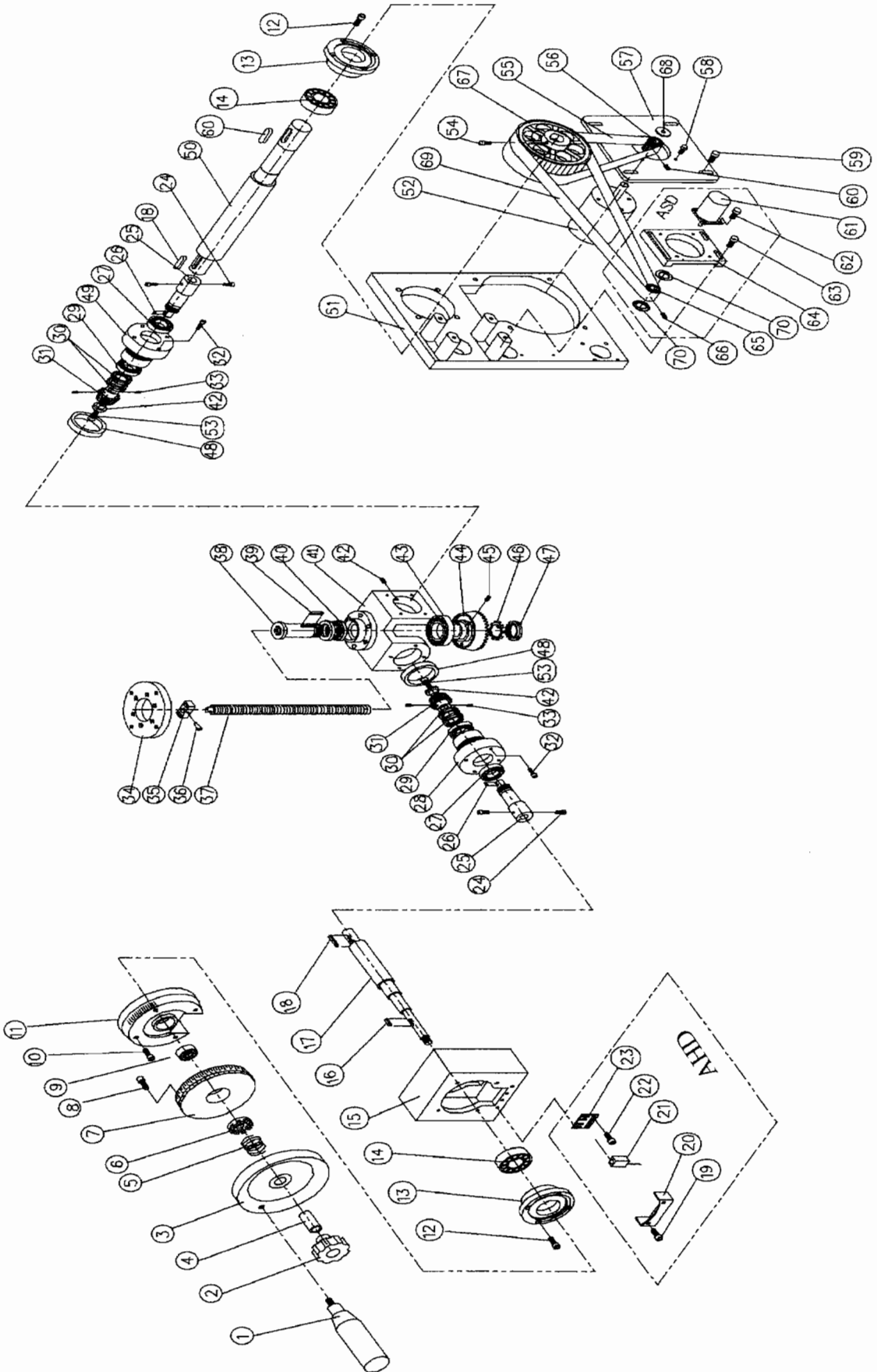
NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
1.		SOCK. HEAD SCREW	2	M5x20L
2.	389015-2	CONTROL BOX	1	
3.		CROSS HEAD SCREW	8	M4x10L
4.	101088	CONTROL PANEL	1	
5.		SOCK. HEAD SCREW	2	M8x15L
6.		CONVEY FLEXIBLE CONDUIT	1	
7.		SOCK. HEAD CAP SCREW	4	M4x15L
8.	389026-1	SPLASH COVER	1	
9.		SOCK. HEAD CAP SCREW	2	M4x15L
10.	200907	SPLASH COVER	2	
11.		SOCK. HEAD CAP SCREW	1	M8x12L
12.	389001-1	ELECTRICAL BOX	1	
13.		RUBBER	1	
14.	389002-1	ELECTRICAL FIXING PLATE	1	
15.		SOCK. HEAD CAP SCREW	4	M8x12L

**B ELECTRICAL AND CONTROL BOX FOR AHD (3695A) SERIES**

NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
1	389012	DISPLAY WINDOW	1	
2.	101082E	CONTROL PANEL	1	
3	389013	DISPLAY MIRROR	1	
4.	389016	FIXING STAND OF PC BOARD	1	
4	389016E-1	FIXING STAND OF PC BOARD	1	CE
5.		CROSS HEAD SCREW	8	M5x10L
6.	389009	HANDLE FIXING SEAT	2	
7.		SOCK. HEAD CAP SCREW	4	M6x14L
8.		WASHER	2	MB12
9.	389006	FIXING NUT	2	(AN12)
10.		HEADLESS SCREW	2	M6x6L
11.		SOCK. HEAD CAP SCREW	2	M6x14L
12.	389011	CONTROL BOX	1	
12	389011E-1	CONTROL BOX	1	CE
13.	389026-1	SPLASH COVER	1	
14.		SOCK. HEAD CAP SCREW	4	M4xP0.7
15.	200907	SPLASH COVER	2	
16.		SOCK. HEAD CAP SCREW	4	M4xP0.7
17.		SOCK. HEAD CAP SCREW	4	M8x12L
18.	389001E	ELECTRICAL BOX	1	
19.	381031E	COVER	1	CE
20.		SOCK. HEAD CAP SCREW	2	M6x25L
21.		SOCK. HEAD CAP SCREW	2	M6x25L

22.	389002E	ELECTRICAL FIXING PLATE	1	
23.	389030E	COPPER BAR	2	
24.	259010	ELECTRIC BOX GROUND STRAP	1	
25.		DOOR LOCK	1	
26.	389019E	BACK-UP PLATE	1	
27.		SOCK. HEAD CAP SCREW	1	M10x30L
28.	389017	SIDE SEALED COVER OF SUPPORT ARM	1	
29.		CROSS HEAD SCREW	4	M4x10L
30.		SOCK. HEAD CAP SCREW	4	M8x16L
31.		WASHER	4	$\phi$ 8
32.	389005	TURNING SHAFT OF CONTROL BOX	2	
33.	389004	HOLDING-DOWN PLATE OF TURNING SHAFT	2	
34.		SOCK. HEAD CAP SCREW	3	M6x14L
35.		CROSS FLATE HEAD SCREW	3	M5x8L
36.	389007	FIXING PLATE OF TURNING SHAFT	2	
37.	389003E-1	FIXING PLATE OF SUPPORT ARM	1	
38.		SOCK. HEAD CAP SCREW	4	M8x30L
39.		WASHER	4	$\phi$ 8
40.		CROSS HEAD SCREW	2	M6x10L
41.	389014	SIDE SEALED COVER OF SUPPORT ARM	1	
42.		SOCK. HEAD CAP SCREW	3	M6x14L
43.	389008	CONTROL BOX SUPPORT ARM	1	
44.	389010	HANDLE OF CONTROL BOX	1	
45.		CROSS HEAD SCREW	8	M5x8L(CE)

# VERTICAL FEED



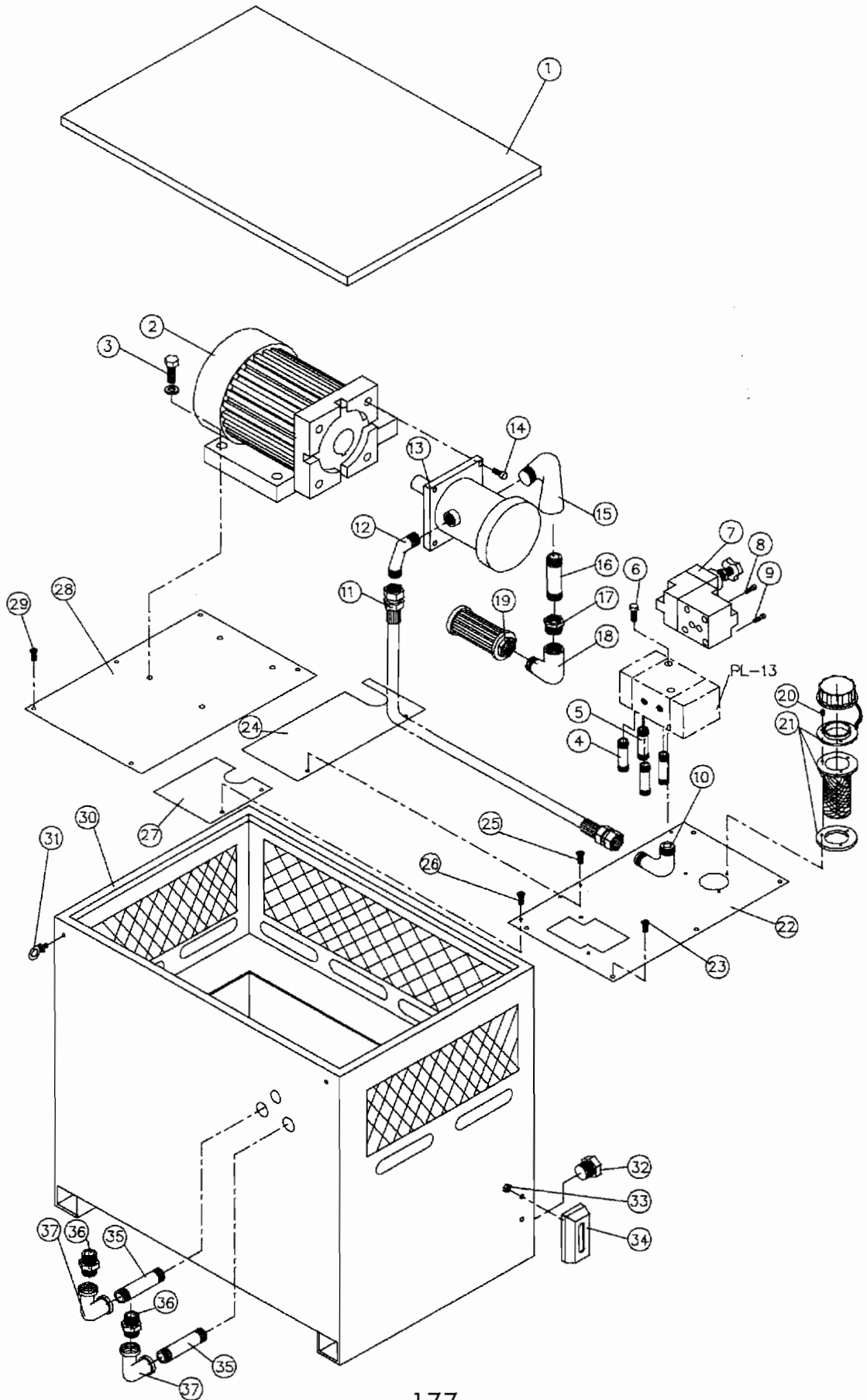
## VERTICAL FEED

NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
1.	100237	HANDLE	1	
2.	365035	ELEVATING HANDLE	1	
3.	365036	ELEVATING HANDWHEEL	1	
4.	365034	LOCKING SHAFT SLEEVE	1	
5.	365012	COMPRESSION SPRING	1	
6.	363011	FIXING DISK GEAR	1	
7.	365032A1	ELEVATING SCALE RING	1	MM
7.	365032E1	ELEVATING SCALE RING	1	INCH
8.		SOCK. HEAD CAP SCREW	1	M6x12L
9.		BEARING	1	6202
10.		SOCK. HEAD CAP SCREW	4	M6x20L
11.	365031A1	ELEVATING SCALE INDICATING PLATE	1	MM
11.	365031E1	ELEVATING SCALE INDICATING PLATE	1	INCH
12.		SOCK. HEAD CAP SCREW	4	M6x30L
13.	255008	REAR BEARING SEAT	1	
14.		BEARING	1	6205
15.	365029-1	BEARING BOX	1	
16.		DOUBLE HEAD FLATE KEY	1	5x5x25L
17.	365012-4	DRIVING SHAFT	1	14 SERIES
17.	465002-3	DRIVING SHAFT	1	1632
17.	415002-1	DRIVING SHAFT	1	1640
18.		DOUBLE HEAD FLATE KEY	1	6x6x25L
19.		SOCK. HEAD CAP SCREW	2	M5X30L
20.	365058	COVER	1	
21.		SENSOR SWITCH	1	PNP17x17x28
22.		SOCK. HEAD CAP SCREW	2	M6x10L
23.	365057	FIXED PLATE	1	
24.		HEADLESS SCREW	2	M6x12L
25.	255005	PINION DRIVING SHAFT	2	
26.		DOUBLE HEAD FLATE KEY	2	6x6x25L
27.		BEARING	2	6202

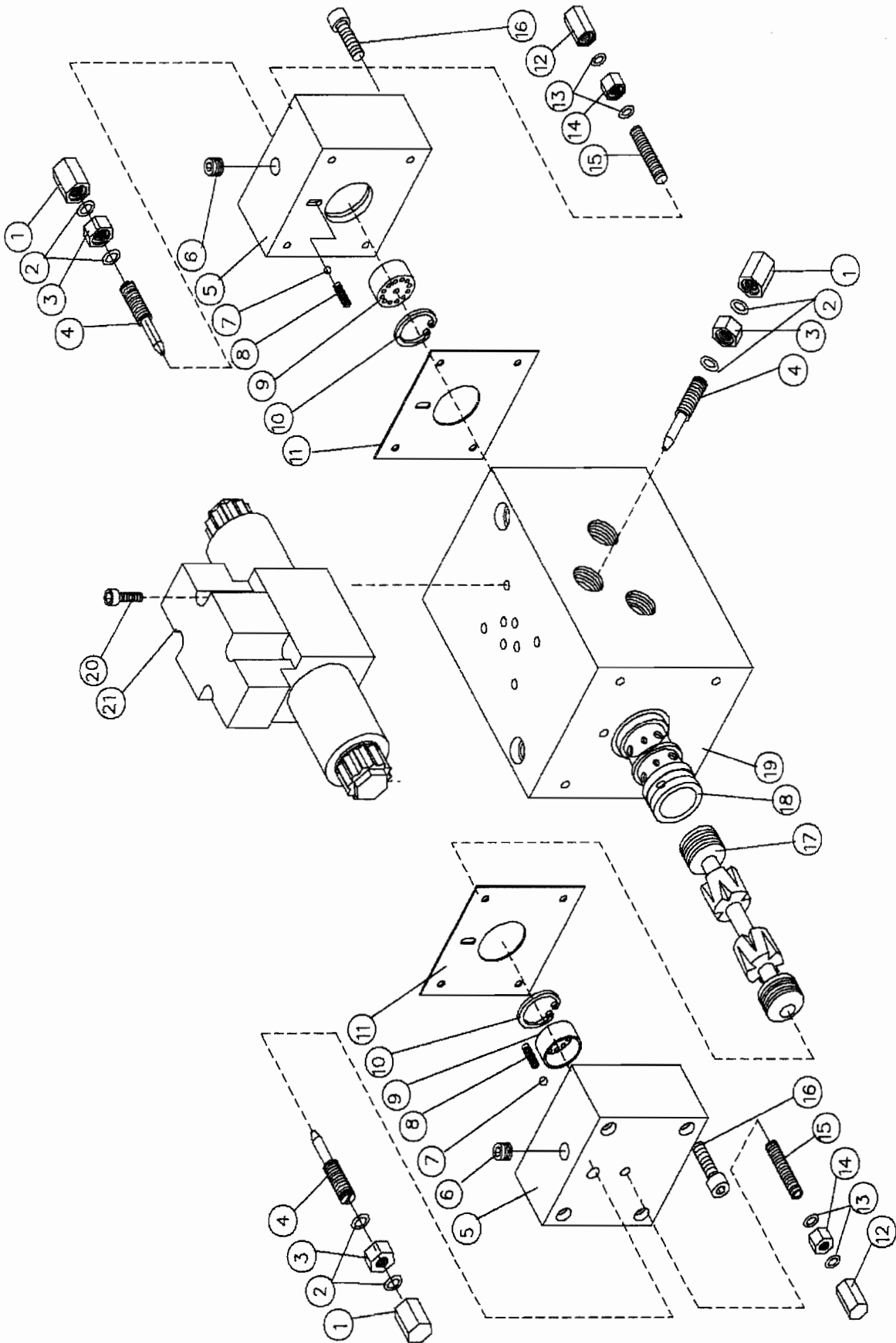


NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
28.	255003	BEARING SEAT	1	
29.		BEARING	2	6202
30.	255004	NUT	2	AN04
31.	365009A	LEFT SPIRAL PINION	2	MM
31.	365009E	LEFT SPRING PINION	2	INCH
32.		SOCK. HEAD CAP SCREW	8	M6x50L
33.		HEADLESS SCREW	4	M6x8L
34.	365041	FIXING PLATE OF ELEVATING NUT	1	
35.	365004	FIXING SEAT OF SCREW SLEEVE	1	
36.		TAPER PIN	1	#4x30L
37.	365005A	STANDARD ELEVATING SCREW	1	MM
37.	255007E	STANDARD ELEVATING SCREW	1	INCH
38.	365006A	ELEVATING NUT	1	MM
38.	365006E	ELEVATING NUT	1	INCH
39.		DOUBLE HEAD FLATE KEY	1	8x7x30L
40.	255008	THRUST BEARING	1	51109
41.	255002	FIXING SEAT OF ELEVATING GEAR	1	
43.		BEARING	1	6212
44.	365008A	RIGHT SPIRAL BIG GEAR	1	MM
44.	365008E	RIGHT SPRING BIG GEAR	1	INCH
45.		HEADLESS SCREW	2	M6x10L
46.		OUTER RING	1	
47.	365007	LOCKING NUT	1	AN09
48.	365014	REGULATING NUT	2	
49.	365015-1	BEARING SEAT	1	
50.	365065	DRIVING SHAFT	1	1428,1632
50.	415006	DRIVING SHAFT	1	1640
51.	365016-4	MOTOR FIXING PLATE	1	
52.	365026	AC MOTOR	1	1/4PH6P
53.		SOCK. HEAD CAP SCREW	2	M8x30L
54.		SOCK. HEAD CAP SCREW	2	M6x15L
55.	255017	PLASTIC STEEL WIRE TOOTH-FORM BELT	1	T5x144Tx25mm

# HYDRAULIC SYSTEM (366)



NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
57.	365062	MOTOR FIXING PLATE	1	
58.		SOCK. HEAD CAP SCREW	4	M8x25L
59.		SOCK. HEAD CAP SCREW	4	M8x25L
60.		DOUBLE HEAD FLATE KEY	2	6x6x25L
61.	365027	STEPPING MOTOR(PK299-01A)	1	
62.		SOCK. HEAD CAP SCREW	4	M5x18L
63.		SOCK. HEAD CAP SCREW	4	M6x30L
64.	200208-1	MOTOR FIXED PLATE	1	
65.	255015	ELEVATING RAPID DRIVING PULLEY	2	
66.		CROSS HEAD CAP SCREW	2	M5x5L
67.	255012	DRIVER PULLEY	1	
68.	200211	WASHER	2	
69.	255018	PLASTIC STEEL WIRE TOOTH-FORM BELT	1	(T5x112Tx18mm)
70.	200211	WASHER	2	

**TABLE REVERSING ARRANGEMENT (3661)**

## TABLE REVERSING ARRANGEMENT (3661)

NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
1.	366012	LEAK-PROOF NUT	3	
2.		O-RING	6	P10
3.	366011	FIXING NUT	3	
4.	366010	SMALL THROTTLING SHAFT	3	
5.	366008	SIDE COVER OF REVERSING BODY	2	
6.		HOLE PLUG	2	1/8PT
7.		STEEL BALL	2	$\phi$ 5
8.	366028	SPRING	2	
9.	366009	TOP BLOCK OF REVERSING SHAFT	2	
10.		INNER RETAINING RING	2	$\phi$ 28
11.		ASBESTOS GASKET	1	95x90x1
12.	366014	LEAK-PROOF NUT	2	
13.		O-RING	4	P8
14.	366013	FIXING NUT	2	
15.		HEADLESS SCREW	2	M8x35L
16.		SOCK. HEAD CAP SCREW	8	M6x45L
17.	366007	REVERSING SHAFT	1	
18.	366006	REVERSING SHAFT SLEEVE	1	
19.	366005-1	REVERSING BODY	1	
20.		SOCK. HEAD CAP SCREW	4	M5x45L
21.		SOLENOID VALVE	1	DV24V

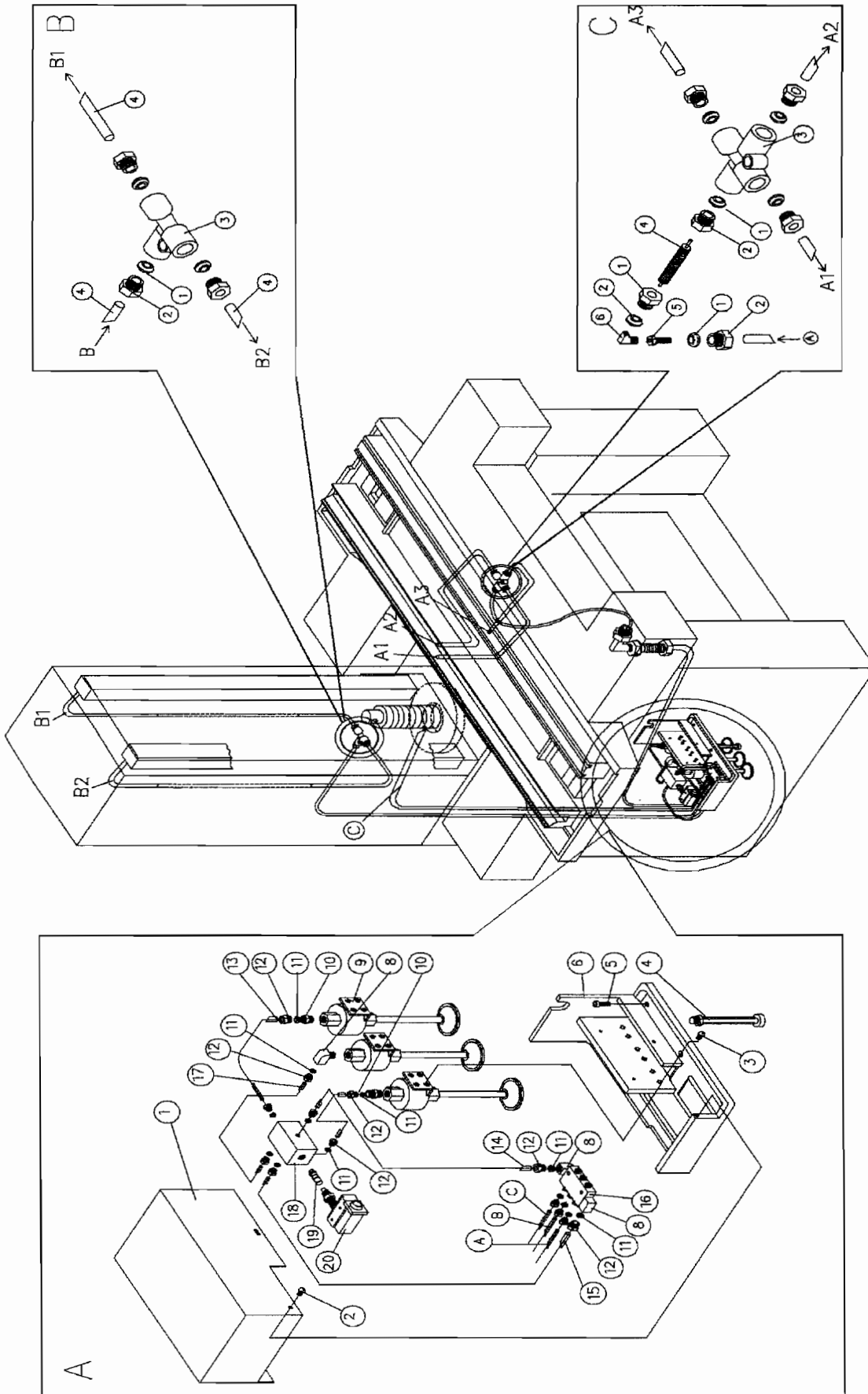
SUPRA1428AHD

SUPRA1632AHD

SUPRA1640AHD

NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
29.		CROSS HEAD SCREW	5	M6x15L
30.	366001-1	OIL TANK	1	
31.		HANGING RING	4	5/16"W
32.		HOLE PLUG	2	1/2"PT
33.		NUT	2	
34.		OIL LEVEL GAUGE	1	3"
35.		STRAIGHT CONNECTION PIPE	2	1/2PTx35"L
36.		HIGH PRESSURE PIPE CONNECTION	2	1/2PTx3/4PF
37.		PIPE ELBOW	2	1/2"PT

# LUBRICATION SYSTEM ( 368 )



SUPRA1428AHD

SUPRA1632AHD

SUPRA1640AHD

NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
29.		CROSS HEAD SCREW	5	M6x15L
30.	366001-1	OIL TANK	1	
31.		HANGING RING	4	5/16"W
32.		HOLE PLUG	2	1/2"PT
33.		NUT	2	
34.		OIL LEVEL GAUGE	1	3"
35.		STRAIGHT CONNECTION PIPE	2	1/2PTx35"L
36.		HIGH PRESSURE PIPE CONNECTION	2	1/2PTx3/4PF
37.		PIPE ELBOW	2	1/2"PT



## LUBRICATION SYSTEM (368)

**A:**

NO.	PART NO.	DESCRIPTION	Q'TY	SPEC.
1.	368006	COVER	1	
2.		SOCK. HEAD CAP SCREW	2	M5x8L
3.		SOCK. HEAD CAP SCREW	6	M6x15L
4.		OIL LEVEL SWITCH	1	FS-8102
5.		SOCK. HEAD CAP SCREW	2	M6x20L
6.	368005	PUMP FIXED STAND	1	
8.		ELBOW CONNECTOR 90°	3	PH-602
9.		PUMP(AC110V)	3	
10.		STRAIGHT ADAPTER	2	PD602
11.		COMPRESSION SLEEVE	10	PB-6
12.		COMPRESSION SLEEVE	10	PA-6
13.		ALUMINIUM TUBING	1	φ 6
14.		ALUMINIUM TUBING	1	φ 6
15.		ALUMINIUM TUBING	1	φ 6
16.		AB TYPE OIL REGULATING MANIFOLD	1	B-3
17.		ALUMINIUM TUBING	2	φ 6
18.	258002	SENSOR FIXED SUPPORT	1	
19.	258003	SENSOR SLIDING STEM	1	
20.		SENSOR	1	TZ-7310

**B:**

1.		COMPRESSION SLEEVE	3	PB-6
2.		COMPRESSION BUSHING	3	PA-6
3.		JUNCTION 3-WAY	1	PKD-6
4.		ALUMINIUM TUBING	3	φ 6

**C:**

1.		COMPRESSION SLEEVE	10	PB-4
2.		COMPRESSION BUSHING	10	PA-4

SUPRA1428AHD

SUPRA1632AHD

SUPRA1640AHD

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JUNCTION 4-WAY

1 PJD-6

HOSE ASSEMBLY

1  $\phi$  4x400L

PROLONGED CONNECTOR

1 PM-104

ELBOW CONNECTOR 90°

1 PH-408