

PALMGREN®



20" GEAR HEAD DRILL PRESS

9680246, 230V W/ FOOT REVERSE & POWER FEED

9680247, 460V W/ FOOT REVERSE & POWER FEED



Read carefully and follow all safety rules and operating instructions before first use of this product.

TABLE OF CONTENTS

General Information and Safety 2 - 3
 Design and Function 3 - 4
 Installation and Set-up 4
 Specifications 4
 Handling, Feed and Drill Ejector 5 - 6
 Maintenance, Cleaning and Lubrication 7
 Repair and Corrective Maintenance 7 - 8
 Electrical Schematics 9 - 13
 Parts 14 - 25
 Warranty 28

INTRODUCTION

Palmgren and Machinery Scandinavia / Arboga have entered into a joint venture to offer the Arboga gear head drilling machines throughout North America. Combining the strengths of both companies we can advance our resources of staff and technologies to offer our customers the very best drilling machines available today.

Arboga drill presses will continued to be manufactured in Sweden and supplied exclusively to Palmgren. Palmgren will provide all sales, technical support and service for Arboga as well as any other brand of Swedish gear head drilling machines.

Arboga gear head drilling machines are sold exclusively by Palmgren a C. H. Hanson Company brand. For parts, service or technical support please contact Palmgren at:

C. H. Hanson
 2000 North Aurora Road
 Naperville, Illinois 60563
 (800) 827-3398
 sales@chhanson.com

GENERAL

This manual is for models 9680246 and 9680247 drill presses. It has been prepared for those using the machine or who are responsible for its maintenance and service and should therefore be made readily available for all those concerned.

Read through the manual carefully before installing and starting up the machine. The machine is of simple design and robustly built, but we cannot guarantee perfect function if it is not correctly handled.

It is therefore necessary to make yourself thoroughly acquainted with its functions and to carry out practical tests on the various parts of the control system and the machine settings. Once these are mastered, the properties of the machine can be fully utilized and the component parts will give maximum service life.

Every machine is tested for accuracy and capacity at the factory. Experienced staff checks both the mechanical and electrical functions according to a standardized program, meaning that we can guarantee workmanship of the highest and most consistent quality.

By following our directions and your own good judgement, we are convinced that your new machine will give you every satisfaction. However, should any problems arise, please do not hesitate to contact our dealer or us.

CE-LABELLING AND DECLARATION OF CONFORMITY

An “EC Declaration of Conformity” accompanies machines delivered within the Euro- pean Union (CE-labelled machines).

The declaration of conformity is valid only if the chuck guard (see figure 2) is used.

SAFETY

SAFETY MESSAGES

Safety messages in this manual are accompanied by a safety alert symbol and a signal word. The safety alert symbol is used to alert the reader about a potential risk of personal injury or damage on the equipment.

SAFETY REGULATIONS

Used correctly, your machine is one of the best concerning design and safety. However, any machine which is used incorrectly can be a safety risk.

It is very important, that those who use the machine are informed how to handle it correctly. They should read and understand these instructions, as well as all signs on the machine. Neglecting to follow the safety regulations can cause an accident.

! WARNING: Using the machine incorrectly can cause serious accidents. The machine has to be installed, used and maintained correctly.

All machines with rotating tools or details can cause accidents. It is therefore important that you as an operator are aware of those risks for any accident and that you avoid all possibilities for accidents.

! PROPOSITION 65 WARNING: Some dust created by using power tools contain chemicals known to the state of California to cause cancer, birth defects or other reproductive harm.

Some examples of these chemicals are:

- Lead from lead-based paints
- Crystalline silica from bricks and cement and other masonry products.
- Arsenic and chromium from chemically treated lumber.

Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals; work in a well ventilated area and work with approved safety equipment. Always wear **OSHA/NIOSH** approved, properly fitting face mask or respirator when using such tools.

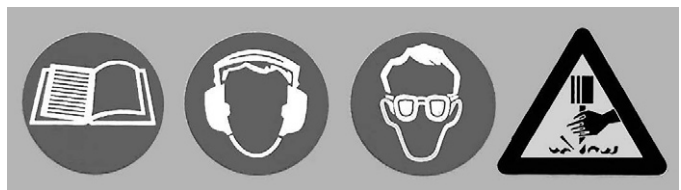


Figure 1 - Warning symbols on the machine.

- Always use appropriate clothes and personal equipment, so that you cannot get caught by rotating tools. Avoid using protective gloves if possible. Use hairnet if necessary.
- Always use eye protection, if there is a risk for chips or splashes from the coolant. Follow local instructions if existing.
- Never use the machine if it lacks necessary protection.
- The chuck guard (figure 2a) must always be used. For safety reasons, the chuck guard is equipped with a micro switch.

SAFETY (CONTINUED)

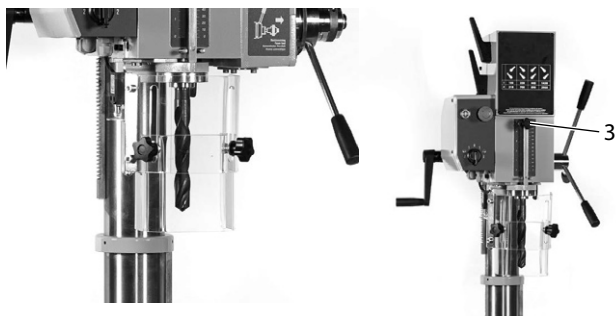


Figure 2a - Chuck guard (for machines within the EU).

Figure 2b - Depth gauge (3).

- Depth gauge and Depth gauge rod (3) must never be removed from the machine.
- Keep clean around the machine to avoid stumbling against rotating tools.
- Make sure that the work piece is securely fastened at the table, see the examples in figure 3 and 4.

⚠ WARNING: Never use your hand to hold the work piece.

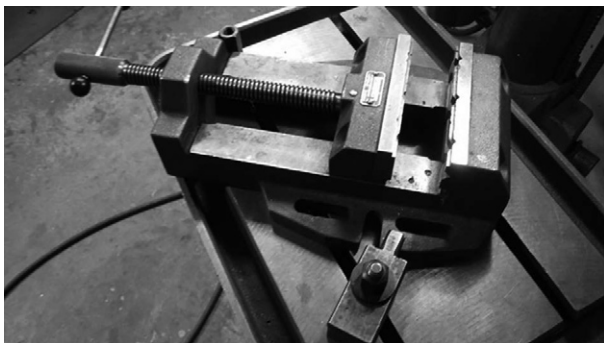


Figure 3 - Fastening the table vice on the table, example.

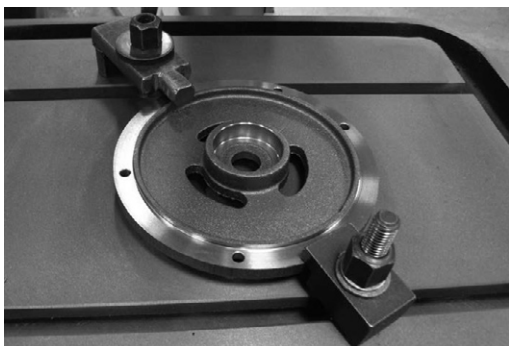


Figure 4 - Fastening the work piece on the table, example.

- Make sure that the switch is in position "0" when changing tools or when cleaning the machine. Never brush away chips while the machine is operating.
- Never stretch yourself over the machine when it is running.
- Always stop the machine when not in use.
- Use faultless tools and the correct speed and feed for the tool. Make sure that the tool is the correct one for your operation.
- Make sure that the drill head, table arm and table are thoroughly fastened before starting up the machine.

DESIGN AND FUNCTION

DRILL HEAD AUTOMATIC FEED

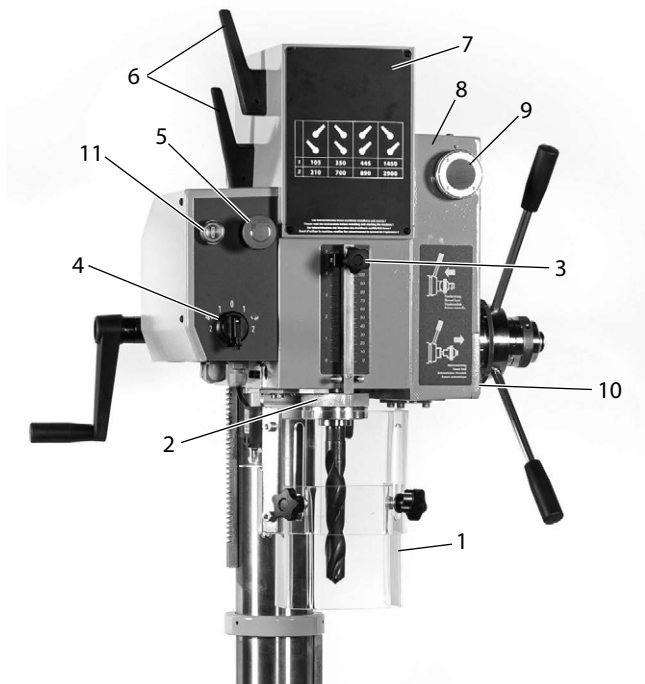


Figure 7 - Drill head.

- 1) Chuck guard
- 2) Spindle quill
- 3) Depth gauge rod
- 4) Switch/speed selector
- 5) Emergency stop push button
- 6) Gear lever (2 pieces.)
- 7) Gearbox
- 8) Power feed box
- 9) Knob for setting the feed speed
- 10) Oil level indicator
- 11) Start button

EMERGENCY STOP

See the location of the emergency stop push button (5) in figure 7. The emergency stop shall be used in case of emergency to stop the machine as fast as possible.

DESIGN AND FUNCTION (CONTINUED)

DRILL HEAD - ELECTROMAGNETIC FEED

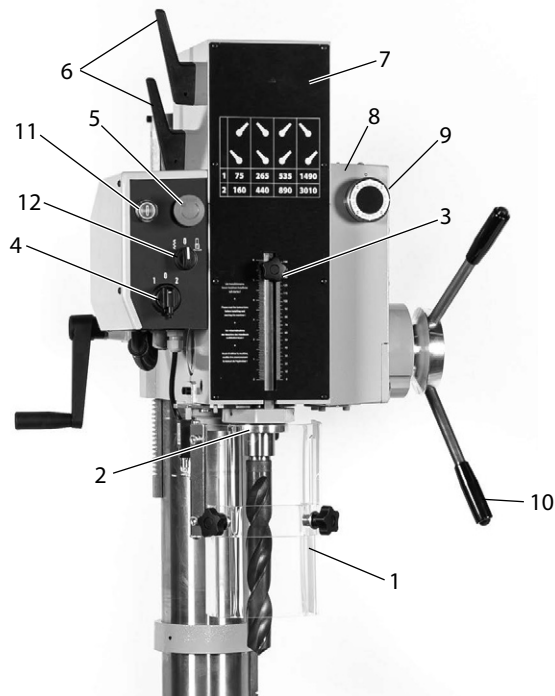


Figure 8 - Drill head.

- 1) Chuck guard
- 2) Spindle quill
- 3) Depth gauge rod
- 4) Switch/speed selector
- 5) Emergency stop push button
- 6) Gear lever (2 pieces)
- 7) Gearbox
- 8) Power feed box
- 9) Knob for setting the feed speed
- 10) Push button for manual switch on/switch off when feeding/threading (3 pieces)
- 11) Start button
- 12) Feeding/threading selector

EMERGENCY STOP

See the location of the emergency stop push button (5) in figure 8. The emergency stop shall be used in case of emergency to stop the machine as fast as possible.

INSTALLATION

SET-UP

Consider the following during set-up of the machine:

- The machine must be installed on a firm foundation. The base plate must be levelled with washers on the foundation bolts, to prevent harmful stresses when the nuts are tightened.
- Do not install the machine in a humid, dirty or badly illuminated environment.
- All bright parts of the machine are treated with rust prevention. By removing this, be careful not to use too strong cleaning compound. The paint might then get damaged.

- Make sure that the boring tool cone is well-cleaned.
- Be sure that the machine is equipped with all necessary protections to comply with the CE directives.
- For machines with automatic feed, the gear box must be filled up with oil, see "Oil Filling, Feed Gear Box" on page 6.

ELECTRIC INSTALLATION

NOTE: Electric installations have to be performed by a qualified electrician.

1. Make sure that the correct voltage is supplied to the machine.
2. Set up the electrical connections according to the attached circuit diagram.
3. Make sure that the drilling spindle has the correct rotation direction.

SPECIFICATIONS

	9680246	9680247
Swing	20"	20"
Column	3.94"	3.94"
Max drill size	1"	1"
Max tap size	5/8", 3/4"	5/8", 3/4"
Arbor	MT3	MT3
Chuck	3/4", JT4	3/4", JT4
Spindle travel	5"	5"
Max workpiece height	32.5"	32.5"
RPMs	130-260, 420-840, 535-1070, 1740-3480	130-260, 420-840, 535-1070, 1740-3480
Voltage	230V	460V
Amps	5	2.5
HP	1.5	1.5
kW	0.8-1.1 kW	0.8-1.1 kW
Phase	3	3
Table	19.70" x 15.75"	19.70" x 15.75"
T-slot dimensions	A: 5/16", B: 1/2", C: 1" D: 15/32	A: 5/16", B: 1/2", C: 1" D: 15/32
Table T-slot distance	3.94" center to center	3.94" center to center
Base	15.75" x 19.7"	15.75" x 19.7"
Overall dimensions	23" x 24" x 72"	23" x 24" x 72"
Weight	430 lbs	430 lbs
Auto feed rate (in/r)	.004, .006, .009, .012	.004, .006, .009, .012

ACCESSORIES

This machine includes:

- Drill press vise (SKU: 9612401) x1
- Forward/reverse foot pedal (SKU: 964848401) x1
- Chuck, 3/4", JT4, w/ key (P/N 964848301) x1
- Arbor MT3/JT4 (P/N 964848201) x1

HANDLING

THREADING - MANUAL FEED

When using different courses of thread, it is not allowed to exceed the recommendation shown in the table below. Otherwise, the depth stop bottoms or gets displaced, or - in worst case - the quill collar might break off. See the table:

Threads	Rotation Speed 50 Hz Max.	Rotation Speed 60 Hz. max.
0 - 0.5 mm	440 RPM	530 RPM
0.5 - 1.0 mm	265 RPM	320 RPM
1.0 - 2.0 mm	160 RPM	190 RPM



The maximum number of reversals is 5 per minute. In order to get better quality threading, we recommend using a floating tap wrench. See figure 9.

- Depending on the thread depth, the spindle speed should be set differently. See the table above.
 - Select the spindle speed using the two gear levers (1) on the left side of the gearbox. See the sign on the front side of the machine.
 - If any of the gears are difficult to get into position, rotate the spindle nose manually.

NOTE: The machine cannot be shifted during operations.

- There are 2 different ways to reverse the spindle rotation of the machine
 - Reversing using the switch/speed selector (2), see "Reversing by using the switch/speed selector"
 - Automatic reversing using the level switch. The desired drill depth is set with the drill depth stop (3), see "Automatic reversing by using the drill depth stop (optional)"

REVERSING BY USING THE SWITCH/SPEED SELECTOR

- Follow the steps in "Drilling", page 4.
- Set the drill depth stop in the upper position.
- Turn the switch/speed selector to position  "1" or "2", see the table above or the sign on the front side of the machine.
- Feed the spindle manually downwards with the feed lever.
- At the desired drill depth, turn the selector anti-clockwise to position  "1" or "2".
- Feed the spindle manually upwards with the feed lever. Turn the selector clockwise to position "0".

DRILLING - AUTOMATIC FEED

WARNING: Use the lock handles to lock the drill head, table arm and the table. Make sure that the work piece is securely fastened at the table. Carefully read through the safety instructions in this manual before using the machine. For manual drilling and

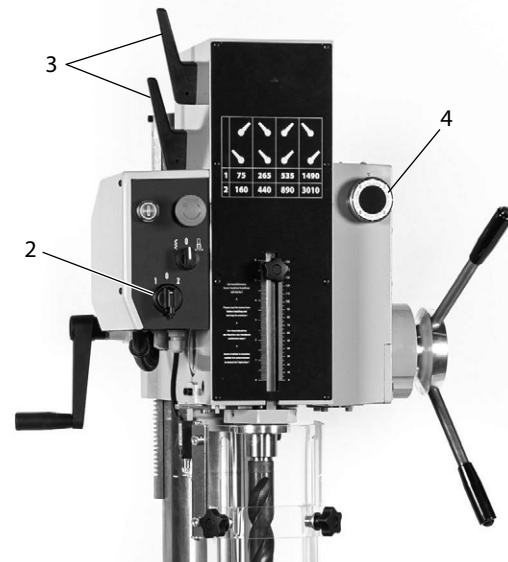



Figure 10 - Set-up.

The working cycle of machine feeding is initiated as the drill spindle is fed down with the feed lever to the work piece, see "Machine feed drilling".

See figure 10.

- The machine is equipped with a 2-speed motor. Select the spindle speed using the two gear levers (3) on the left side of the gearbox, see the sign on the front side of the machine.
 - If any of the gears is difficult to get into position, rotate the spindle nose manually.

NOTE: The machine cannot be shifted during operations.

- Turn the switch/speed selector (2) to position  "1" or "2", see the sign on the front side of the machine.
- The feed speed is set with the knob (4) on the right side of the feed box.

NOTE: The feed rate can be set while the machine is in operation, but not when loaded. The knob cannot be turned directly from the highest to the lowest feed rate, or vice versa. You always have to go through the middle positions.

- Use machine feed drilling according to chapter "Machine feed drilling" or feed manually according to chapter "Manual drilling".
- At bottom holes, repeat the drilling to eliminate tensions.
- Check the measurements and adjust the drilling depth if necessary.

MACHINE FEED DRILLING

threading, make sure the claw coupling is inserted.

- Make sure the claw coupling is in its outer position.
- Set the machine fed drill depth according to chapter "Setting the drill depth" below.
- Feed down the drill spindle with the feed lever to the work piece. When the drill pressure is on, the machine feed is connected and the machine drills to the pre-set drill depth. The drill spindle then returns to its original position.
 - The machine feed's repeated accuracy is 0.1 – 0.2 mm. If required, the feed can be cancelled by holding back the hand feed lever.

HANDLING (CONTINUED)**SETTING THE DRILL DEPTH**

First, set the machine fed drill depth, see figure 11:

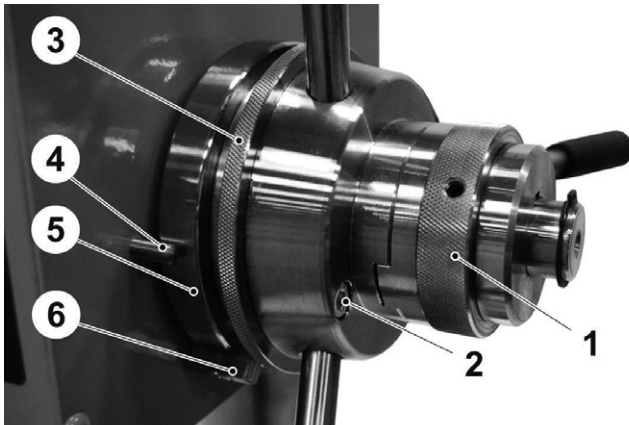


Figure 11 - Coupling.

- 1) Lock the drill depth scale in its upper position.
- 2) Remove the coupling (1) towards the right.
- 3) Loosen the two hexagon socket head screws (2) in the hand lever fastener.
- 4) Feed the spindle down to the desired drill depth. In the event of machine feeding, the spindle goes approximately 3 mm longer than what is set. The mechanical design means that it has to be set this way.
- 5) Push the inner ring's (5) stop heel (6) against the top side of the stop pin (4).
- 6) Turn the grooved ring's (3) stopper toward the top of the stop heel.
- 7) Tighten both of the female screws before releasing the spindle.

ADJUSTING THE FEED SWITCH

The feed is set at the factory so that the machine can not be overloaded. However, after using the machine for a while, the coupling may need to be readjusted:

NOTE: The turning of the ring nut which is about to be performed is only marginal (a few millimeters).

- 1) Remove the claw coupling.
- 2) Disengage the locking on the ring nut.
- 3) The ring nut has 4 positions for locking with the locking washer. Check which position that is closest to a locking position.
- 4) Rotate the ring nut (pointed out in figure 12) clockwise to this position and lock the ring nut on the locking washer. This provides a greater feeding power.

When drilling with sensible boring tools, it may be necessary to use a lower power for feeding. Adjustments are made as above, but the ring nut is rotated counter-clockwise.

In the event that the drill pressure is too high, the coupling acts as an overload protection.

Figure 12 – Adjusting the feed switch.

DRILL EJECTOR

The machine is equipped with an automatic drill ejector. Between the nose of the spindle sleeve and the spindle case, there is a stopper that prevents the spindle from reaching its upper position.

NOTE: When ejecting the boring tool from a machine with automatic feed, the claw coupling must be inserted.

AUTOMATIC EJECTION

To eject the drill:

- 1) Bend out the stopper (see the arrow in figure 14).
- 2) Grip the tool and hit the spindle sleeve to its upper position with the feed lever. The boring tool should be pushed out.



Figure 14 - Automatic drill ejection.

- 3) Bend the stopper back.
- 4) Mount a new tool to the spindle.

EXPELLER WEDGE

The boring tool may become stuck in the spindle, e.g., via hard drilling pressure and heat changes in the spindle. In this case, we recommend using an expeller wedge instead of the automatic drill ejector, see figure 15.



Figure 15 - Expeller wedge.

MAINTENANCE

OIL FILLING, FEED GEAR BOX

The machine is not supplied with oil in the power feed gearbox.

- The feed gear box's worm gear sits in an oil bath. Add oil via the filling hole (1) up to the middle of the level indicator (2), see figure 16. Approx. 0.3 liters should be kept available to cover the need.

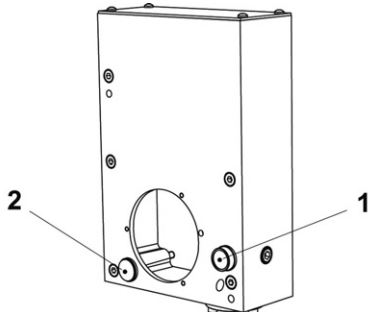


Figure 16 - Oil filling and level indicator, feed gear box

OIL RECOMMENDATIONS

Proper oil should have a viscosity of 5 °E at 50 °C.

NOTE: The guarantee of the machine is based on the use of these oils - at normal temperatures.

Oil company	Oil type
OK Petroleum	Delta Oil 68
BP	BP Maccurant 68, BP Bartran 68
Castrol	Castrol Hyspin AWS 68
Texaco	Texaco HD 68
Statoil	Nuto H68
Mobil	Mobil DTE 26, Mobil Vactra Oil No 2
Shell	Shell Tellus Oil 68, Shell X-100 10W/30

CLEANING

- Always make sure that the boring tool tongue and cone are well-cleaned and not damaged. This to avoid unnecessary wear and tear of the drilling spindle and/or the boring tool getting caught in the spindle.
- Keep the table and work piece free from chips. Use a brush, not compressed air.

LUBRICATION

All ball bearings and gear wheels are lubricated at the factory. For other lubrication; check levels regularly and apply grease, if necessary, see figure 17 and figure 18.

DRILL HEAD

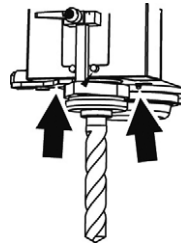


Figure 17 - Grease nipples, drill head.

WORM GEAR BOX

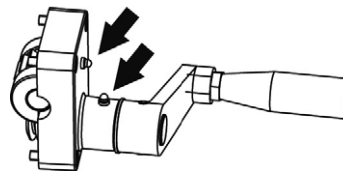


Figure 18 - Grease nipples, worm gear box.

REPAIR

For parts, service or technical support please contact Palmgren at:

C. H. Hanson
 2000 North Aurora Road
 Naperville, Illinois 60563
 (800) 827-3398
sales@chhanson.com

CORRECTIVE MAINTENANCE

GENERAL

⚠ WARNING: Disconnect the machine from the external mains before any dismantling takes place.

On reassembly, see to it that all surfaces are clean and that any burrs, which may have been made during disassembly, are first removed.

ADJUST THE TAPER BEARING PLAY

The spindle is journaled in the quill by a taper roller bearing at the bottom and by a radial ball bearing at the top. At the top end of the spindle, there is a nut, with which the play in the taper bearing can be adjusted. This nut can be reached, when the quill is removed from the machine as follows:

- 1) Remove the depth stop rod, see figure 19.



Figure 19 - Removing the depth stop rod.

- 2) Feed out the complete quill with the feed handle. Hold the quill, so that it doesn't fall out and gets damaged.
- 3) Loosen the spring pressure by letting the feed handle slowly return.
- 4) Adjust the play at the top end of the quill by turning the nut clockwise. Make sure it does not turn heavily, see figure 20.



Figure 20 - Nut for adjusting the play of the quill.

- 5) Turn the feed handle about two turns for counter balancing the quill.
- 6) Put back the quill and make sure the keys on the spindle coincide with the key ways in the spindle shaft and that the teeth of the feed shaft get the grip of the quill feed rack.
- 7) Let the quill return to the top position. Check the position of the feed handle and adjust by the feed shaft teeth grip another rack position.
- 8) If necessary, feed out the quill and turn the feed handle to further counter balance the quill as described in "Counter Balancing the Spindle" on page 7.
- 9.) Re-assemble the depth stop rod.

COUNTER BALANCING THE SPINDLE

Counter balance the spindle by tightening the spring in the spring housing as follows:

- 1) Remove the depth stop rod and feed out the complete quill, see "Adjust the Taper Bearing Play" on page 7.
- 2) Increase the return speed (the spring is tightened) by turning the feed handle 1/4 turn clockwise. Reduce the return speed by turning the feed handle 1/4 turn anti-clockwise.
- 3) Put back the quill and re-assemble the depth stop rod, see "Adjust The Taper Bearing Play" on page 7.

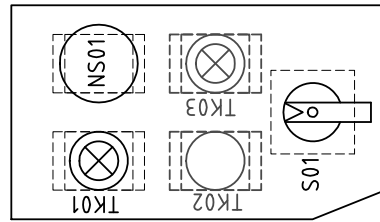
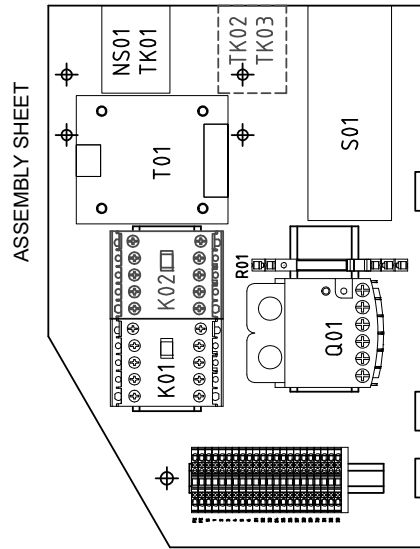
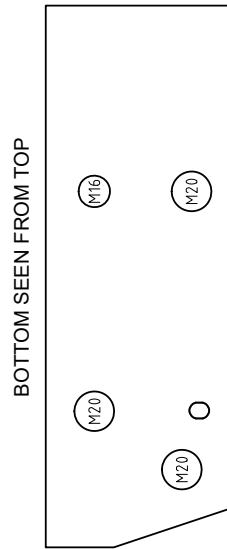
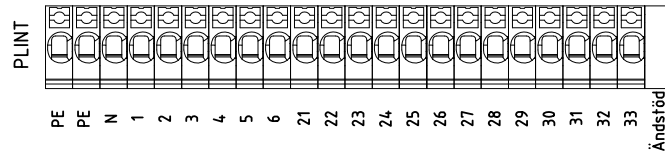
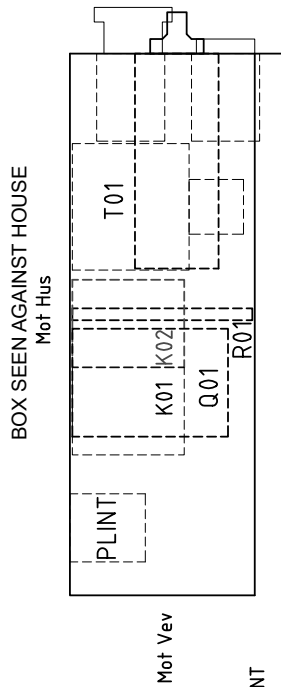
MOTOR

In case of motor failure, please contact Palmgren for further information.

GEARBOX

In case of gearbox failure, please contact Palmgren for further information.

ELECTRICAL SCHEMATICS



FUNCTION:

1. SET SWITCH TO MODE "0"
PRESS TK01 FOR MACHINE READY TO OPERATE
THE LAMP IN THE BUTTON LIGHTS ON
NOW YOU CAN DRIVE FORWARD / BACK AND 2
SPEEDS VIA S01
 2. TRIGGERED EMERGENCY STOP
RESET THE EMERGENCY STOP
FOLLOW STEPS ABOVE, IN #1
 3. TRIGGERED OVERCURRENT RELAY
RESETS AUTOMATICALLY
FOLLOW STEPS ABOVE, IN #1
 4. TRIGGERED DRILL GUARD (OPTIONAL)
FOLD BACK THE DRILL GUARD
FOLLOW STEPS ABOVE, IN #1
 5. FOOT CURRENT SWITCH
FOLLOW STEPS ABOVE, IN #1
START / STOP ALSO VIA THE FOOT POWER SWITCH
 6. FOOT REVERSAL
FOLLOW STEPS ABOVE, IN #1
FRAM-0-BACK ALSO VIA FOOT REVERSION SWITCH
- AUTOMATIC REVERSAL (OPTIONAL)
ON / OFF VIA LAMP PUSH BUTTON TK03

SETTING Q01

PROTECTION Q01 IS BASICLY WINDED THREE TIMES
THIS MEANS THAT THE SCALING WILL BE 1-10A
INSTEAD OF M3-30A
FOR A MOTOR OF 5A, Q01 SHOULD BE SET OF 15A
(3X5 = 15)

3m RUBBER CABLE 5G1.5

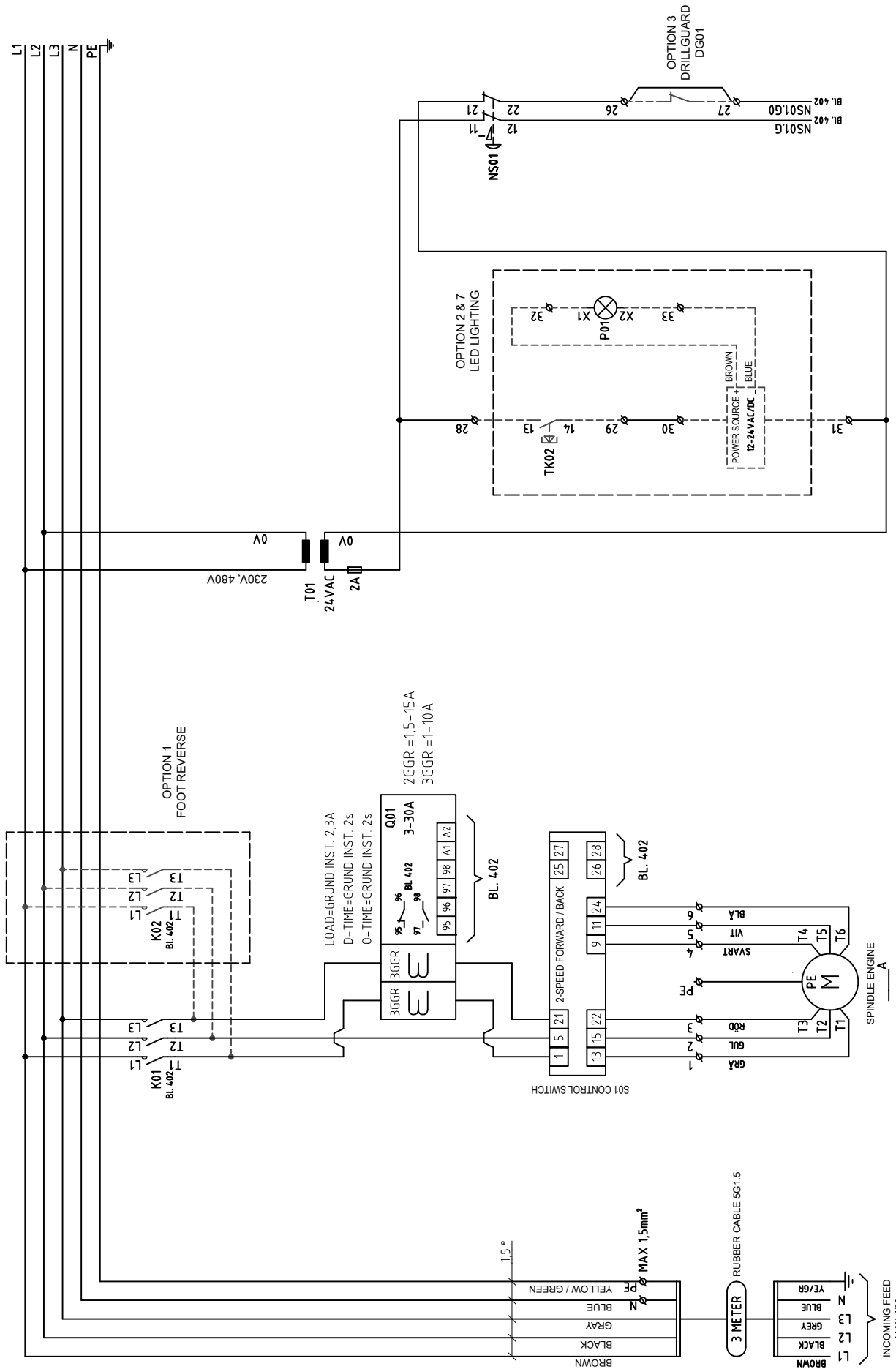
ELECTRICAL PARTS LIST

Ref. No.	Designation	Make	Type/No.	Data	Sheet
FRS01	FRONT SIGN	INFOSERVICE	SEE TEMPLATE		202
K01	MINI CONTACTOR	SCHNEIDER ELECTRIC	LC1-K0910B7	24VAC/9A 4kW	402
NS01	CONNECTOR 2NC	SCHNEIDER ELECTRIC	ZB5AZ1045	2br BLADE SPRING CONNECTION	401
NS01	EMERGENCY STOP BUTTON	SCHNEIDER ELECTRIC	ZB5AS844	TRIGGER ACTION	401
Q01	ELECTR. OVERCURRENT RELAY	SCHNEIDER ELECTRIC	LT4730B5	3-30A 24VAC/DC	401
R01	RELAY MODULE	PHOENIX	PLC-RPT- 24UC/21 / 2900300	24VAC/DC 1vxl	402
S01	CONTROL SWITCH	SONTHEIMER	WAH2119/13ZM/X99/Z20	DAHLANDER 2 Hast.Fram/Back	401
T01	Transformer	NORATEL	CUSTOMIZED 24VAC/2A	0-230-400-440-480-575V / 24V	401
TK01	CONNECTORS 1NO	SCHNEIDER ELECTRIC	ZB5AZ1015	15L BLADE SPRING. CONNECTION	402
TK01	LAMP PRESSURE RE-FJ.	SCHNEIDER ELECTRIC	ZB5-2001 HC5ZO	GREEN "1"	402
TK01	LAMP BLOCK GREEN LED	SCHNEIDER ELECTRIC	ZBVB35	24V BLADE SPRING. CONNECTION	402
X01 (19)	MINIPLINT PUSH-IN	PHOENIX CONTACT	MPT 1,5/S	0,14 mm ² - 1,5 mm ²	
X01 (1)	MINIPLINT PUSH-IN	PHOENIX CONTACT	MPT 1,5/S BU	0,14 mm ² - 1,5 mm ²	
X01 (2)	MINIPLINT PUSH-IN	PHOENIX CONTACT	MPT 1,5/S-PE	0,14 mm ² - 1,5 mm ²	

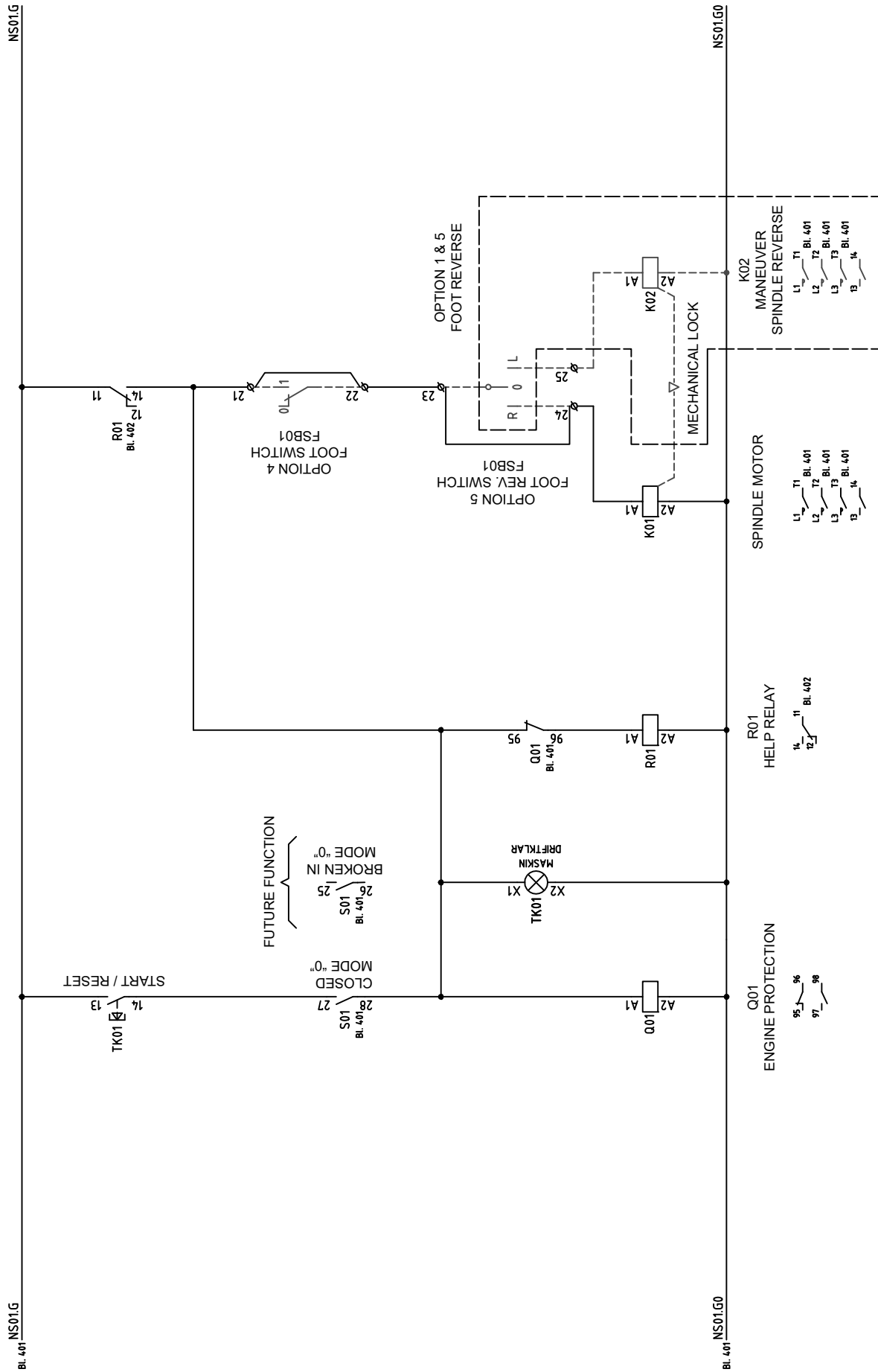
ELECTRICAL PARTS LIST

Ref. No.	Designation	Make	Type/No.	Data	Sheet
<OPT.1> K02	FRONT/BACK CONTACTOR	SCHNEIDER ELECTRIC	LC2K0910B7	24VAC/9A 4kW	402
<OPT.2> TK02 TK02	Push-button CONNECTORS 1NO	SCHNEIDER ELECTRIC SCHNEIDER ELECTRIC	ZB5-2001HC55T ZB5AZ1015	PRESS-TAP WITH LAMP SYMBOL 1SL BLADE SPRING. CONNECTION	401 401
<OPT.3> DG01	BOUNDARY POSITION DRILL PROTECTION		COMEPI	EP1G14	401
<OPT.4> FSB01	FOOT CURRENT SWITCH	Art. 3E02007		1SL + 1BR CONNECTOR	402

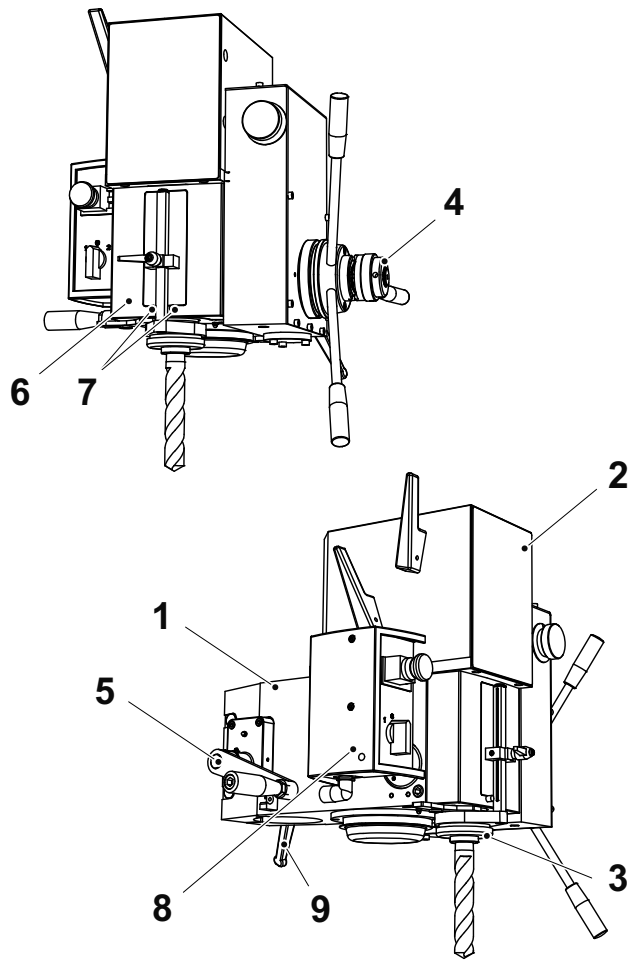
ELECTRICAL SCHEMATICS



ELECTRICAL SCHEMATICS

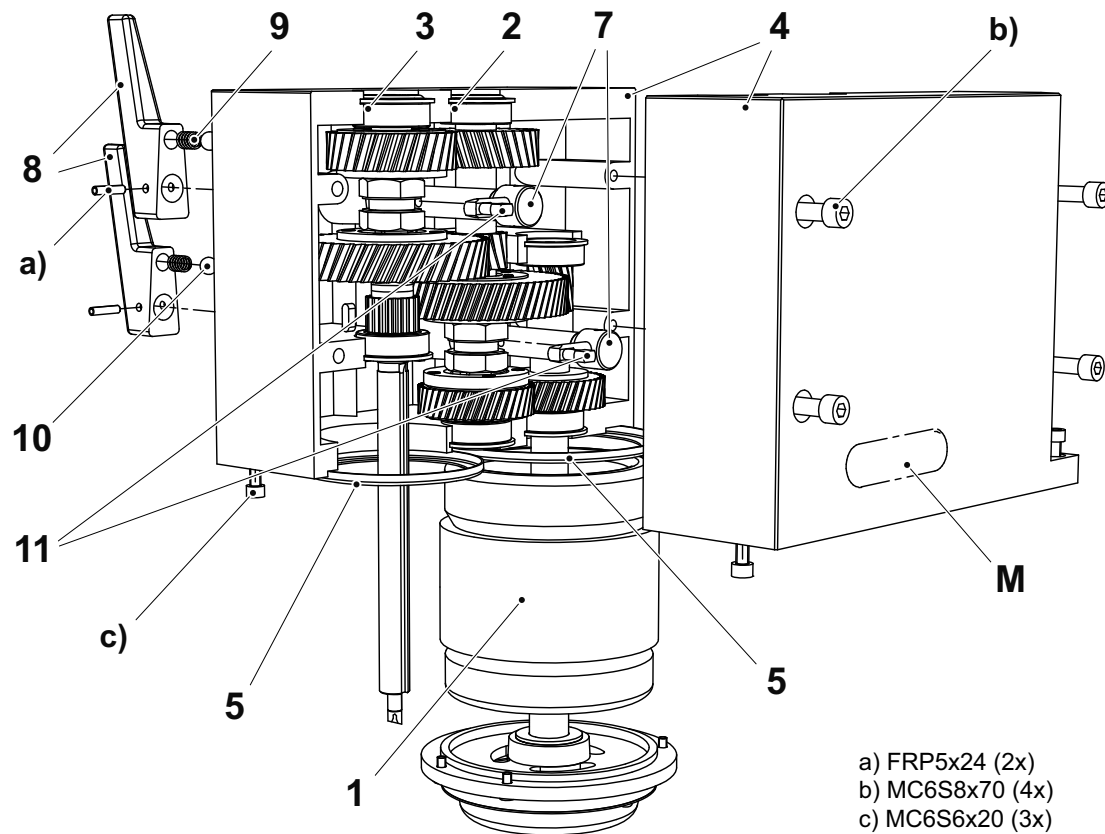


PARTS FOR DRILL HEAD



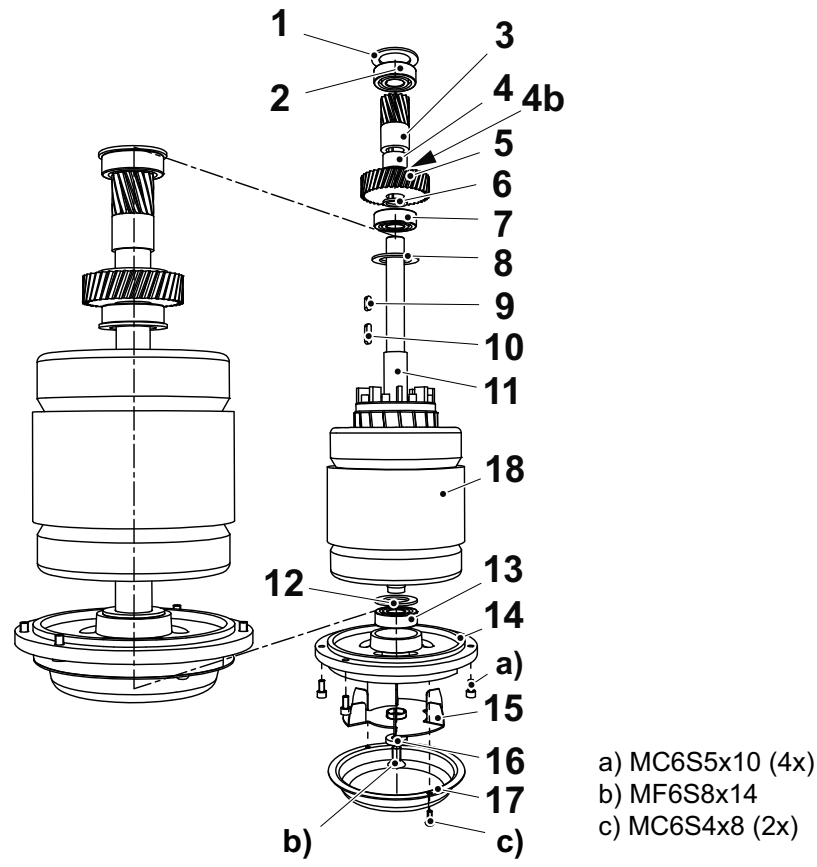
Ref. No.	Part Number	Description	Note
1	2V08700-1	Spindle housing	
2	2X08404-M	Gear box	
3	2X08710	Spindle sleeve	
4	2I08456R	Feed shaft complete	
5	2X08720-1R	Worm gear unit	
6	2U08702	Front cover	
7	3P01407	Pin	CP 8x36
8	2U08705	Electric box cover	
9	3R00014-1	Locking lever	

PARTS FOR GEAR BOX



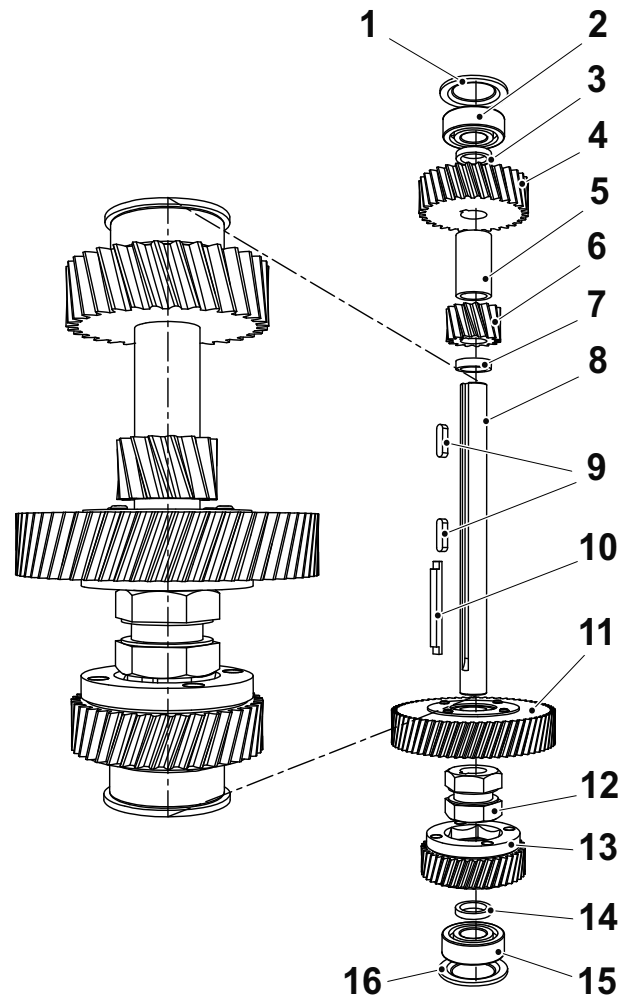
Ref. No.	Part Number	Description	Note
1	2X08404-1	Motor shaft complete	
2	2X08404-2	2:nd shaft complete	
3	2X08404-5	3:rd shaft complete	
4	2X08422-1	Gear box complete	
5	4B00174	Ring	2x
7	2X08536	Gear selector arm	
8	2RS0653-1	Gear lever	
9	4C02921	Gear	2x
10	3T04028	Steel ball	2x
11	4T04168	Shift pin	

PARTS FOR ENGINE SHAFT



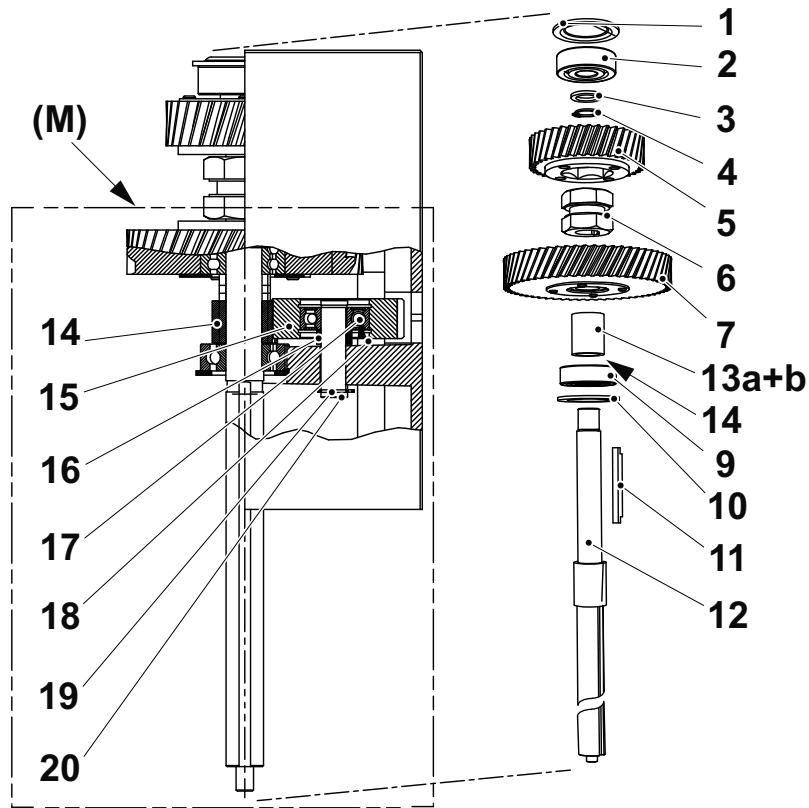
Ref. No.	Part Number	Description	Note
1	4B00137	Washer	
2	3L15003	Ball bearing	6203-2RS
3	2H07969	Gear	15-1,5
4a	2D17014	Spacing sleeve	17x14
4b	2D17003	Spacing sleeve	17x3
5	2H07972	Gear	39-1,5
6	2D17002	Spacing sleeve	17x2
7	3L15003	Ball bearing	6203-2RS
8	4B00137	Washer	
9	3K01184	Key	5x5x14
10	3K01185	Key	5x5x16
11	4X08405-2	Rotor shaft (rotor incl.)	
12	4F06203	Washer	FB 6203
13	3L15003	Ball bearing	6203-2RS
14	2N01889	Bearing cover	B-1889
15	4B00175	Fan	B-175
16	2B03449	Washer	C-3449
17	4B01890	Fan cover	C-1890
18	3E80103R	Stator 80/2-4-70	400 - 440 V

PARTS FOR SECOND SHAFT



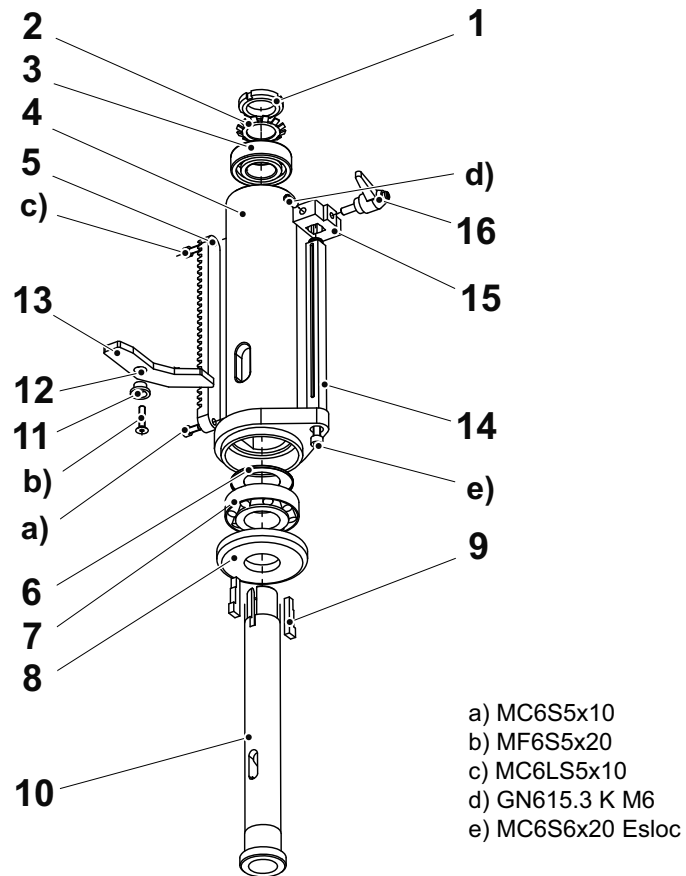
Ref. No.	Part Number	Description	Note
1	4B00138	Washer	C-138
2	3L15003	Ball bearing	6203-2RS
3	2D00009	Spacing sleeve	17x3,5
4	2H07971	Gear	32-2
5	2D17038	Spacing sleeve	17x38
6	2H07970	Gear	15-2
7	2D17005	Spacing sleeve	17x5
8	2A04871	2:nd shaft	C-4871
9	3K01187	Key	5x5x20
10	2T06615	Key	C-6615
11	2X08408R	Gear compl.	64-1,5
12	2T04254	Clutch	C-4254
13	2X08406R	Gear compl.	40-1,5
14	2D00009	Spacing sleeve	17x3,5
15	3L15003	Ball bearing	6203-2RS
16	4B00138	Cover	C-138

PARTS FOR THIRD SHAFT



Ref. No.	Part Number	Description	Note
1	4B08584	Cover	C-138
2	3L15002	Ball bearing	6302
3	2D15002	Spacing sleeve	15x2
4	3C01117	Circlip	SgA 15
5	2X08413R	Gear compl.	32-2
6	2T04254	Clutch	C 4254
7	2X08411R	Gear compl.	49-2
9	3L15003	Ball bearing	6203-2RS
10	4B00137	Cover	C-137
11	2T06615	Key	C-6615
12	2A08410	3:rd shaft	B-8410
13a	2D00011	Spacer	17x4,5 (2x)
13b	2D00009	Spacer	17x3,5
14	2HSB7501-1	Gear wheel	18-1,5
15	2X08558	Gear complete feed	
16	4D12006	Spacer	12x6,5
17	3C02131	Circlip	SGH32 (2x)
18	3L13001	Bearing	6201 2Z
19	3C01114	Circlip	SGA 12
20	2A08441	Feed gear shaft	

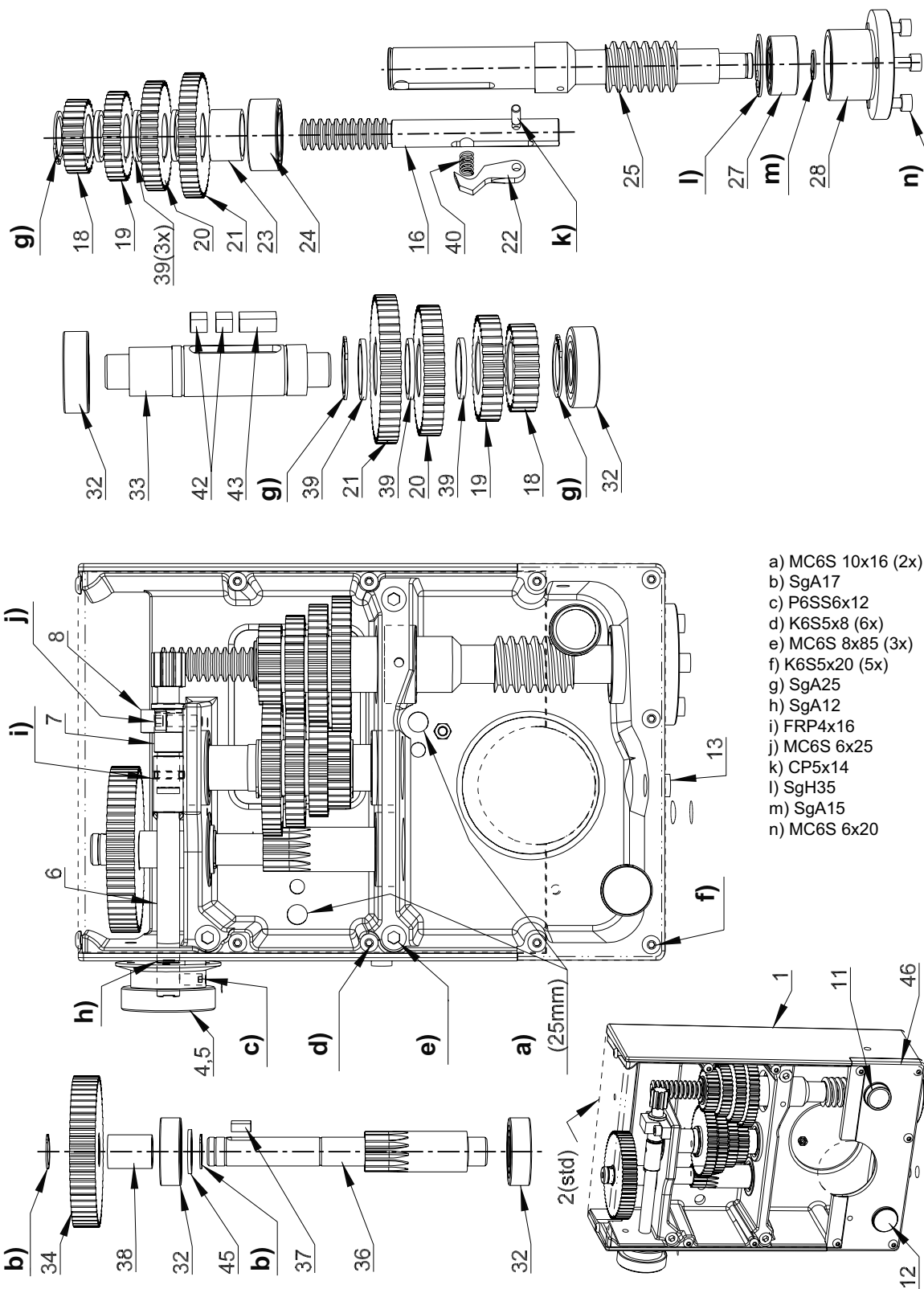
PARTS FOR SPINDLE SLEEVE



- a) MC6S5x10
- b) MF6S5x20
- c) MC6LS5x10
- d) GN615.3 K M6
- e) MC6S6x20 Esloc

Ref. No.	Part Number	Description	Note
1	3M06005	Nut	MK5
2	4B00155	Locking washer	
3	3L15005	Ball bearing	6205
4	2G08710	Spindle sleeve	
5	2I08753	Rack	
6	4B03769	Washer	
7	3L51006	Taper roller bearing	30206
8	2TS1106	Roller bearing cover	
9	2T08386	Key	2x
10	2A08418-1R	Spindle	
11	2T08593	Spacing sleeve	
12	3B06003	Washer	
13	2T08547	Stop	
14	2A08755-1	Depth gauge rod	
15	2T08757	Stop	
16	3R00002	Locking lever	M6x16

PARTS FOR POWER FEED BOX

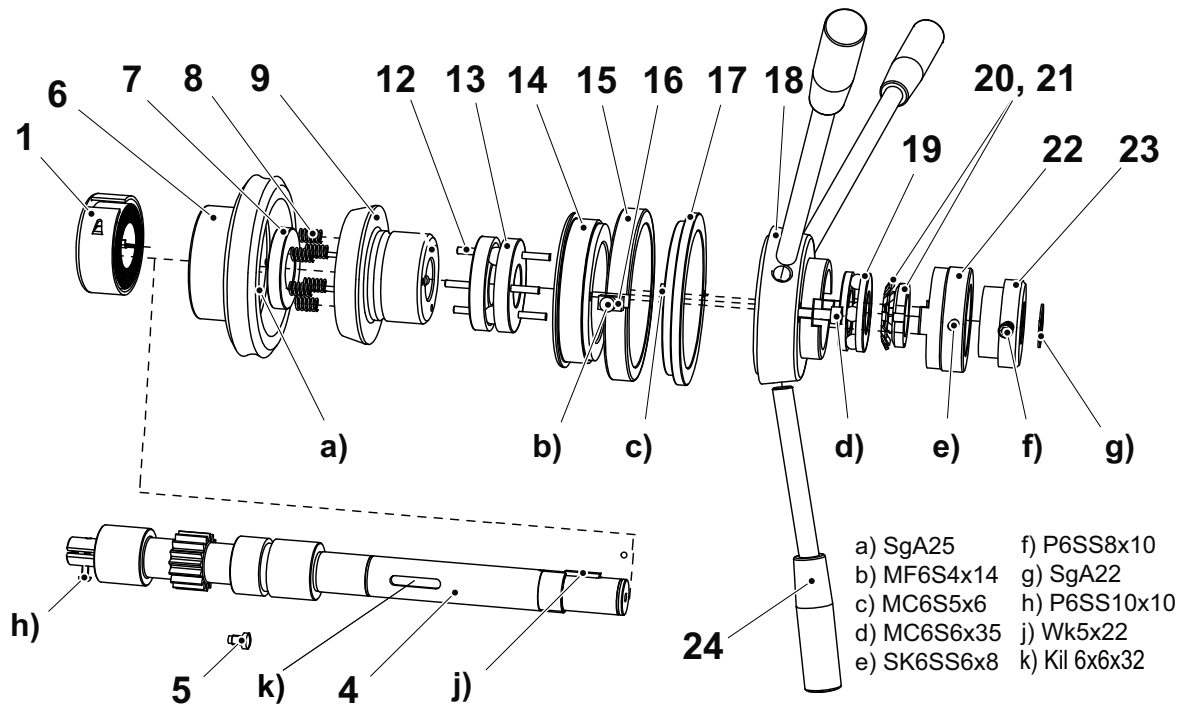


- a) MC6S 10x16 (2x)
- b) SgA17
- c) P6SS6x12
- d) K6S5x8 (6x)
- e) MC6S 8x85 (3x)
- f) K6S5x20 (5x)
- g) SgA25
- h) SgA12
- i) FRP4x16
- j) MC6S 6x25
- k) CP5x14
- l) SgH35
- m) SgA15
- n) MC6S 6x20

PARTS FOR POWER FEED BOX (CONTINUED)

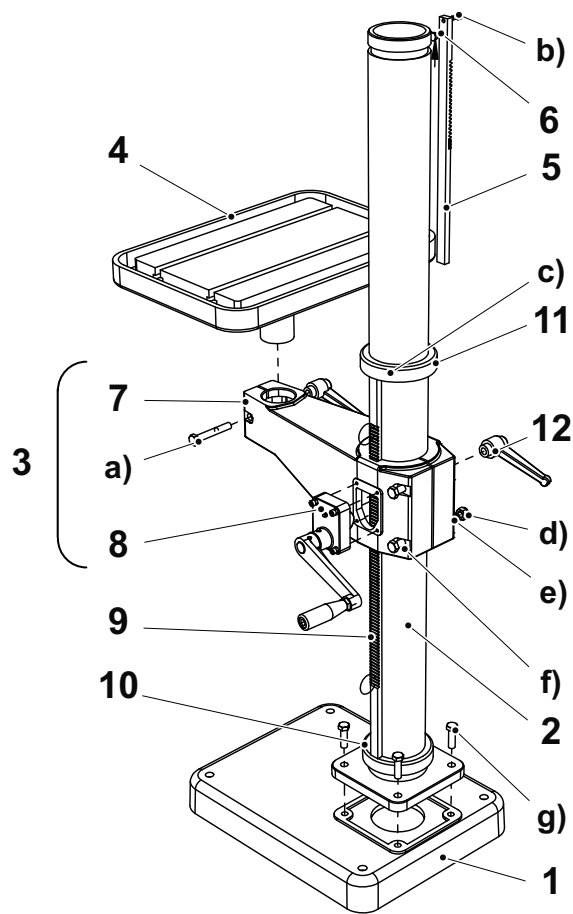
Ref. No.	Part Number	Description	Note
1	2X08781	Feed gear box with cover plate	
2	4L08783	Cover plate	
4	2R05431	Hand wheel	
5	4L086031	Feed plate	
6	2X08458	Extension shaft	
7	2I08542	Gear shaft	
8	2N08457	Bearing bracket	
11	3S50005	Oil fill plug	
12	3T03002	Oil sight glass	
13	3S50002	Plug	R ¼"
16	2I08649	Shaft feed gear box	
18	4H085564	Gear wheel	27-1,5
19	4H085565	Ball bearing	33-1,5
20	4H085566	Ball bearing	41-1,5
21	4H085567	Ball bearing	47-1,5
22	2TSB7534	Key	
23	2DSB75302	Spacer	25x18
24	3L00010	Needle bearing	NA 4905
25	2I08639	Worm shaft feed box	
27	3L40002	Bearing	3202
28	2T08555	Bearing housing	
32	3L15003	Bearing	6203-2RS
33	4A08541	Feed shaft	
34	2HSB75463	Gear	60-1,5
36	2I08540	Gear shaft	
37	3K00183	Key	5x5x12
38	2D00005	Spacer	
39	2D08640	Spacer	25, 1x2 (6x)
40	4CSB11750	Spring	
42	3K00934	Key	
43	3K00296	Key	
45	2D17002	Spacer	17x2

PARTS FOR FEED SHAFT



Ref. No.	Part Number	Description	Note
1	4XS2150	Return spring	
4	2I08456	Feed shaft	
5	4S04211	Guide screw	
6	2ISB7523-2	Worm wheel	
7	2TSB142081	Pressure plate	
8	4CSB548090-2	Clutch head spring	6x
9	2NSB142080	Clutch head	
12	3P07257	Pin	3x
13	2TSB548091	Clutch half	
14	2TSB548092	Lock ring	
15	2TSB548093-1	Stop ring	
16	2TSB548093-3	Stop	
17	2TSB548093-2	Adjusting ring	
18	2TSB548094-1	Handle holder	
19	3L61005	Bearing	
20	3B07005	Locking washer	
21	3M06005	Nut	
22	2TSB548096-1	Coupling clutch	
23	2TSB548096-2	Coupling hub	
24	4E08758	Feed lever	3x

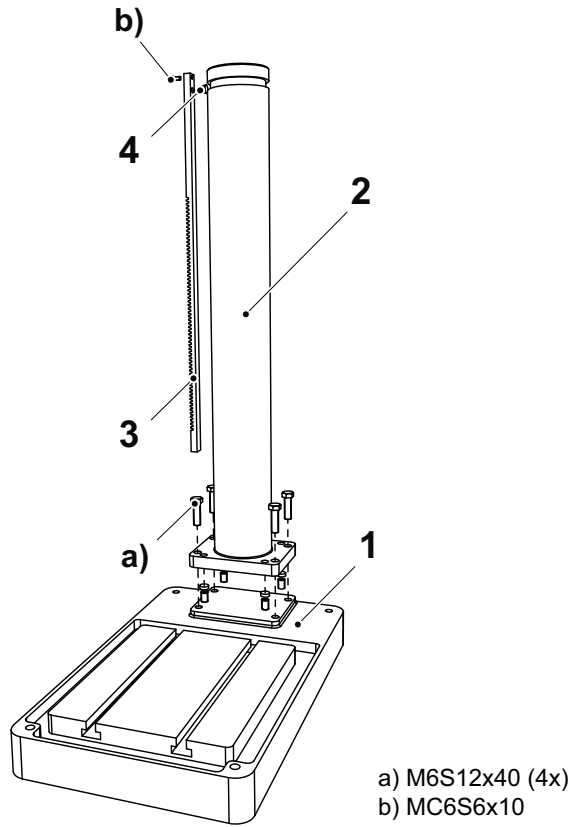
PARTS FOR COLUMN



- a) M6S12x90
- b) MC6S6x10
- c) SK6SS6x12 (3x)
- d) Locknut M12
- e) BRB13x24x2 (3x)
- f) M6S12x130 (2x)
- g) M6S12x40 (4x)

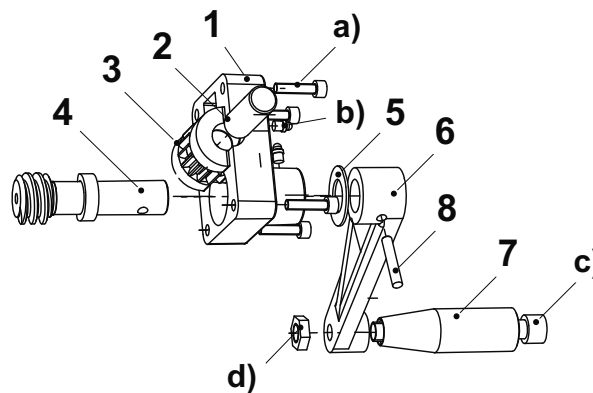
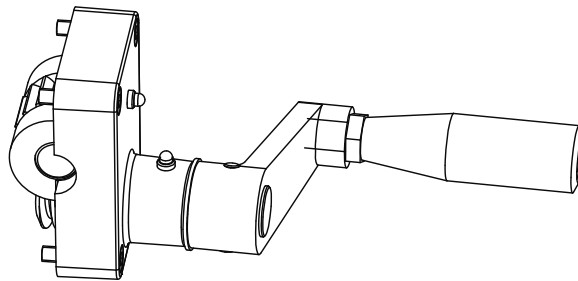
Ref. No.	Part Number	Description	Note
1	2W07802	Base plate	
2	4X08300	Column	L=1500
3	2X08723R	Table arm complete	
4	2X00199R	Table complete	
5	2X08445	Rack	
6	2T07146	Pin	
7	2Y08723	Table arm	
8	2X08720-1R	Worm gear complete	
9	4I03598	Rack	
10	2N00186R	Lower ring	
11	2N03668R	Upper ring	
12	3R00014-1	Locking lever	2x

PARTS FOR COLUMN BENCH TYPE DRILL



Ref. No.	Part Number	Description	Note
1	2WS1236-1	Base plate	
2	4ZS1232-1	Column	
3	2X08545	Rack	
4	2T07146	Pin	

PARTS FOR WORM GEAR BOX COMPLETE



- a) MC6S6x25 (4x)
- b) Lub.nipple Ø6 (2x)
- c) MC6S12x100
- d) ML6M12

Ref. No.	Part Number	Description	Note
1	2N08720	Worm gear box	
2	2A08725	Shaft	
3	4HS1201	Gear	
4	2IS1203-1	Worm shaft	
5	3L00021	Washer	
6	2RS1182-2	Crank	
7	3R01106	Handle	
8	3P06035	Pin	

ACCESSORIES

Part Number	Description	Notes
9612401	Milling vise	Not shown
964848401	Foot pedal	Not shown
964848201	Arbor, MT3/JT4	Not shown
964848301	Chuck w/key, 3/4", JT4	Not shown

PALMGREN WARRANTY

C.H. Hanson / Palmgren warrants their products to be free of defects in material or workmanship. This warranty does not cover defects due directly or indirectly to misuse, abuse, normal wear and tear, failure to properly maintain the product, heated, ground or otherwise altered, or used for a purpose other than that for which is was intended.

The warranty does not cover expendable and/or wear part (i.e. v-belts, screws, abrasives, jaws), damage to tools arising from alteration, abuse or use other than their intended purpose, packing and freight. The duration of this warranty is expressly limited to the terms noted below beginning from the date of delivery to the original user.

The Palmgren branded items carry the following warranties on parts:

All vises, clamps, positioning tables, arbor presses, tombstones, jack screws and vise accessories - LIFETIME.

All bench grinders, drill presses, tapping machines, band saws, lathes, milling machines, abrasive finishing machines and work stands - 3 YEARS.

All non-wear parts for the Arboga drill presses - 5 YEARS.

The obligation of C.H. Hanson / Palmgren is limited solely to the repair or replacement, at our option, at its factory or authorized repair agent of any part that should prove inoperable. Purchaser must lubricate and maintain the product under normal operating conditions at all times. Prior to operation become familiar with product and the included materials, i.e. warnings, cautions and manuals.

Failure to follow these instructions will void the warranty.

This warranty is the purchaser's exclusive remedy against C.H. Hanson for any inoperable parts in its product. Under no circumstances is C.H. Hanson liable for any direct, indirect, incidental, special or consequential damages including loss of profits in any way elated to the use or inability to use our products. This warranty gives you specific legal rights which may vary from state to state.

PALMGREN®



Palmgren - a C.H. Hanson Company

2000 N. Aurora Rd., Naperville, IL 60563 U.S.A.

or call 1-800-827-3398