

INSTRUCTION MANUAL

GHD-22 Geared Head Drill (415V) 31.5mm Drilling Capacity 3MT



D170

Instruction and Spare Parts List

This is your copy of the instructions and spare parts list for Drilling Machine. 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 is of simple design and robustly built, but we cannot guarantee perfect function if it is incorrectly handled.

It is therefore necessary to make yourself thoroughly acquainted with the function and to carry out practical tests on the various parts in the control system and the machine settings. Once these are mastered the excellent 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 check both the mechanical and electrical functions according to a standardized programme, 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 every satisfaction. However, should any problems arise, please do not hesitate to contact our dealer or us.

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 of vital importance, that those who use the machine are informed how to handle it correctly. They should read and understand these instructions as well as all plates available on the machine. Omitment to follow the safety regulations might cause an accident.

Warning

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

General safety regulations

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.

- Always use such clothes and personal equipment so you cannot get caught by rotating tools.
- Always use protective goggles if there exist a risk for chips or splashes from the coolant. Follow local instructions if existing.
- Keep it clean around the machine to avoid to stumble against rotating tools.
- See to it that the work piece is securely fastened at the table. Never use your hand to hold the work piece.
- See to it that the switch is in the 0 position when changing tools or when cleaning the machine.
- Never brush away chips while the machine is operating.
- Use faultless tools and the correct speed and feed for the tool. Be sure that the tool is the correct one for you operation.
- See to it that the drill head and the table are thoroughly damped before starting up the machine.

Installation

- Avoid to install the machine in a humid, dirty or badly illuminated environment.
- Be sure that the machine possesses all necessary protections.
- Electric installations have to be executed by a qualified electrician.
- Be sure that the machine is steadily put up and positioned.

Using

- Never use the machine if it lacks necessary protections.
- Follow applicable regulations for use of machine regarding, personal protective equipment.
- Do not operate the machine with loose clothes or jewelleries. Use hair-net if necessary.
- Never stretch yourself over the machine when it is running.
- Never leave the machine when running.
- Always stop the machine when not in use.

By service and maintenance

- See to that the current is disconnected.
- Always follow the instructions in this manual.
- Do not modify the machine without contacting our dealer.

Cleaning:

All bright parts of the machine are treated with rust preventive. By removing this, be careful not to use too strong cleaning compound. The paint might then get damaged.

Installation:

The machine must be installed on a firm foundation.

The baseplate must be levelled with washers on the foundation bolts to prevent harmful stresses when the nuts are tightened.

Lubrication:

All high-speed shafts and gears are journalled in ball bearings or roller bearings, so that the machine needs very little lubrication.

THE GEAR HOUSING MUST NOT BE FILLED WITH OIL.

EXCESSIVE LUBRICATION SHOULD BE AVOIDED, AS EXCESS OIL CAN DROP INTO THE MOTOR AND DAMAGE ITS INSULATION.

Connections to mains:

The connection to be effected direct to the thermal overload circuit breaker or on multispindle machines to a junction box common for all drilling heads.

Note the earth screw!

(See attached wiring diagram.)

Spindle speed selection:

The selection of the different spindle speeds according to the plate on the front of the drive gear box is effected by the levers on the left hand side of the gear box and also by means of the pole change switch for the motor.

General:

IT SHOULD BE NORMAL PRACTICE TO DISCONNECT THE MACHINE FROM THE MAINS BEFORE ANY DISAMANTLING TAKES PLACE. ON RE-ASSEMBLY SEE TO IT THAT ALL SURFACES ARE CLEAN AND THAT ANY BURRS WHICH MAY HAVE BEEN MADE DURING DISASSEMBLY ARE FIRST REMOVED.

Drive gear box:

When it is necessary to disassemble the drive gear box:

Remove the four screws which connect the drive gear box to the quill housing. Then take away the fan cover and the fan from the quill housing. By knocking slightly on the rotor shaft the drive gear box can be removed. The gear box casting, consisting of two halves can be taken apart by loosening the four screws. All shafts can now be taken out for further disassembling.

When re-assembling the drive gear box, check that the shift pin fits properly into the groove of the clutch. When re-placing the drive gear box on the quill housing, it must be checked that the driving keys in the spindle are in place and that they will fit properly the corresponding key ways on the gear box output shaft.

Spindle:

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.

Hold the spring housing by co-locating a hex key in the centre of the housing and loosen the screw. Let the housing to relieve the pressure on the spring. The quill will then automatically go to its lowest position.

Remove the stop and loosen the screw, which keeps the feed shaft in its position. Hold the quill with one hand and push the feed drive shaft so far to the right to disengage the teeth from the quill feed rack. Then remove the quill.

When re-assembling, the keys on the spindle are to coincide with the key ways in the spindle shaft. Take care to avoid damaging the keys when sliding the quill into position.

Counter balancing:

The spring housing for counter balancing of the spindle is removed as follow:

Hold the spring housing with a hex key and at the same time loosen the locking screw which secures it. Let the housing turn in order to relieve the pressure on the spring, then turn the spring housing round in a clockwise direction, so that the spring will be released from the screw, with which it is fixed to the feed shaft. The spring housing can now be removed.

When re-assembling press the spring housing with the spring into its place and turn in counter-clockwise direction until the spring fits to the screw on the feed shaft.

Then turn the spring housing further in counter clockwise direction, until the correct balancing of the spindle is obtained. Then lock the housing with the screw.

Motor:

If it is necessary to remove the stator, proceed as follow:

DISCONNECT THE MACHINE FROM THE MAINS.

Remove the drive gear box, the quill and the feed drive shaft as indicated above. The motor and the line cables are removed from the pole-change switch. Secure the quill housing with a lifting band. Loosen the screw and lift off the quill housing. Then remove the elevating mechanism for the drilling head.

The two step screws on the left side of the quill housing keeping the stator in its position, are removed and the position of the stator is marked in the housing. By knocking lightly on the underside of the quill housing against a suitable surface the stator will slide downwards out of the housing. The new stator is then pressed into the housing from below in the same position as the previous one.

MACHINERYHOUSE

Drill Ejector type Tell

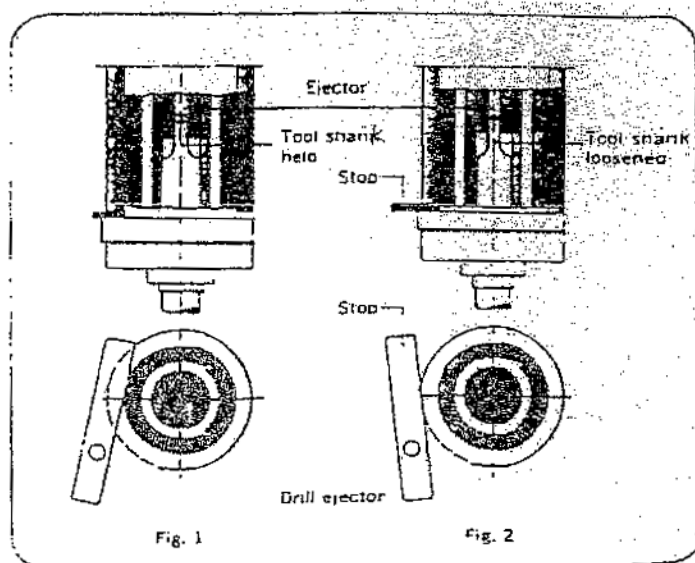
This Drilling Machine is fitted with a built-in Drill Ejector, the mechanism and instructions for use outlined below.

When it is desired to remove a taper shank drill or chuck from the spindle, the pivoting finger stop is swung outward away from the spindle by pressing the short extended section, as shown in figure 2. This allows the quill unit to be raised an extra $\frac{1}{4}$ ". The drill or chuck shank is then ejected from out of the spindle by giving a light jerk on the feed lever. The pivoting finger stop in the "IN" position, as shown in figure 1. Prevents the quill unit from returning completely into quill housing, this preventing the tang on the drill shank from contacting the drill ejector during normal use.

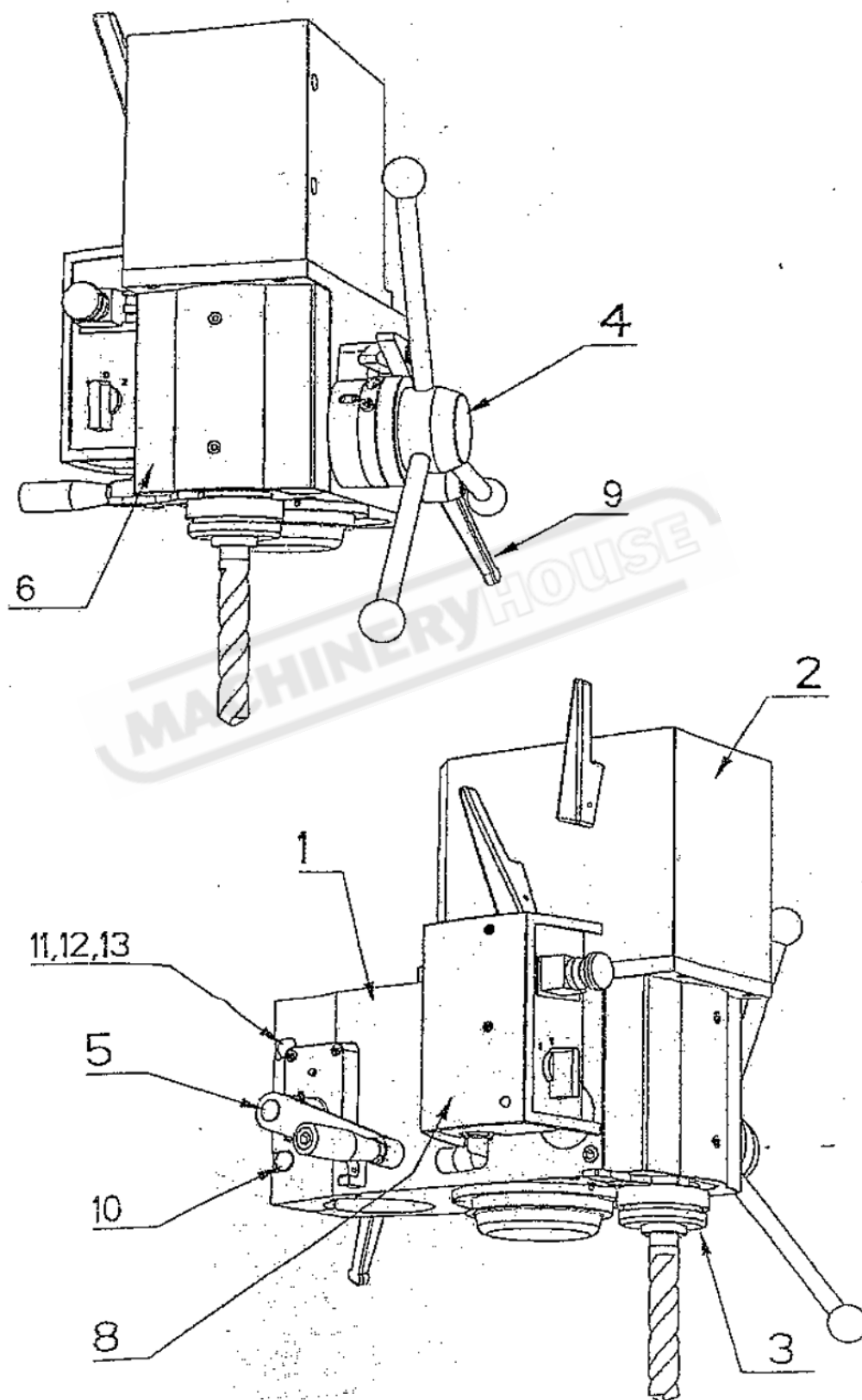
It sometimes occurs that the drill or chuck shank may stick in the taper socket, making it difficult to eject. Do not use force to loosen it, as this may damage both the spindle shaft and the bearings.

In such case use the standard type of drift and when doing so, lower the spindle and quill unit so that the drift slot is below the spindle housing.

It is essential for efficient use of the built-in drill ejector, that drills and chuck shanks are provided with standard tapers and tangs. If the tang is too short the drill can only be removed by using a drift by the aforementioned method. With too long a tang the drill will be removed even if the pivoting finger stop is in the "IN" position. This can, however, be easily remedied by grinding down the head of the tang until it clears the ejector.



SPINDELHUVUD
DRILLHEAD
BOHRKOPF

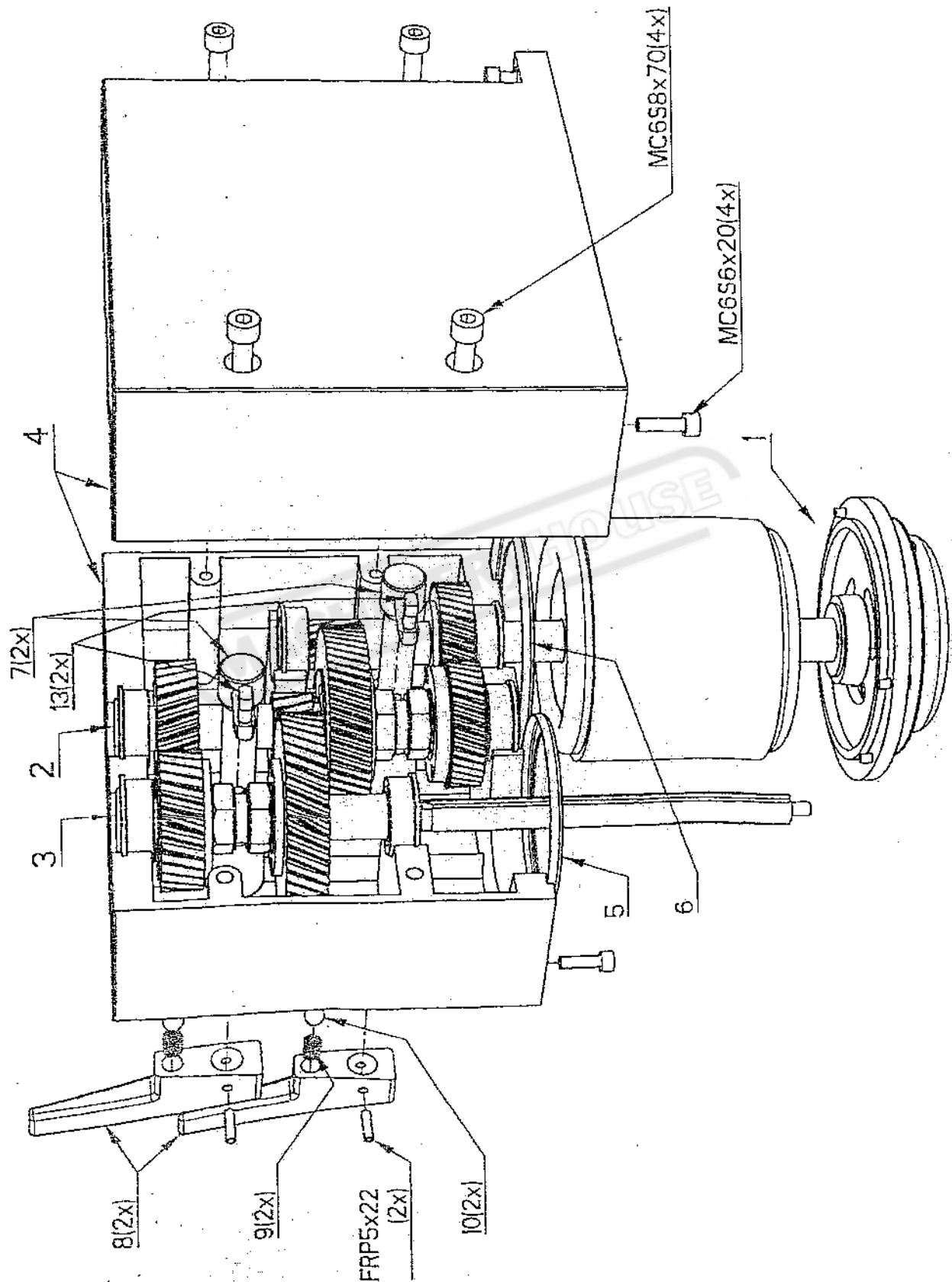


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		Spindelhuvud	Drillhead	Bohrkopf	
Pos	Art.No.	Benämning	Description	Benennung	Not
1.	2X08700	Spindelhus	Spindlehousing	Spindelgehäuse	
2.	2X08404	Växellåda	Gearbox	Getriebekasten	
3.	2X08719	Spindelhylsa	Spindlesleeve	Spindelhülse	
4.	2X08740-5	Matningsaxel komp.	Feedshaft compl.	Vorschubwelle kompl.	
5.	2X08720	Snäckväxel	Wormgearunit	Schneckenwechsel	
6.	2X08702	Frontkåpa	Frontcover	Frontdeckel	
8.	4U08705	Elboxkåpa	Electricboxcover	Elektrogehäuse	
9.	3R00014	Ställbar låsspak	Locking lever	Klemmhebel	
10.	3S02556	Skruv M6S	Screw	Schraube	M12x120
11.	3S02558	Skruv M6S	Screw	Schraube	M12x130
12.	3M09122	Låsmutter	Lockingnut	Sicherungsmutter	M12
13.	3B04178	Bricka TRB	Washer	Scheibe	13x24x4

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VÄXELLÅDA
GEAR BOX
GETRIEBEGEHÄUSE

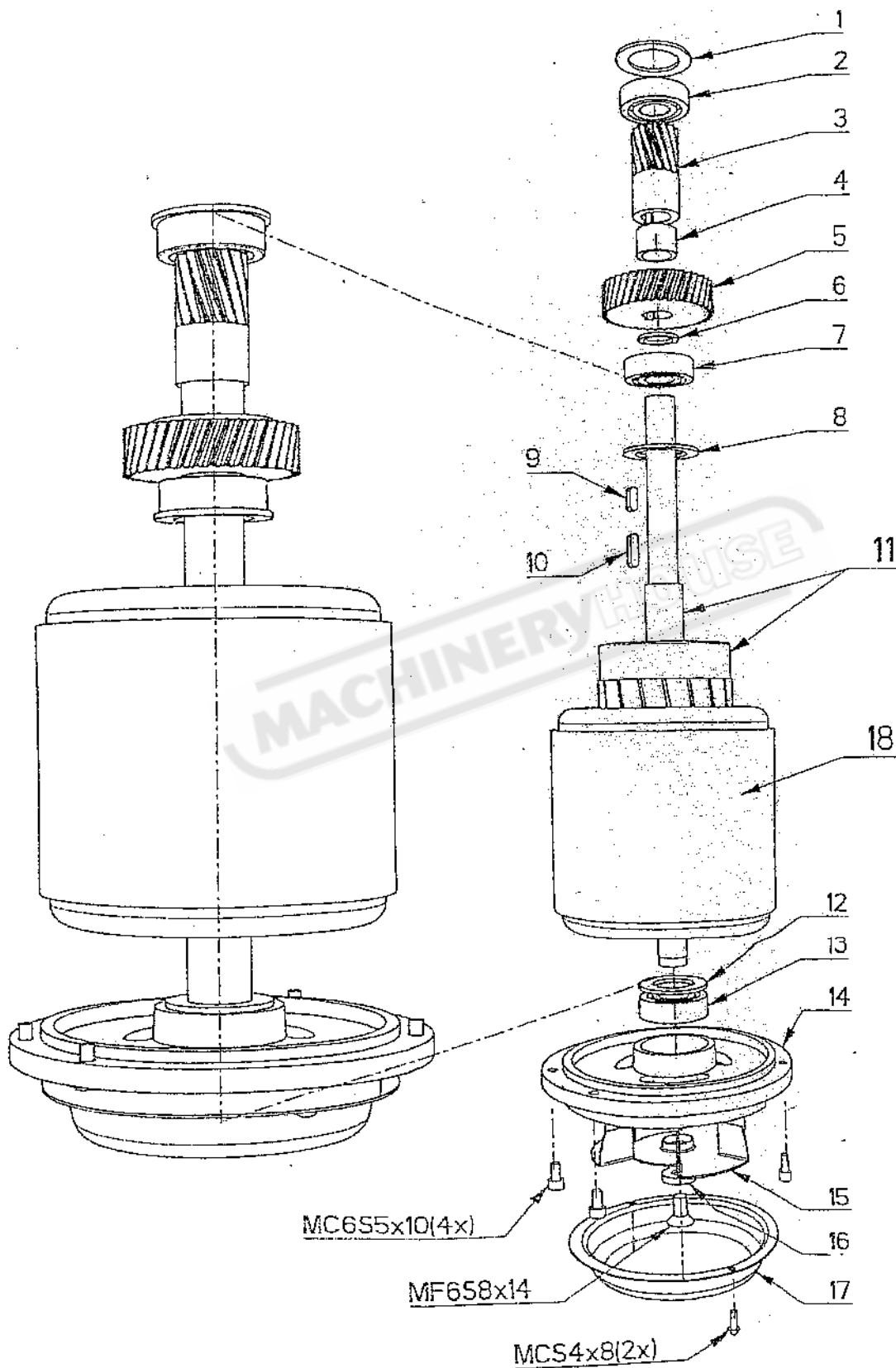


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		Växellåda	Gear box	Getriebegehäuse	
Pos	Art.No.	Benämning	Description	Benennung	Not
1.		Motoraxel	Rotorschaft	Rotor kompl.	
2.	2X08404-2	2:a Axel kompl.	2:nd Shaft complete	2:e Welle kompl.	
3.	2X08404-3	3:e Axel kompl.	3:rd Shaft complete	3:e Welle kompl.	
4.	2X08422	Växellådshus kpl.	Gear box complete	Getriebekasten	
5.	4B00174	Styrning	Ring	Ring	
6.	4B00173	Styrning	Ring	Ring	
7.	2X08536	Skiftarm	Gear selector arm	Schaltarm	
8.	4RS0653-1	Växelspak	Gear lever	Schalthebel	
9.	4C02921	Fjäder	Gear	Feder	
10.	3T04028	Stålkula	Steel ball	Kugel	
13.	4T04168	Skiftstift	Shift pin	Stift	

MACHINERYHOUSE

MOTORAXEL
SHAFT, ENGINE
WELLE, MOTOR



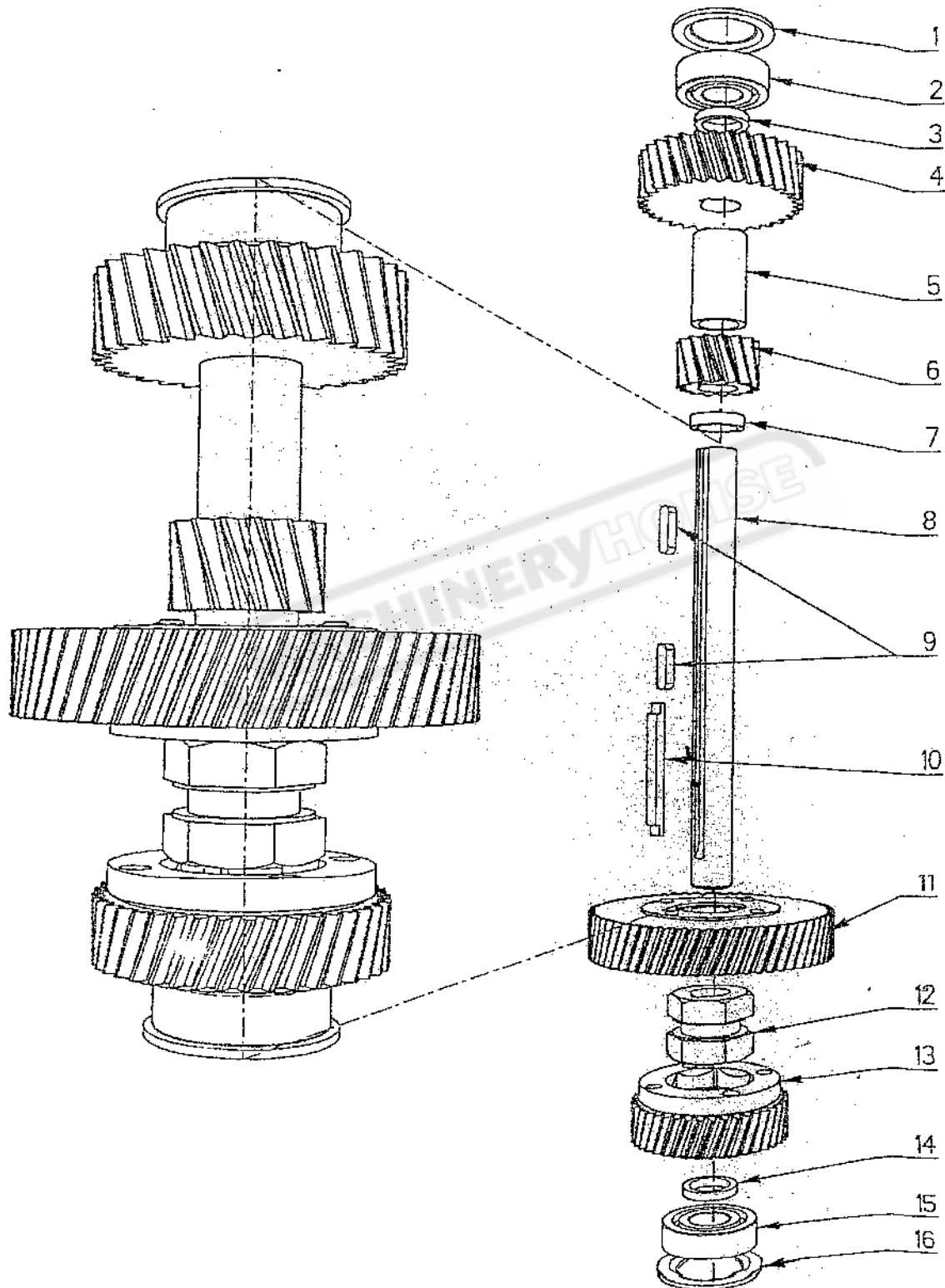
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		Motoraxel	Rotorshaft	Rotorwelle		
Pos	Art.No.	Benämning	Description	Benennung	Not	
1.	4B00137	Lock	Washer	Scheibe		
2.	3L11003	Enrad spårkullager	Ball bearing	Kugellager	6203	
3.	2H07969	Kugghjul	Gear	Zahnrad	15-1,5	
4.	2D17014	Distanshylsa	Spacing sleeve	Distanzhülse	17x14	
5.	2H07972	Kugghjul	Gear	Zahnrad	39-1,5	
6.	2D17002	Distanshylsa	Spacing sleeve	Distanzhülse	17x2	
7.	3L11003	Enrad spårkullager	Ball bearing	Kugellager	6203	
8.	4B00137	Lock	Washer	Scheibe		
9.	3K00184	Keil	Key	Keil	5x5x14	
10.	3K00187	Keil	Key	Keil	5x5x20	
11.	2X08405	Motoraxel	Rotorshaft	Rotorwelle		
12.	4F06203	Bricka	Washer	Scheibe	FB 6203	
13.	3L11003	Enrad spårkullager	Ball bearing	Kugellager	6203	
14.	2N01889	Lagerlock	Bearing cover	Lagerdeckel	B-1889	
15.	4B00175	Vinghjul	Fan	Ventilator	B-175	
16.	2B03449	Bricka	Washer	Scheibe	C-3449	
17.	4B01890	Flätkåpa	Fan cover	Ventilatordeckel	C-1890	
18.	3E80103	Stator 80/2-4-70	Stator 80/2-4-70	Stator 80/2-4-70	380-440	

2:a AXEL, VÄXELLÅDA

2nd SHAFT, GEAR BOX

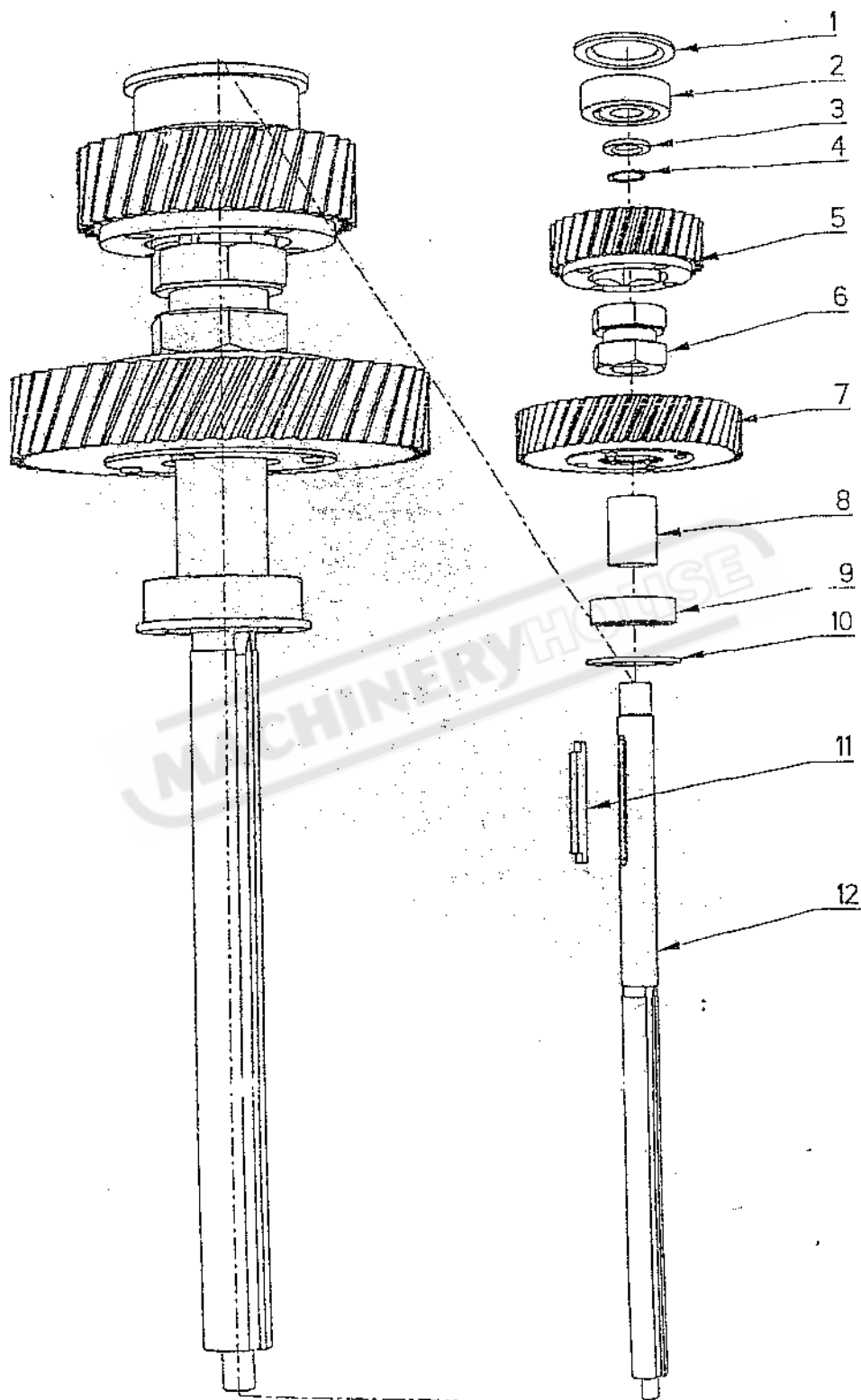
2:e WELLE, GETRIEBEGEHÄUSE



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		2:a Axel	2:nd Shaft	2:e Welle	
Pos	Art.No.	Benämning	Description	Benennung	Not
1.	4B00138	Lock	Washer	Scheibe	C-138
2.	3L11003	Enrad spårkullager	Ball bearing	Kugellager	6203
3.	2D00009	Distanshylsa	Spacing sleeve	Distanzhülse	17x3,5
4.	2H07971	Kugghjul	Gear	Zahnrad	32-2
5.	2D17038	Distanshylsa	Spacing sleeve	Distanzhülse	17x38
6.	2H07970	Kugghjul	Gear	Zahnrad	15-2
7.	2D17005	Distanshylsa	Spacing sleeve	Distanzhülse	17x5
8.	2A04871	2:a Axel	2:nd Shaft	2:e Welle	C-4871
9.	3K00187	Kil	Key	Keil	5x5x20
10.	2T06615	Övre kil	Key	Keil	C-6615
11.	2X08408	Kugghjul kompl.	Gear complete	Zahnrad kompl.	64-1,5
12.	2T04254	Kopplingsklo	Clutch	Kupplung	C-4254
13.	2X08406	Kugghjul kompl.	Gear complete	Zahnrad kompl.	40-1,5
14.	2D00009	Distanshylsa	Spacing sleeve	Distanzhülse	17x3,5
15.	3L11003	Enrad spårkullager	Ball bearing	Kugellager	6203
16.	4B00138	Lock	Cover	Deckel	C-138

3:e AXEL, VÄXELLÅDA
3rd SHAFT, GEAR BOX
3:e WELLE, GETRIEBEGEHÄUSE

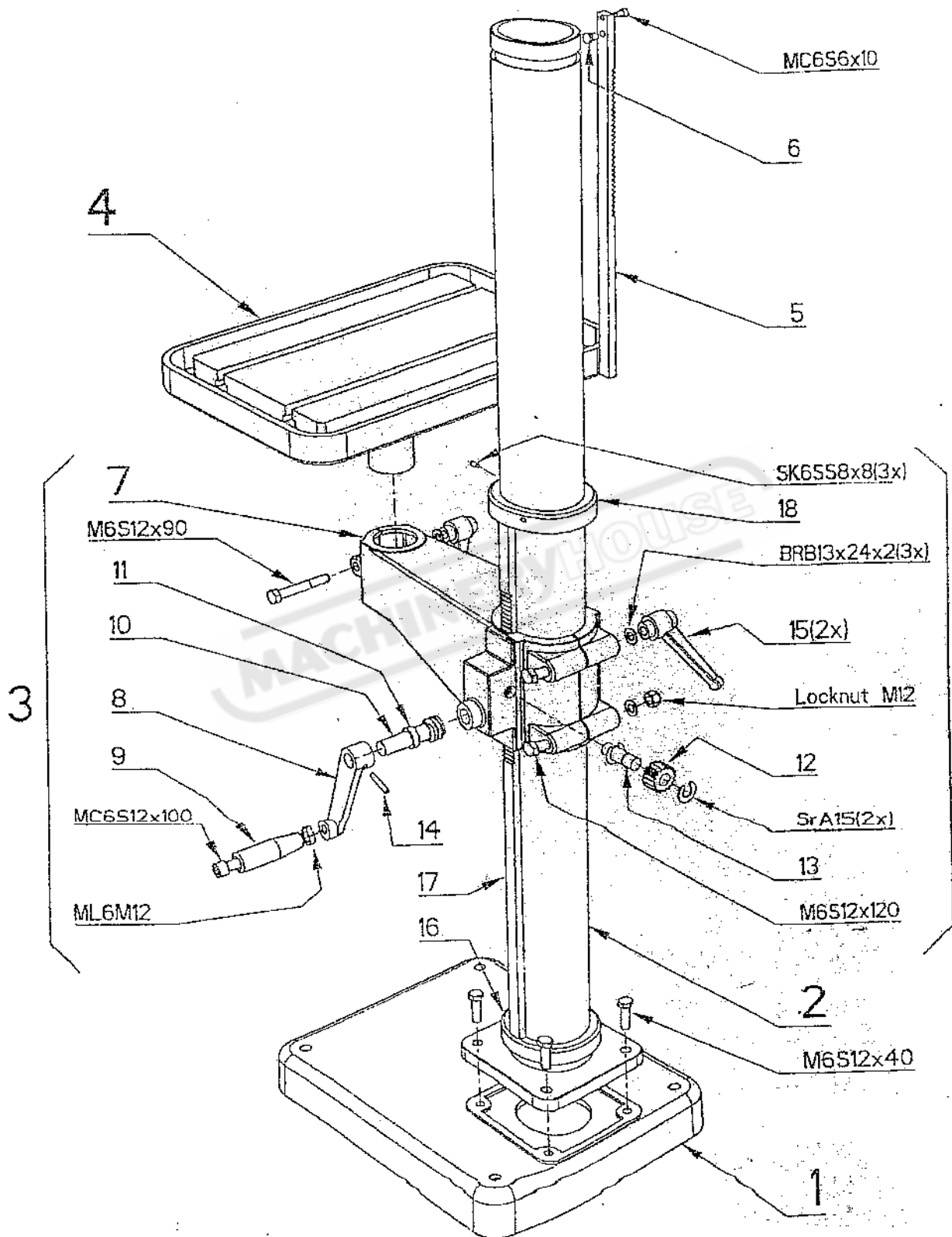


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		3:e Axel	3:rd Shaft	3:e Welle	
Pos	Art.No.	Benämning	Description	Benennung	Not
1.	4B00138	Lock	Cover	Deckel	C-138
2.	3L16002	Enrad spårkullager	Ball bearing	Kugellager	6302
3.	3D15002	Distanshylsa	Spacing sleeve	Distanzhülse	15x2
4.	3C01117	Spärring	Circlip	Führungsring	SgA 15
5.	2X08413	Kugghjul kompl.	Gear complete	Zahnrad kompl.	32-2
6.	2T04254	Kopplingsklo	Clutch	Kupplung	C 4254
7.	2X08411	Kugghjul kompl.	Gear complete	Zahnrad kompl.	49-2
8.	2D00006	Distanshylsa	Spacing sleeve	Distanzhülse	17x31,5
9.	3L11003	Enrad spårkullager	Ball bearing	Kugellager	6203
10.	4B00137	Lock	Cover	Deckel	C-137
11.	2T06615	Övre kil	Key	Keil	C-6615
12.	2A08410	3:e Axel	3:rd Shaft	3:e Welle	B-8410

MACHINERYHOUSE

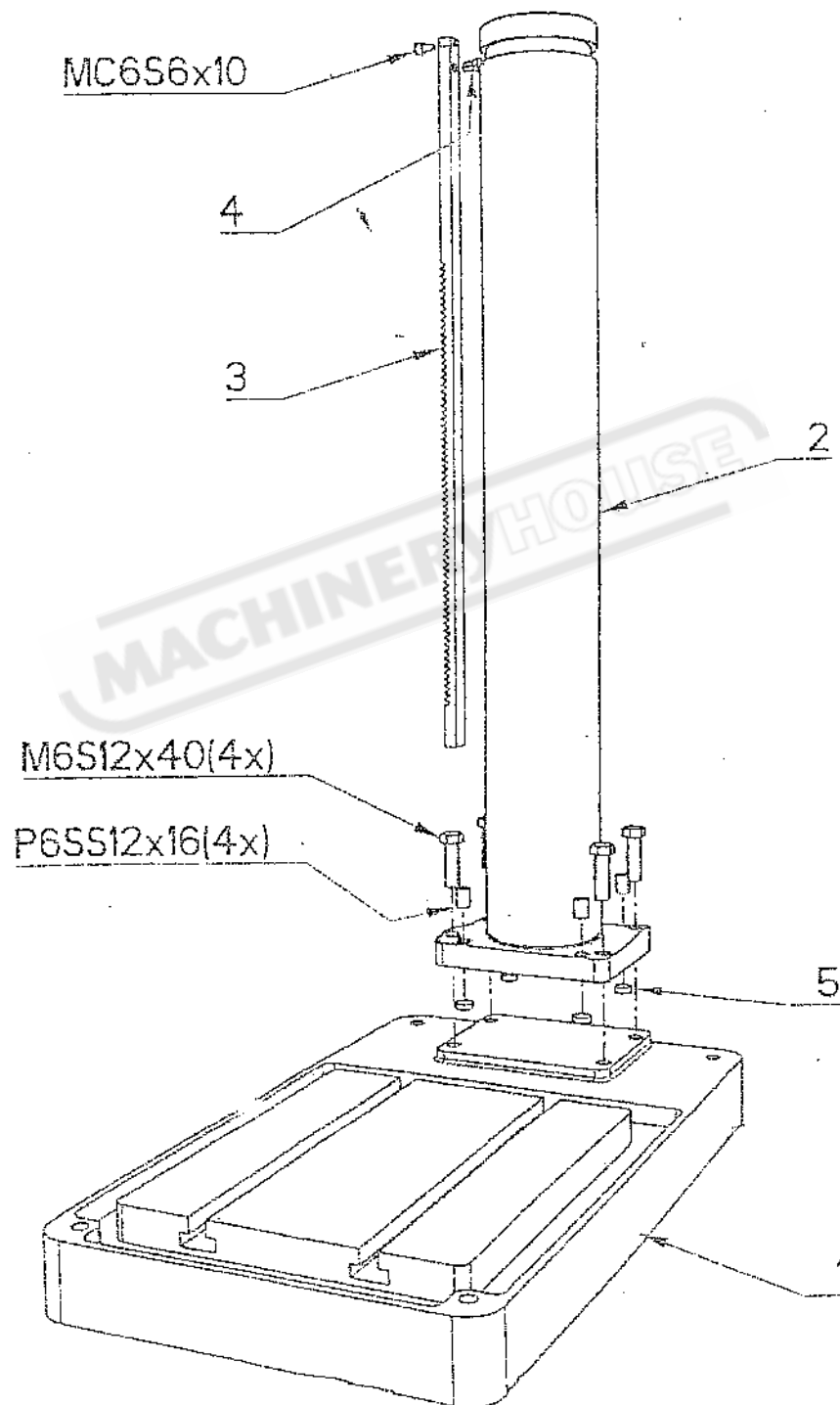
PELARE COLUMN SÄULE



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		Pelare	Column	Säule		
Pos	Art.No.	Benämning	Description	Benennung	Not	
1.	2W07802	Fotplatta	Base plate	Fussplatte		
2.	4X08300	Pelare	Column	Säule	L=1500	
3.	2X08723	Bordarm kompl.	Table arm complete	Tischstätze kompl.		
4.	2WS1231	Fyrkantsbord	Table	Tisch		
5.	2X08445	Kuggstång	Rack	Zahnstange		
6.	2T07146	Tapp	Pin	Zapfen		
7.	2Y08723	Bordarm	Table arm	Tischstätze		
	2X08720-1	Snäckväxel kompl.	Worm gear complete	Schneckengetriebe kompl.		
8.	2RS1182	Vev	Crank handle	Kurbel		
9.	3R01106	Handtag	Handle	Ballengriff		
10.	2IS1203	Snäckskruv	Worm shaft	Schneckenwelle		
11.	2D20008	Distansring	Spacer	Distanzring		
12.	2HS1201	Kugghjul	Gear	Zahnrad		
13.	2AS1202	Axel	Shaft	Welle		
14.	3S04444	Stoppskruv	Stop screw	Gewindestift	SK6SS 8x8	
15.	3R00014	Ställbar låsspak	Locking handle	Sperrhebel		
16.	2N00186	Nedre ring	Lower ring	Ring		
17.	2I03598	Kuggstång	Rack	Zahnstange		
18.	2N03668	Övre ring	Upper ring	Oberer Ring		

PELARE
COLUMN
SÄULE

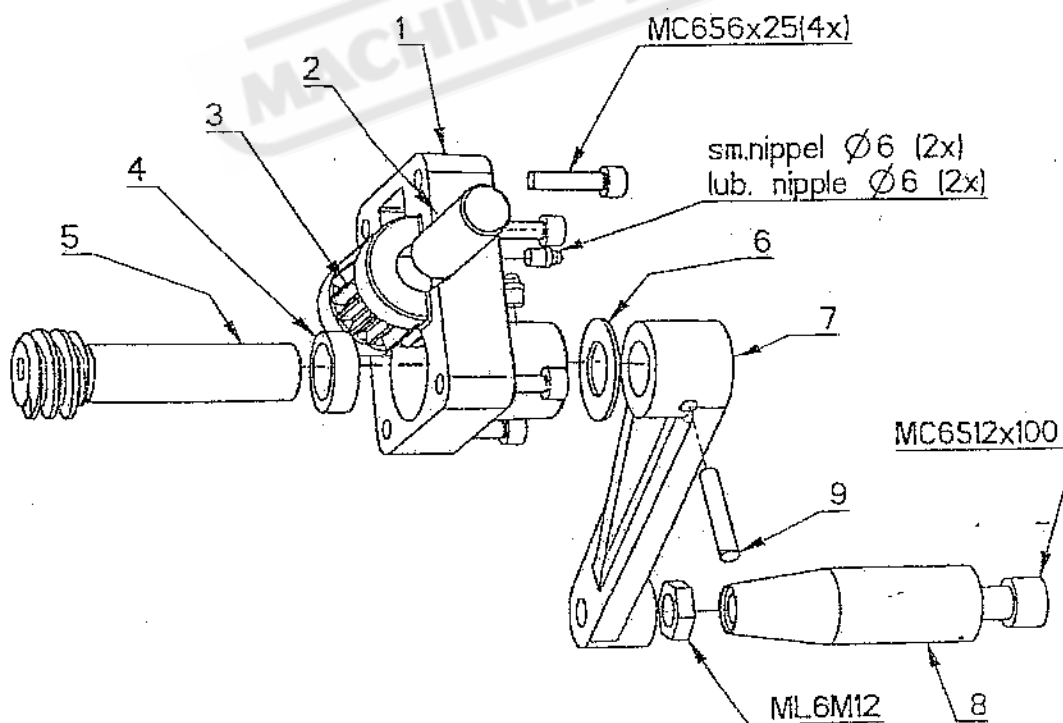
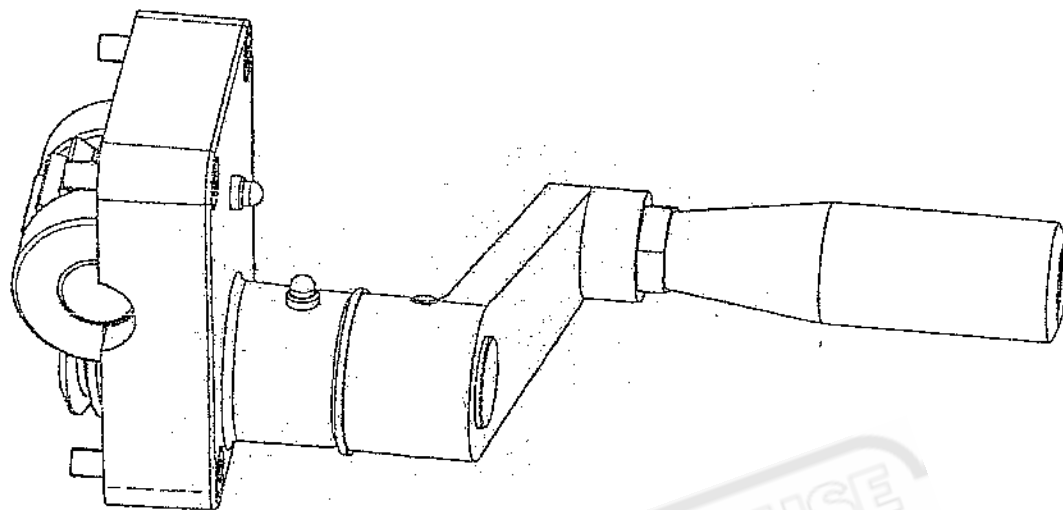


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		Pelare	Column	Säule	Not
Pos	Art.No.	Benämning	Description	Benennung	
1.	1B03016	Bänkplatta	Base plate	Tischplatte	
2.	4ZS1232	Bänkelare	Column	Säule	
3.	2X08545	Kuggstång kompl.	Rack	Zahnstange	
4.	2T07146	Tapp	Pin	Zapfen	
5.	2B05922	Tryckbricka	Washer	Scheibe	

MACHINERYHOUSE

VEV KOMPLETT
CRANK COMP.
KURBEL KOMP.



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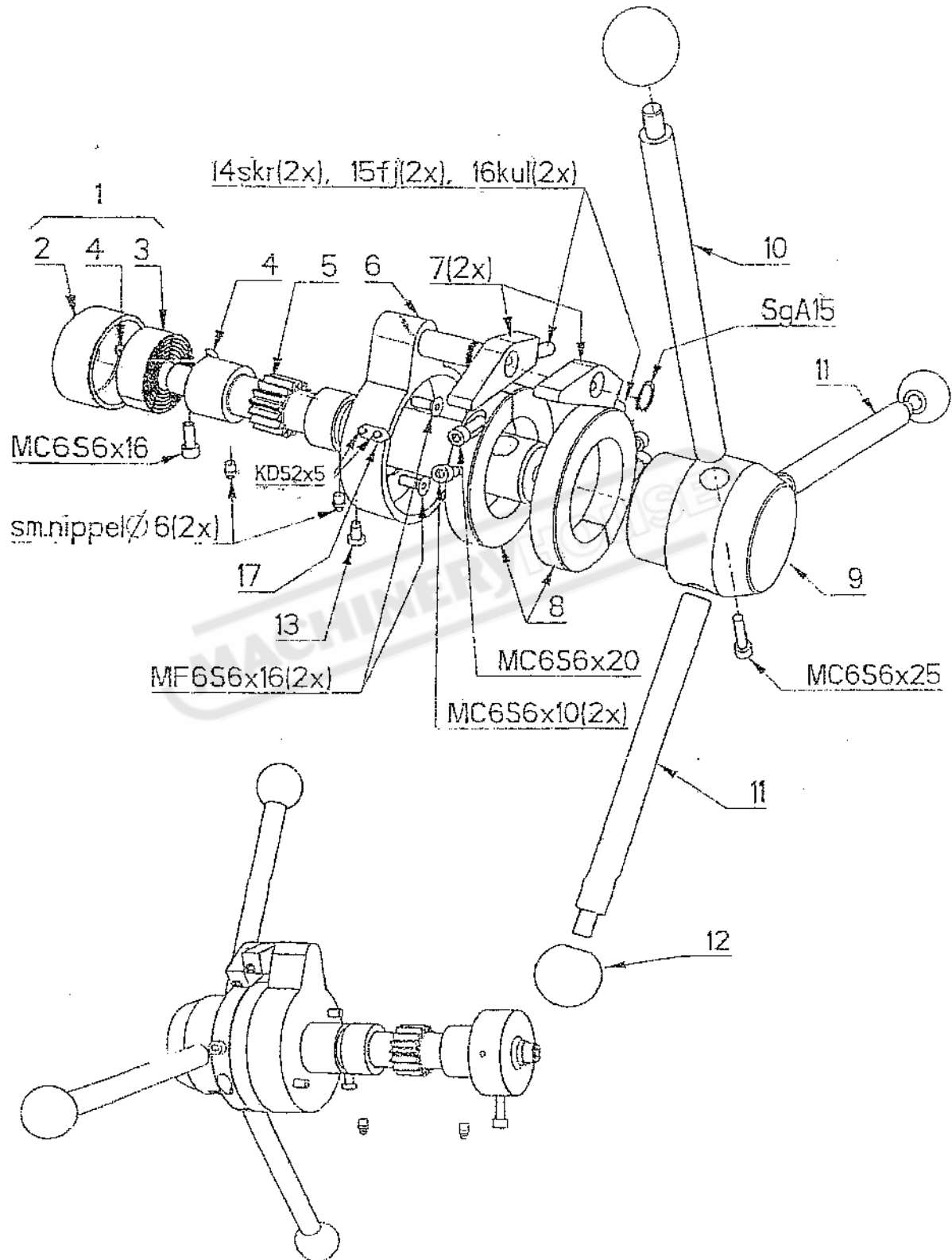
2X08720

Snäckväxelhus
kompl.Worm gear box
completeSchneckengetriebe-
gehäuse kompl.

Pos	Art.No.	Benämning	Description	Benennung	Not
1.	2N08720	Snäckväxelhus	Worm gear box	Schnecken- getriebegehäuse	
2.	2AS1202	Axel	Shaft	Welle	
3.	2HS1201	Kugghjul	Gear	Zahnrad	
4.	2D20008	Distansring	Spacer	Distanzring	20x8
5.	2IS1203	Snäckskruv	Worm shaft	Schneckenwelle	
6.	3L00021	Glidbricka	Washer	Scheibe	
7.	2RS1182	Vev	Crank	Kurbel	
8.	3R01106	Handtag	Handle	Ballengriff	
9.	3S04444	Skruv	Screw	Schraube	SK6SS 8x8

MACHINERYHOUSE

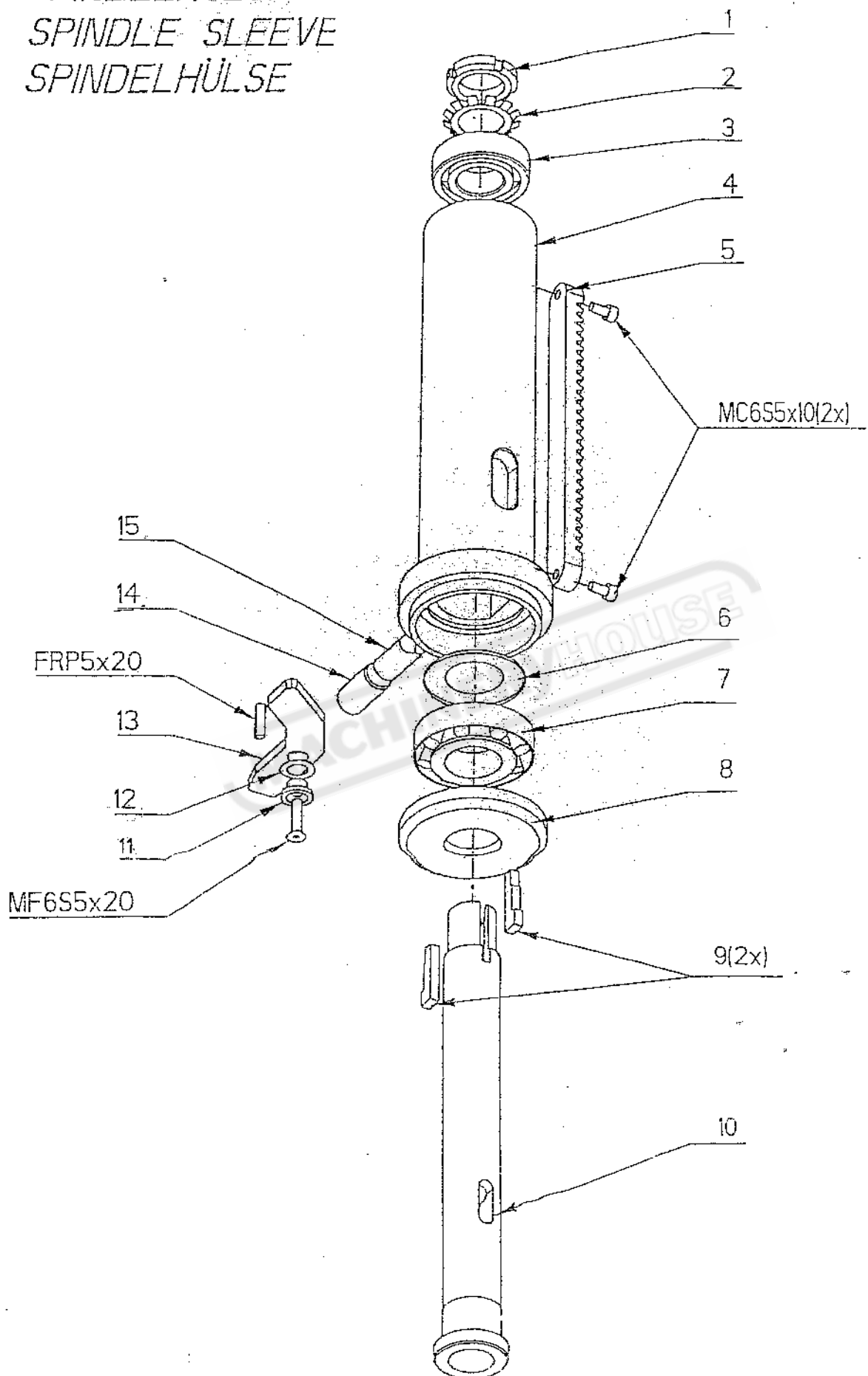
MATNINGSAXEL
FEED SHAFT
VORSCHUBWELLE



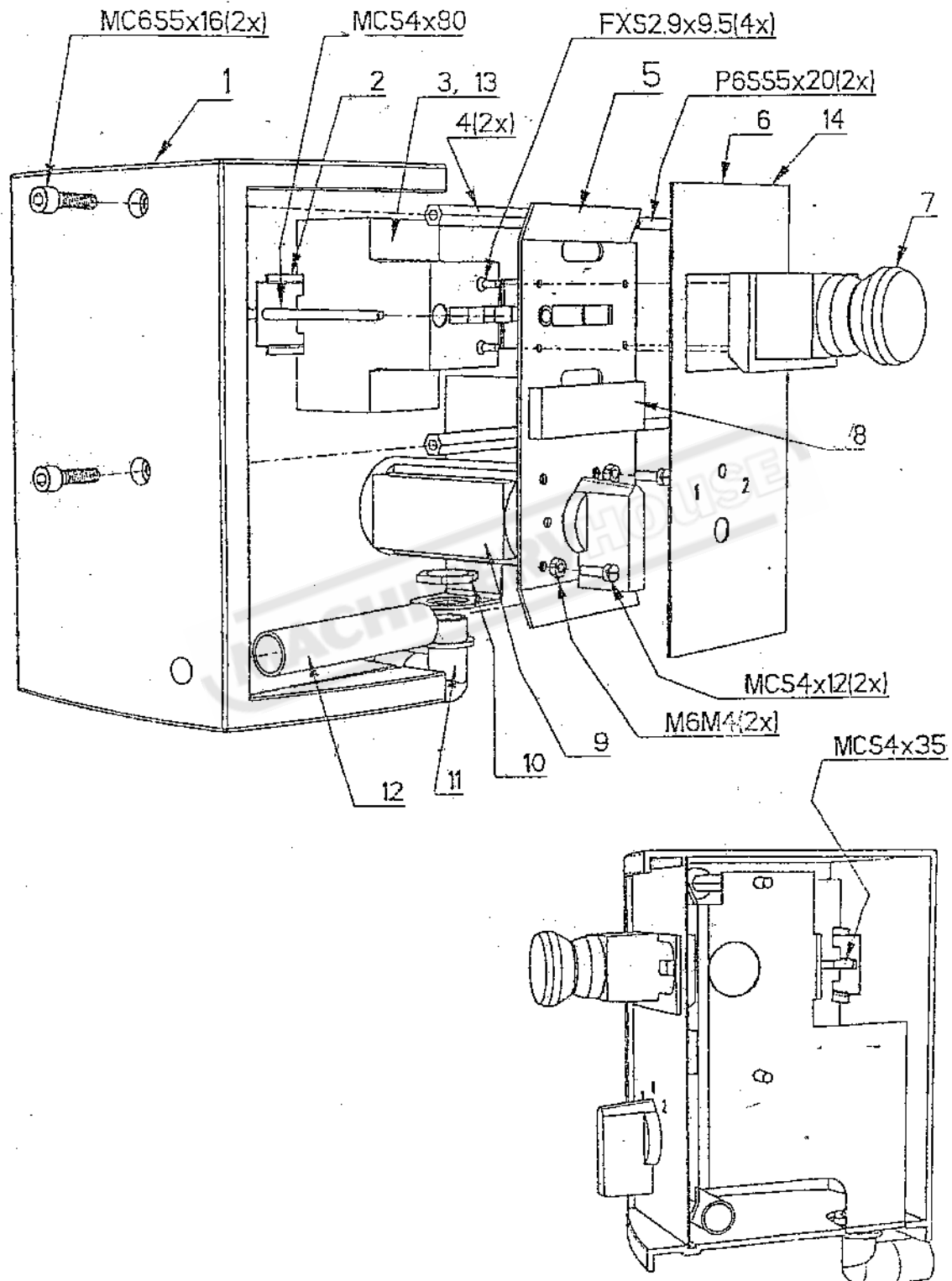
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		Matningsaxel	Feed shaft	Vorschubwelle	
Pos	Art.No.	Benämning	Description	Benennung	Not
1.	2X08715	Fjäderhus kompl.	Spring housing cpl.	Federgehäuse kompl.	
2.	4T08715	Fjäderhus	Spring housing	Federgehäuse	
3.	4C03026	Fjäder	Spring	Feder	
4.	3S11285	Skruv	Screw	Schraube	MFS 4x6
5.	2I08708	Matningsaxel	Feed shaft	Vorschubwelle	
6.	2TS1129	Fjäderhus	Spring housing	Federgehäuse	
7.	2TS1132	Stopplack	Stop lug	Anschlag	
8.	2TS1125	Skalring yttre	Scale ring	Anschlagring	
8a.	2TS1125-1	Skalring mm	Scale ring	Skalenring	
8b.	2TS1125-2	Skalring tum	Scale ring	Skalenring	
9.	2T08707	Spaknav	Lever hub	Nabe	
10.	2E08721	Matningsspak	Feed lever	Vorschubhebel	
11.	2E08722	Matningsspak	Feed lever	Vorschubhebel	
12.	3R02003	Handtagskula	Handle ball	Ballengriffkugel	
13.	4S04211	Tappskruv	Screw	Schraube	
14.	3S08443	Skruv	Screw	Schraube	M8x8
15.	4CS1134	Fjäder t. Stopplack	Spring, stop lug	Feder, Anschlag	
16.	3T04022	Stålkula	Steel ball	Stahlkugel	
17.	4LS1124	Visare	Indicating hand	Zeiger	

SPINDELHYLSA
SPINDLE SLEEVE
SPINDELHÜLSE



ELLÄDA
ELECTRIC BOX
ELEKTROKASTEN



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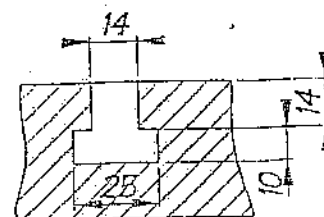
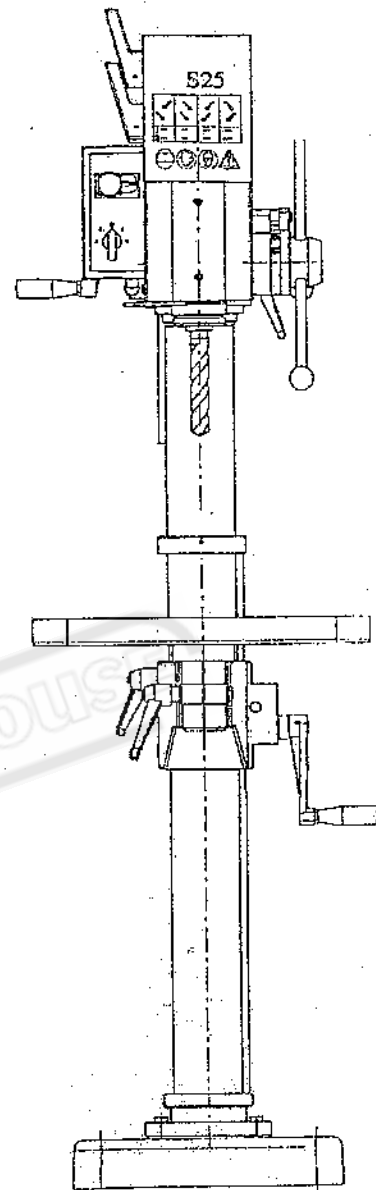
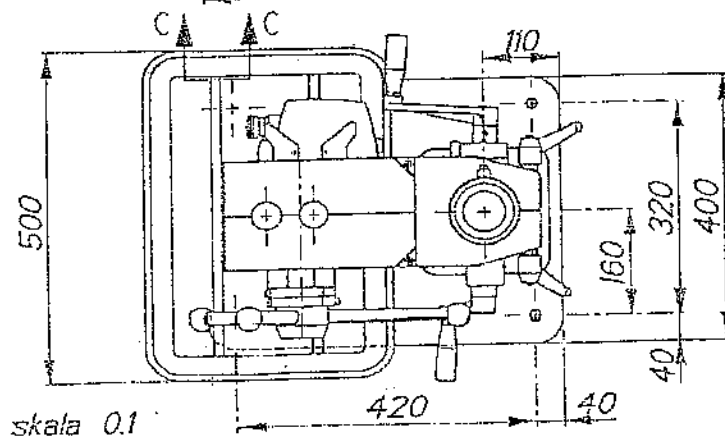
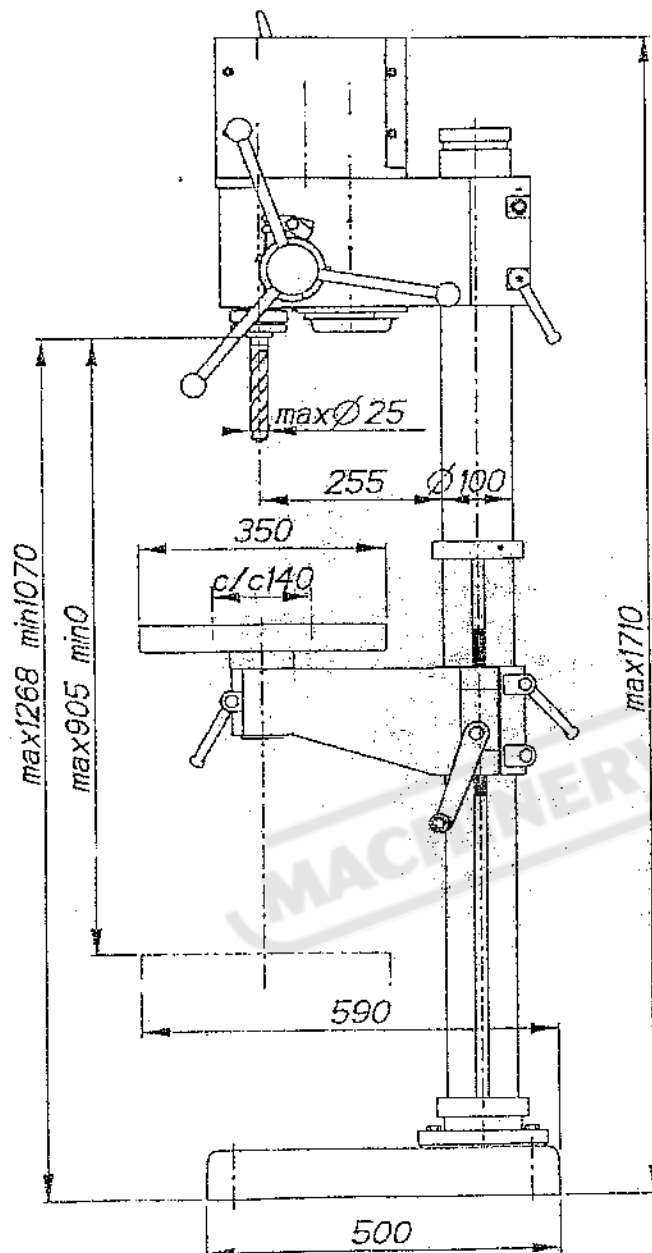
		Spindelhylsa	Spindle sleeve	Spindelhülse		
Pos	Art.No.	Benämning	Description	Benennung	Not	
1.	3M06005	Mutter	Nut	Mutter	MK 5	
2.	4B00155	Låsbricka	Locking washer	Sicherungsscheibe		
3.	3L11005	Enrad.spårkullager	Ball bearing	Kugellager	6205	
4.	2G08709	Spindelhylsa	Spindle sleeve	Spindelhülse		
5.	2I08420	Kuggstång	Rack	Zahnstange		
6.	4B03769	Bricka	Washer	Scheibe		
7.	3L51006	Kon.rullager	Taper roller bearing	Rollenlager	30206	
8.	2TS1106	Rullagerlock	Roller bearing cover	Rollenlagerdeckel		
9.	2T08386	Kil	Key	Keil		
10.	2A08418-1	Borrspindel	Spindle	Bohrspindel		
11.	2T08593	Distanshylsa	Spacing sleeve	Distanzhülse		
12.	3B06003	Bricka	Washer	Scheibe		
13.	4T08547	Anslag	Stop	Anschlag		
14.	3S08622	Skruv	Screw	Schraube	P6SS 14x 25	
15.	4T08714	Klämback	Collet jaw	Klemmebolzen		

MACHINERYHOUSE

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2X08705 Ellåda Electric Box Elektrokasten				
Pos	Art.Nr.	Benämning	Description	Benennung
1.	4U08705	Elboxkåpa	Electric box cover	Elektrogehäuse
2.	2L08712	Ankarsken	Rail anchor	Klemmenschiene
3.	3E10604	Motorskydd 380/50	Motor protector 380/50	Motorschutz 380/50
4.	2E08713	Elboxdistanspinne	Electric box distance tube	Elektrokasten Abstandstift
5.	4L08706	Fästplåt	Anchor plate	Halteblech
6.	4L08711-3	Elboxpanel	Electricbox plate	Elektrokastenschild
7.	3E16227	Nödstoppknapp	Emergency stop	Notstopp
8.	3T18003	Svampgummilist	Rubber moulding	Gummileiste 15x8
9.	3E06016	Handpol- omkopplare	Pole reverser	Polumschalter
10.	3E19088	Kontramutter	Nut	Mutter 1816
11.	3E19493	Vinkelförskruvning	Angular nipple	Winkelverschraubung
12.	2T08735	Skyddsör	Protection conduit	Schutzschlauch
13.	3E10614	Undersp.utlösare	Under volt release	Unterspannungsauslöser
14.	4L08711-3	Elboxpanel	Electricbox plate	Elektrokastenschild

Mättskiss
Dimension sketch
Masskizze



Vy C-C
Skala 0.5

PLANT SAFETY PROGRAMME

NEW MACHINERY HAZARD IDENTIFICATION, ASSESSMENT & CONTROL

Stock Code: D170

Description: Geared Head Drilling Machine

Model:

GHD-22

Brand:

HAFCO

Developed in Co-operation Between A.W.I.S.A and Australia Chamber of Manufactures
This program is based upon the Australian Worksafe Standard for Plant(NOHSC:1010-1994)

Item No.	Hazard Identification	Hazard Assessment	Risk Control Strategies (Recommended for Purchase / Buyer / User)
A	ENTANGLEMENT	HIGH	Eliminate, avoid loose clothing / Long hair etc.
B	CRUSHING	LOW	Secure & support work material on drill table.
C	CUTTING, STABBING, PUNCTURING.	MEDIUM	Isolate power to machine prior to any checks or maintenance being carried out. Do not adjust or clean until the machine has fully stopped.
D	SHEARING	MEDIUM	Isolate power to machine when changing speeds or maintenance is being carried out. Make sure all guards are secured shut when machine is on.
F	STRIKING	MEDIUM	Ensure workpieces are tightly secured on machine. Wear safety glasses. Ensure correct spindle direction when drilling..
H	ELECTRICAL	MEDIUM	All electrical enclosures should only be opened with a tool that is not to be kept with the machine. Never clean or dust machine when power is on . Machine should be installed & checked by a Licensed Electrician.
M	HIGH TEMPERATURE	LOW	Wear appropriate protective clothing to prevent hot swarf.
O	OTHER HAZARDS, NOISE.	LOW	Wear hearing protection as required.
Plant Safety Program to be read in conjunction with manufactures instructions			

HAREFORBES
MACHINERYHOUSE
ABN 96 000 286 957

"THE JUNCTION" 2 WINDSOR ROAD, NORTHMEAD NSW 2152
Phone (02) 9890 9111 Fax (02) 9890 3888

Authorised and signed by:
Safety officer:

Manager:

Date: Mar-02