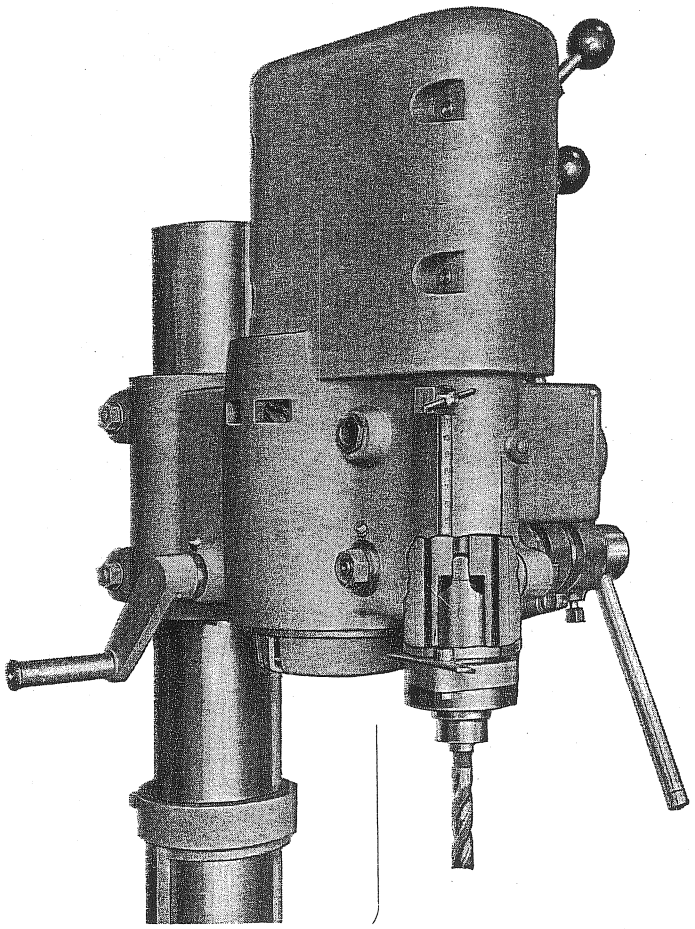
AB ARBOGA MASKINER

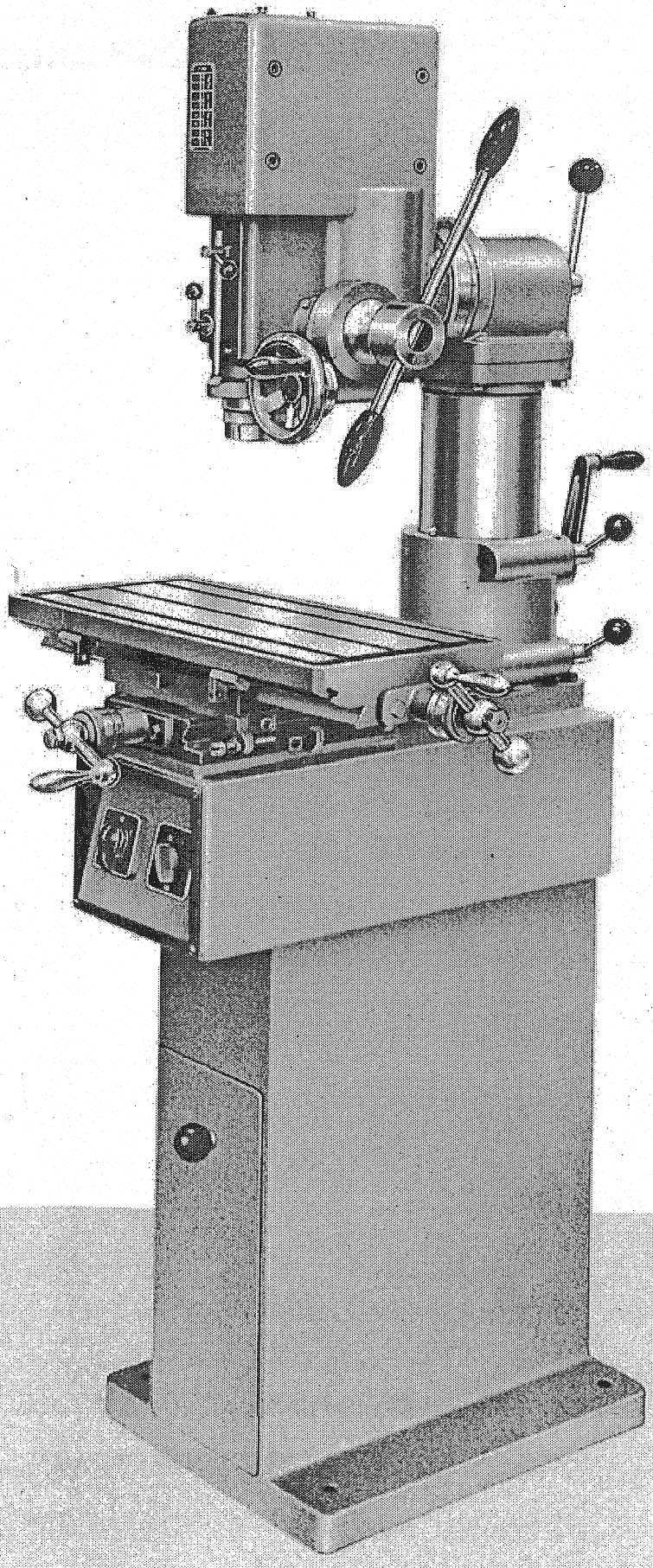
ARBOGA SWEDEN

MODELS U-2508/EM825

Operating Instruction for the

ARBOGA Column type Drilling Machine





ARBOGA Universal-borrmaskin U 2508

With references to EM825

För borrning
fräsning
och urborrning

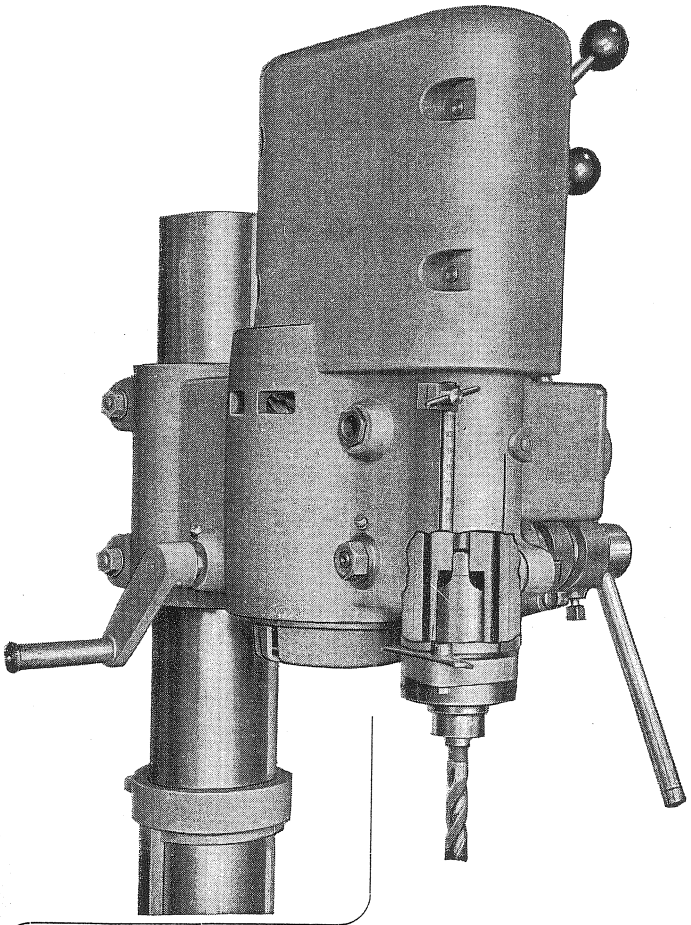
OPERATING INSTRUCTIONS

AB ARBOGA MASKINER

ARBOGA SWEDEN

FOR THE DRILL EJECTOR, TYPE "TELL"

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



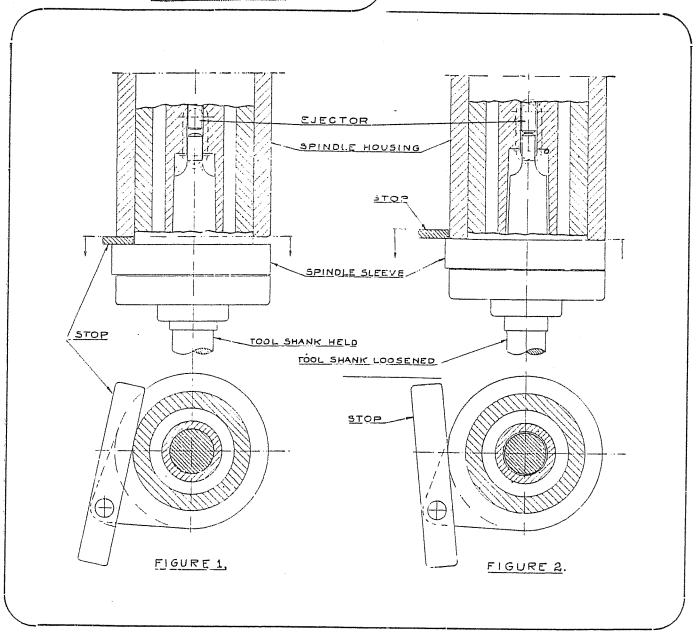


FIGURE 1. FIGURE 2.

When it is desired to remove a Taper Shank Drill or Chuck from the Spindle, the Pivotting 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 ¼". The Drill or Chuck Shank is then ejected from out of the Spindle by giving a light jerk on the Feed Lever. This operation can be carried out with the Spindle running. The Pivotting finger stop in the "IN" position, as shown in figure 1, prevents the Quill unit from returning completely into the Quill housing, thus preventing the Tang on the Drill Shank from contacting the Drill Ejector during normal use.

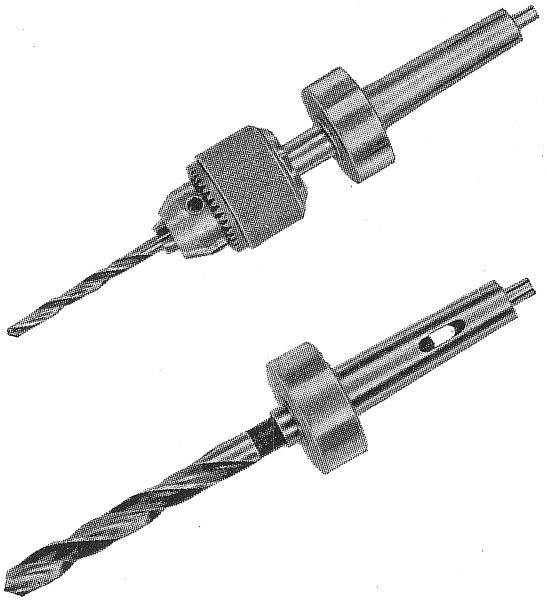
It sometimes occurs that the Drill or Chuck Shank may stick in the Taper Socket, making it difficult to eject. Do not use force to loosen it, as this may damage both the Spindle Shaft and the bearings.

In a case such as this, 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 essentail for efficient use of the built-in Drill Ejector, that all 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. If the Pivotting 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.

DRILL and CHUCK ADAPTORS

SUITABLE FOR USE WITH DRILL SPINDLES FITTED WITH DRILL EJECTORS, TYPE "TELL"



Adaptor and Chuck for Parallel Shank Drills up to 13 mm. dia. (½") — type "TELLCY".

Adaptor for No. 1 M. T. Shank Drills — type "TELLKO".

For general puposes it is recommended for several of these Chucks to be available with required Drills fitted. The complete unit is thus changed when another size Drill is required. In view of the special type Tang fitted to these Adaptors (see illustration) they can be ejected and inserted with the Machine Spindle in rotation.

Prices of this equipment are available on request.

AB ARBOGA MASKINER

ARBOGA SWEDEN

1 121 - 4000 - 69 *Arboga Boktryckeri AB, Arboga 1969*

Printed in Sweden
Enbart för spridning utomlands

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. We recommend White Spirit.

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 DOWN INTO THE MOTOR AND DAMAGE ITS INSULATION. A few drops of ordinary machine oil should be dripped into the oil cups and lubrication holes in the machine once or twice a week.

Connection to mains (A5563)

Remove the cover (10) for the switch on the front of the machine. The connection is then effected direct to the thermal overload circuit breaker (11) according to the attached wiring diagram. Note: the earth screw on the thermal overload breaker.

Spindle speed selection (A5563)

The selection of the different spindle speeds according to the plate (4) on the front of the drive gear box is effected by the levers (3) on the left hand side of the gear box and also by means of the pole change switch (9) for the motor.

Fine feed (A5563)

The fine feed is connected by pressing the feed lever (13) towards the quill housing so that the centre (14) of the lever will be in mesh with the worm wheel of the fine feed.

Locking the quill (A5563)

The quill is locked with the screw (7) on the front of the quill housing. The screw actuates a jaw (6) which locks the quill.

Milling

The drill head can be swivelled through 45° vertically to either side and the angular position can be read-off from the scale graduated 45° - 0 - 45°. Provision is made for locking the head by two screws in the angular position at 15° increments from the vertical, moving in a counter clockwise direction. At intermediate positions the head is secured by means of the single locking lever, a fixed stop is provided to locate the head in the vertical position.

When milling, the quill should be firmly locked. Vibrations and strokes occur when milling; therefore, the tool has to be firmly locked in order not to loosen from the taper. To reduce the vibrations, we recommend the use of cutters with more than two cuttings edges, preferably spiral fluted, in order that at least one cutting edge is working at all times. For the sake of stability, one should work with as short tools as possible.

By setting a cutting according to the scale, one should not loosen the locking screw more than necessary to be able to lower the quill. If the locking screw is loosened completely, the

return spring on the feed shaft can raise the quill as much as the play in setting of fine feed will allow. Consequently the setting on the scale is lost.

It is wise to check now and then that the slide bars of the table are correctly tightened. The slide not in use should be locked.

Frequently questions arise concerning the size cutter which can be used in the machine. It is difficult to reply to such a question, as the conditions and demands are so varied. However, we have had good results milling in steel with an end-mill of 14 mm (9/16") diameter to a depth of 4 mm (5/32"). We have also spot faced a fine cut with a cutter of 63 mm (2 1/2") diameter with the same good results.

Boring

Despite the fact that great care is always devoted to get as minimal a play as possible between the teeth of the rack and those of the feed shaft, there always exists a little play. When boring there is a risk that the quill will be pulled down by the tool as far as the play will allow. This risk can be reduced by having the cutting edge inclined, so that any axial force that might occur will be directed upwards.

Drilling

The most accurate hole will be obtained by pre-boring with a smaller drill, preferably in two steps. The diameter of the second drill should be close to the diameter of the hole wanted.

Guarantee

This machine is guaranteed by us for a year, counted from the day on which it leaves our factory. Should during the guarantee period, any part of the machine be proved defective in material or workmanship, we guarantee at our own discretion to supply free of charge a new part or to repair the defective part, provided that it is returned to our factory freight pre-paid.

We assume no liability for defects in the machine due to extraneous circumstances, wear, lack of due care and attention or faulty handling. Nor can we accept any obligation whatsoever to provide compensation for other direct or indirect costs in connection with cases covered by this guarantee.

General

IT SHOULD BE NORMAL PRACTICE TO DISCONNECT THE MACHINE FROM THE MAINS BEFORE ANY DISMANTLING 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 (A4860)

When it is necessary to disassemble the drive gear box, remove the three screws which connect the drive gear box to the quill housing. Then take away the fan cover (45) and the fan (44) from the quill housing. By knocking slightly on the rotor shaft (34) the drive gear box can be removed.

The gear box casing (19), consisting of 2 halves can be taken apart by loosening the four screws (26). All shafts can now be taken out for further disassembling.

When re-assembling the drive gear box check that the shift pin (38) fits properly into the groove of the clutch (3). When replacing the drive gear box on the quill housing, it must be checked that the driving keys (B5522-4) in the spindle (B5522) are in place and that they will fit properly the corresponding key ways on the gear box output shaft (8).

Spindle (B5522)

The spindle (15) is journalled in the quill (21) by a taper roller bearing (23) at the bottom and by a radial ball bearing (3) at the top. At the top end of the spindle there is a nut (1) with which the play in the taper bearing can be adjusted. This nut can be reached, when the quill is removed from the machine.

To do this, hold the spring housing (B5551-2) and at the same time loosen the locking screw (B5551-17) which secures it. Now turn the housing in order to releave the preasure on the spring (B5551-3). The feed lever (B5551-15) is pulled off its centre (B5551-12) and the circlip (B5551-24) is taken away. The centre is pulled off the feed shaft and the key (B5551-23) is removed.

Remove the circlip (B5551-24). The feed drive shaft can now be pushed so far to the left to disengage the teeth from the quill feed rack (20). The quill can now be removed from the quill housing.

When re-assembling the machine the keys (4) on the spindle are made to coincide with the key ways in the spindle shaft (A4860-8) by turning the spindle. Take care to avoid damaging the keys when sliding the quill into position.

Counter balancing (B5551)

For counter balancing of the spring housing for the spindle, hold the spring housing (2) and at the same time loosen the locking screw (17), which secures it. Now turn the housing in order to release the pressure on the spring (3) then turn the spring housing round in a clock-wise direction, so that the spring will be released from the screw (1), with which it is fixed to the feed shaft (5). The spring housing can now be removed.

When re-assembling press the spring housing with the spring into

its place and turn it in counter clock-wise direction until the spring fits to the screw (1) on the feed shaft. Then turn the spring housing further in counter clock-wise direction until the correct balancing of the spindle is obtained. Then lock the housing with the screw (17).

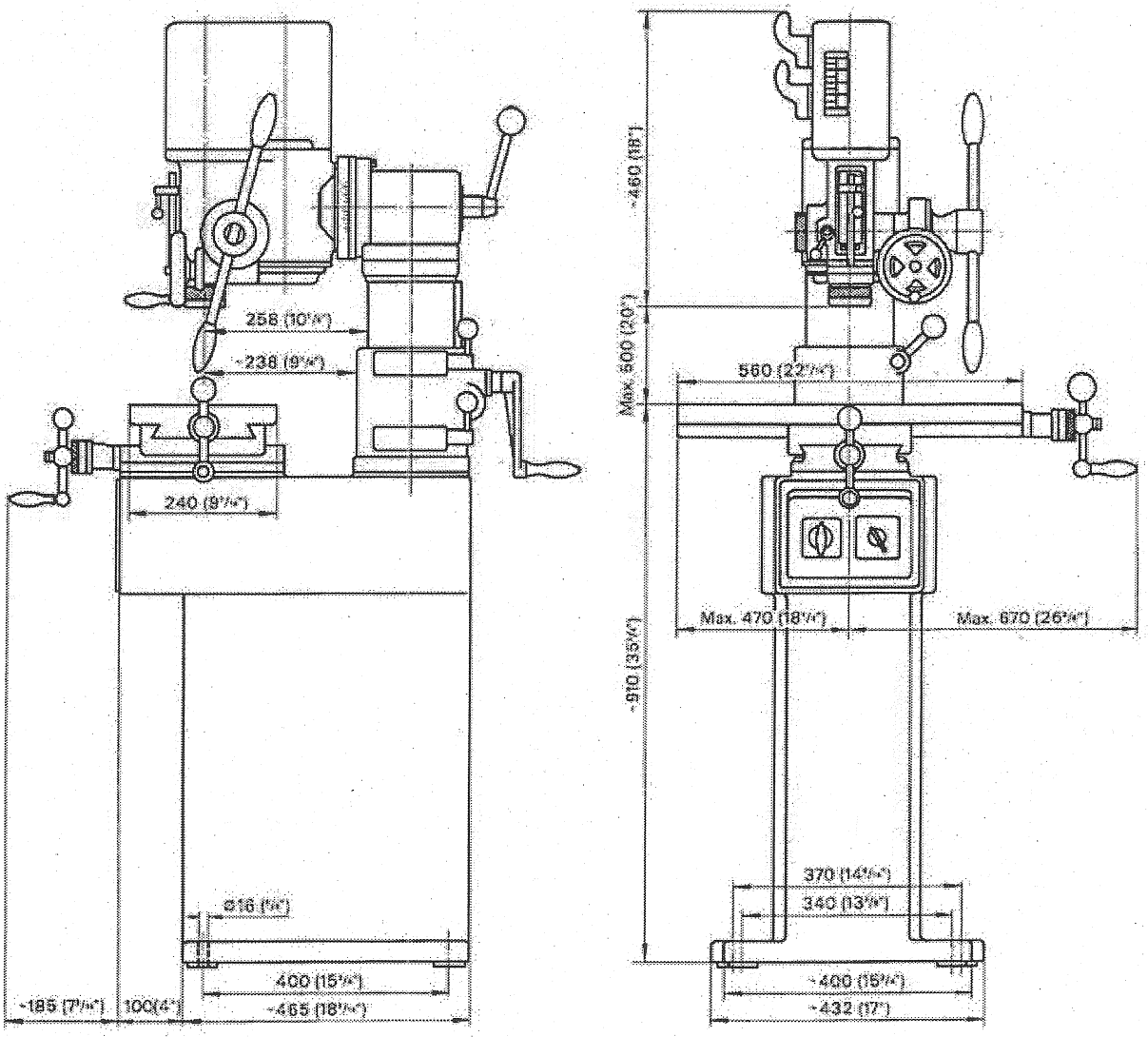
Motor (A5559)

If it is necessary to remove the stator proceed as follows:

DISCONNECT THE MACHINE FROM THE MAINS. Remove the drive gear box, the quill and the feed device. The motor cables are removed from the pole-change switch and their protecting tube is removed from its screw cap. The conical pin (13) and the two screws (14) fastening the quill housing at the support (15) are removed. After removing the lock nut (19) and the washer (21) the quill housing is pulled out of the support. The protecting tube for the cables as well as the two stop screws on the left hand side of the quill housing, keeping the stator in its position, are removed.

By knocking lightly 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 sameposition as the previous one.

ARBOGA BOKTRYCKERI AB 693833



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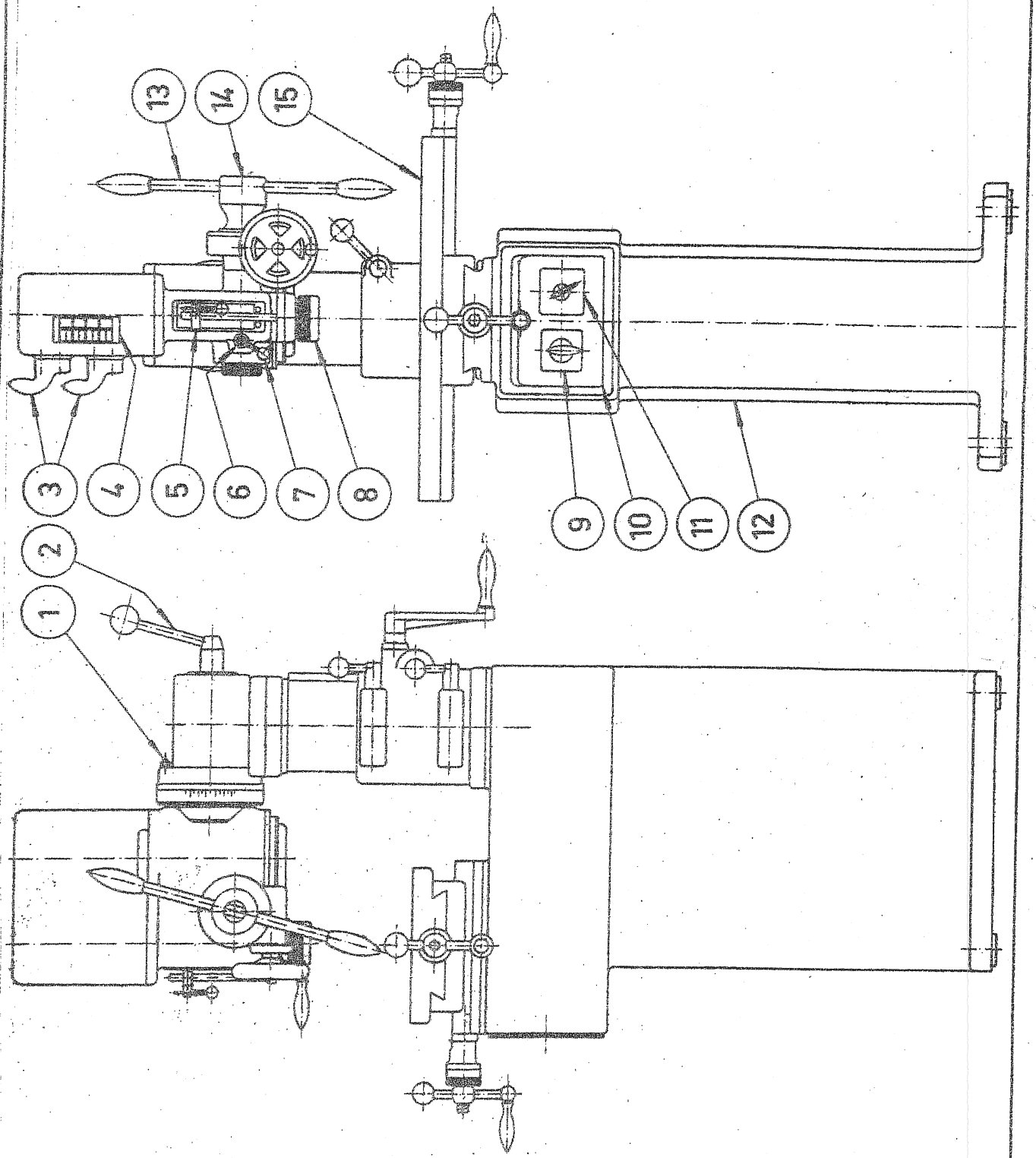
AB ARBOGA MASKINER

U2508

A5563

681217



1978.01.01 U 2508 A 5563
681217

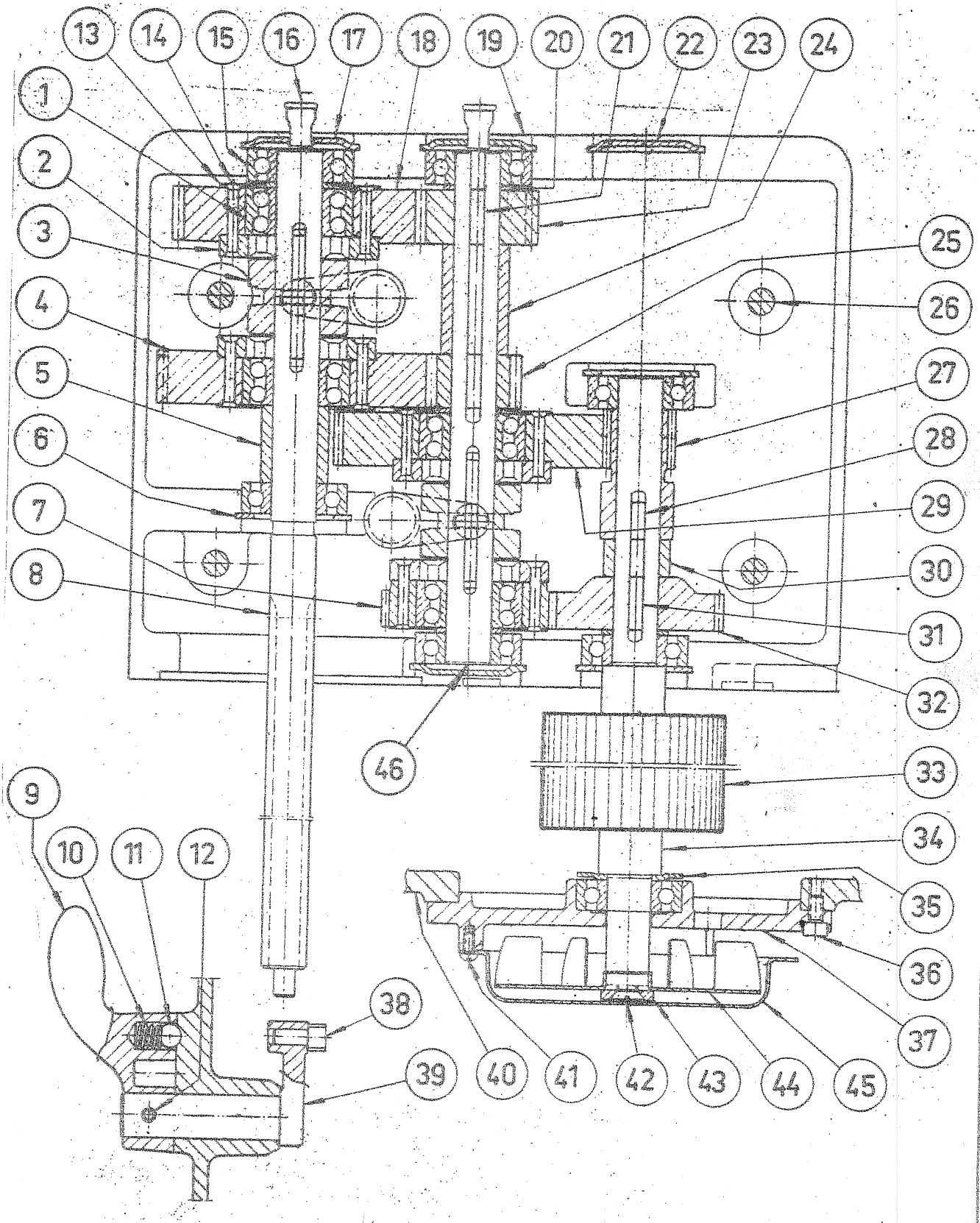
Pos	Det.nr.	Art.nr.	Benämning	Anmärkningar	Gr
1		3P14324	Pinne GKP 8x55	.....	
2		2E05035	Låsningsspak	.....	
3		2R04223	Handtag	.....	A
4		4L05252	Varvtalsskylt	.....	
5		2X05935	Stopp kompl.	.....	B
6		2T05265	Klämmback	.....	
7		2S05536	Låsskruv	.....	
8		2T03378	Mutter	.....	
9		3E04015	Polomkoppl. C10A441 EG ..	.....	B
10		2U05598	Frontplatta	.....	
11		3E10000	Motorskyddsbr. VTP 10 ..	.....	C
12		2Z05433	Stativ	.....	
13		2E04899	Matningsspak	.....	
14		2T04778	Nav	.....	
15		1B04014	Koordinatbord Nr 3 mm ..	.....	

AB ARBOGA MASKINER

2508

A4860

680606



ARBOGA BOKTRYCKERI AB 621170

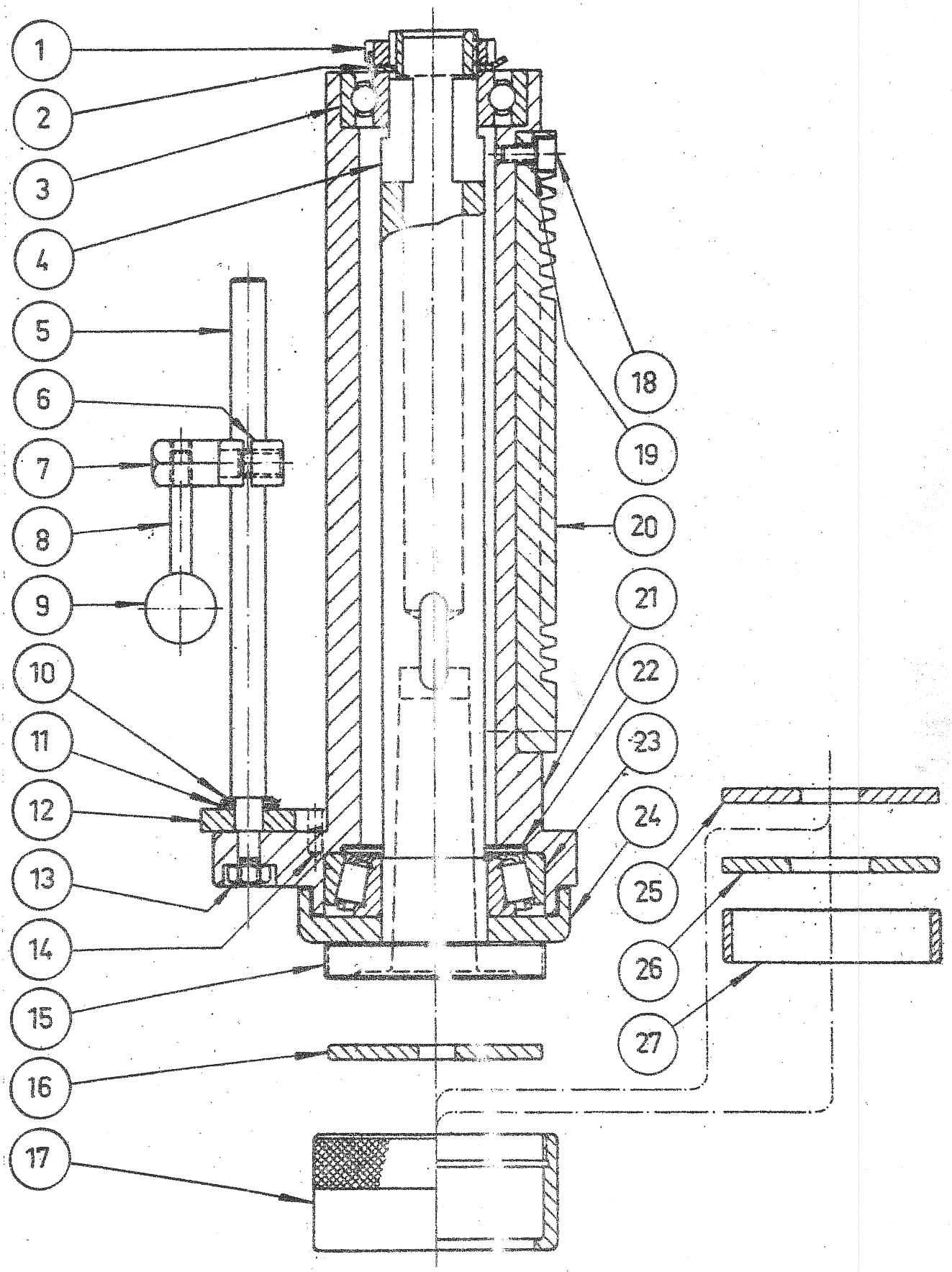
1. 3203
2. C 4255
3. C 4254
4. C 4885 Z=51; mod. 2
5. 17x30
6. C 137
7. C 4875 Z=42; mod. 1,5
8. C 4876
9. C 4223
10. C 129 B
11. 7/16"
12. 5x28
13. C 158
14. 4x27
15. 6203
16. 6 mm
17. C 136
18. C 4883 Z=33; mod. 2
    C 4881 Z=38; mod. 2
    C 4879 Z=46; mod. 2
19. A 4861
20. 17x2
21. 5x20
22. C 138
23. C 121 Z=34; mod. 2
    C 3059 Z=29; mod. 2
    C 3002 Z=21; mod. 2
24. 17x41
25. C 119 Z=16; mod. 2
26. 10x100
27. C 4869 Z=16; mod. 1,5
28. 5x14
29. C 4873 Z=68; mod. 1,5
30. 17x14
31. 5x20
32. C 4945 Z=42; mod. 1,5
33. M 3/2-4/8
34. B 4868
35. 6203
36. 5x10
37. B 1889
38. C 4168
39. C 98
40. A 4887
41. 4x8
42. 8x12
43. C 3449
44. B 175
45. C 1890
46. C 4870

AB ARBOGA MASKINER

U2508

B 5522

681230



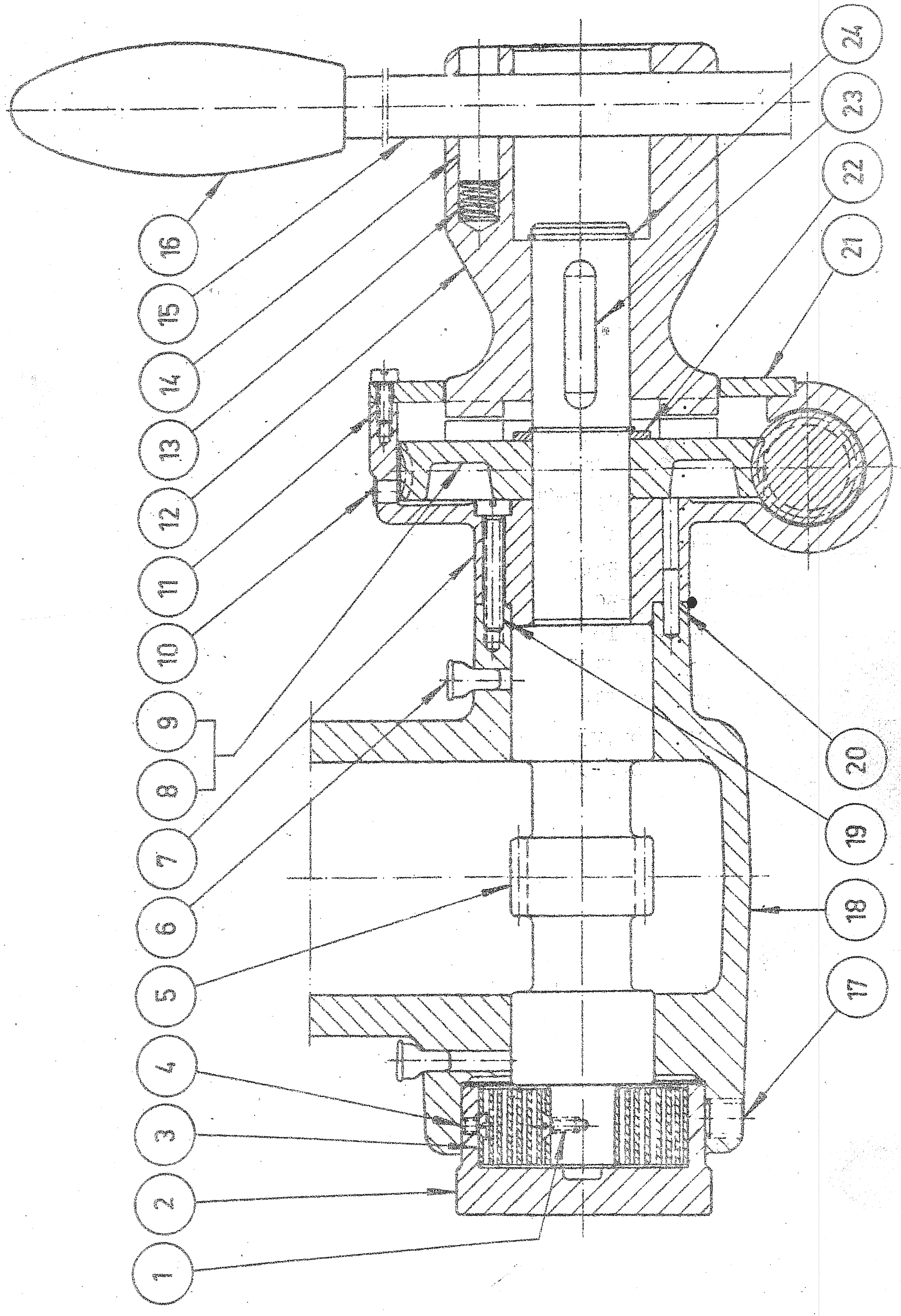
1. C 134
2. C 155
3. 6205
4. C 3758
5. C 4891
6. C 4846
7. C 5564
8. C 3544
9. 20 mm
10. A-8
11. 8,4x16
12. C 3625
13. M6
14. C 3706
15. B 3687
16. C 3374 MK 1
17. C 3378
18. 5x10
19. FBB-5,1
20. C 5281
21. B 4890
22. C 3769
23. 30206
24. D 135
25. C 3375 MK 2
26. C 3376 MK 3
27. C 3377 MK 3

AB ARBOGA MASKINER

U 2508

B 5551

681211



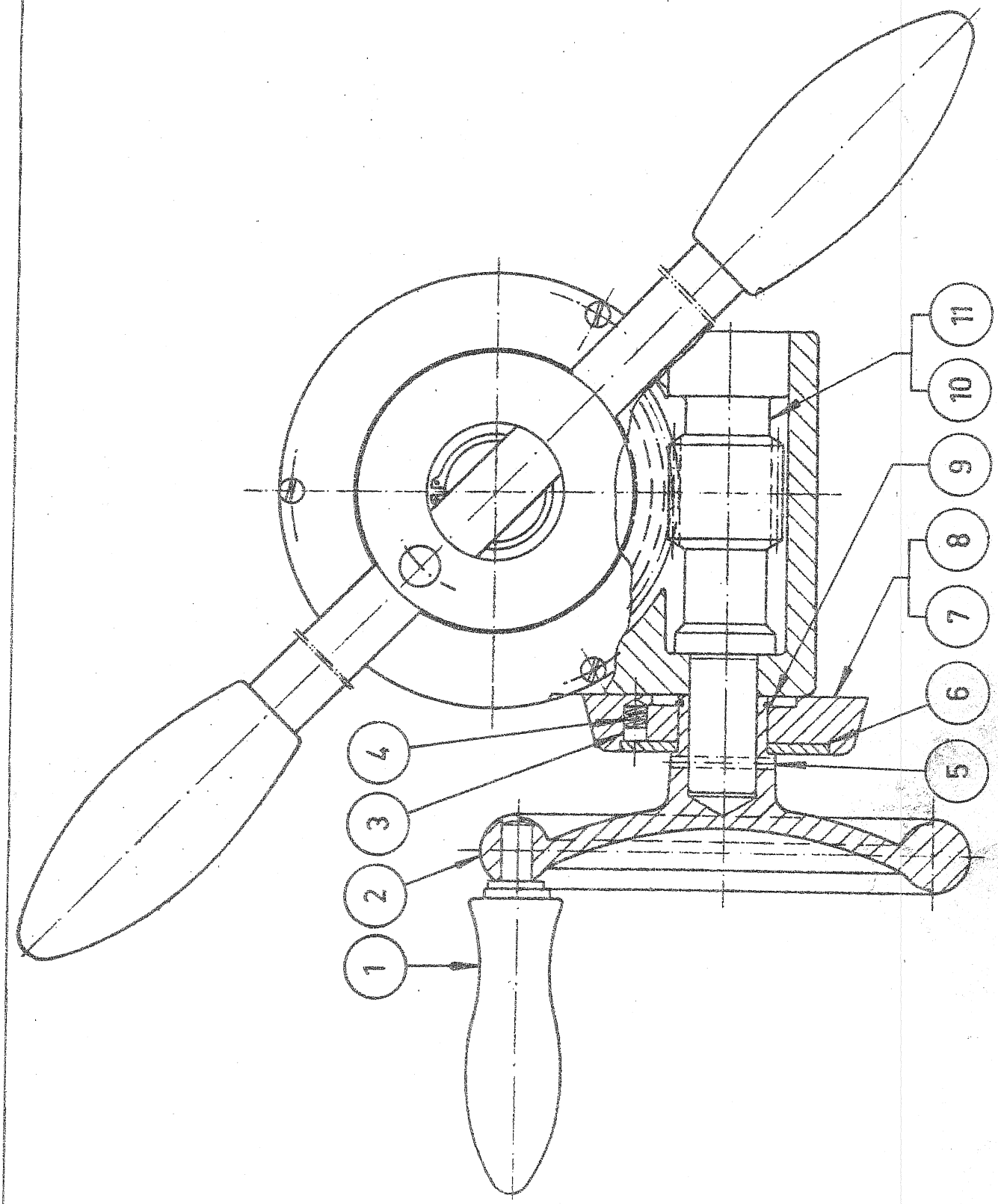
1. 4x6
2. C 5473
3. C 3026
4. 4x6
5. B 5474
6. 5 mm
7. B 5475
8. C 3519 mm
9. C 3521 tum
10. 6 mm
11. 4x10
12. C 4778
13. C 129 B
14. C 651
15. C 4899
16. M16; L=85
17. 10x10
18. A 5465
19. 5x30
20. 4x16
21. C 3147
22. C 3150
23. 8x7x30
24. SgA-25

AB ARBOGA MASKINER

U 2508

B 5545

681210



B 5545

U 2508

681210

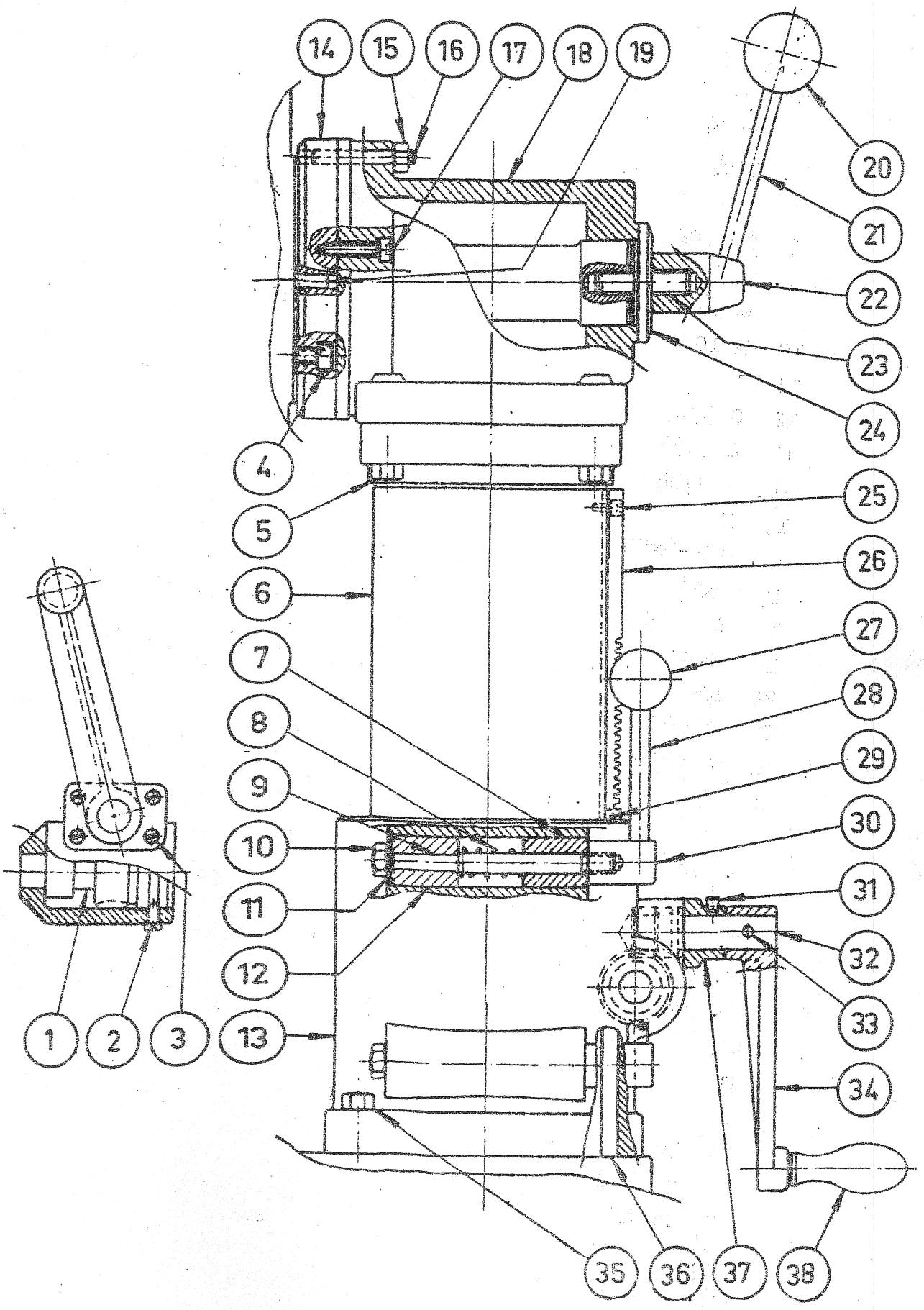
1. HM-3
2. C 3446
3. C 3448
4. C 3467
5. 3x26
6. C 3447
7. C 3535 mm
8. C 3536 tum
9. SgA-22
10. C 3520 mm
11. C 3522 tum

AB ARBOGA MASKINER

U2508

A5559

690825



Pos	Det.nr.	Art.nr.	Benämning	Anmärkningar	Gr
1	C 3281	2I03281	Kugg- & skruvhjulsaxel		
2	C 4211	4S04211	Styrskruv		
3	5x12	3S03327	Skruv MC6S 5x12 mm		
4	UC6S-3/8"x32	3S55197	Skruv UC6S 3/8"x32		
5	12x40	3S02540	Skruv M6S 12x40		
6	B 3785	2Z03785	Pelare		
7	C 3792	2T03792	Klämmback		
8	C 3798	4C03798	Fjäder		
9	C 5566	2E05566	Låsbult		
10	M 10	3M01320	Mutter M6M 10		
11	11x22	3B03173	Bricka SRB 11x22		
12	C 5565	2T05565	Klämmback		
13	A 4153	2N04153	Lagerhus		
14	B 3784	2N03784	Graderad bricka		
15	M 8	3M01318	Mutter M6M 8		
16	CKP-8x55	3P14324	Pinne CKP 8x55 mm		
17	8x35	3S03457	Skruv MC6S 8x35 mm		
18	A 3783	2N03783	Konsol		
19	8x32	3P12381	Pinne FRP 8x32		
20	45 mm	3R02004	Kula Ø 45 mm M 10		C
21	C 5035	2E05035	Låsningsspak		
22	C 5034	2T05034	Låsningshuvud		
23	16x55	3S10631	Skruv PS 16x55 mm		
24	C 3322	2B03322	Bricka		
25	5x16	3S03329	Skruv MC6S 5x15 mm		
26	B 3459	2I03459	Kuggstång		
27	35 mm	3R02003	Kula Ø 35 mm M 10		C
28	C 4909	2E04909	Låsningsspak		
29	3x8	3P04204	Pinne RPA 3x8 mm		
30	C 4297	2T04297	Låsningshuvud		
31	6 mm	3T02011	Kulsmörjkopp 6 mm		
32	C 183	2I00183	Snäckskruv		
33	5x32	3P12314	Pinne FRP 5x32 mm		
34	C 1742	2R01742	Vev		C
35	12x40	3S02540	Skruv M6S 12x40		
36	C 3282	2X03282	Linjal		
37	C 188	2N00188	Lagerlock		
38	HM 4	3R04004	Handtag HM 4		C

ARBOGA MASKINER

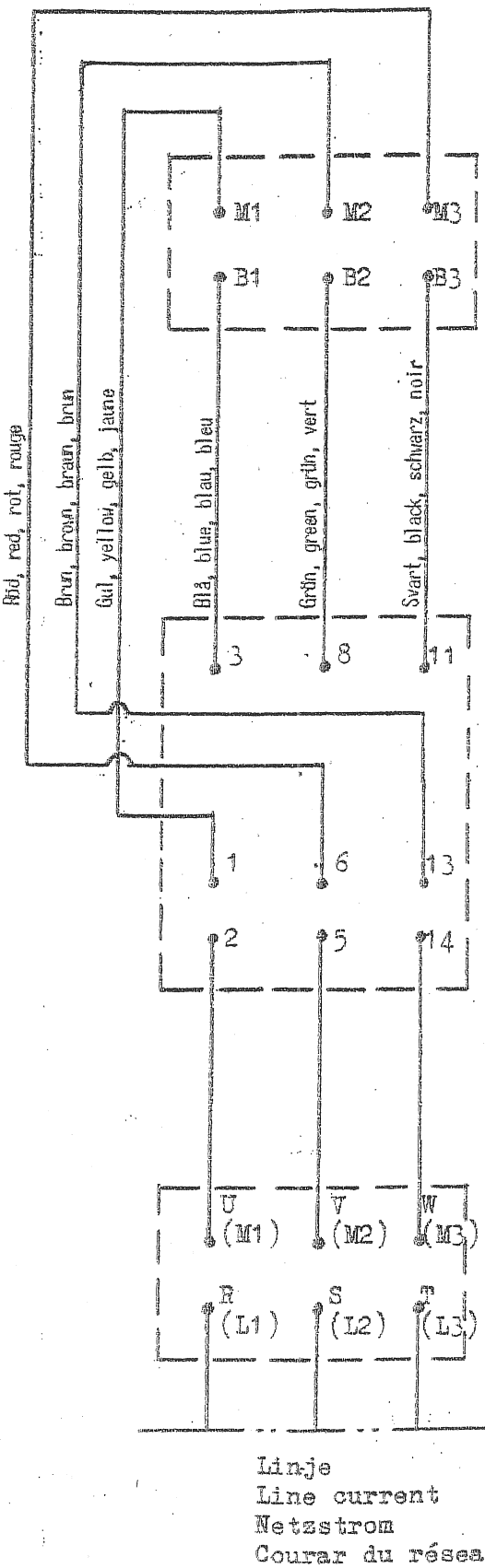
Kopplingsschema för borrmaskin med polomkopplare typ C6 (C7) A 441 och motorskydd

Tabell	518
Sida	32.325
Dat:	680503

Wiring diagram for Drilling Machine.
Control switch for 2-speed motor
(Dahlander type)

Schema de connexions pour perceuse.
Coupleur (modele Dahlander)

Schaltbild für Bohrmaschine.
Polumschalter nach Dahlander



Motor

C 6 (C 7) A 441
Polomkopplare (Dahlandertyp)
Control switch for 2-speed motor
(Dahlander type)
Polumschalter nach Dahlander
Coupleur (modele Dahlander)

Motorskydd
Thermal overload relay
Motorschutz
Disjoncteur

Linje
Line current
Netzstrom
Courar du réseau

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 down into the motor and damage its insulation. A few drops of ordinary machine oil should be dripped into the oil cups and lubrication holes in the machine once or twice a week.

Dismantling the machine

The spindle (B 3687) is journalled in the spindle sleeve (B 97) 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 (C 134) with which the play in the taper bearing can be adjusted. This nut can be reached when the spindle sleeve is removed from the machine. To do this, hold the spring housing (C 3635) and, at the same time, loosen the locking screw (PSS-3/8" x 12) which secures it. Now turn the housing in order to relieve the pressure on the spring and then turn it round in a clockwise direction so that the spring will be released from the screw (FS-4x8) with which it is fixed to the feed shaft. The spring housing can now be removed. Take away the circlip (SgA25) on the other end of the shaft and pull the feed levers with their centre (C 3151) off the shaft. Turn the worm wheel by means of the handwheel (C 3446) in order to get at and remove the two screws (FS-5 x 14) inside the worm wheel. When the screws have been removed, tap the feed shaft lightly in order to push it so far to the right that the teeth of the shaft come out of mesh with the rack (C 117) on the spindle sleeve (B 97). The spindle sleeve can now be pulled down out of the housing enabling the play in the bearing to be adjusted. When assembling the machine, the key on the spindle is made to coincide with the keyway in the spindle shaft (C 3704) by turning the spindle. Take care to avoid damaging the key when sliding the spindle sleeve into position.

If it should be necessary to dismantle the gear box, proceed as described in the following. Remove the fan cover (C 1890) and the fan (B 175). Take out the four screws (ECS-5 x 19) with which the gear box is secured to the spindle housing. Tap lightly on the free, lower end of the motor shaft in order to loosen the gear box from the spindle housing, propping up the front of the gear box at the same time. When the gear box has been loosened it can be lifted out of the spindle housing. Now remove the four screws (EC6S-3/8"x85) holding the two halves of the gear box together. These two halves can now be separated, leaving all shafts and gears accessible for inspection.

When re-assembling, see that all machined surfaces are thoroughly cleaned. When mating the two halves of the gear box, make sure that the shifting finger on the gear lever enters the slot in its clutch (D 141).

If it should be necessary to remove the stator (M3/2-4/8) for repairs, proceed as described in the following.

First switch off the current to the machine. Disconnect the motor wires from the switch. Remove the spindle housing and gear box as described above. Take away the taper pin (GKP-5/16"x 8 x 60) for the zero position of the spindle housing. After removing the lock nut (C 985) and the washer (C3322), pull the spindle housing out of the support (A 3783), making sure that it is accompanied by the cables leading to the switch. Detach the cables. Unscrew the two stop screws (SSS-6x10) sited to the front on either side of the housing, and bang the spindle housing against a suitable surface until the stator comes out. When replacing the stator, make sure

that no old paint is left on machined surfaces and that no foreign particles enter the machine.

Guarantee.

This machine is guaranteed by us for a period of one year, counted from the day on which it leaves our factory, with regard to the quality of the materials and the manufacturing standard. Should, during the guarantee period, any part of the machine be proved defective in material or workmanship, we guarantee, at our own discretion, either to supply, free of charge, a new part of corresponding quality, or to repair the defective part, provided that it is returned to our factory freight pre-paid.

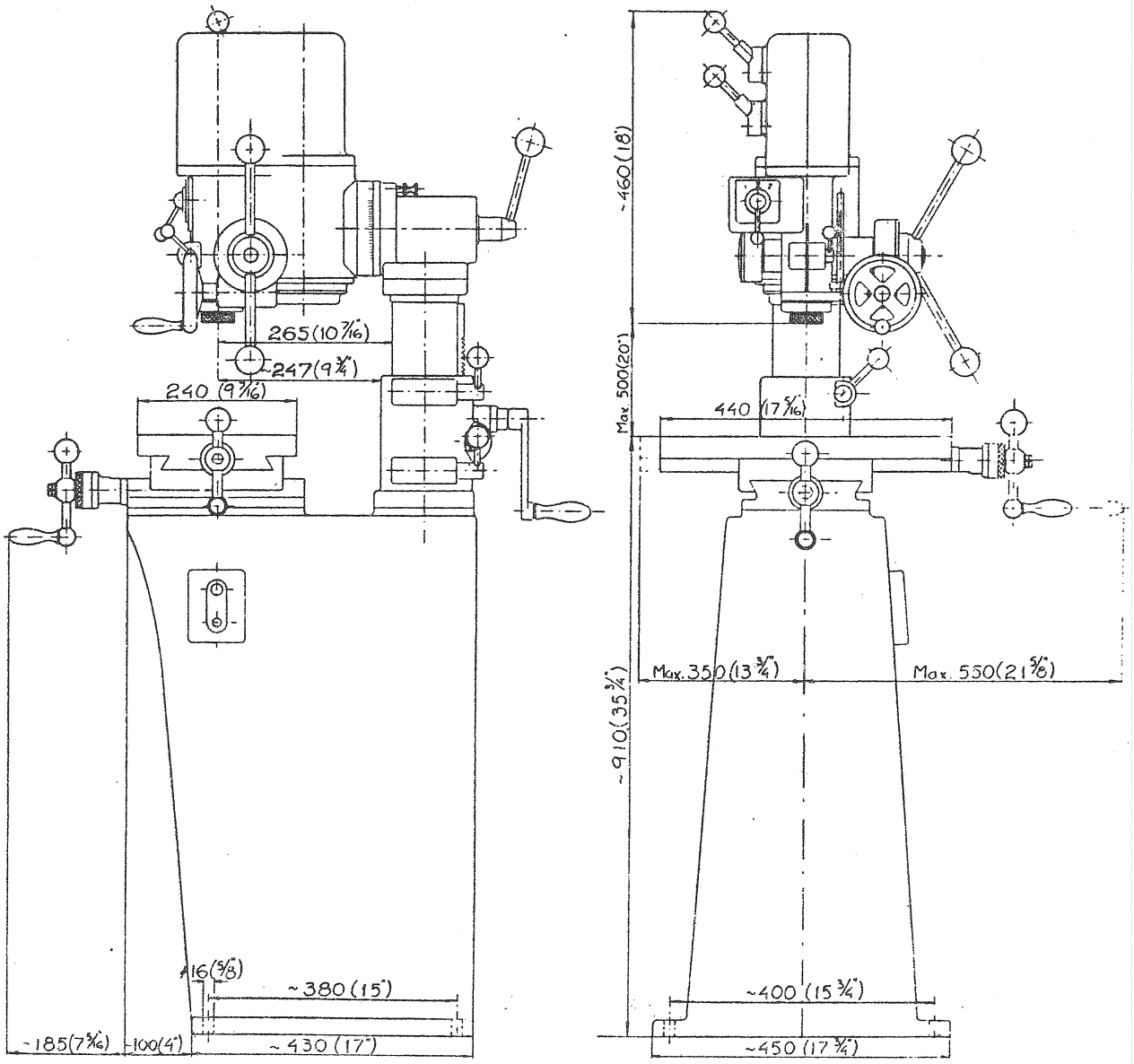
We assume no liability for defects in the machine due to extraneous circumstances, wear, lack of due care and attention or faulty handling, nor can we accept any obligation whatsoever to provide compensation for other direct or indirect costs in connection with cases covered by this guarantee.

ARBOGA BOKTRYCKERI A.-B. 591551

AB ARBOGA MASKINER

Universalborrmaskin
EM 825

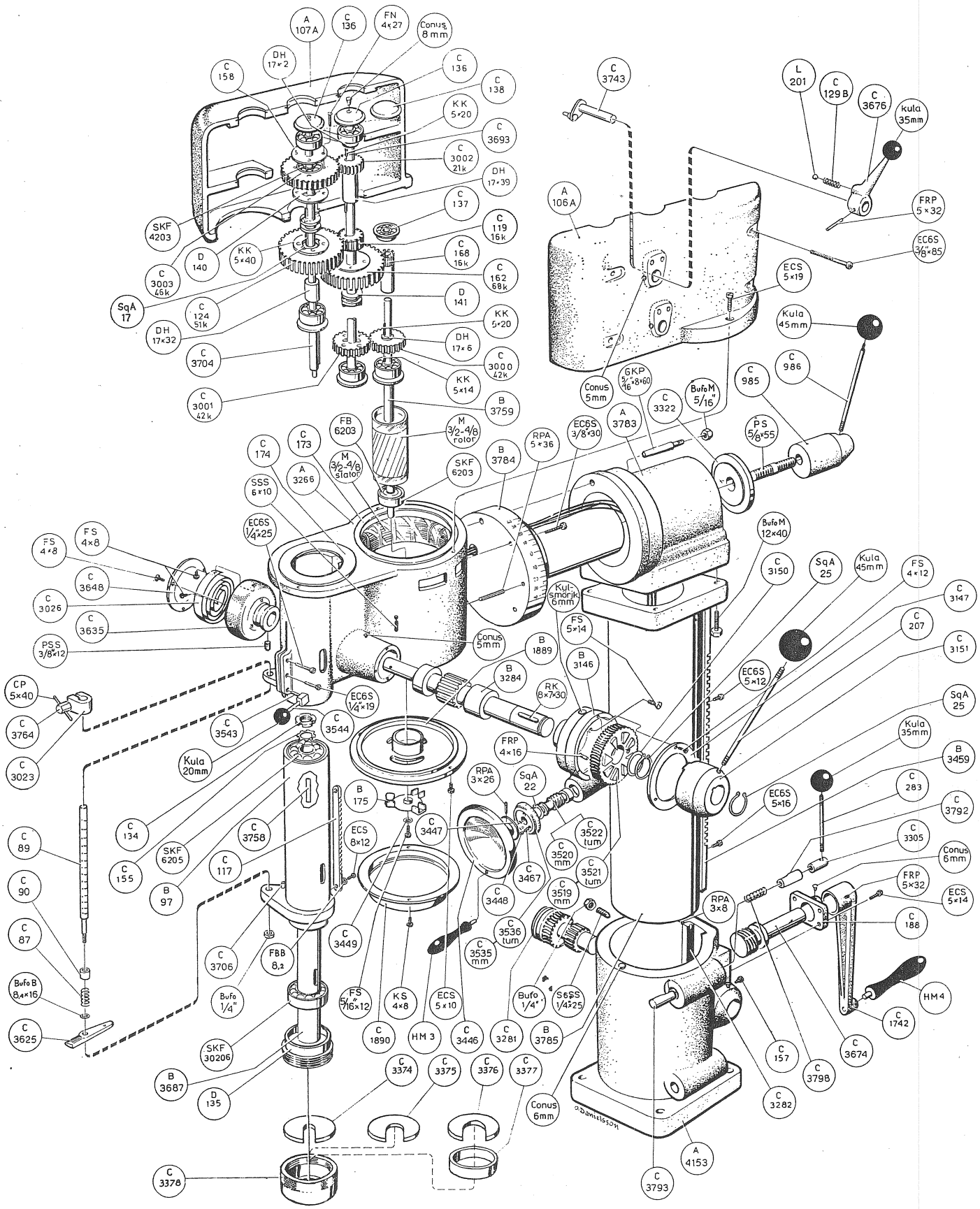
Dat. 601115



AB ARBOGA MASKINER

Sprängritning över borrhuvud till universalborrmaskin typ EM 825.

Exploded view of the head of Vertical Milling Machine model EM 825.

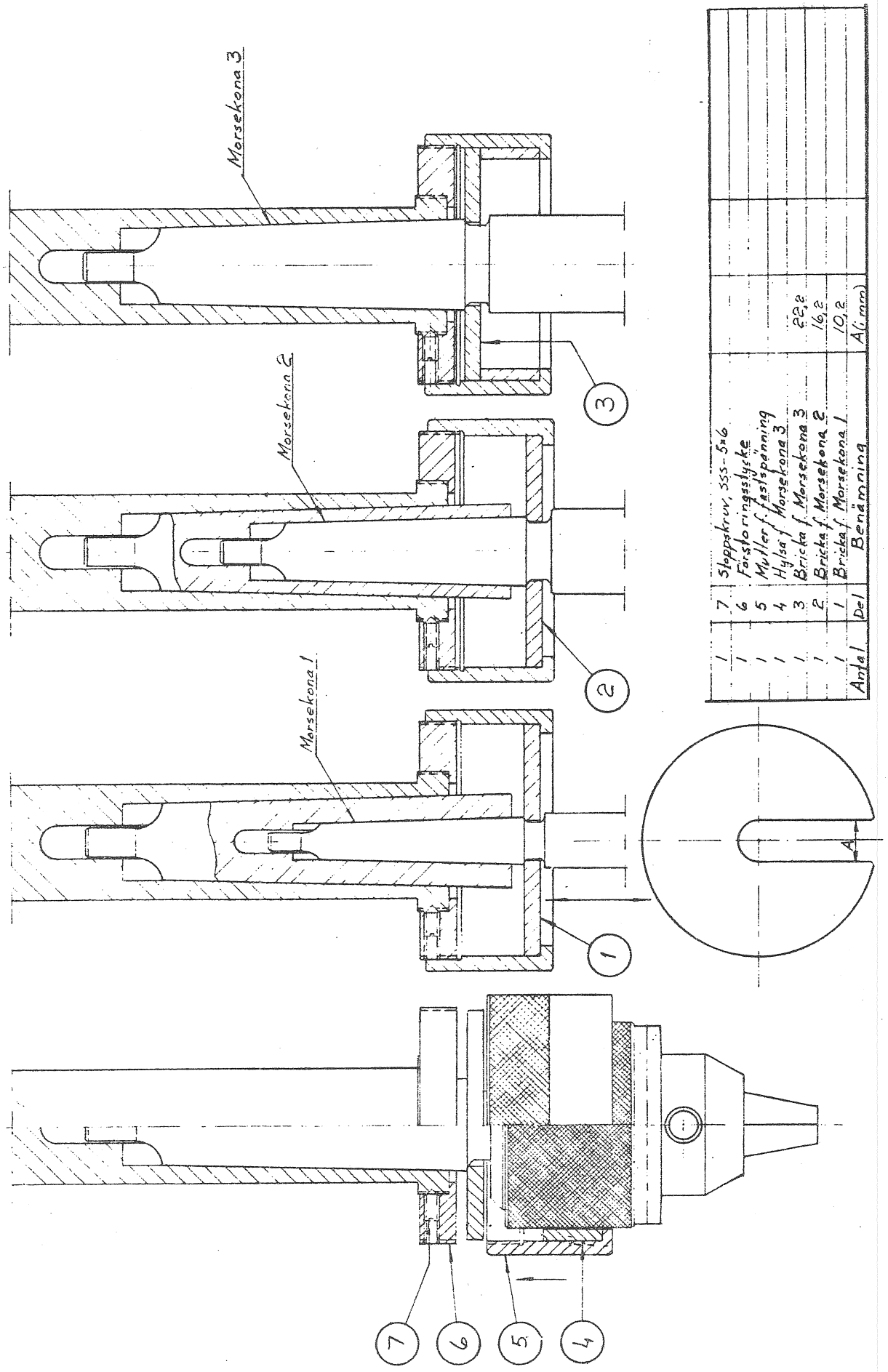


ARBOGA BOKTRYCKERI AB

AB ARBOGA MASKINER

Fastspänningsanordning f. verktyg i borrmaskin, typ E 100, E 100 S, E 825, EM 825

Dat. 601116



Antal	Del	Benämning	Ä i mm
1	7	Stoppskruv, SSS-5x6	
1	6	Färstoringsstycke	
1	5	Mutter f. fastspänning	
1	4	Hylsa f. Morsekona 3	22,2
1	3	Bricka f. Morsekona 3	16,2
1	2	Bricka f. Morsekona 2	10,2
1	1	Bricka f. Morsekona 1	

ARBOGA BOKTRYCKERI A-B. 5x1551

AB ARBOGA MASKINER

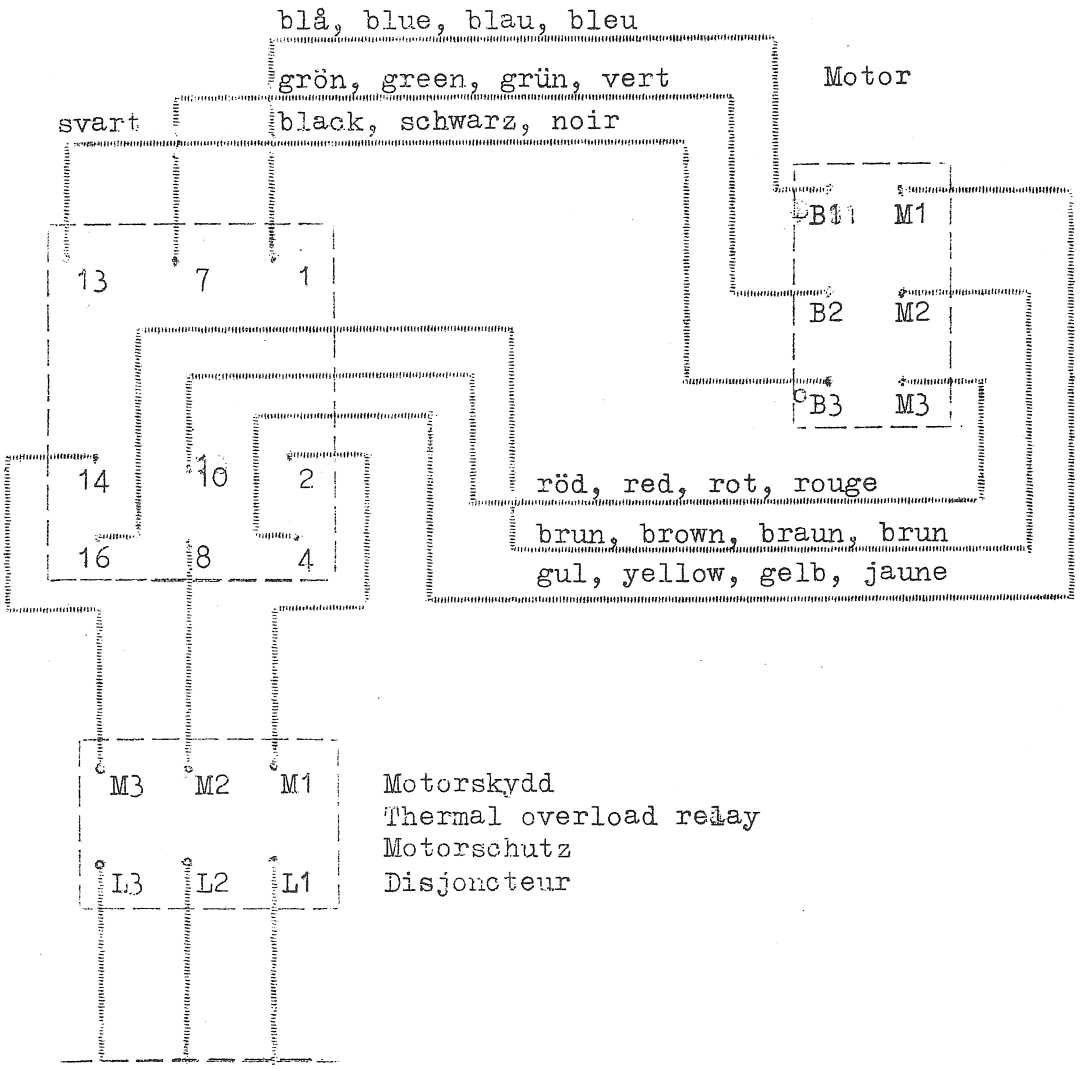
Kopplingschema för borrmaskin
typ E 825, EM 825, E 830, ER 1830
ER 830

Tabell 295
Sida 32, 321
Dat: 601024

Wiring diagram for Drilling Machine
model E 825, EM 825, E 830, ER 1830, ER 830

Schaltbild für Bohrmaschine Type
E 825, EM 825, E 830, ER 1830, ER 830

Schema de connexions pour perceuse
modèle E 825, EM 825, E 830, ER 1830, ER 830



Linje
Line current
Netzstrom
Courant du réseau

B 10
Polomkopplare (Dahlandertyp)
Control switch for 2-speed motor (Dahlander type)
Polumschalter nach Dahlander
Coupleur (modèle Dahlander)

ARBOGA BOKTRYCKERI A-B. 591551