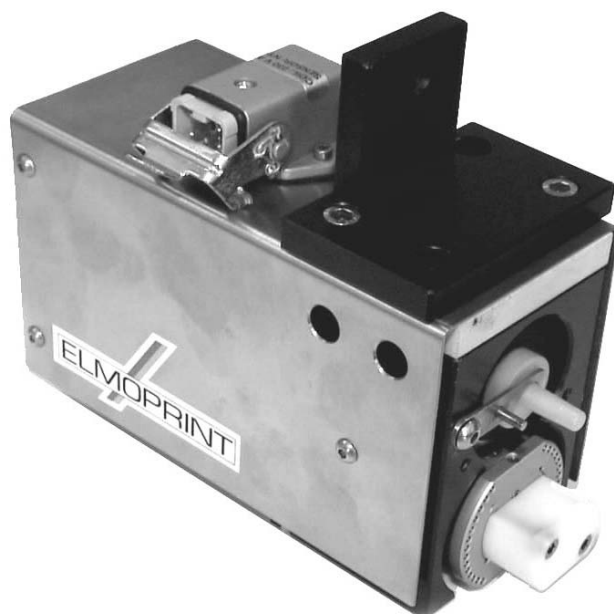




Manual for R-35-EM

CCW / PT-100 / 230VAC / DIGITAL

Original brugsanvisning / Original Users Guide
Monteringsvejledning / Assembly instruction

Indholdsfortegnelse

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Introduktion

Elmoprint vil gerne benytte denne lejlighed til at sige tak, fordi De valgte vort produkt til at løse Deres opgave.

Elmoprint har mange års erfaring med fremstilling af prægemaskiner, og disse er produceret med henblik på de specielle omgivelser, som de skal virke i, mange år frem.

Elmoprint har meget høje krav til de materialer, som bliver brugt til fremstilling af vore produkter.

For at De, som bruger, kan få det optimale ud af vort produkt, bør De læse denne manual igennem for at være bekendt med drift og vedligehold af printeren.

Introduction

Elmoprint will like to take this opportunity to thank you for choosing our product to solve your assignment.

Elmoprint has many years of experience in manufacturing imprinting machinery, and our machines are made to work in the unique surroundings for which they are designed for many years to come.

The materials used to make our products must fulfil Elmoprint's high standards.

Please read this manual and become acquainted with the operating and maintenance of the imprinting machine in order to be able to utilize our product to its utmost potential.

EU Indkorporeringserklæring

Fabrikant og indsamler af den relevante tekniske dokumentation

Elmoprint ApS Maskinfabrik
Tåstruphøj 56
DK-4300 Holbæk

erklærer hermed for delmaskine

Varenr.: R35-EM-CCW
Handelsbetegnelse: Rotoprinter
Elektromekanisk CCW
Type: Hot ink rotorprinter
Funktion: In-line printer
Serienr.: _____

.. at de væsentlige krav til ergonomi, bevægelige dele, ekstreme temperaturer og støj i EUROPA-PARLAMENTETS OG RÅDETS DIREKTIV 2006/42/EF af 17. maj 2006 om maskiner finder anvendelse og er opfyldt, idet de harmoniserede standarder DS/EN ISO 12100-2, DS/EN ISO 13857, DS/EN ISO 14121-1 og DS/EN 60204-1 finder anvendelse.

Delmaskinen må ikke tages i brug, før den færdige maskine som den skal indkorporeres i, er blevet erklæret som værende i overensstemmelse med 2006/42/EF.

Holbæk d.

Jens Storm-Nielsen

EC Declaration of Incorporation

Manufacturer and compiler of the relevant technical documentation

Elmoprint ApS Maskinfabrik
Taastruphøj 56
DK-4300 Holbaek

hereby declare for the partly completed machine

Itemno.: R35-EM-CCW
Commercial name: Rotoprinter
electromechanical CCW
Type: Hot ink coder
Function: In-line printer
Serial no.: _____

... that the essential requirements to ergonomics, moving parts, extreme temperatures and noise in DIRECTIVE 2006/42/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 May 2006 on machinery is in use and fulfilled, as the harmonized standards DS/EN ISO 12100-2, DS/EN ISO 13857, DS/EN ISO 14121-1 and DS/EN 60204-1 is used.

The partly completed machine must not be put in to service until the final machinery into which it is to be incorporated has been declared in conformity with 2006/42/EC.

Holbaek, Denmark

Jens Storm-Nielsen

Tekniske specifikationer

Print

Max. printareal	30 x 30 mm
Max. hastighed	300 print/min.
Filmhastighed	8-30 m/min.

Blækruller

Diameter	36 mm
Bredde	32 mm

Forbrug

El	230V/150W forsikring 2A
----	----------------------------

Dimensioner

Højde	100 mm
Bredde	80 mm
Dybde	205 mm

Andet

Støj	< 80 dB(A)
------	------------

Maskinens serie nr (banket i toppen af maskinen):

Technical specifications

Print

Print area	30 x 30 mm
Speed	300 prints/min
Surface speed	8-30 m/min.

Hotinkrollers

Diameter	36 mm
Width	32 mm

Consumption

Electrical	230V/150W (fuse 2A)
------------	------------------------

Dimension

Hight	100 mm
Width	80 mm
Depth	205 mm

Other

Noise	< 80 dB(A)
-------	------------

The printers serial number (stamped in the top of the printer):

Sikkerhed og sundhed

Normal anvendelse

Deres printer er udviklet og fremstillet til at trykke en information på etiketter og emballage. Den er beregnet til indbygning på pakkemaskiner, hvor der i forvejen er elektriske - og/eller pneumatiske dele.

Det er vigtigt at De læser nedstående sikkerhedsinstrukser, før De tager maskinen i brug.

Anden anvendelse

Enhver anden anvendelse af maskinen er ikke tilsigtet. Elmoprint er ikke ansvarlig for skader eller ulykker forårsaget af misbrug. Enhver misbrug sker på eget ansvar. Misbrug omfatter at øge temperaturen på printhoved, ved at bruge andet/andre varmelegemer end det foreskrevne.

Safety and health

Intended use

Your printer has been developed and manufactured for printing information on labels and packaging. It is designed to be built into packing machinery already equipped with electronic and/or pneumatic components.

It's important that you read the safety instructions below, before you use your printer.

Other use

Any other or additional use is not intended. Elmoprint is not liable for damage resulting from misuse. Any misuse is at your own risk. Misuse includes raising temperature of the printhead by using other heating elements than the one described in this manual.

Farekilder

1. R-35-EM er tilsluttet 230 V og der bør ved installering drages omsorg for, at tilledningen ikke beskadiges. R-35-EM skal være forsynet via sikring max. 2 A.

2. Den rustfrie skærm er mærket med en advarselstrekant og må ikke fjernes før R-35-EM er spændingsløs. Der er ført 230 V frem til klemrækken, og de 2 varmeelementer er hver på 230V/75W.

3. R-35-EM virker ved, at blæk bliver varme-overført til emnet, som skal præges. Dette indebærer, at typeholderen er varmet op til ca. 110° C. Håndtaget på typeholderen er fremstillet af et ikke varmeledende materiale.

4. R-35-EM er konstrueret til at arbejde i våde rum, men tåler ikke spuling med vand. Ved rengøring med vand, anbefales det at dække maskinen med en plastpose.

5. Rengøring af R-35-EM udføres bedst med trykluft og en klud.



Hazards

1. R-35-EM runs on 230 V, and during installations please be sure not to damage the connecting cable. The power supply to R-35-EM must go through a fuse of max. 2 A.

2. The stainless steel shield is equipped with a warning sign and must not be removed as long as electrical current can be supplied to the R-35-EM. 230 V are connected to the tag block, and 2 heating elements are each 230V/75W.

3. R-35-EM works by thermally transferring the hot ink to the item to be imprinted. This means that the printing head and type holder are heated to approx. 110° C. The handle on the type holder is made of material which is not heat-conductive.

4. R-35-EM is constructed to function in wet rooms, but must not be sprayed with water. When cleaning with water, it is recommended that the machine be covered with a plastic bag.

5. For ideal cleaning of R-35-EM, use pressurized air a cloth.

Miljørigtig bortskaffelse

Fabrikanter af B2B-apparater er fra den 23.03.2006 forpligtet til at tilbagetage og nyttiggøre gamle apparater, der er produceret efter den 13.08.2005.

Disse gamle apparater må principielt ikke afleveres til de kommunale samlesteder. Nyttiggørelsen og bortskaffelsen af disse skal organiseres af fabrikanten. Apparatet kan derfor i fremtiden afleveres til Elmoprint, som vil sørge for bortskaffelse iht. gældende forskrifter.

Elmoprint varetager derved alle forpligtelser, der er forbundet med bortskaffelse af gamle apparater, og muliggør dermed også en fortsat problemløs distribution af produkterne. Vi kan kun tage apparater tilbage, der er sendt fragtfrit. Yderligere oplysninger fremgår af WEEE direktivet .

Environmentally-friendly disposal

Manufacturers of B2B equipments are obliged to take back and dispose old equipment which was manufactured after 13 August 2005.

In principle, these old equipments may not be delivered to communal collecting points. They may only be organised used and disposed by the manufacturer.

Elmoprint products accordingly labelled can therefore in future be returned to Elmoprint, whereupon old equipment is professionally disposed.

Thereby Elmoprint observes all obligations in the context of old equipment disposal in time and makes therewith the smooth selling of products furthermore possible. Please understand that we can only take-back equipment that is send free of carriage charges. Further information is available from WEEE directive.

Betjening

Elmo-Roll R-35-EM er en hot-ink rotorprinter til trykning af datoer, batchnumre og lignende, der ikke kræver bogtrykskvalitet. Blækken, der er fast ved stuetemperatur, opvarmes og overføres fra en blækrulle til pakkefilmen ved hjælp af en roterende typeholder, hvor typerne skiftevis er i kontakt med blækrulle og pakkefilm. Når blækken er afsat på pakkefilmen, afkøles og hærder den nærmest øjeblikkeligt.

Når printeren tændes, varmes typeholderen og blækrullen op til ca. 110 °C, hvorved blækken får en konsistens, således at den kan blive overført fra blækrullen, via typeholderen og videre til pakkefilmen eller etikettebanen. Typeholderen roterer 180°, drevet af et gummihjul ved hjælp af friktion med pakkefilmen, hver gang den får et startsignal.

Temperaturen af typeholder og blækrulle kan justeres mellem 70-130°C.

For at udskifte blækrullen, gøres følgende:

- Løft den lille ståalarm til siden.
- Tag den brugte blækrulle ud.
- Plastichåndtaget genbruges, mens resten smides ud.
- Montér plastichåndtaget på en ny blæk rulle og sæt den nye blækrulle i printeren.
En ny blækrulle vil opnå arbejdstemperaturen i løbet af få minutter.
- Blækrullens position sikres med armen.

Når pakkefilmen ikke kører, men Elmo-Roll-printeren er opvarmet, bør typerne ikke være i kontakt med pakkefilmen. Dette opnåes enten ved at dreje typeholderen med hånden, eller ved at løfte hele printeren fri af pakkefilmen.

Tilførslen af blæk kan justeres ved hjælp af en spindel fra printerens top, hvorved man justerer centerafstanden mellem blækrullen og typeholderen, ved at bevæge blækrullen vertikalt.

Operation

Elmo-Roll R-35-EM is a hot ink rototprinter for printing of dates, batchno's etc., which doesn't require letter quality printing. The hot ink, which is solid at normal temperatures, is heated and transferred from a hot ink roller to the packaging film by a rotating type holder, where the types is in contact with the ink roller and the packaging film by turns.

When the printer are turned on, the type holder and the hot-ink-roller are heated to approx. 110°C / 230°F, which enables the ink to be transferred from the ink roller to the type holder, and from the type holder on to the packaging film. The type holder rotates 180°, driven by a rubber wheel on the packaging film, every time it's activated by a startsignal.

The heat is adjustable and the range is 70-130 °C (158-266 °F).

In order to replace the hot ink roller:

- Lift the little steelarm to the side.
- Take out the used hot ink roller.
The plastichandle is to be reused, while the rest can be disposed.
- Fit a plastichandle to a new hot ink roller, and plug the ink roller in to the printer. A new hot ink roller will reach operating temperature in a few minutes.
- Secure the hot ink roller with the stell-arm.

When the packaging machine is not running, but the printer is hot, the types should not be in contact with the packaging film. This can be accomplished by turning the type holder by hand, or by lifting the whole printer.

The supply of ink can be adjusting by a mandrel from the top of the printer, adjusting the center-distance between the hot ink roller and the type holder by moving the hot ink roller vertically.

Opstart

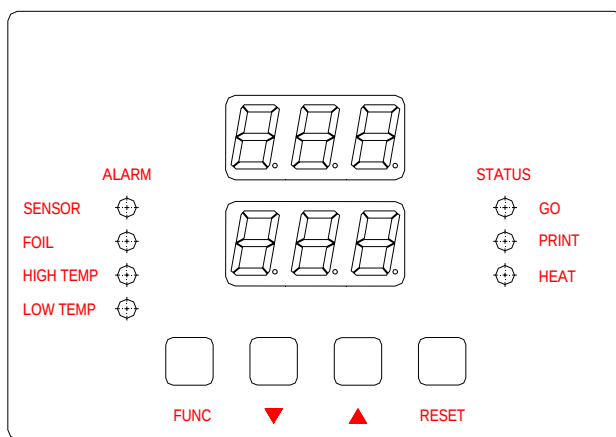
Det forudsættes at printeren er monteret i en anden maskine (værtmaskinen) og forsynes med el-, trykluft og startsignal fra denne.

Læs evt. værtmaskinens manual, såfremt der er problemer med tilførsel / tilslutning af el-, trykluft og startsignal.

Starting the printer

We presume that the printer is mounted in an other machine (the host machine) and supplied with power-, compressed air and startsignal fra the host.

You may need to read the manual for the host machine to get info about turning on/off the supply of power- air and start-signal.



Ca. 10 min. før printeren skal bruges, tændes for printeren, således at den kan varme op til den ønskede drifttemperatur, f. eks. 110 °C.

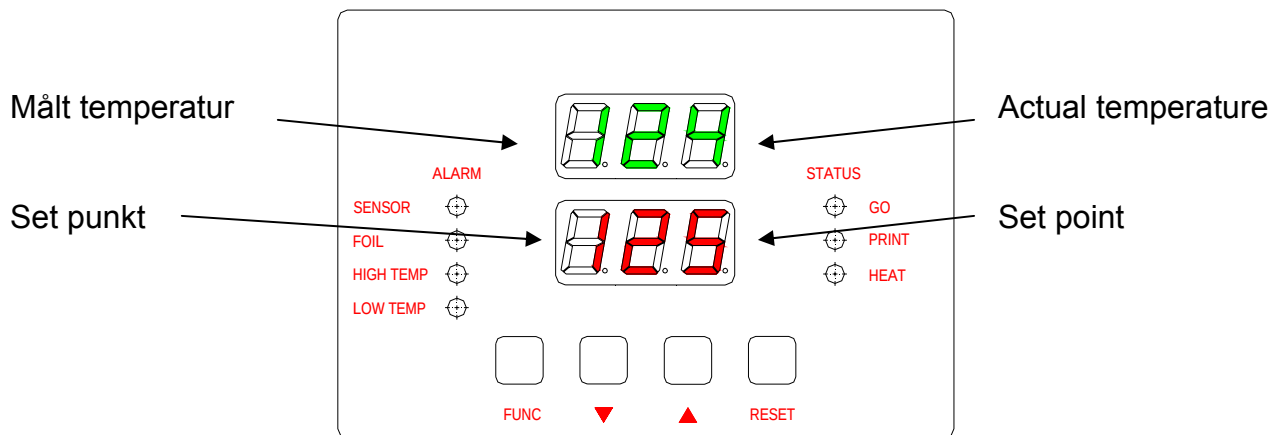
Printeren kan tændes/afbrydes på afbryder i kontrolkassen, men det normale er at printeren er forsynet over afbryder i værtmaskinen, så det er der man tænder/slukker for printeren.

Under opvarmning vil den gule lampe (HEAT) lyse konstant, indtil den ønskede temperatur er opnået, hvorefter samme lampe vil starte på at blinke.

Turn on the heat approx. 10 min. before the hot stamping machine is taking into use, so the printer can reach the desired temperature, (110°C for example).

The printer can be powered on/off on a switch inside the controlbox, but in normal installations, the printer power supply is connected through a switch in the host machine.

While it's heating up, the yellow LED (HEAT) will shine continuously until the desired temperature is reached, where upon this same LED will start flashing.



Prægetemperatur (S.SP) indstilles ved at trykke på FUNC så det nederste display viser S.SP, værdien ændres ved at trykke på pilene og gemmes ved at trykke på FUNC igen. Så vises t1 (forsinkelse) i displayet.

Printing temperature (S.SP) and dwell time (t2) is set by pressing FUNC, so S.SP shows in display, change the value by pressing arrows up or down and save by pressing FUNC again. Now the display shows t1 (delay).

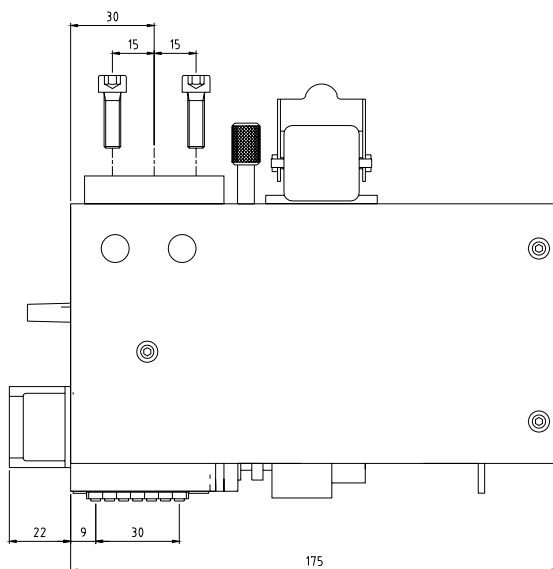
Dwell time (t2) is only in use to activate the clutch, so no need to be adjusted. If t2 is set too high, the printer will turn more than half a turn.

Monteringsvejledning

R35-EM er en delmaskine, der er beregnet for indbygning i en anden maskine. Denne del af manualen omhandler de ting som montøren skal vide, for at kunne montere prægemaskinen.

Montage omfatter at fastgøre printeren i et stativ i værtsmaskinen (pakkemaskine), samt tilslutte elforsyning og tilslutte startsignal, således at printeren kan fungere sammen med værtsmaskinen. Læs venligst "Sikkerhed og Sundhed" før montage.

R-35 EM skal monteres med 4 M6-skruer, således at printerens drivhjul trykker mod pakkefilmen, med en valse på den modsatte side. R-35 EM skal forsynes med 230V, gennem en sikring på max. 2A. Printeren skal have et startsignal.



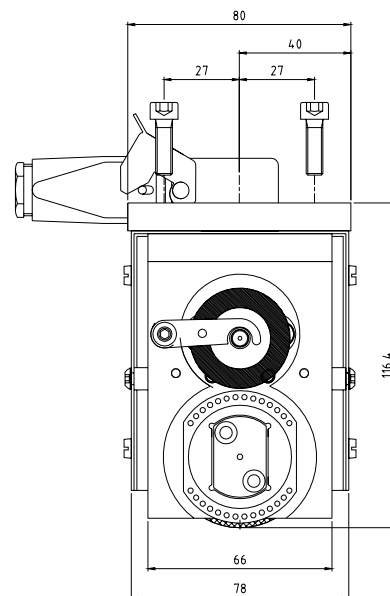
Der skal ved indbygningen sikres at brugeren har nem og sikker adgang til at betjene printeren, samt til dagligt vedligehold.

Assembly instruction

R35-EM printer is a partly assembled machine intended to be mounted in a host machine. This part of the manual is for the technician, with the information necessary to install the printer.

This includes mounting the printer in a frame on the host machine (packaging machine or otherwise), as well as connecting powersupply, and connecting startsignal and foilalarm for the printer to interact with the host machine. Please read "Safety and health" first.

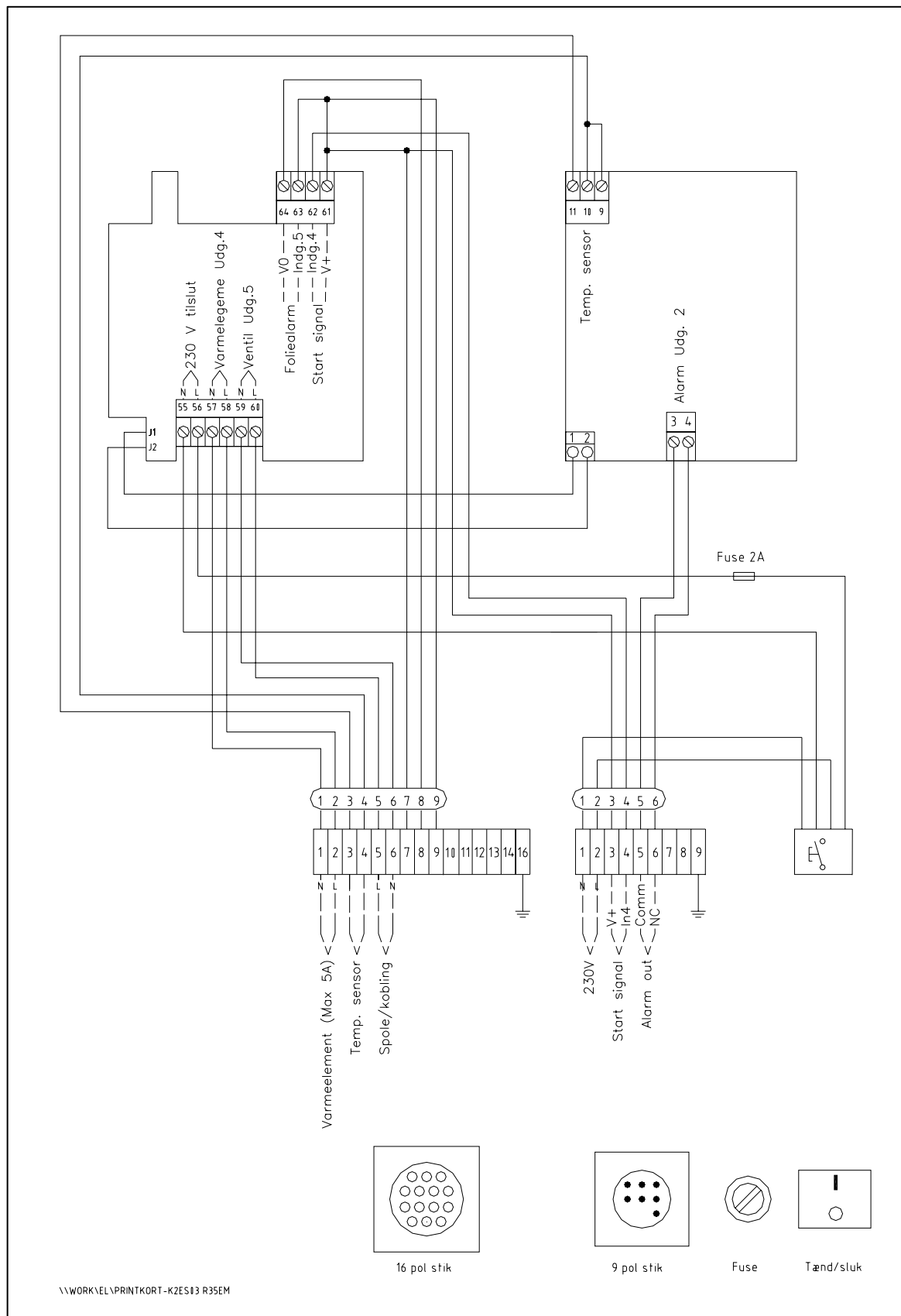
R35-EM must be mounted with 4 pcs. M6 screw, in a way that the driving wheel press the packaging film against a roller. R35-EM must be supplied with 230V through a switch and a fuse, max. 2A. The printer requires a startsignal.



When installing printer you must consider good access to the printer, so user can operate the printer and perform daily maintenance.

Tilslutning

Connections



Tilbehør

Blækruller

Blækruller fås i forskellige farver og temperaturområder. De leveres i kasser med 20 stk.

Typer

Blandt typer skelnes mellem radiale og lineare typer og man kan bestille typerne som enkelt-typer, eller tekstblokke. Typer fås som standard med skrifthøjden 3 mm. Ved bestilling angives varenummeret efterfulgt af den ønskede tekst.

Varenr.	Navn
9031100	3 mm blind radial
9031101	3 mm teksttype radial
9031103	3 mm enkelttype radial
9032100	3 mm blind linear
9032101	3 mm teksttype linear
9032103	3 mm enkelttype linear
9033000	Siliconelåsestykke

Accessories

Hot ink rollers

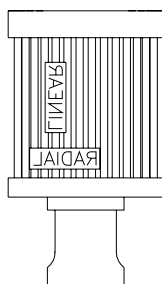
Hot ink rollers are available in various colours and temperature ranges. They are delivered in boxes of 20 pcs.

Types

Types are divided into radial and linear types and can be delivered as single types or text types. Types are as standard available with the text height of 3 mm. When ordering, please state itemno. followed by the text.

Itemno.	Description
9031100	3 mm blank radial
9031101	3 mm text type radial
9031103	3 mm single type radial
9032100	3 mm blank linear
9032101	3 mm text type linear
9032103	3 mm single type linear
9033000	Silicone locking piece.

PAKKEFILM/PACKAGING FILM →



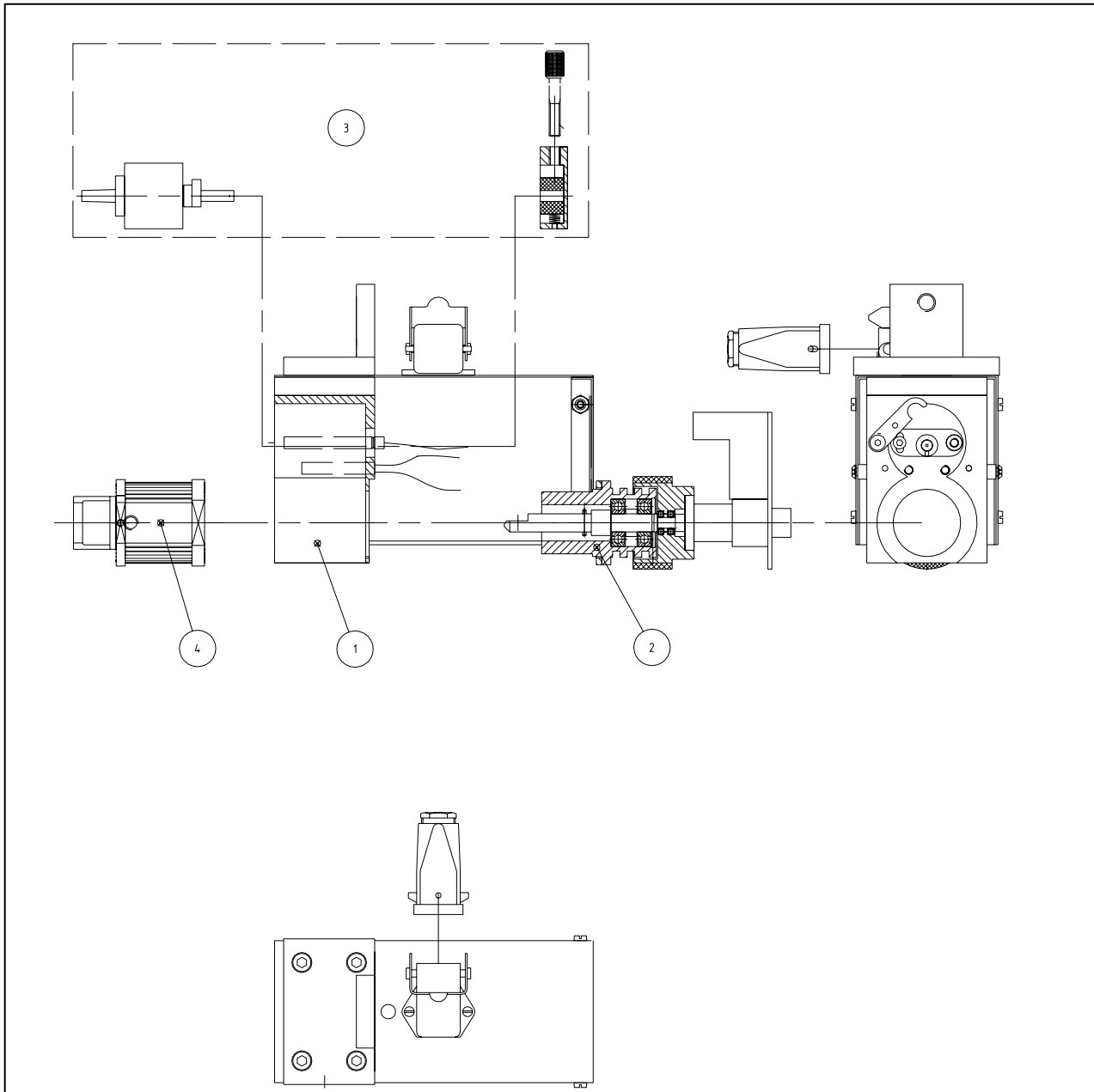
LINEAR
RADIAL

LINEAR
RADIAL

LINEAR
RADIAL

Stykklister

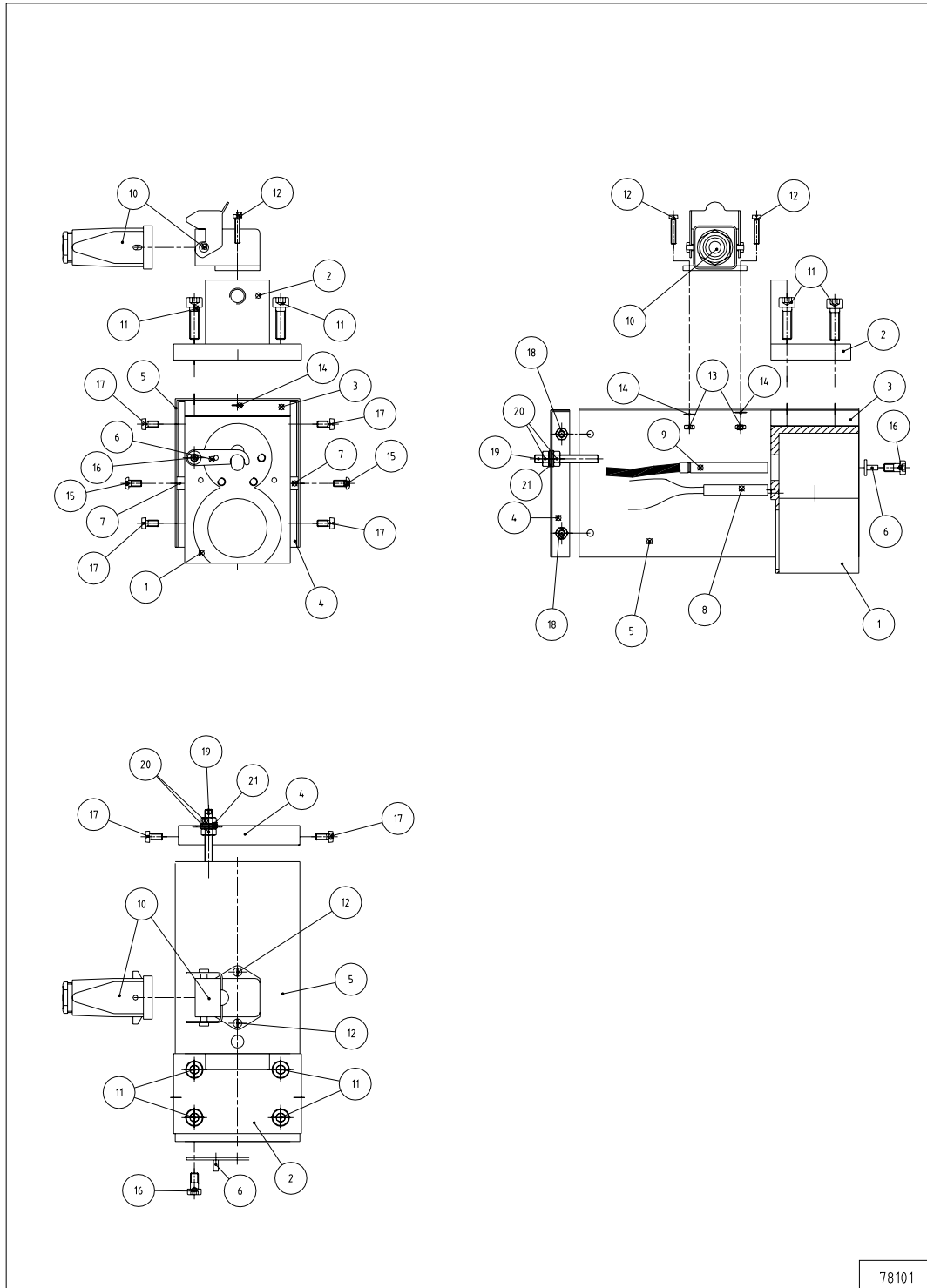
Part lists



Pos	Varenr.	Antal	Beskrivelse
1	78101	1	Hus, komplet
2	78102	1	Drivmekanisme
3	78003	1	Ophæng f blækrolle
4	90180	1	Typeholder

Pos	Item#	Qty	Description
1	78101	1	Block complete
2	78102	1	Driving mechanism
3	78003	1	Suspension
4	90180	1	Typeholder

78101-1



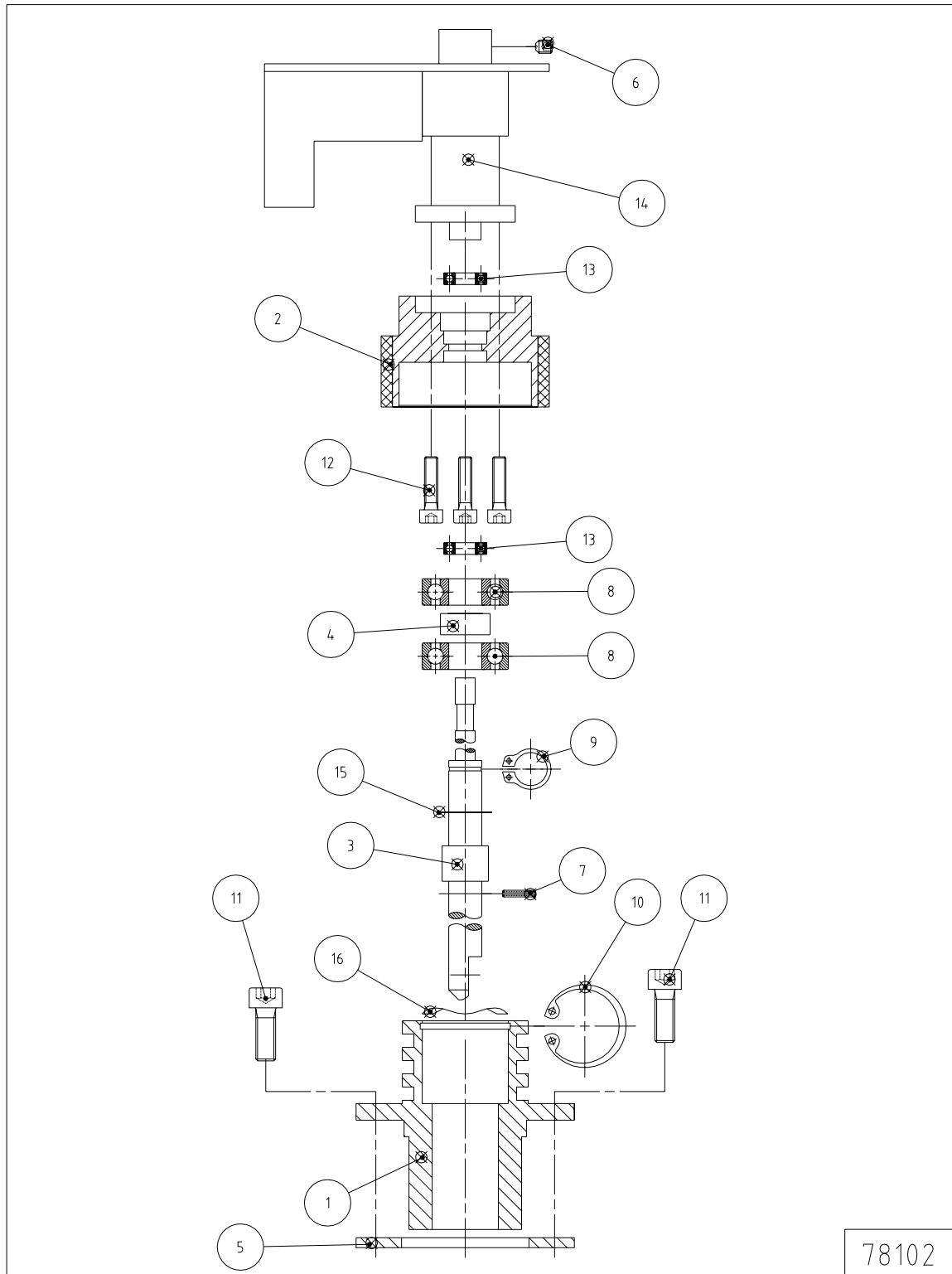
Varenr. 78101-1 indeholder:

Pos	Varenr.	Antal	Beskrivelse
1	18001	1	Basisblok
2	18005	1	Topneslag
3	18007	1	Isoleringsplade
4	18108	1	Bagskærm
5	18109	1	Skærm f el-tilslut.
6	18067	1	Låsebeslag
7	109408	4	Afstandsstykke
8	40164	1	Varmeelem. 230V 75W
9	72042-11	1	Varmeføler PT-100
10	9900243	1	Stik 7 pol komplet
11	110620	4	Unbracoskrue M6x20
12	210316	2	Kærvskrue M3x16
13	104103	2	Møtrik M3
14	105103	2	Spændeskive ø3
15	110416	4	Unbracoskrue M4x10
16	110510	1	Unbracoskrue M5x10
17	210408	4	Kærvskrue M4x8
18	104104	4	Møtrik M4
19	18114	1	Gevindstag M5
20	104105	2	Møtrik M5
21	105105	2	Spændeskive ø5

Item# 78101-1 contains:

Pos	Item#	Qty	Description
1	18001	1	Main block
2	18005	1	Top clamp
3	18007	1	Insulating plate
4	18108	1	End shield
5	18109	1	Shield for power
6	18067	1	Lock for inkroller
7	109408	4	Spacer
8	40164	1	Heatingelement 230V
9	72042-11	1	Heat sensor PT-100
10	9900243	1	Plug complete
11	110620	4	Allen screw M6x20
12	210316	2	Slotted screw M3x16
13	104103	2	Nut M3
14	105103	2	Washer ø3
15	110416	4	Allen screw M4x10
16	110510	1	Allen screw M5x10
17	210408	4	Slotted head screw
18	104104	4	Nut M4
19	18114	1	Threate pin M5
20	104105	2	Nut M5
21	105105	2	Washer ø5

78102



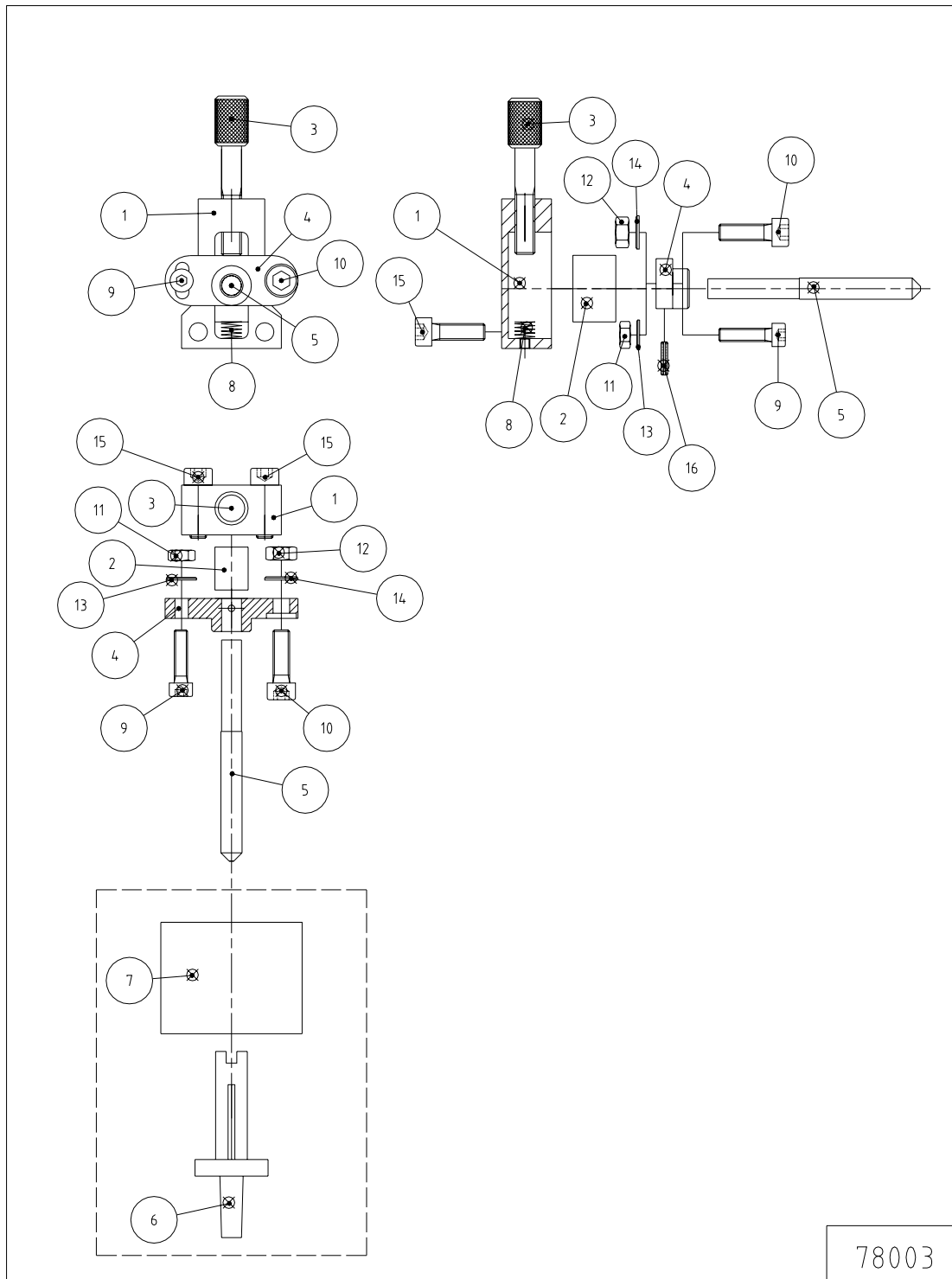
Varenr. 78102 indeholder:

Pos	Varenr.	Antal	Beskrivelse
1	18002	1	Lejerør
2	18103	1	Drivhjul ø50.8
3	18104	1	Drivaksel
4	18006	1	Afstandsring
5	18013	1	Isoleringsplade 3mm
6	130506	1	Pinolskrue M5x6
7	18014	1	Stift ø2
8	751026	2	Kugleleje 6000Z
9	105310	1	Seegerring U10
10	105425	1	Seegerring I25
11	110616	4	Unbracoskrue M6x16
12	110416	3	Unbracoskrue M4x16
13	751013	2	Kugleleje 618/6
14	9900244	1	Kobling
15	105710-2	1	Passkive
16	105819	1	Bølgefjeder

Item# 78102 contains:

Pos	Item#	Qty	Description
1	18002	1	Bearing tube
2	18103	1	Driving wheel
3	18104	1	Driving shaft
4	18006	1	Spacing ring
5	18013	1	Insulating plate
6	130506	1	Allen set screw
7	18014	1	Pin
8	751026	2	Ball bearing 6000Z
9	105310	1	Seeger circlip U10
10	105425	1	Seeger circlip I25
11	110616	4	Allen screw M6x16
12	110416	3	Allen screw M4x16
13	751013	2	Ball bearing 618/6
14	9900244	1	Clutch
15	105710-2	1	Shims
16	105819	1	Waved Spring Washer

78003



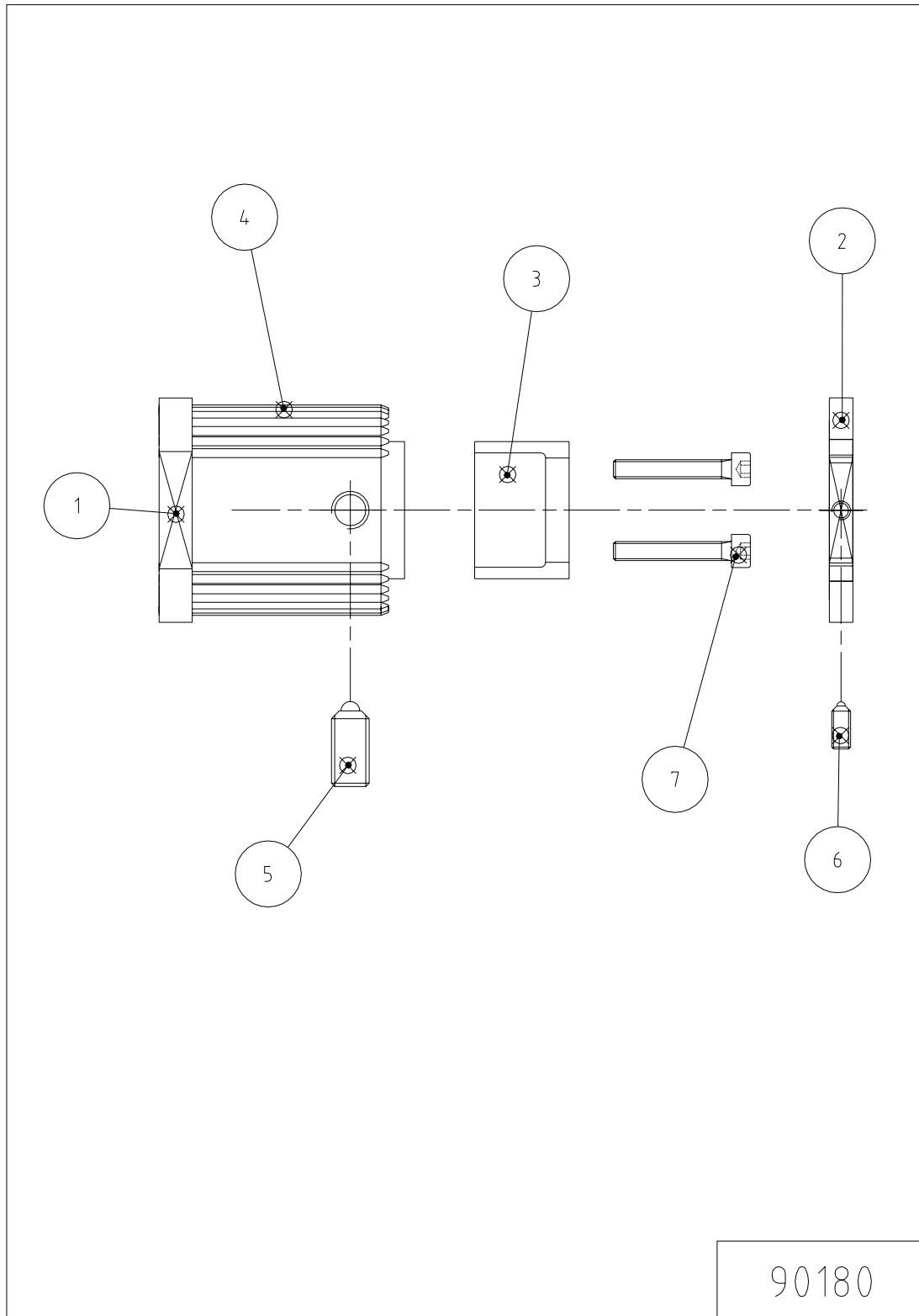
78003 indeholder:

Pos	Varenr.	Antal	Beskrivelse
1	18010	1	Hus f. blækjustering
2	18011	1	Styreklods blækjust.
3	18012	1	Justeringspindel
4	18065	1	Holder for aksel
5	18066	1	Aksel f blækrulle
6	18086	1	Håndtag f blækrulle
7		1	Blækrulle
8	10098	1	Trykfjeder
9	110416	1	Unbracoskrue M4x16
10	110516	1	Unbracoskrue M5x16
11	104104	1	Møtrik M4
12	104105	1	Møtrik M5
13	105104	1	Spændeskive ø4
14	105105	1	Spændeskive ø5
15	110516	2	Unbracoskrue M5x16
16	240210	1	Rørstift ø2x10

Item# 78003 contains:

Pos	Item#	Qty	Description
1	18010	1	Housing inkadjust
2	18011	1	Guide for inkadjust.
3	18012	1	Adjustm.mandrel
4	18065	1	Fitting for shaft
5	18066	1	Shaft for inkroll
6	18086	1	Handle for inkroll
7		1	Ink roll
8	10098	1	Spring
9	110416	1	Allen screw M4x16
10	110516	1	Allen screw M5x16
11	104104	1	Nut M4
12	104105	1	Nut M5
13	105104	1	Washer ø4
14	105105	1	Washer ø5
15	110516	2	Allen screw M5x16
16	240210	1	Pin ø2x10

90180



Typeholder 90180 indeholder:

Pos	Varenr.	Antal	Beskrivelse
1	18060	1	Typeholder
2	18061	1	Låseplade
3	18062	1	Håndtag
4	18063	28	Nål
5	18078	1	Fjedrende trykstykk
6	18079	1	Fjedrende trykstykk
7	110425	2	Unbracoskrue M4x25

Item# 90180 contains:

Pos	Item#	Qty	Description
1	18060	1	Type holder
2	18061	1	Lock plate
3	18062	1	Handle
4	18063	28	Needle
5	18078	1	Spring pin
6	18079	1	Spring pin
7	110425	2	Allen Screw M4x25

Udskiftning af styreprint (80330)

Hvis det er nødvendigt at udskifte prægemaskinens styreprint, skal dette efterfølgende tunes ind (kalibreres). Dette gøres som følger:

- Hold samtidigt FUNC og RESET inde i nogle sekunder, indtil den øverste linie skifter til OP.B (Operation basic).
- Tryk ↑ så display skifter til OP.S (Operation service).
- Tryk FUNC
- Tryk ↑ så password skifter til 1
- Tryk på FUNC indtil tU.n vises
- Tryk ↑ så ON vises.

Nu autotuner varmestyringen. Mens dette foregår (10-20 minutter), må man ikke ændre varmeindstilling, eller slukke printeren.

Styringen kan stilles tilbage til "Operation basic" straks efter at autotuning er startet.

- Hold samtidigt FUNC og RESET inde i nogle sekunder, indtil den øverste linie skifter til OP.S (Operation service).
- Tryk ↓ så display skifter til OP.B (Operation basic).

Replacing control board (80330)

If replacing printboard for the printing unit is required, you must then calibrate the heat control afterwards, as follows:

- Press and hold at the same time FUNC and RESET, until OP.B (Operation basic) appears in the display (up to 10 sec.).
- Press ↑ to display OP.S (Operation service).
- Press FUNC
- Press ↑ to change password to 1.
- Press FUNC multiple times, until tU.n is displayed.
- Press ↑ to display ON.

The printer is now auto-tuning (10-20 minute). You can use the printer during auto-tuning, but you must not change the set value for printing temperature, nor must you turn off the printer.

The controller mode can be changed back to Operation Basic as soon as auto-tuning has been started.

- Press and hold at the same time FUNC and RESET, until OP.S (Operation service) appears in the display (up to 10 sec.).
- Press ↓ to display OP.B (Operation basic).

Tillæg

Appendix

Kobling

Clutch

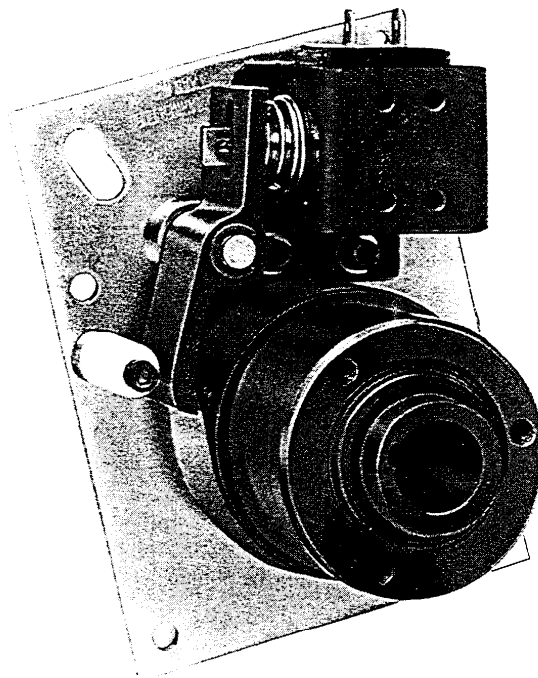
**WARNER
ELECTRIC**

SERVICE

& INSTALLATION INSTRUCTIONS

P-258

*CB Models Wrap Spring
Clutch/Brakes*



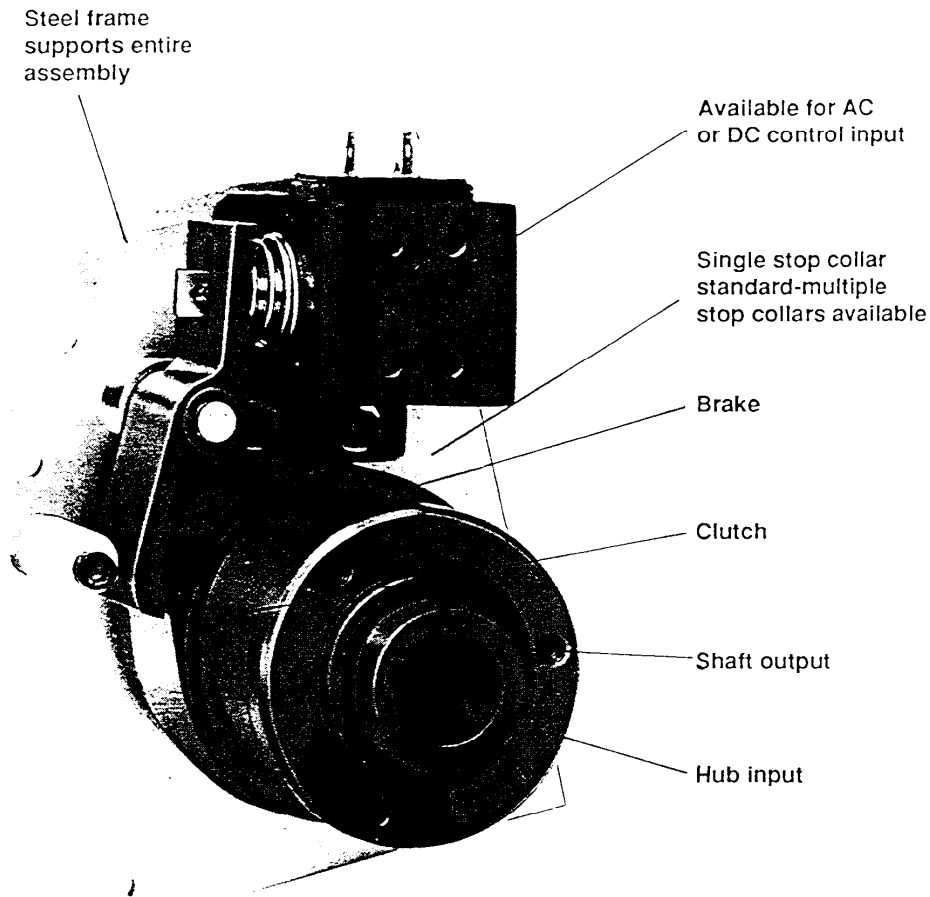
WARNER ELECTRIC



INTRODUCTION

The CB incorporates all the components necessary to accurately start and stop a load driven by a continuously rotating input. Each unit is a pre-engineered and preassembled package consisting of a clutch and brake with a stop collar and solenoid actuator affixed

to a mounting plate. The CB is capable of locking the load in both directions so that no external antiback, overtravel or other mechanism is needed to maintain registration.



Features:

- Starts and stops within $\pm 1/2^\circ$ in a 360° revolution with no cumulative error
- Preassembled package
- May be cycled or run continuously
- Operates from a single AC or DC pulse
- Maximum operating speeds from 300 to 1800 RPM
- Maximum torque ratings from 25 to 5000 lb. in.
- Standard incrementally adjustable collar for positioning of output.
- Sintered metal construction for permanent lubrication, long life and low maintenance.

Operation:

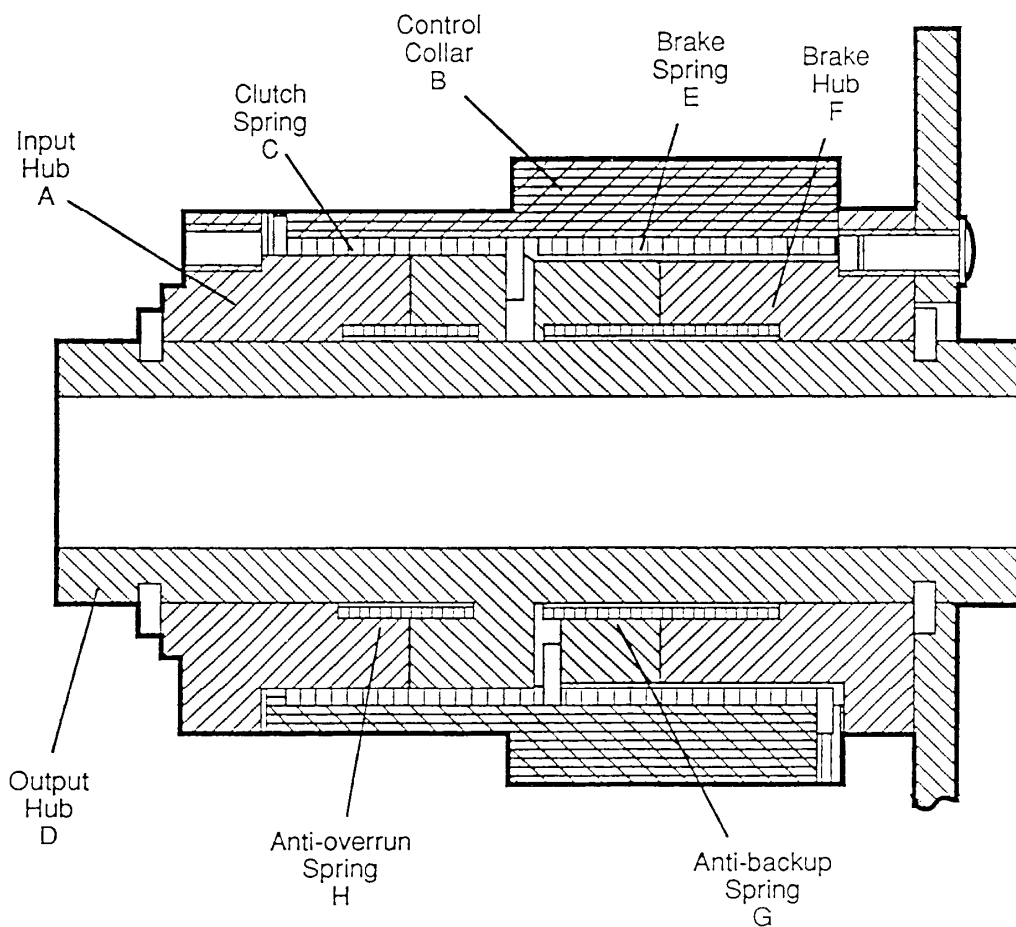
Input hub A is connected to a continuously turning input. When the solenoid is energized, control collar B allows brake spring E to unwrap from brake hub F and output hub D. Simultaneously the control collar allows clutch spring C to wrap down on input hub A and output hub D. Torque is then transmitted from the input to the output.

When the solenoid is de-energized, the actuator hits the cam on the control collar causing the clutch spring to unwrap from the input and output hubs. At the same time, the control collar causes the brake spring to wrap down on the output hub and brake hub. The

output is then disconnected from the input and the output load is stopped accurately.

Standard antiback spring G prevents oscillation between the clutch and brake springs and prevents the output load from backing up.

Optional antioverrun spring prevents overhauling loads from overrunning the input. This feature would therefore prevent an eccentric output load from going any faster than the constant input speed.



MOUNTING INSTRUCTIONS—CB SERIES

Warner Electric wrap spring clutches are self-contained packaged products which are easy to mount. A few simple precautions should be taken to ensure maximum life.

All Warner Electric wrap spring clutch products are designed for parallel shaft application where they are fully supported by the

shaft on which they are mounted. In the case of wrap spring clutch/brakes (CB) the through shaft is always the output. Connecting the parallel shaft to the CB input can be accomplished by use of a belt, chain or gear drive. CB models must be mounted with the shaft(s) in a horizontal position.

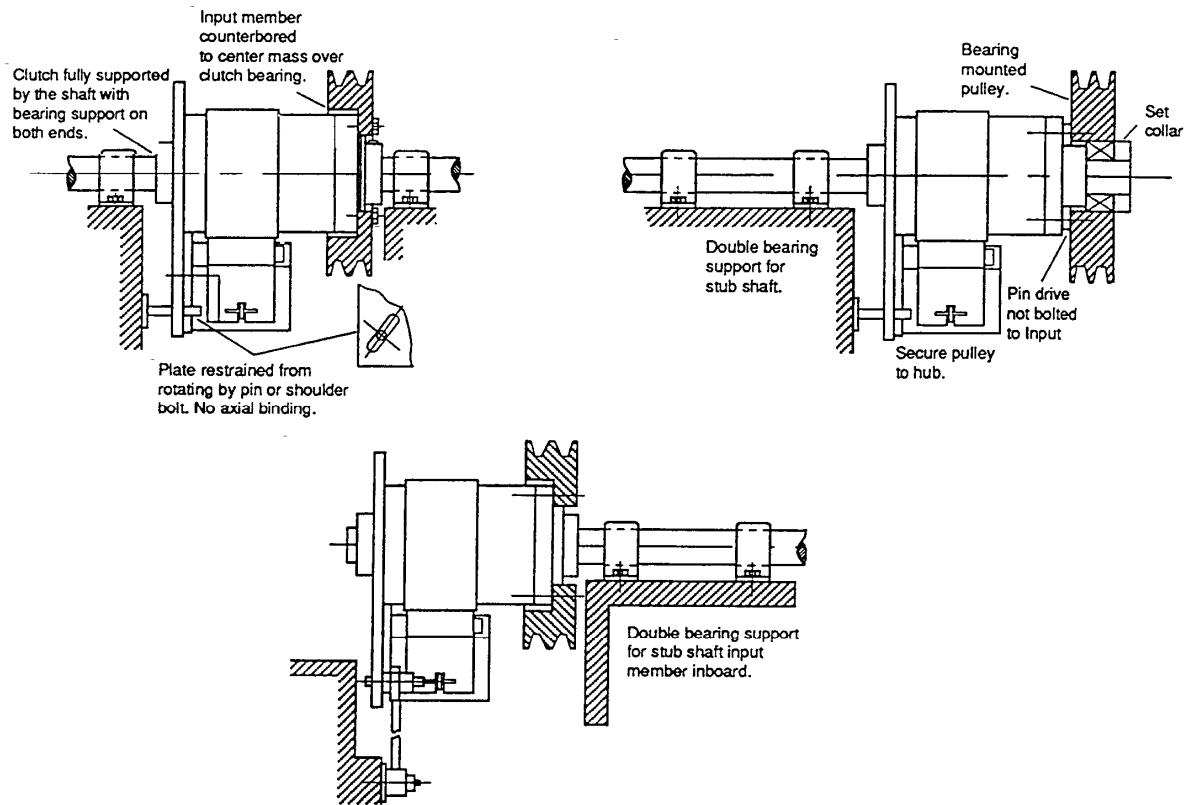


Figure 3

Figure 1 shows an ideal CB mounting. The unit is locked to the output shaft with a key and set screws. The mounting plate is restrained from rotating with a pin, but is not restrained axially, reducing the load on the CB's internal plate bearing.

The anti-rotation device employed must be able to withstand the braking torque required by the load.

It may be desirable to have easy access to the input for changing belts, etc. In this case, the clutch/brake can be mounted on a stub shaft. If so, the unit must still be fully supported. Overhung loads on the input member must be avoided to secure long radial bearing life.

Figures 2 and 3 illustrate how proper support can be provided. Input members are generally face-mounted to the input hub of the

unit as shown in Figure 1. This is facilitated by drilled and tapped holes provided in the free hub flange.

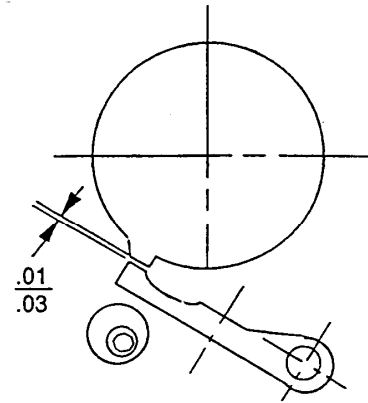
The set-up shown in Figure 2 is possible if the radial load to the input hub of the clutch is small compared to the specified load. With a substantial load, arrange the pulley over the centerline of clutch free hub as shown in Figure 3.

The solution presented here is better than that in Figure 2. Place one support bearing as close to the pulley as possible. Use a torque arm for antirotation.

Small units (size 2, 4, and 5) are provided with pilot holes in the output shaft. These guide drilling through the machine shaft attachment of the unit, accomplished by a pin.

LUBRICATION

All standard clutch brakes are constructed with sintered metal components, which are approximately 18% oil by volume. Properly applied, a wrap spring clutch needs no lubrication for the life of the unit.



TROUBLESHOOTING THE ACTUATOR:

The actuator is a simple, straight-forward mechanical linkage. When the actuator does not trip, the following checks should be made:

Problem	Solution
1. No power to the coil (check w/voltmeter).	1. Check all wiring and switching in the system that supplies power to the coil to actuate the clutch.
2. Lack of continuity in coil windings (check w/ohmmeter).	2. Replace coil.
3. Mechanical binding of plunger.	3. A. Realign coil. This important step must be completed before proceeding to B. B. Set actuator/cam tip clearance at .010" to .030" with coil energized and apply light pressure to the control collar as shown in Figure 1. Note: For AC coils, the actuator should hit the ALS and bottom simultaneously. C. Replace coil assembly.
4. Actuator does not clear cam.	4. Reset coil as in Step 3.
5. Collar pushes so hard on the actuator that the coil cannot pull in.	5. A. Actuator loading can be caused by the braking force exceeding the limits of the brake spring. Re-evaluate unit size. B. If the spring differential setting is too large, the clutch spring could be opening into the control collar and acting as a brake. The spring differential must be reset (see Section 8, CB Spring Differential Adjustment).

TROUBLESHOOTING THE CLUTCH BRAKE UNIT

When the brake spring is engaged, i.e., fully wrapped down, the input should be free to rotate by hand. Note: Units with antioverrun springs will allow the input hub to turn only in the direction of rotation. The addition of the antioverrun spring causes some additional drag in the direction of rotation.

Problem	Solution
1. Continuous driving (input and output hubs locked together).	1. A. The spring differential setting is too small (see Section 8, "CB Spring Differential Adjustment"). B. The endplay (axial clearance between hubs) setting is too close. Reset by moving output sleeve on shaft until a minimum of .003" to .006" clearance is achieved. CAUTION: Use a brass hammer to avoid shaft damage. C. The hubs are necked down (worn at the spring crossover point) and the spring is captured between the two hubs. This probably results from excess torque being applied to the unit. Re-evaluate sizing. Replace springs and input and output hubs as necessary. Reset endplay. D. The bearing surface between the input and output hubs is galled. If galling was caused by contaminants, add a dust cover (see Section 9). If galling was caused by radial side loading or an overhung load, correct by mounting input member properly (see Section 3).
2. Input is free, but clutch will not engage when actuated.	2. A. The spring differential setting is too loose. Reset (see Section 8). B. Check clutch spring for damage. Replace as necessary. C. The control collar cannot move because foreign matter is jamming it. Clean the unit and add a dust cover (see Section 9). D. The actuator/cam tip clearance is inadequate (see Section 6). E. The coil has failed (see Section 5).
3. CB stalls motor when engaged.	3. A. See solutions to Problem 1, continuous driving.
4. Control collar tang slot ripped out.	4. A. The spring differential setting was altered. Replace collar, reset differential (see Section 8). B. Unit was rotated in reverse direction. Replace broken parts. DO NOT REVERSE UNIT. C. The torque or inertia is too high for the unit. Re-evaluate unit size.

TROUBLESHOOTING THE CLUTCH BRAKE UNIT (Continued)

Problem	Solution
---------	----------

5. Output does not repeat stopping point

5. A. There is not enough inertia to fully disengage the clutch spring and engage the brake spring. Add inertia by either increasing RPM or adding weight to the output (such as a flywheel). To calculate the inertia required, use the following table and formula:

Clutch	T _c	t	I _c
CB-2	1.65	0.003	0.0116
CB-4	4.40	0.004	0.0450
CB-5	6.88	0.004	0.1663
CB-6	8.75	0.005	1.221 (0.75 in. bore) 1.138 (1.0 in. bore)
CB-8	20	0.005	9.43 (.075 in. bore) 9.32 (1.0 in. bore) 8.15 (1.5 in. bore)
CB-10	50	.006	30 (1.5 in. bore)

Minimum Inertia Calculation

I = Minimum inertia required to fully activate the Clutch/Brake - lb. in.²

t = Time — Seconds

T_c = Torque required to fully activate the Clutch/Brake — in. lb.

T_o = Frictional Torque — in. lb.

RPM = Revolutions per minute

I_c = Inertia at the output side of the clutch — lb. in.²

Example: CB-5 in a system running at 300 RPM with 10 in. lb. drag. What inertia is required to fully activate the Clutch/Brake?

$$= \frac{(t) (T_c + T_o) (3700)}{\text{RPM}} - I_c$$

$$= \frac{(0.004) (6.88 + 10) (3700)}{300} - 0.1663 = 0.6664 \text{ lb. in.}^2$$

low to determine maximum inertia load.

$$\frac{T \times 3700 \times t}{\text{RPM}} = WR^2$$

- B. There is too much system friction to allow the output inertia to fully disengage the clutch spring and engage the brake spring. Reduce system friction. Also, see Section A above on minimum inertia.
- C. The control tang is broken on the brake spring. Replace spring.
- D. There is binding caused by rigid mounting. (See Section 3.)
- E. There is insufficient antiback holding capability or the unit has been reversed. See technical ratings for antiback holding capabilities. **Important: Do not reverse unit!** Re-evaluate sizing.
- F. An overhauling load is causing misregistration. Add antioverrun option.
- G. The antioverrun holding capacity has been exceeded. See technical ratings. Re-evaluate sizing.

STOP COLLAR ADJUSTMENT:

The incrementally adjustable collar is provided so the output orientation can be changed.

To adjust:

1. Work retaining ring A out of its groove and slide it forward on sleeve C.
2. Slide cam B off splines, rotate to the desired relationship of stop to output shaft and slide cam back onto splines. The actuator will have to be held clear during this operation.
3. Slide the retaining ring back into the groove.

NOTE: Make sure the brake is fully wrapped down to ensure getting the proper stop point.

Adjustment Increments:

Standard Stop Collar

CB-2	2.8° Adjustable
CB-4	2.4° Adjustable
CB-5	1.8° Adjustable
CB-6	1.8° Adjustable
CB-8	1.6° Adjustable
CB-10	1.5° Adjustable

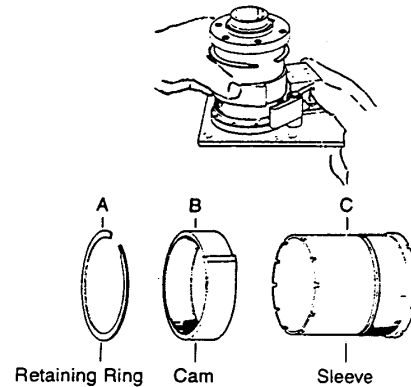


Figure 1 - Readjusting location of standard stop collar
CB-2, 4, 5, 6, 8, 10

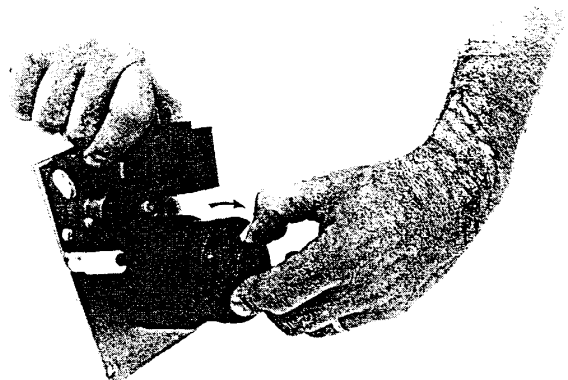
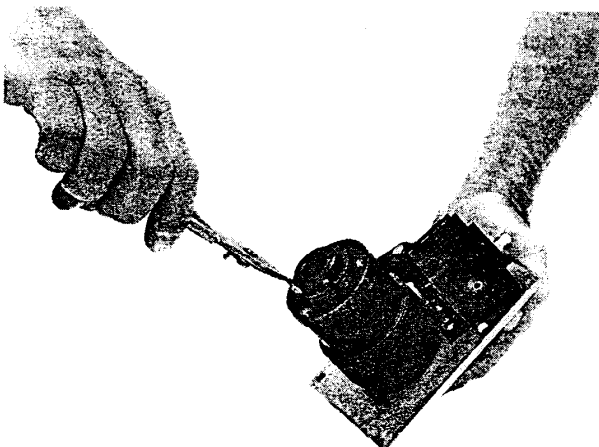
CB SPRING DIFFERENTIAL ADJUSTMENT

All CB series clutch/brakes are factory preset to the proper spring differential overtravel. Should a component of the CB require replacement and the springs are affected, it is advisable to mark

the two spring tang slots to ensure correct reassembly. If this is not possible, use the following procedure to reset the springs.

1. Remove the retaining ring from the input hub.

2. Rotate the clutch so the brake spring is fully wrapped down.
NOTE: Merely rotating the unit until the actuator hits the cam will not fully engage the brake spring. The output shaft must be rotated in the driving direction until the brake spring fully wraps down by applying 10 to 15 lb. in. torque to the shaft in the drive direction.

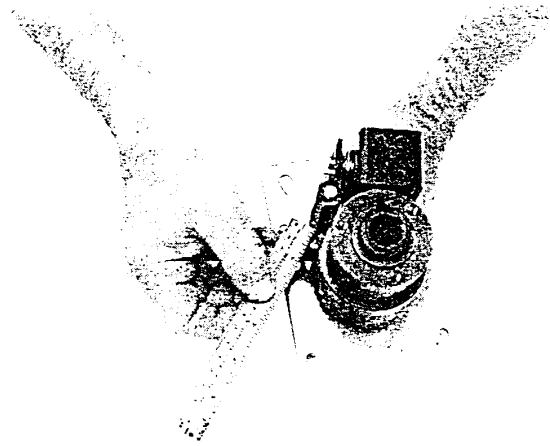


CB SPRING DIFFERENTIAL ADJUSTMENT (Continued)

3. With the brake fully engaged (per step 2), pull the hub assembly out and push the clutch spring out of its slot, allowing it to jump to wherever it comes to rest.



6. With the brake fully engaged, hold the shaft with one hand and release the actuator.



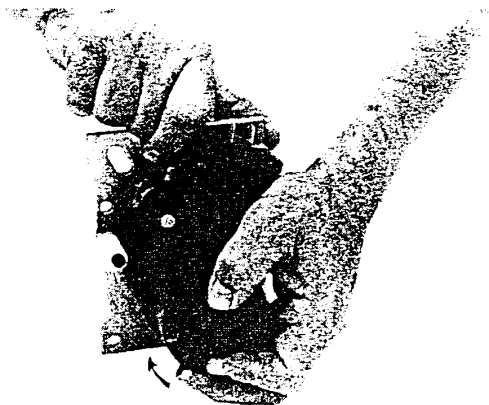
4. The clutch spring should be between two slots. Unwrap the spring and push it back into the nearest slot.



THE AMOUNT OF OVERTRAVEL VARIES WITH THE SIZE OF THE UNIT:

CB-2	.09 to .19"
CB-4	.19 to .25"
CB-5	.25 to .38"
CB-6	.38 to .50"
CB-8	.50 to .62"
CB-10	.62 to .75"

5. Push the input hub back into place, release the actuator and rotate the clutch until the brake spring fully wraps down again.



8. To obtain the overtravel, use a scale to measure the distance between the tip of the actuator and the tip of the cam.

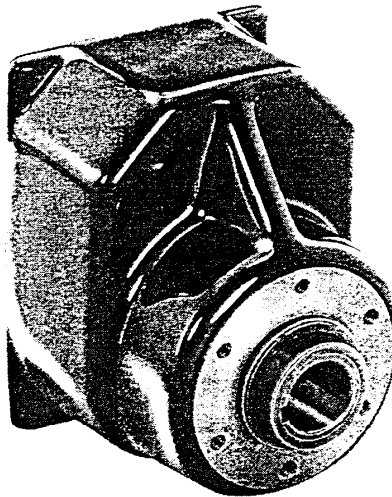
CB SPRING DIFFERENTIAL ADJUSTMENT (Continued)

9. If the overtravel is within specified limits, reinstall the retaining ring and the unit is set.
 10. If the overtravel exceeds the specified amount, move the brake spring back one slot against the direction of rotation and repeat steps two through eight.
 11. If the overtravel is less than the specified amount, move the brake spring forward one slot in the direction of rotation.
- Reposition the drive and brake springs to their original positions onto the output shaft assembly.
 - Reassemble the clutch and position the spring tangs of the drive and brake springs in the factory marked locations on the control collar assembly (on the control collar there are designated slots marked with a recessed punch mark).
 - After the unit is completely assembled, the differential setting should be back to its original setting.
- *NOTE: If the unit is disassembled and the drive and/or brake springs do not need to be replaced, proceed as follows:

Dust Covers

Dust covers for CB models have been designed to protect the clutch/brake units from abrasives, corrosion, contaminants, and other harsh environmental elements. Features and part numbers are listed below.

- Protects models CB-2 through -10 from dirt contaminants and moisture
- Helps assure longer life
- Highly durable, flexible, soft plastic material
- Simple to remove and install
- Low cost



Model Number	Part Number
Dust Cover for CB-2	287-2-0007
Dust Cover for CB-4	287-4-0002
Dust Cover for CB-5	287-5-0007
Dust Cover for CB-6	287-6-0007
Dust Cover for CB-8	287-8-0003
Dust Cover for CB-10	287-0-0002

CB-2 SPECIFICATIONS



Designed expressly for the computer peripheral and business machine market, this CB unit is suitable for indexing and rapid cycling.

Technical Ratings

Static Torque	25 lb. in.
Maximum anti-overflow holding capability	10 lb. in.
Maximum anti-back holding capability	18 lb. in.
Inertia, rotating parts	.0207 lb. in. ²
Maximum radial bearing load at maximum speed	7.5 lb.
Maximum operating speed	1800 RPM
Response time, voltage on at full speed	20 MS

See page 8 for minimum inertia requirements.

See page 5 for mounting instructions.

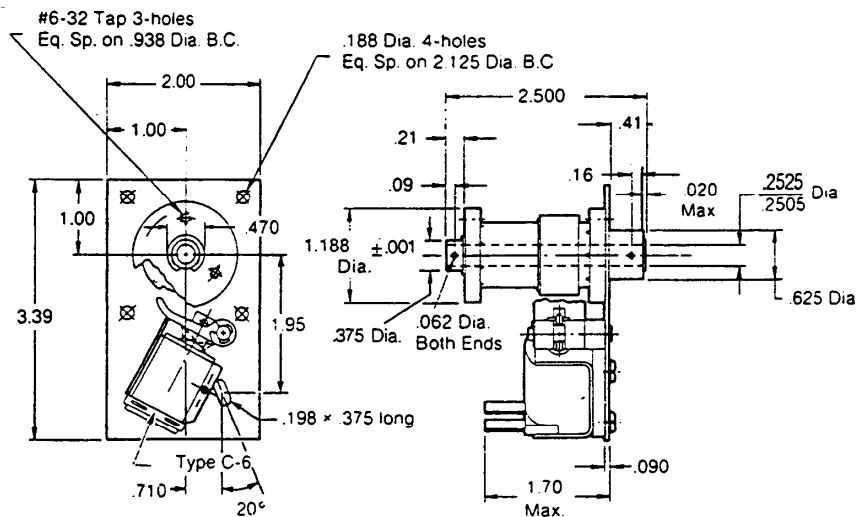
Electrical Characteristics

(Coils are rated for continuous duty)

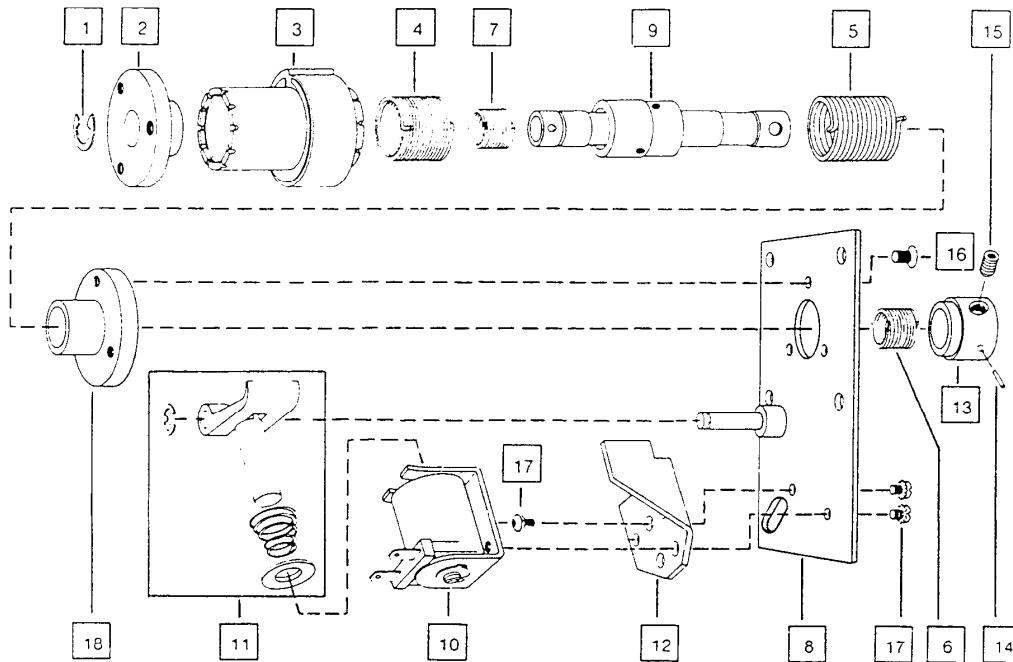
Voltage	Current (Amps)	Resistance (Ohms)
120 AC 60 Hz	*.104	825
24 DC	.230	104
12 DC	.460	26
90 DC	.059	1510

*120 AC—in rush current—.10 Amps
Holding current—.04 Amps

Dimensions



Parts List



CB-2 Model S Incremental Rotation Control Package

Item	Description	Rotation	Part No.
1	Retaining Ring		748-1-0085
2	Input Hub Anti-Overrun		540-2-0004
3	Control Collar (Specify No. of Stops) Standard 2.8° Adjustable	CW CCW	266-2-0001 266-2-0031
4	Drive Spring	CW CCW	808-2-0108 808-2-0109
5	Brake Spring	CW CCW	808-2-0101 808-2-0100
6	Anti-Back Spring	CW CCW	808-2-0004 808-2-0003
7	Anti-Overrun Spring	CW CCW	808-2-0003 808-2-0004
8	Plate Assembly	CW CCW	686-2-0001 686-2-0002

Item	Description	Rotation	Part No.
9	Output Assembly with Anti-Overrun		824-2-0006
10	Coil Assembly (Specify Voltage)	$\left(\begin{array}{l} 24 \text{ DC} \\ 120 \text{ AC} \\ 12 \text{ DC} \\ 90 \text{ DC} \end{array} \right)$	275-1-0003 275-1-0006 275-1-0002 275-1-0005
11	Act. Assembly (kit w/plunger)		101-2-0001
12	Actuator Limit Stop	CW CCW	816-2-0001 816-2-0002
13	Anti-Back Hub		540-2-0003
14	Spring Pin		679-1-0019
15	Headless Socket Set Screw		797-1-0152
16	Flat Head Socket Cap Screw		797-1-0311
17	Pan Head Machine Screw (Sems)		797-1-0415
18	Brake Hub		540-2-0006

Dissassembly

1. Important—Insure that spring tang location is marked before the unit is taken apart.
2. Rotate the input hub until the actuator hits the stop cam. Continue to apply torque in the direction of rotation to the output shaft until the brake spring is fully wrapped down.
3. Remove the retaining ring from the input hub end.
4. Remove input hub—turn in direction of rotation only.
5. Release the actuator so that the brake is disengaged.
6. Remove the control collar by extracting the collar toward the clutch spring end.

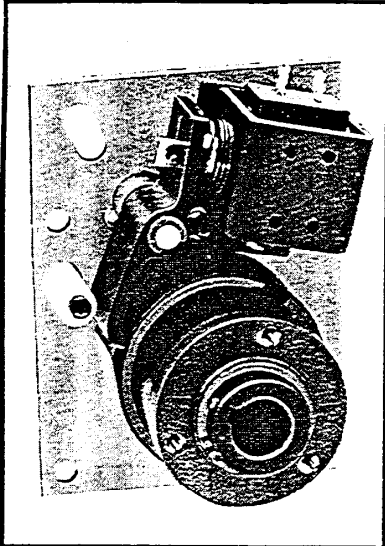
Assembly

1. Replace parts as needed.
 2. Install the control collar over the output shaft and spring assembly. (Pull the clutch spring tang through the collar with needle-nosed pliers, taking care not to distort the spring.)
 3. Install input hub—turn in direction of rotation only.
 4. Reset spring differential as needed (see how to set spring differential on a CB unit, pages 9-11).
 5. Install retaining ring with smooth surface facing input hub.
- NOTE:** Anti-back springs and hubs should not be disassembled because of the difficulty in maintaining endplay setting between hubs. The unit should be returned to the factory for service.

13

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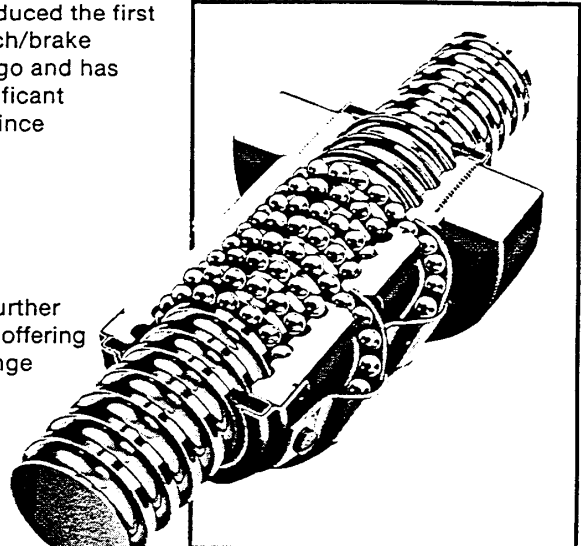
Products for Motion Control



WRAP SPRING CLUTCHES & BRAKES

Warner Electric introduced the first electromagnetic clutch/brake more than 50 years ago and has pioneered every significant advance in the field since that time.

Warner Electric has further diversified its product offering to include a broad range of unique motion control devices that sets the company apart in three significant ways:



BALL BEARING SCREWS & SPLINES

The application experience and production range to recommend exactly the right solution without bias.

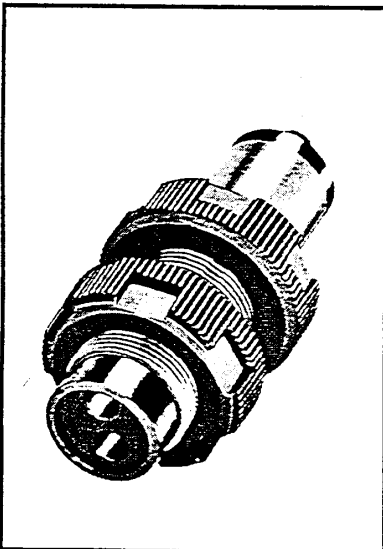
Immediate product availability from manufacturing facilities and stocking distributors throughout the world.

A worldwide marketing organization offering the Company's customers prompt and professional application, installation and service assistance wherever it's needed.

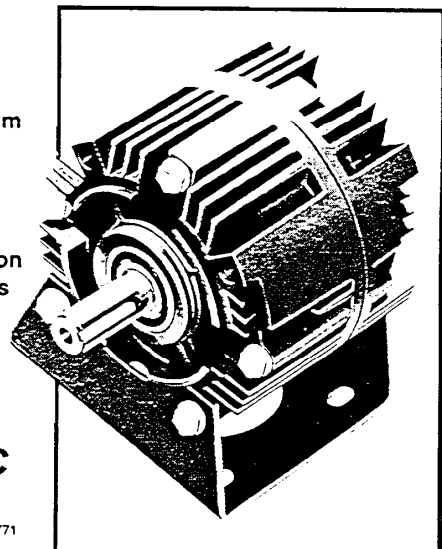
WARNER ELECTRIC



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WARNER PHOTOELECTRICS



ELECTRIC BRAKES & CLUTCHES