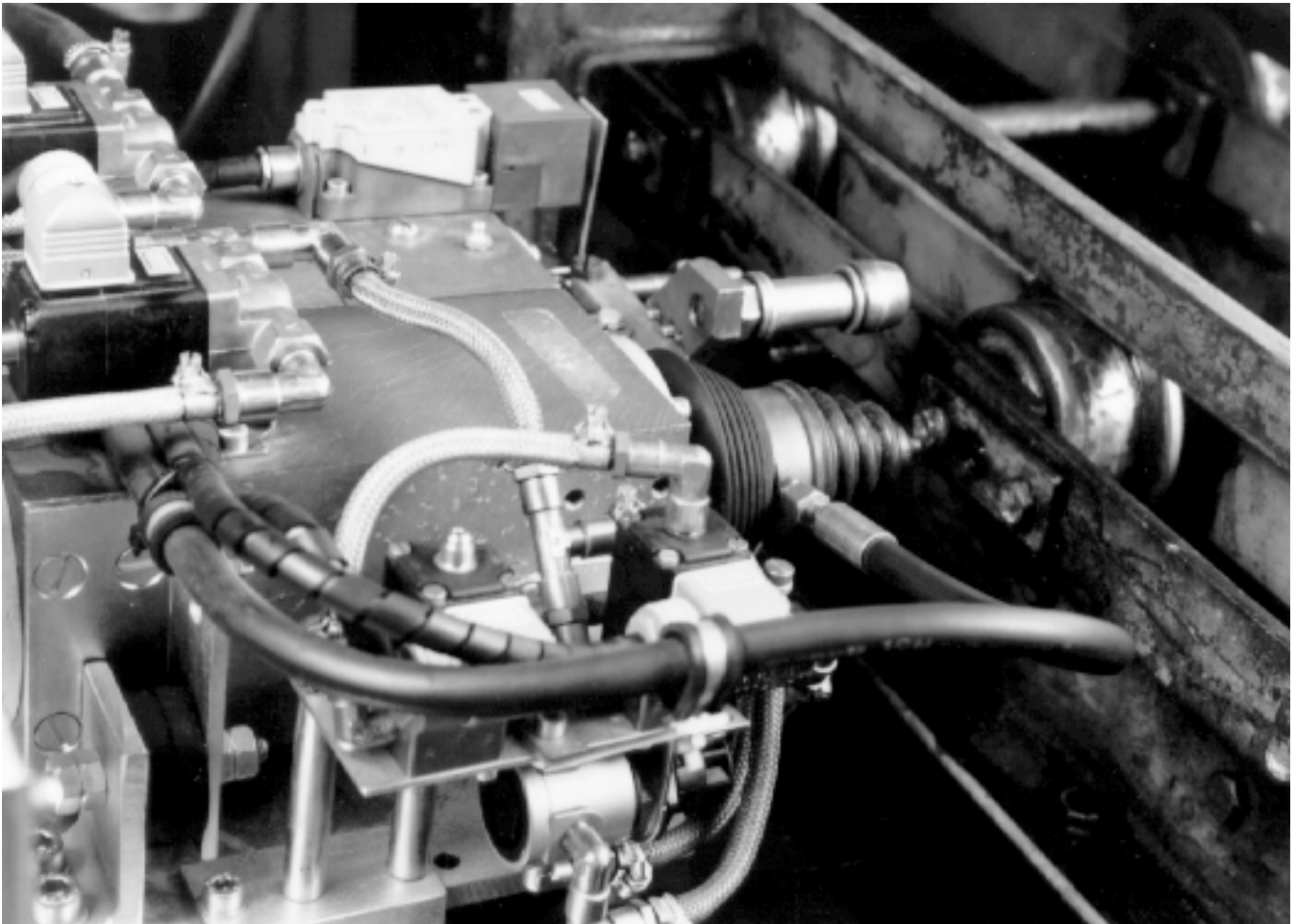


# **COBRA 3-2**

## ***Lubrication device for moving lubrication points***



**1 Preface to the Owner's Manual**

This Owner's Manual is intended to familiarize the user with the pump/lubrication system and to enable him to use its various features.

The Operating Instructions contain important information for the safe, correct and economic operation of the pump/lubrication system. Their observance will help avoid hazards, reduce repair costs and downtime, increase the reliability and prolong the service life of the pump/lubrication system.

These Operating Instructions must be supplemented by the respective national regulations concerning the prevention of accidents and protection of the environment.

The Owner's Manual must always be available on the site where the pump/lubrication system is in operation.

The Owner's Manual must always be available on the site where the pump/lubrication system is in operation.

If persons who are charged with work with the pump/lubrication system do not have a good command of the English language, it is the user's responsibility to take the necessary action to make the Owner's Manual, particularly the Operating Instructions, understandable to these persons. The Owner's Manual must be read and used by all persons who are charged with work with the pump/lubrication system, e.g.

- **Operation**, including adjustment, troubleshooting during operation, elimination of production waste, maintenance, disposal of process materials
- **Maintenance** (inspection, repairs) and/or
- **Transport**

<b>Chapter</b>	<b>Table of Contents</b>	<b>Page</b>
<b>1</b>	<b>Preface</b>	<b>2</b>
<b>2</b>	<b>Safety Instructions</b>	<b>3</b>
<b>3</b>	<b>Description</b>	<b>5</b>
3.1	Designation	5
3.2	Appropriate Use	5
3.3	Mode of Operation	4
3.4	Safety Functions	7
3.5	Technical Data	7
<b>4</b>	<b>Erection and Assembly</b>	<b>9</b>
4.1	Mechanical Installation	9
4.2	Electrical Installation	10
<b>5</b>	<b>Operating Instructions</b>	<b>10</b>
5.1	Adjustments	11
5.1.1	Adjustment of the pick up arm	11
5.1.2	Adjustment of the distance between the pick up arm and the lubricating head	11
5.2	Putting into operation	12
5.3	Putting out of operation	12
5.4	Maintenance	12
5.5	Troubleshooting	13
<b>6</b>	<b>Spare Parts</b>	<b>17</b>
6.1	Spare Parts Drawing	17
6.2	Spare Parts List	18

## 2 Safety Instructions

The Operating Instructions include general instructions which must be followed when a pump/lubricating unit is installed, operated or serviced. Therefore, it is absolutely necessary for the fitter and specialist/user to read the Operating Instructions before a unit is installed and put into operation. The Operating Instructions must always be available on the site where the machine/system is installed.

All general safety instructions contained in this main chapter on safety must be observed as well as all special safety instructions given in other main chapters.

### Hazard Marking in the Operating Instructions

The notes referring to safety contained in the Operating Instructions whose failure to observe them may result in personal injury are marked by the following symbol



Safety symbol acc. to DIN 4844-W9

The symbol



Safety symbol acc. to DIN 4844-W8

warns of an electrical current.

If ignoring the safety note might result in machine damages and malfunction, the word

CAUTION

Warnings directly fixed to the machine must always be observed and must be kept in completely legible condition.

### Staff Qualification and Training

The staff responsible for operation, maintenance, inspection and installation must be adequately qualified for these jobs. The user must properly regulate the field of responsibility and supervision of the personnel. If the personnel is not in command of the necessary expertise, they must receive the appropriate training and instructions. If necessary, this can be done by the manufacturer/supplier on behalf of the machine user. Furthermore, the user must ensure that the contents of the Operating Instructions are fully understood by the personnel.

### Hazards Resulting from Failure to Observe the Safety Instructions

Failure to heed the safety warnings may result in damage to equipment and the environment and/or personal injury. Failure to observe the safety notes may result in the loss of all claims for damage.

As an example, in the following we list some dangers which may result from failure to observe the warnings:

- failure of machine/system to fulfill important functions
- failure of specified methods for maintenance and repair
- personal injury due to electrical, mechanical and chemical influences
- danger to the environment due to leakage of harmful materials

### Safety-Conscious Working

The safety instructions given in the Operating Instructions, the prevailing national regulations for the prevention of accidents and any working and shop regulations and accident prevention measures of the user must be observed.

### Safety Instructions for the User/Operator

- If warm or cold machine parts present hazards, the customer must protect them against accidental contact.
- Do not remove protection devices for moving parts while the machine is in operation.
- Leakages of harmful materials must be disposed of so as to jeopardize neither persons nor the environment. The requirements of the law must be satisfied.
- Danger caused by electrical current must be excluded (for details refer to the applicable specifications of VDE and the local power supply companies).

### Safety Instructions for Maintenance, Inspection and Installation Services

The user must make sure that all maintenance, inspection and installation work is executed by authorized and qualified experts who have adequately informed themselves by thoroughly reading the Operating Instructions. On no account may work be done on the machine while the machine is in operation. Follow all instructions for shutting down the machine as described in the Operating Instructions. Decontaminate pumps and pump units delivering harmful materials. Reassemble all safety and protection devices immediately after completion of the cleaning procedure. Dispose of materials harmful to the environment in accordance with the applicable official regulations. Before putting the pump/pump unit into operation, ensure that all points given in the chapter "Putting into Operation" are fulfilled.

**Unauthorized Modification and Spare Parts Production**

Alteration and modifications of the machine are only allowed if approved by the manufacturer. Original spare parts and accessories authorized by the manufacturer ensure safe operation. If other parts are used, the manufacturer may be released from its liability for the resulting consequences.

**Inadmissible Operating Modes**

The operational safety of the supplied product is only granted if the product is operated according to the instructions given in chapter 3.2 of the Owner's Manual. The maximum ratings listed in the Technical Data must never be exceeded. Putting the product (pump/pump unit) into operation within the European Union is forbidden until it has been decided that the machine in question meets the requirements of the EU guidelines.

### 3 Description

#### 3.1 Designation

This Owner's Manual only refers to the following lubricating devices:

- COBRA 3-2LS (24 VDC) LDR + MANO  
Part no. 637-28157-1
- COBRA 3-2RS (24VDC) LDR + MANO  
Part no. 637-28158-1
- COBRA 3-2LH (24VDC) LDR + MANO  
Part no. 637-28613-1
- COBRA 3-2RH (24VDC) LDR + MANO  
Part no. 637-28614-1

#### 3.2 Appropriate Use

The COBRA 3-2 lubricating device is exclusively designed for the lubrication of moving lubrication points on roller and chain conveyors. For the supply of the COBRA 3-2 with lubricant, use only central lubrication pumps equipped with pressure reducing valves.

Any other use is not in accordance with the specified instructions and will result in the loss of claims for guarantee and liability. The same is true if the technical data are not adhered to.

#### 3.3 Mode of Operation (see [Fig. 1](#))

Condition:

The COBRA 3-2 must be in the starting position, i.e. the proximity switch S5 is dampened (switched).

- A The proximity switch S4 inductively detects the position of the roller and simultaneously switches the 3/2-way valve Y1. The air pressure acts on the cylinder (B) of the pick up arm, the pick up arm (C) is engaged.

*Note: The sequence of the lubrication cycles (each roller or every second roller, etc.) depends on the number of rollers and on the speed of the chain/conveyor or on the distance between the rollers.*

- B The roller to be lubricated grasps the pick up arm (C). It simultaneously moves the COBRA 3-2 in parallel to it so that the lubrication cycle can be carried out.

*Note: The COBRA 3-2 is connected to the carriage (F) which is mounted on the frame (G) so as to be slightly movable.*

To allow the carriage to operate smoothly and not abruptly with the roller the cylinder (A) is pressurized with a damping pressure via a pressure reducing valve (H). The damping pressure is set in the factory and should not be altered.

- C During the movement, the switching bracket (L) grasps the proximity switch S6, thus actuating the 3/2-way valve Y2. The air pressure now acts on the lubricating head cylinder (E). The lubricating head (D) moves towards the lubrication fitting.

- D The lubricating head (D) being pressed on the roller fitting, a piston dispenses the lubricant from a prefilled dosage chamber to the lubrication point.

- E When the switching bracket (L) goes away from the proximity switch S6, the damping is finished. The 3/2-way valve Y2 is put in the off-position. The return spring of the lubrication head cylinder (E) moves the lubrication head into its initial position. At the same time, a central lubrication pump fills lubricant into the dosage chamber for the next stroke.

- F When the switching bracket (L) has reached the proximity switch S7, the 3/2-way valve Y1 is switched to its initial position. The return spring in the cylinder (B) of the pick up arm moves the pick up arm (C) to its initial position. The quick venting valve (J) ensures a quick return movement.

- G When the pick up arm (C) has reached its initial position, the proximity switch S8 actuates the valve Y3. Air pressure acts on the double-acting cylinder (A). The damping pressure is switched off. The COBRA 3-2 is put back into its starting position. The speed of the return movement can be regulated via the throttle valve (M).

*Note:*

*The position switch S2 has only a safety function.*

*If the proximity switch S7 fails to operate or if it operates too slowly, the switching bracket (L) actuates the position switch S2. All valves are de-energized. The COBRA 3-2 remains in the final position.*

*To avoid damage by an automatic return movement the COBRA 3-2 must be disengaged by hand when it is in its final position. When the fault is acknowledged the COBRA 3-2 automatically moves back in the initial position.*

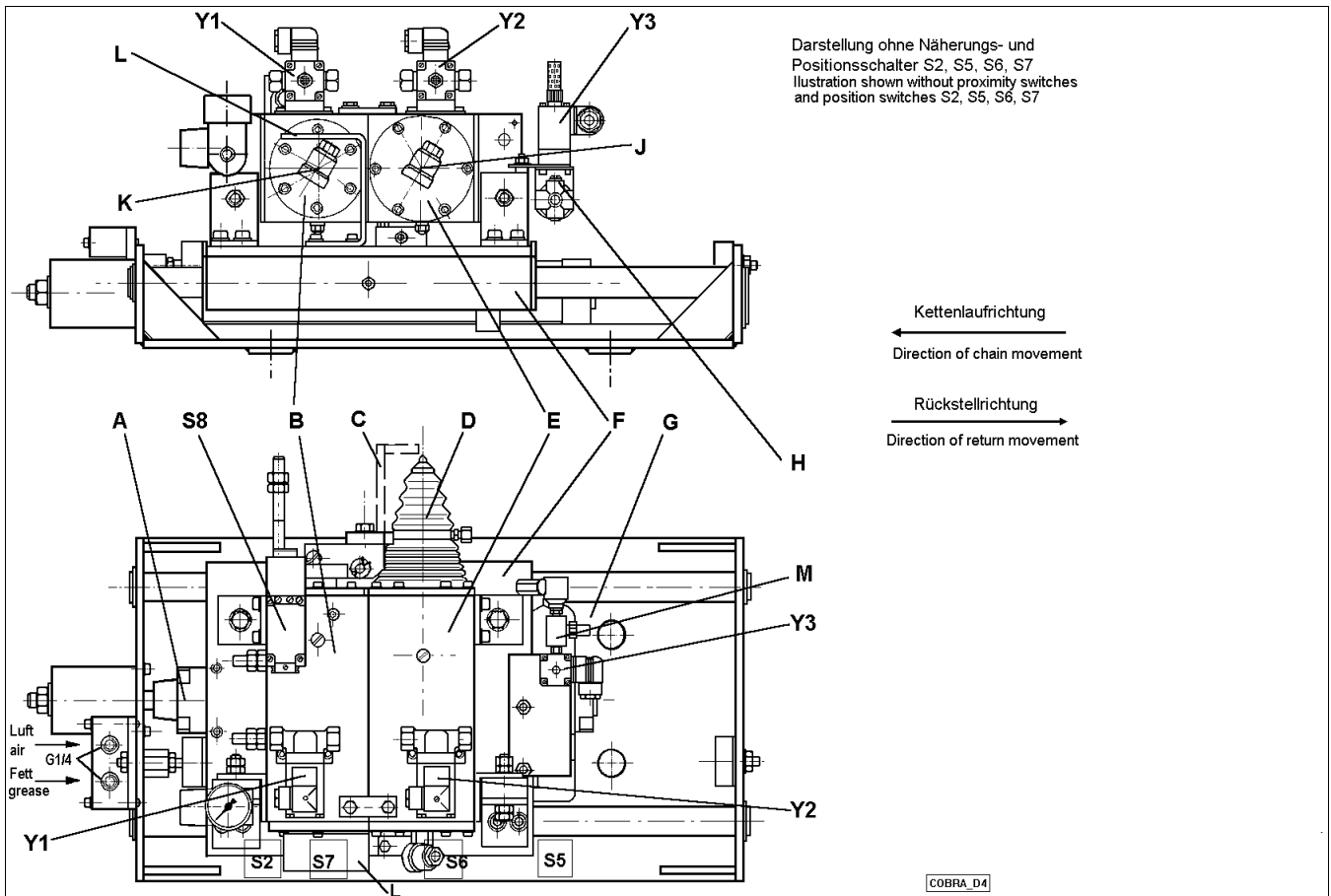


illustration of the left-hand design (just before the return movement)

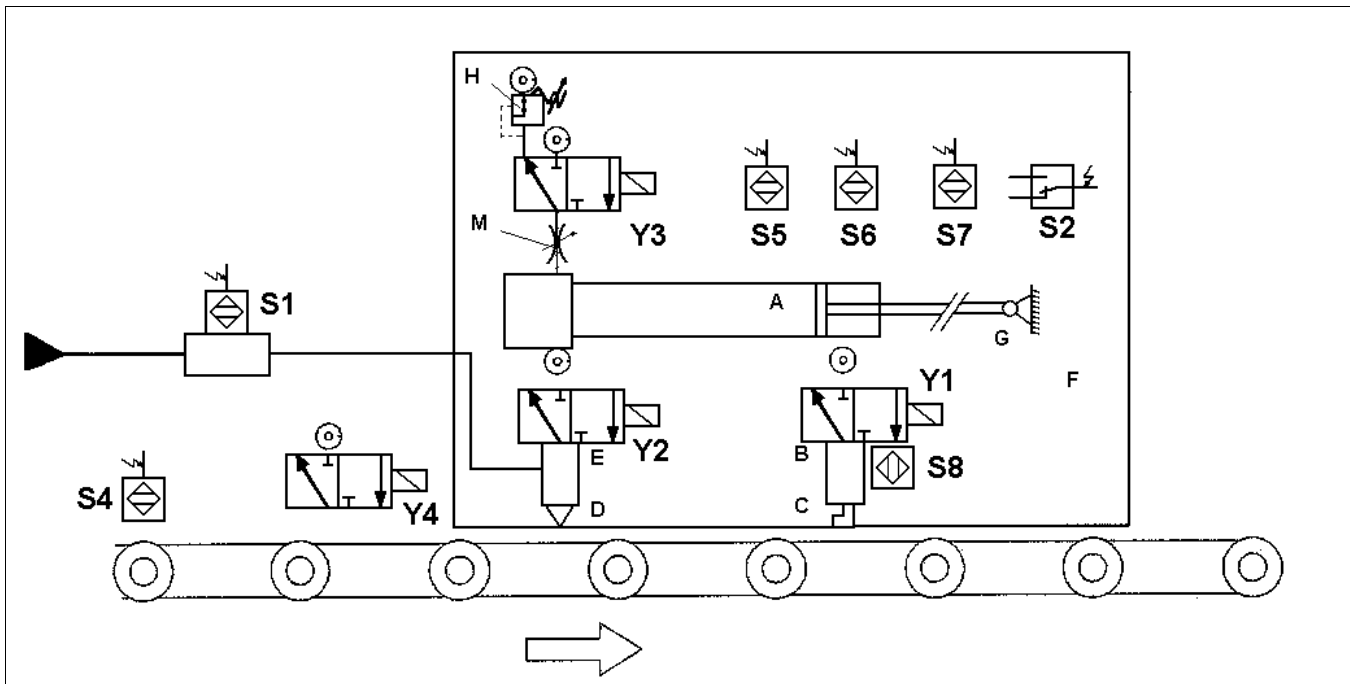


Fig. 1: Mode of operation of the COBRA 3-2 (illustration of the right-hand design)

### 3.4 Safety Functions

#### Failure in the power supply:

Due to its specific control concept, the COBRA 3-2 is immediately disengaged from the chain or roller conveyor in the case of a failure in the power supply. It remains in the safe rest position until the failure is eliminated and it can be put into operation again.

#### Predetermined Breaking Point (see Fig. 2):

A screw used as a predetermined breaking point prevents from major damage, e.g.

- in cases where the pick up arm (Fig. 1, item C) is still engaged while the carriage (Fig. 1, item F) already collides with the frame (Fig. 1, item G);
- in the case of a too rapid conveyor speed and/or of a too high inertia of the system control or if the proximity and position switches S7, S2 (Fig. 1) fail to operate.

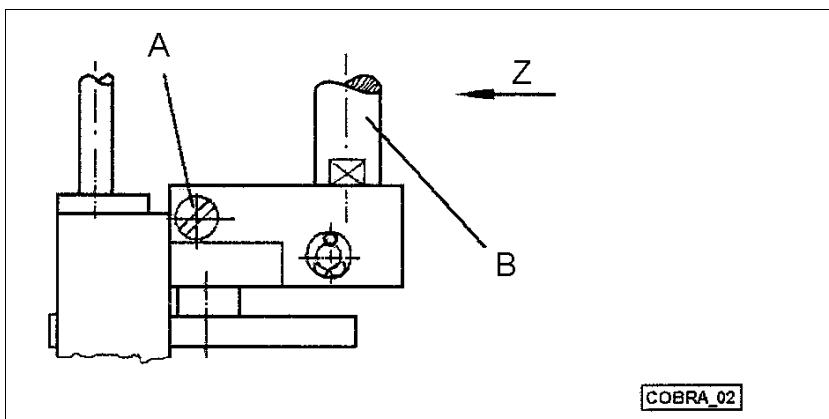


Fig. 2 : Predetermined point of breaking of the COBRA 3-2

- A: predetermined point of breaking  
B: engaging element of the pick up arm  
Z: direction of chain movement

### 3.5 Technical Data

Air connection: ..... G ¼  
Lubricant connection: ..... G ¼  
Inlet air pressure: ..... 5 - 6 bar  
Inlet lubricant pressure: ..... 40 - 70 bar  
..... (grease), 20 - 40  
..... bar (oil)  
Lubricant output: ..... max. 1.2  
..... cm<sup>3</sup>/stroke  
Max. stroke of the pick up arm: ..... to 60 mm,  
..... adjustable  
Max. stroke of the lubricating head: ..... approx. 18 mm  
Dispensed media: ..... grease of NLGI  
..... grade 2 or oil  
Operating temperature: ..... - 10° to + 70°C  
Chain speed: ..... max. 400 mm/s  
(higher chain speed on request)

Lubrication frequency: ..... max. 1 lubrication  
..... pulse/second  
*Note: The lubrication frequency results from the chain speed divided by the chain split*  
Weight: ..... approx. 70 kg  
Sound pressure level: ..... < 70 dB/A

#### Electrical Data:

Supply voltage: ..... 24 V DC,  
residual ripple <5%  
Power consumption: ..... 20 W without  
control and additional equipment  
Type of protection: ..... IP 65,  
Terminal box: ..... IP 55

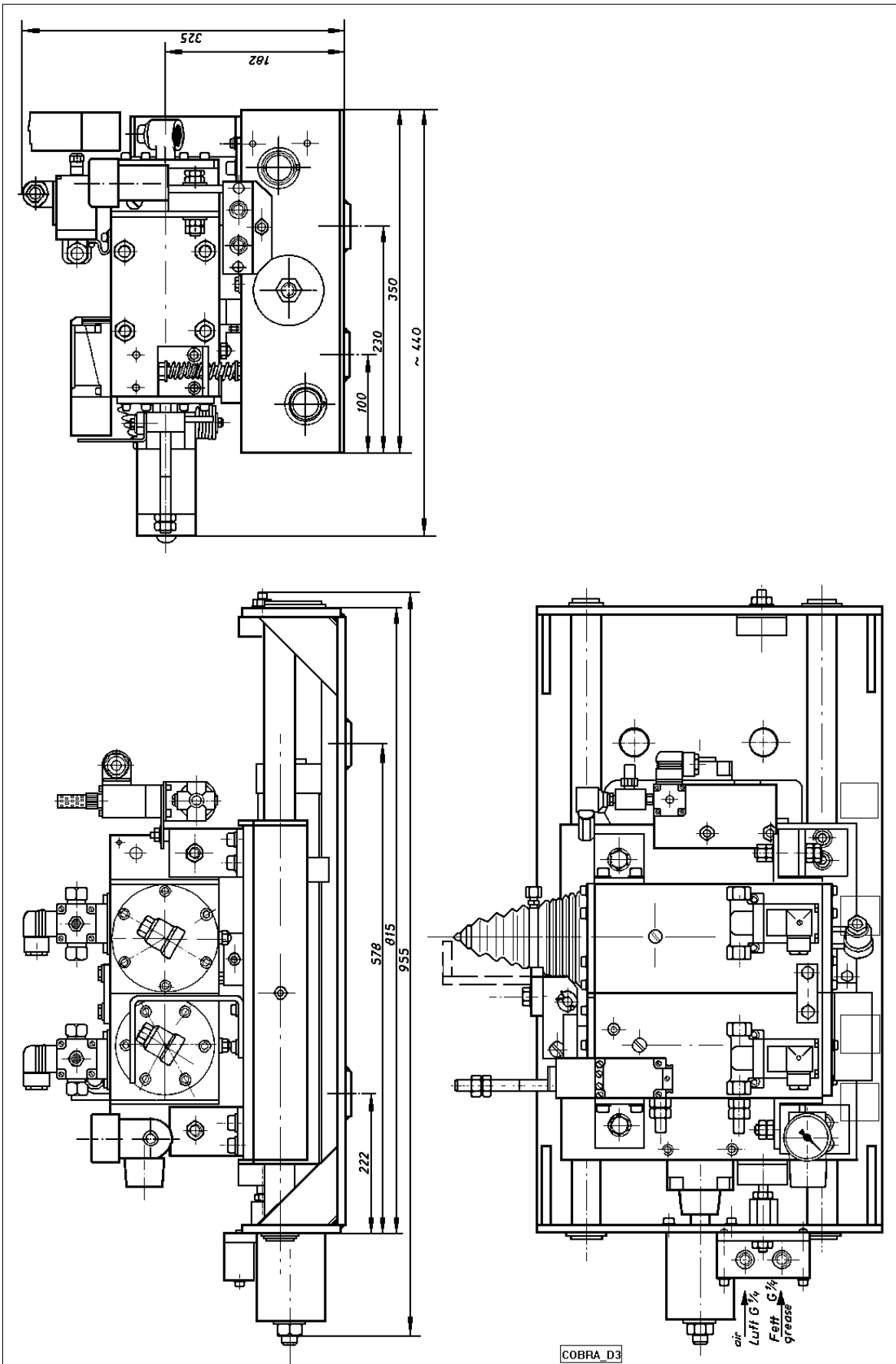


Fig. 3: Installation dimensions of the COBRA 3-2



4 Erection and Installation



The unit should be erected and installed only if the roller or chain conveyor is not in operation.

When the protective cover is closed, it must be ensured that no limbs can enter the space between the chain/roller conveyor and the COBRA 3-2 and the operating area of the COBRA 3-2.

4.1 Mechanical Installation



**Attention:** Take the following measures to ensure the stability of the installation: Install on the chain or roller conveyor to be lubricated a base plate to support the COBRA 3-2 with stability.

Tighten the COBRA 3-2 on the base plate by means of 4 adequately dimensioned screws.



**Note:** The COBRA 3-2 must be equipped with a protective hood or cover of adequate size.

**Determining the mounting height:**

- The lubricating head of the COBRA 3-2 must be fitted at the same height as that of the lubrication fitting of the roller to be lubricated. Possible height levelling by adjusting the COBRA 3-2:  $\pm 8$  mm.
- To compensate large variations in height of the rollers (e.g. the rollers above the running surface in the case of stiff chain links). Elevation of the roller running surface according to Fig. 4. Note the following:
  - Length of the elevation (y) within the COBRA operating area;
  - Only one roller on the elevated running path
  - Height of the elevation (x): min. as high as the highest roller elevation from the running path
  - Raise the opposite roller using the same dimensions Obligatory in the case of opposite COBRA

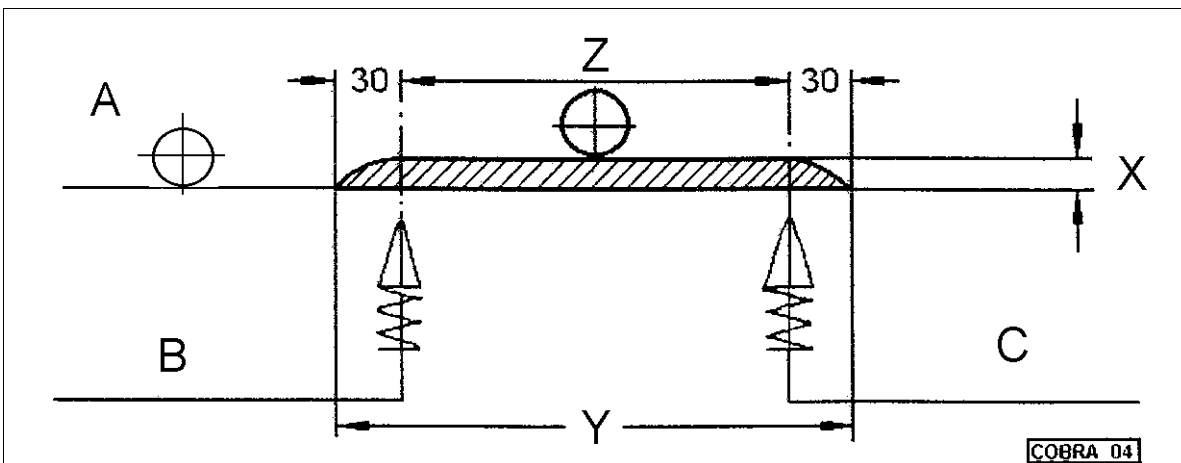


Fig. 4: Elevation of the roller running surface

- A: roller to be lubricated
- Z: COBRA running area
- B: COBRA initial position
- C: COBRA final position

#### Determining the horizontal mounting position

- Determine the horizontal mounting position according to Fig. 5.  
*Recommendation: The positioning of the COBRA can be facilitated by drilling oblong holes in the base plate.*

- In the case of horizontal roller movements longer than  $\pm 10$  mm:  
Guide the roller/chain conveyor on the side by means of an additional construction.

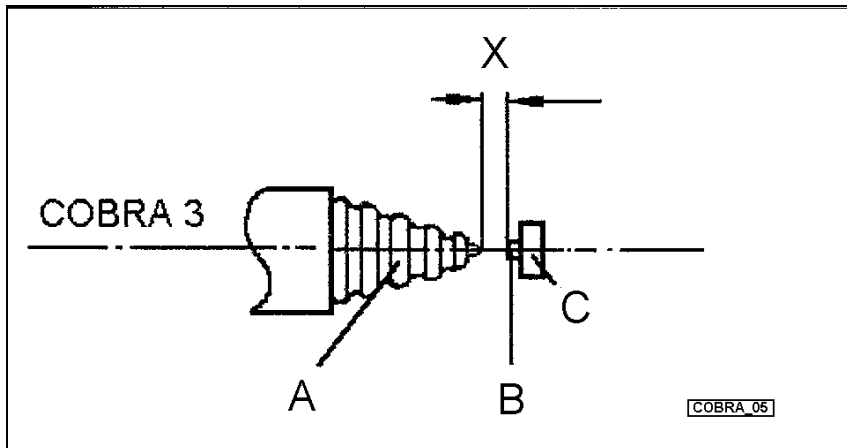


Fig. 5: Horizontal mounting position

- X: normal distance 20 mm  
minimum distance 10 mm  
maximum distance 30 mm
- A: lubricating head  
B: lubrication fitting  
C: roller

#### 4.2 Electrical Installation

Proceed to the electrical installation in accordance with the description of the overall system and the wiring diagram.



All electrical work should only be carried out by qualified personnel.

#### 5 Operating Instructions



Note the following for all work done when the protective hood/cover is opened or removed:

- Danger of squeezing by possible movements of the carriage within the frame (see Fig. 1, items F and G)
- Danger of limbs being pulled in or caught up by the carriage moving within the frame (see Fig. 1, items F and G).
- Danger of collision when the pick up arm and the lubricating head are moved forwards and backwards (see Fig. 1, items D and C), particularly if the proximity switches and position switches (see Fig. 1, items S2, S4, S5, S6, S7, S8) are actuated negligently.

## 5.1 Adjustments

### 5.1.1 Adjustment of the pick up arm (see Fig. 6)

Adjust the pick up arm after the COBRA 3-2 has been brought into its correct horizontal position.  
(see Fig. 5: Normal distance 20 mm when the cylinder of the lubricating head and that of the pick up arm are retracted)

When the cylinder of the pick up arm is retracted:  
Distance between the front edge of the catching element of the pick up arm (see Fig. 6, item A) and the even side of the contact disc (E): 25 to 30 mm.  
Adjustment of this distance by increasing or shortening the catching element of the pick up arm.

When the cylinder of the pick up arm is engaged:  
Engagement of the catching element of the pick up arm (A): 15 to 25 mm (see Fig. 6). Adjustment of the engagement by readjusting the counter nut (B) on the threaded bolt (D), which limits the stroke of the pick up arms (maximum stroke of the pick up arm: 60 mm).

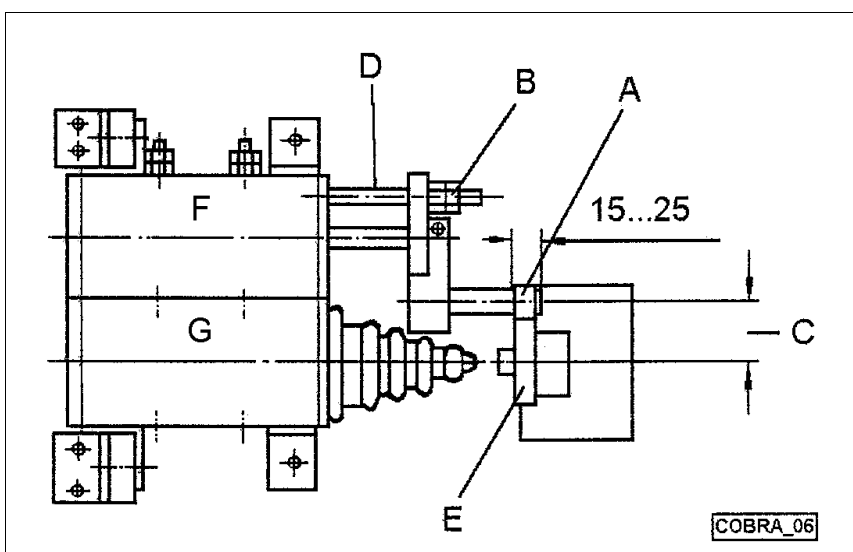


Fig. 6: Adjustment of the pick up arm

F: cylinder of the pick up arm  
G: lubricating cylinder

### 5.1.2 Adjustment of the distance between the pick up arm and the lubricating head (see Fig. 6, item C)

Proceed to the adjustment when the COBRA is in the position shown in Fig. 6.

- Cylinder of the pick up arm engaged; the catching element of the pick up arm (A) is close to the contact disc (E)
- Unscrew the 4 x 2 counter nuts on the side of the cylinder of the pick up arm (see Fig. 7)

- Unscrew the 2 M8 screws on the bracket at the rear part of the two cylinders (see Fig. 7)
- Adjust the cylinder of the pick up arm and that of the lubricating head by means of the M12 counter nuts in such a way that the lubricating head and the lubrication fitting are aligned (Fig. 7). The distance between the cylinders must be smaller than 10 mm.
- If necessary: Support of the adjustment by raising with a screw-driver. Unscrew attaching angle.

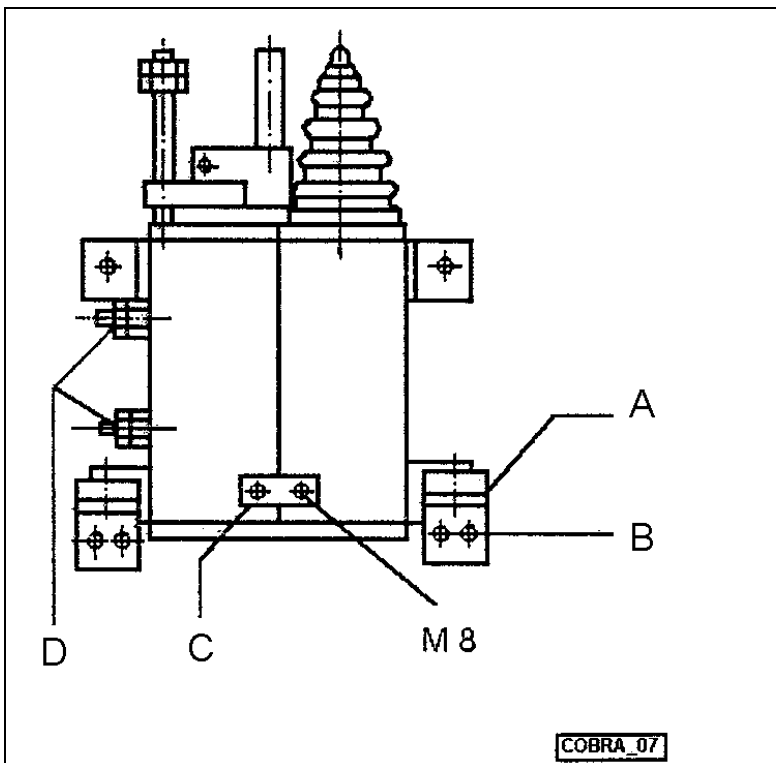


Fig. 7: Adjustment of the distance pick up arm - lubricating head

- A: angle bracket
- B: M8 hexagon socket head screw
- C: bracket
- D: M 12 counter nut

## 5.2 Putting into Operation

Check the system's ratings:  
COBRA inlet air pressure: 5 to 6 bar  
COBRA inlet lubricant pressure: 40 to 70 bar for grease,  
40 bar for oil

Put the COBRA into operation in accordance with the description of the overall system.  
Check the lubricant discharge: Close the shut-off valve ahead of the lubricant inlet of the COBRA.  
The pressure shown at the gauge which indicates the supply pressure at the COBRA must fall by approx. 20 bar in the case of grease and by 0 - 10 bar in the case of oil during the first lubrication cycle and after the shut-off valve has been closed.

- Check whether lubricant leaks between the lubrication fitting and the lubricating head during the first lubrication cycle. If necessary, check the distance between the fitting and the lubricating head acc. to [Fig. 5](#).
- Check the state of the lubrication fittings.

## 5.3 Putting out of Operation

Put the COBRA out of operation in accordance with the description of the overall system.

## 5.4 Maintenance

- Protect the COBRA against dirt and falling objects
- After approx. 10000 lubrication cycles supply the bearings of the 2 carriage guides and those of the cylinder of the pick up arm with multipurpose grease by means of the existing lubrication fittings.
- Do not wash the COBRA with fat dissolving agents such as Per.

5.5 Troubleshooting

- <b>Fault:</b> pick up arm does not engage (see Fig. 1, item C)	
- <b>Cause</b>	- <b>Remedy</b>
<ul style="list-style-type: none"> <li>● Proximity switch S5 (see Fig. 1) does not transmit any signal</li>   <li>● Proximity switch S4 (see Fig. 1) is not actuated</li>   <li>● Valve Y1 (see Fig. 1) is not actuated</li>   <li>● Failure in the compressed air supply</li> </ul>	<ul style="list-style-type: none"> <li>● Check the electric connections and the operation of proximity switch S5. If necessary, correct the position of proximity switch S5 and/or that of the switching angle (See Fig.1, item L) in such a way that the proximity switch can be properly dampened (green LED: voltage is applied, yellow LED: proximity switch operating)</li>   <li>● Check the electric connections and the operation of proximity switch S4. If necessary, correct the position of proximity switch S4 so that it is properly dampened by the rollers (green LED: voltage is applied, yellow LED: proximity switch operating).</li>   <li>● Check the electric connections and the operation of valve Y1 (valve actuation displayed by LED)</li>   <li>● Check the compressed air lines</li> <li>● Check the required inlet air pressure (see item 3.5, p = 5 - 6 bar)</li> </ul>

- <b>Fault:</b> Pick up arm (see Fig. 1, item C) is engaged too late	
- <b>Cause</b>	- <b>Remedy</b>
<ul style="list-style-type: none"> <li>● Proximity switch S4 is dampened too late (see Fig. 1)</li> </ul>	<ul style="list-style-type: none"> <li>● Displace proximity switch S4 against the direction of chain movement in such a way that the next roller is caught earlier.</li> </ul>

- <b>Fault:</b> Pick up arm (see Fig. 1, item C) is not engaged enough or is engaged too much	
- <b>Cause</b>	- <b>Remedy</b>
<ul style="list-style-type: none"> <li>● Distance between COBRA and roller/chain conveyor not correct</li>   <li>● Stroke of the pick up arm not adjusted properly</li> </ul>	<ul style="list-style-type: none"> <li>● Check the horizontal mounting position of the COBRA acc. to item 4.1, Fig. 5 and correct it, if necessary.</li>   <li>● Check the adjustment of the pick up arm acc. to item 5.1.1, Fig. 6 and correct it, if necessary.</li> </ul>

- <b>Fault:</b> Carriage (see Fig. 1, item F) starts jerkily (when the roller engages the pick up arm (see Fig. 1, item C) the pick up arm rebounds from the roller)	
- <b>Cause</b>	- <b>Remedy</b>
<ul style="list-style-type: none"> <li>● Damping pressure adjusted at the pressure reducing valve (see Fig. 1, item H) too low</li> </ul>	<ul style="list-style-type: none"> <li>● Readjust the damping pressure</li> </ul> <p><b>Note:</b> If the damping pressure is too high, there is the danger that</p> <ul style="list-style-type: none"> <li>● the COBRA will jam and therefore will not operate correctly (rattling)</li> <li>● too high forces act on the pick up arm with the result that it is damaged and/or it jams on the roller during its return movement.</li> </ul>

- <b>Fault:</b> The carriage (see Fig. 1, item F) moves jerkily when the roller engages (rattling)	
- <b>Cause</b>	- <b>Remedy</b>
<ul style="list-style-type: none"> <li>● Damping pressure adjusted at the pressure reducing valve (see Fig. 1, item H) too high</li> </ul>	<ul style="list-style-type: none"> <li>● Readjust the damping pressure (also refer to the fault/remedy "Carriage starts jerkily")</li> </ul>

- <b>Fault:</b> The lubricating head (see Fig. 1, item D) is not engaged	
- <b>Cause</b>	- <b>Remedy</b>
<ul style="list-style-type: none"> <li>● Proximity switch S6 (see Fig. 1) does not switch</li> <li>● Valve Y2 (see Fig. 1) does not switch</li> <li>● Failure in the air supply</li> </ul>	<ul style="list-style-type: none"> <li>● Check the electric connections and the operation of proximity switch S6. If necessary, correct the position of proximity switch S6 and/or that of the switching angle (see Fig. 1, item L) in such a way that the proximity switch is dampened properly. (green LED: voltage is applied yellow LED: proximity switch operating)</li> <li>● Check the electric connections and the operation of valve Y2 (the switching process of the valve is displayed via LED)</li> <li>● Check the air lines</li> <li>● Check the required inlet air pressure (see chapter 3.5, p = 5 - 6 bar)</li> </ul>

- <b>Fault:</b> The lubricating head (see Fig. 1, item D) does not run out far enough	
- <b>Cause</b>	- <b>Remedy</b>
<ul style="list-style-type: none"> <li>● The distance between the COBRA and the rollers/chain conveyor is not correct</li> </ul>	<ul style="list-style-type: none"> <li>● Check the horizontal mounting position of the COBRA acc. to item 4.1, Fig. 5 and correct it, if necessary.</li> </ul>

- <b>Fault:</b> The lubricating head (see Fig. 1, item D) is positioned beside the lubrication fitting on the roller	
- <b>Cause</b>	- <b>Remedy</b>
<ul style="list-style-type: none"> <li>● The distance between the pick up arm and the lubricating head is not correct</li> </ul>	<ul style="list-style-type: none"> <li>● Check the distance between the pick up arm and the lubricating head acc. to item 5.1.2, Fig. 6 and 7 and correct it, if necessary.</li> </ul>

- <b>Fault:</b> No lubricant is discharged although the lubricating head correctly contacts the lubrication fitting	
- <b>Cause</b>	- <b>Remedy</b>
<ul style="list-style-type: none"> <li>● Failure in the lubricant supply, e.g. supply pump defective or not enough lubricant in the reservoir, lubricant feed line leaking</li> </ul>	<ul style="list-style-type: none"> <li>● Check the inlet lubricant pressure (see item 5.2)</li> <li>● Check the supply pump and the lubricant feed lines</li> </ul>

- <b>Fault:</b> The pick up arm runs to the initial position only when position switch S2 is actuated (see Fig. 1, items C, S2)	
- <b>Cause</b>	- <b>Remedy</b>
<ul style="list-style-type: none"> <li>● Proximity switch S7 (see Fig. 1) is not actuated or is actuated too late</li> </ul>	<ul style="list-style-type: none"> <li>● Check the electric connections and the operation of position switch S7. If necessary correct the position of proximity switch S7 and/or that of the switching angle (see Fig. 1, item L) in such a way that the proximity switch is dampened properly and in time. (green LED: voltage is applied yellow LED: proximity switch operating)</li> </ul>
<ul style="list-style-type: none"> <li>● Valve Y1 (see Fig. 1) is not switched back to the initial position</li> </ul>	<ul style="list-style-type: none"> <li>● Check the electric connections between proximity switch S7 and valve Y1</li> </ul>

- <b>Fault:</b> The pick up arm (see Fig. 1, item C) does run to its initial position <b>Note:</b> In such a case the pick up arm is put out of operation by the breaking point to avoid bigger damage; after the elimination of the fault repair the pick up arm (see item 3.4, Fig. 2)	
- <b>Cause</b>	- <b>Remedy</b>
<ul style="list-style-type: none"> <li>● Position switch S2 (see Fig. 1) is not actuated or is actuated too late</li> </ul>	<ul style="list-style-type: none"> <li>● Check the electric connections and the operation of position switch S2. If necessary, correct the position of position switch S2 and/or that of the switching angle (see Fig. 1, item L) in such a way that the position switch is actuated properly and in time.</li> </ul>
<ul style="list-style-type: none"> <li>● Valve Y1 (see Fig. 1) is not set back to its initial position</li> </ul>	<ul style="list-style-type: none"> <li>● Check the electric connection between position switch S7 and valve Y1</li> </ul>

<b>- Fault:</b> The carriage (see Fig. 1, item F) does not run to its initial position	
<b>- Cause</b>	<b>- Remedy</b>
<ul style="list-style-type: none"> <li>● Proximity switch S8 (see Fig. 1) is not actuated</li>   <li>● Valve Y3 (see Fig. 1) is not actuated</li>   <li>● Throttle valve M (see Fig. 1) closed</li>   <li>● Failure in the air supply</li> </ul>	<ul style="list-style-type: none"> <li>● Check the electric connections and the operation of proximity switch S8. If necessary, correct the position of proximity switch S8 and/or that of the damping element in such a way that the proximity switch is damped properly. (green LED: voltage is applied yellow LED: proximity switch operating)</li>   <li>● Check the electric connections and the operation of valve Y3 (switching process of valve displayed via LED)</li>   <li>● Open the throttle valve and adjust the return speed</li>   <li>● Check the air lines</li> <li>● Check the required inlet air pressure (see item 3.5, p = 5 -6 bar)</li> </ul>
<b>- Fault:</b> The carriage (see Fig. 1, item F) runs too slowly or too rapidly into its initial position	
<b>- Cause</b>	<b>- Remedy</b>
<ul style="list-style-type: none"> <li>● Return pressure too high or too low</li> </ul>	<ul style="list-style-type: none"> <li>● Adjust the return pressure at throttle valve M (see Fig. 1)</li> </ul>

All the repairs which are beyond the knowledge of the user's personnel must be carried out by LINCOLN experts.

Service address:

LINCOLN GmbH  
Abt. Zentraler Kundendienst  
Postfach 1263  
D-69183 Walldorf  
Tel. 06227 330  
Fax. 06227 33259



## 6 Spare Parts

### 6.1 Spare Parts Drawing

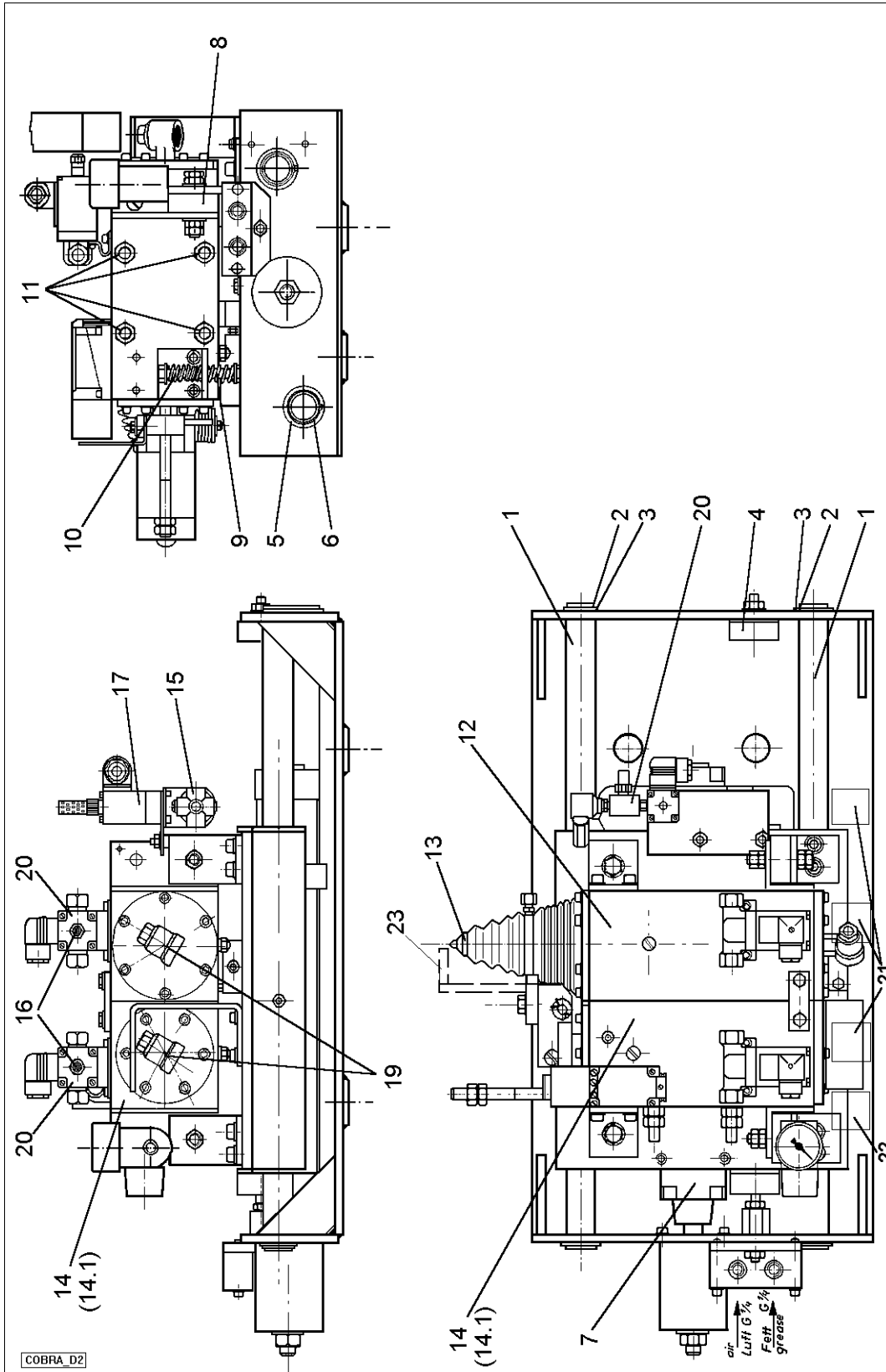


Fig. 8: Spare parts drawing of COBRA 3-2

**6.2 Spare Parts List of the COBRA 3-2**

<b>Item</b>	<b>Designation</b>	<b>Qty.</b>	<b>Part Number</b>
1	Guide rod	2	437-24053-1
2	Retaining ring	4	211-12164-7
3	Distance washer	8	209-12157-8
4	Vibration damper	1	233-13073-2
5	Bearing sleeve	2	437-23137-1
6	Scraper	2	220-13603-1
7	Double acting cylinder	1	253-14068-5
8	Vibration damper	2	233-13073-4
9	Compression spring	6	218-13062-8
10	Compression spring	2	218-13062-9
11	Rod screw	4	437-23143-1
12	Lubricating head cylinder	1	537-30770-1
13	Lubricating head assy. with domed-head coupler	1	537-31890-1
13.1	Lubricating head assy. with flush coupler	1	537-30741-1
14	Cylinder of pick up arm, left-hand design	1	537-30771-1
14.1	Cylinder of pick up arm, right-hand design	1	537-30783-1
15	Pressure reducing valve	1	253-14068-4
16	Muffler	3	253-14050-3
17	3/2-way solenoid valve 24 VDC	2	235-13109-4
18	Throttle valve G 1/8	1	253-14067-3
19	Quick-action venting valve G 1/4	2	253-14067-4
20	3/2 way solenoid valve 24 VDC	2	235-13115-6
21	Proximity switch model 2RG4031-6JB00/10-30	4	234-13153-3
22	Position switch model 3SE3100-1E	1	236-13244-2
23	Pick up arm	1	according order