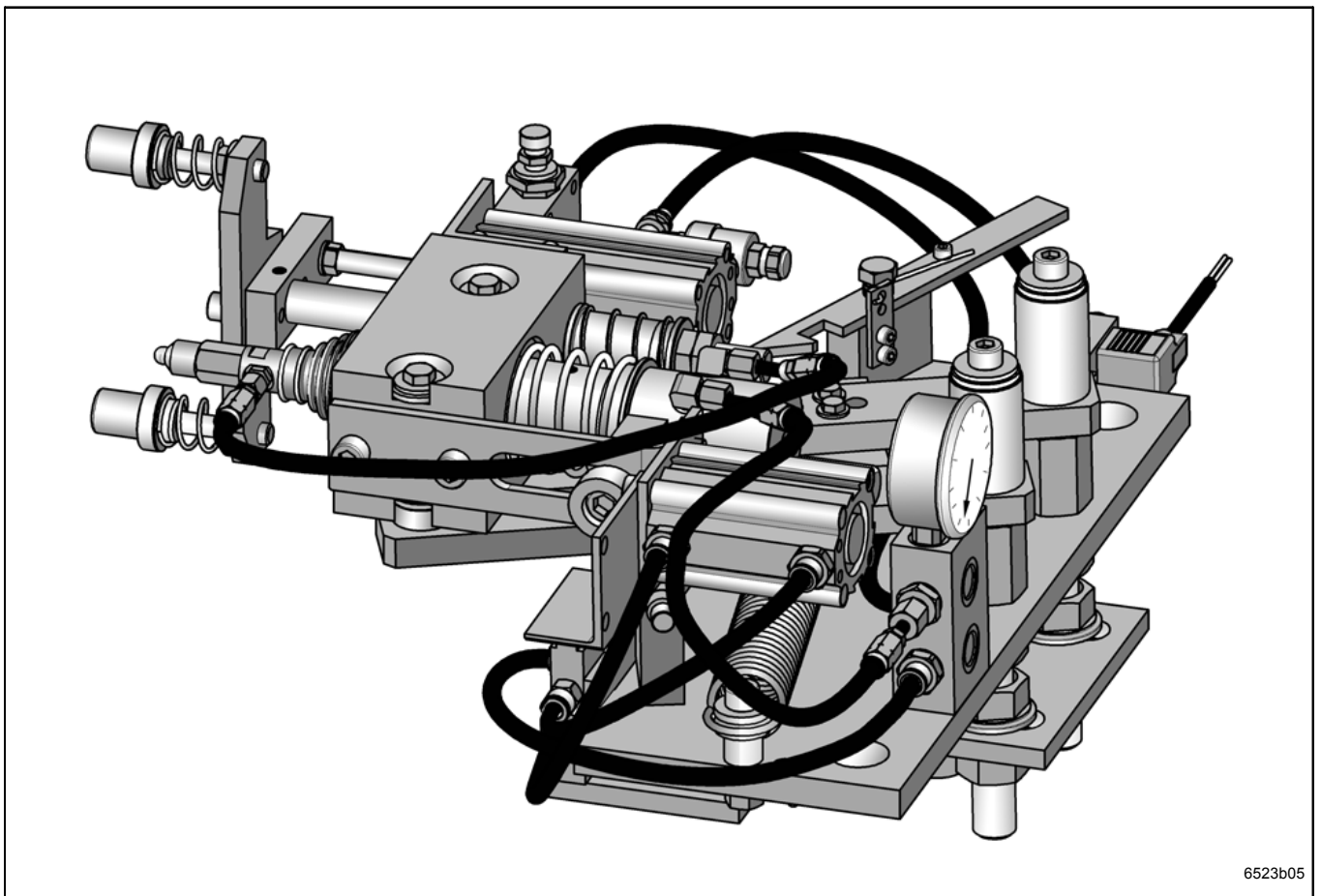


COBRA 1X-2

Lubrication Device for Moving Lubrication Points



6523b05

Manufacturer:
SKF Lubrication Systems Germany GmbH
Heinrich Hertz-Str. 2-8 D-69190 Walldorf
Tel. +49(0) 6227 33-0 Fax: +49 (0) 6227 33-259
E-Mail: Lubrication-germany@skf.com
© SKF All rights reserved

Table of Contents

	Page		Page
Introduction	4	Assembly and Start-up	10
Explanation of Symbols Used	4	Safety	10
User's Responsibility	4	Preparation	10
Environmental Protection	4	Guidance of the conveyor belt.....	10
Service	4	- Vertical guidance	10
		- Horizontal guidance	10
Safety Instructions	5	1. Preparation for adjustment	11
Appropriate Use	5	2. Vertical adjustment	11
Applicable Lubricants	5	3. Horizontal adjustment	11
Misuse	5	4. Horizontal fine adjustment	12
Exclusion of Liability	5	- Adjust distance nozzle coupler – pick-up rollers ...	12
Regulations for Prevention of Accidents	5	- Adjust pick-up stroke	12
Disposal	5	5. Adjustment of swivelling distance	13
General Safety Instructions	5	6. Adjustment of reverse travel speed	13
Installation, Maintenance and Repair	5	7. Adjustment of output	14
Operation	6	- Metering to zero	14
		- Adjustment	14
Description	6	8. Adjustment of proximity switch	14
COBRA 1X-2	6	Start-up	14
General	7		
Features	7	Operating Method	15
Interface to equipment provided by the user	8	Pneumatics and mechanics	15
Safety Functions	8	Off-position	15
		Readiness for operation	16
Planning and Layout	9	Pick-up and initial phase	17
Layout of the Holding Construction	9	Lubrication phase	18
Positioning	9	End of lubrication phase	19
Positions	9	Pull-back movement	20
Lubricant pump	9	Lubricant supply	21
Safety zone	9	Metering procedure	21
Lubricating devices	9	Lubrication procedure	22
Lubricant Supply	9	Operation of the COBRA 1X-2	22
Synchronization	9	Termination of readiness for operation	22
Pump	9		
Feed Lines	9	Maintenance, Repair and Functional Test	23
		Maintenance	23
		Repairs	23
		Functional tests	23
		Troubleshooting	23
		Technical Data	26
		Dimensions, assembly from the top	27
		Dimensions, assembly from the bottom	28
		Type Code	29
		Components and Kits	30
		Parts List	31
		Manufacturer's Declaration	32

**Always keep this User Manual ready to hand
on the site where the COBRA1X-2 is in operation!**

Introduction

6.3A-18004-B05

Explanation of Symbols Used




The following description standards are used in this manual:

Safety Instructions

Structure of safety instructions:

- Pictogram
- Signal word
- Danger text
 - Danger note
 - How to avoid danger

The following pictograms are used in this manual and are combined with the corresponding signal words:

 1013A94	 4273a00	 6001a02
ATTENTION CAUTION WARNING	ATTENTION CAUTION WARNING	NOTE IMPORTANT

The signal words give the seriousness of danger if the following text is not observed:

ATTENTION	refers to faults or damages on machines.
CAUTION	refers to bad damages and possible injuries.
WARNING	refers to possible dangerous injuries.
NOTE	indicates improved operation of the device.
IMPORTANT	indicates special operating features of the device.

Example:



1013A94

ATTENTION!

When making use of other than the tested spare parts, serious damage may affect your device.

Furthermore, you will find the following text symbols in this manual:

- Listing of applicable statements
 - Subpoint of applicable statements
- 1. Determination of the number or sequence of contents
- ➔ Procedural instruction

User's Responsibility

To ensure the safe operation of the unit, the user is responsible for the following:

1. The pump / system shall be operated only for the intended use (see next chapter "Safety Instructions") and its design shall neither be modified nor transformed.
2. The pump / system shall be operated only if it is in a proper functioning condition and if it is operated in accordance with the maintenance requirements.
3. The operating personnel must be familiar with this Owner Manual and the safety instructions mentioned within and observe these carefully.

The correct installation and connection of tubes and hoses, if not specified by SKF, is the user's responsibility. SKF will gladly assist you with any questions pertaining to the installation.

Environmental Protection

Waste (e.g. used oil, detergents, lubricants) must be disposed of in accordance with relevant environmental regulations.

Service

The personnel responsible for the handling of the pump / system must be suitably qualified. If required, SKF offers you full service in the form of advice, on-site installation assistance, training, etc. We will be pleased to inform you about our possibilities to support you purposefully. In the event of inquiries pertaining to maintenance, repairs and spare parts, we require model specific data to enable us to clearly identify the components of your pump / system. Therefore, always indicate the part, model and series number of your pump / system.

Safety Instructions

6.3A-18004-B05

Appropriate Use

The COBRA 1X-2 lubrication device is exclusively designed for the lubrication of moving lubrication points on rollers and chain conveyors.

The appropriate use also refers to:

- professional installation and repair works
- regular visual controls and maintenance works (depending on customized operation intervals)
- disposal of used or contaminated lubricants as well as of all parts that were in touch with lubricant according to the legal regulations pertaining to environmental protection
- safe operation by observing the technical data

Applicable Lubricants

The lubrication device COBRA 1X-2 is able to deliver greases up to NLGI grade 2 or lubricating oils of at least 40 mm²/s (cST) at operating temperature.



6001a02

IMPORTANT NOTE

Make sure that the applied oils or greases do not change their characteristics essentially due to age, pressure or temperature.

Misuse

Any use of the COBRA 1X-2 that is not expressly stated as appropriate in this User Manual will be regarded as misuse. If the COBRA 1X-2 is used or operated in a different manner other than the specified, any claim for warranty or liability will be null and void.

Exclusion of Liability



6001a02

IMPORTANT

If personal injury or material damage occurs as a result of inappropriate operation, e.g. if the safety instructions are ignored, or resulting from an incorrect installation of the COBRA 1X-2, no claims or legal actions may be taken against SKF

Regulations for Prevention of Accidents

To prevent accidents, observe all city, state and federal safety regulations of the country in which the product will be used.

Disposal

Dispose of used or contaminated lubricants as well as of parts that were in touch with lubricant according to the legal regulations pertaining to environmental protection.

General Safety Instructions

- Lincoln lubrication devices COBRA 1X-2 for moving lubrication points are designed state-of-the-art.
- Incorrect use may result in damage caused by poor or excessive lubrication of moveable bearings and bearing points.
- Unauthorized modification and alteration to the machine are allowed only with the manufacturer's or his contract partner's consent.
- Use original spare parts only or parts authorized by SKF.
- Warning directly fixed to the machine must always be observed and must be kept in fully legible condition.

Installation, Maintenance and Repair

- The manufacturer recommends establishing a safety zone around the operation area of the COBRA 1X-2. Otherwise, the owner must secure the operation area with protective devices against inadmissible access.
- Maintenance, inspection, repair or installation work must always be performed by authorized and instructed personnel who are familiar with the lubrication device.
- On no account may work be carried out while the device is in operation, but only in its off-position (see page 15). In the case of exceptions:



1371a94

CAUTION!

Risk of Crushing and Banging!
Make sure to observe all moving components when performing any work on the COBRA 1X-2 during operation.

- Fix the COBRA 1X-2 at a suitable place (see pages 10 ff, chapter "Assembly and Start-up").
- After completion of the assembly, maintenance or repair work, reinstall all protective devices again.

Safety Instructions, continuation

6.3A-18004-B05

Operation



1371a94

CAUTION!

Risk of Crushing or Banging!

Always consider that the COBRA 1X-2 may move together with the conveyor belt when ready for operation.



6001a02

IMPORTANT

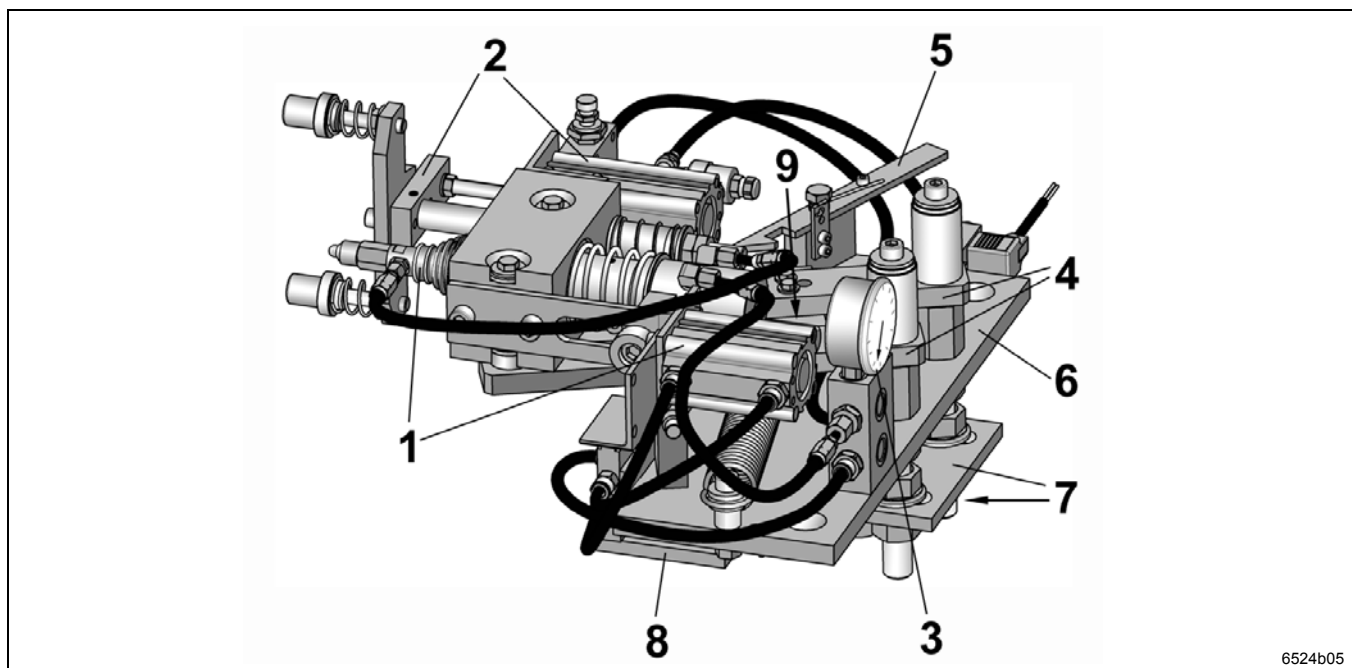
During operation the spring characteristic of the COBRA 1X-2 protects it against damage. Therefore, the lubrication device must in no case be supported additionally.

Operation is allowed only under the following preconditions:

- observe the maintenance instructions (see page 23)
- technically proper condition of the lubrication device
- all protective devices fixed (see page 8, chapter "Safety functions" and page 9, chapter "Positioning")
- use recommended or comparable lubricants (see page 5, chapter "Applicable lubricants")
- follow the prescribed moving direction of the chain
- operation only by authorized and instructed personnel under observation of the instructions given in this User Manual
- within a complete system only, the commissioning of which had been allowed under consideration of the respective directives

Description

COBRA 1X-2



6524b05

Fig. 1 COBRA 1X-2

- | | | |
|--|---|---------------------------------------|
| 1 - Lubrication head with air cylinder | 4 - Slewing crank with pull-back spring | 7 - Slewing device |
| 2 - Pick-up arm with air cylinder | 5 - Safety notch | 8 - Mounting plate |
| 3 - Pressure gauge, lubricant pressure | 6 - Base plate | 9 - Measuring valve (also see fig. 2) |

Description, continuation

6.3A-18004-B05

COBRA 1X-2, continuation

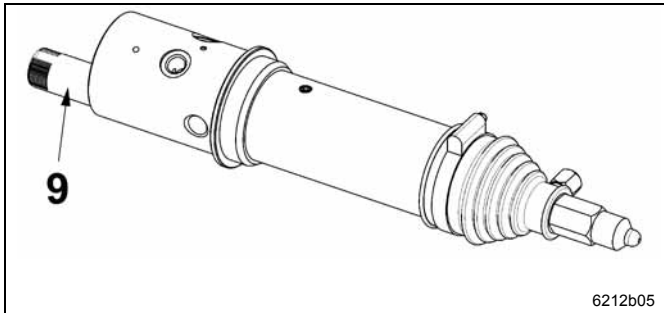


Fig. 2 Lubrication head

9 - Measuring valve

General

- The COBRA 1X-2 is a mechanically and pneumatically operated lubrication device for the automatic lubrication of moving rollers or swivel pins on transport chains.
- Applications:
 - Power & Free belts
 - Plate conveyors (mining industry)
 - Coil conveyor belts (metallurgical industry)
 - Crusher discharging belts and clinker transport (cement industry)
 - Circular conveyors, vehicle transport belts (automobile industry)
 - Beet transport belts (sugar industry).
- For the lubrication of a transport chain, normally 2 COBRA lubrication devices are required, one in left-hand version and one in right-hand version.
- The COBRA 1X-2 allows for the metered application of lubricants into linearly moving lubrication points, even if the roller distances vary.
- The disconnection is effected via a 3-way air valve. The valve can be activated as follows:
 - Mechanically (standard), manually
 - Electrically (option), remote disconnection possible
 - Pneumatically (option), remote disconnection possible

Features

- compact design
- high rigidity
- reliable functionality
- universally applicable on diverse roller or chain belts
- adaptation of the required lubricant-injecting pressure into the roller or pin bearing of the transport chain
- During the operation of the COBRA 1X-2 variations in the running speed of the transport chain are admissible to a limited extent. Admissible variations in the running speed depend on the following factors:
 - average speed
 - chain pitch
 - diameter of the chain rollers
- The COBRA 1X-2 is factory-adapted to the individual design of the transport chain. Therefore, the geometry of the chain must not change exceeding the admissible tolerances. It is determined by the following factors:
 - dimensions of the chain rollers
 - lubrication points on the transport chain
- The metering quantity per stroke and lubrication point (0.2 to 2.0 cm³/ stroke) can be adjusted by means of the **measuring valve** (see pos. 9).
- As a protection against damages, the COBRA 1X-2 has got a **safety notch** (see fig. 1, pos. 5) as well as a **slewing notch** (see fig. 1, pos. 7 and 8).

Description, continuation

6.3A-18004-B05

Interfaces to the equipment provided by the user

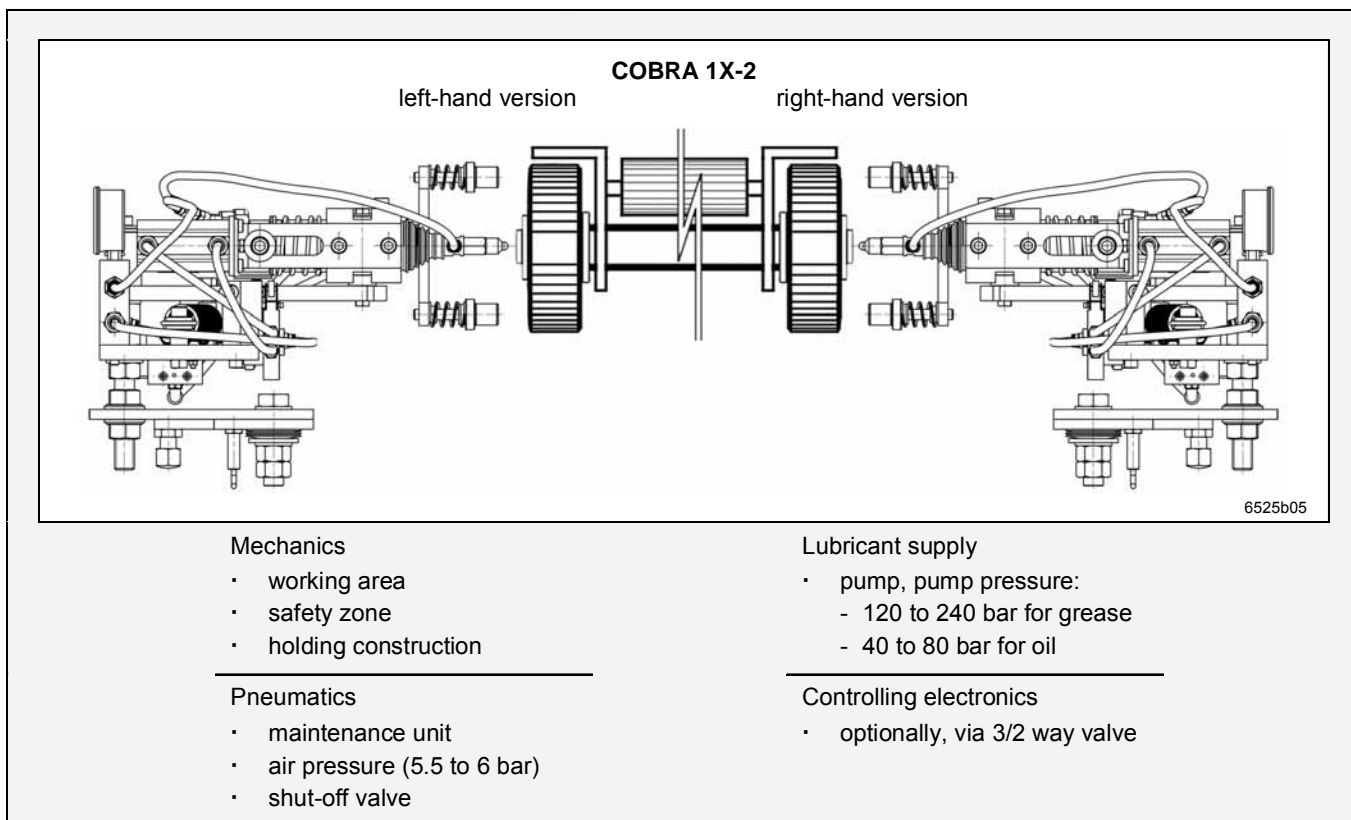


Fig. 3 Schematic of a lubrication system, view in direction of dispense

Safety Functions

Slewing notch (see page 6, fig. 1, pos. 7)

Preconditions

- In case of unintentional pick-up of the pick-up rollers (see page 10, fig. 4, pos. 2.1) by the transport chain
- In case of a reverse movement of the transport chain
- In case of a malfunction of the 5/2 way valve (see page 13, fig. 7, pos. 13)

Function

- The complete COBRA 1X-2 is slewed out of the catchment area of the transport chain.
- As an option, this slewed position can be detected by a proximity switch in order to provide an external control with a signal.

Safety notch (see page 6, fig. 1, pos. 5)

Preconditions

- In case the speed of the transport chain is too high
- In case the actuating angle (page 13, fig. 7, pos. 4.3) has been set wrongly.

Function

- The safety notch engages into the slewed lubrication-head pick-up device and prevents it from slewing back into the catchment area of the transport chain.
- The 5/2 way valve (page 13, fig. 7, pos. 13) is thereby actuated and drives the lubrication-head pick-up device (pos. 1 and 2) out of the catchment area of the transport chain.



6001a02

IMPORTANT

Whenever one of the two safety functions has been applied, the COBRA 1X-2 is out of operation.

- *Eliminate the cause for the activation of the safety function.*
- *Bring the COBRA 1X-2 back into the off position (see page 15).*
- *Put the COBRA 1X-2 into operation again (see page 14, chapter "Re-start").*

Planning and Layout

6.3A-18004-B05

Layout of the holding construction

- Prepare a holding construction with sufficient stability for fixing four screws M10 (see page 11, fig. 5: hole pitches 270 x 70mm), where the mounting plate can be attached to (page 6, fig. 1, pos. 8).
- The holding construction must provide a horizontal and even rest for the mounting plate.
- Determine the distance between the hole pattern of the mounting plate and the lubrication fitting. Therefore, keep a horizontal distance at a centered positioning in the oblong holes C between L_{min} and L_{max} (see page 11, fig. 5). In the off-position the distance between the transport chain and the next parts of the COBRA 1X-2 (lubrication head and pick-up rollers) must be that big that even in case of a maximum variation of the transport chain there will not occur any collision.
- During the vertical positioning, consider the different distances between the fixing versions from the top and those from the bottom (see pages 27 and 28, fig. 25 and 26).



6001a02

NOTE

Customer services of SKF are pleased to assist you in the planning and layout of your automated lubrication system (address on the rear side of this User Manual).

Positioning

To determine the position of the COBRA 1X-2 consider the following factors:

Positions

- Position with low degree of contamination
- Position with high degree of contamination: Install dust protection observing the maximum slewing range (dimensions, see pages 27 and 28, fig. 25 and 26).

Lubricant pump

- Positioning of the lubricant pump: As centrally as possible in order to achieve equal line lengths to the lubrication devices.

Safety zone

- Establishment of a safety zone (dimensions, see pages 27 and 28, fig. 25 and 26).

Lubrication devices COBRA 1X-2

- Opposite positioning of two synchronized operating lubrication devices (example, see fig. 3) in order to avoid a horizontal excursion of the conveyor belt.
- Positioning of the lubrication devices: Choose a running section of the transport belt where (depending on the arrangement of rollers, fittings and holes) the smallest horizontal (max. ±25 mm) and vertical variations (max. ±1,5 mm) can be expected. If the variations of the transport belt are too big, the transport rollers must be guided (see page 10, chapter "Guidance of the conveyor belt").

Lubricant supply

Synchronization

- Each COBRA 1X-2 receives a separate feed line from the pump.
- The lubricant supply to two COBRA 1X-2 lubrication devices of a lubrication station is effected by dividing the feed line into two supply lines of possibly equal lengths.

Pump

The output of the pump depends on the following factors:

- the number of lubrication devices
- the lubricant need per operating stroke
- the stroke frequency:

$$\text{strokefrequency} = \frac{\text{chainspeed}}{\text{chainpitch}}$$

Chain pitch: distance between two lubrication points on a transport chain

Feed Lines

The layout of the lubricant lines to provide the lubrication devices with lubricant depends on:

- the distance between the pump and the lubrication station
- the viscosity of the lubricant
- the required output
- the minimum temperature expectation



6001a02

IMPORTANT

As the lubrication devices are to operate simultaneously, there may occur a strong short-term increase of lubricant consumption. Therefore, install a flexible hydraulic hose on the lubricant inlet of each COBRA 1X-2. Thanks to the flexibility of the hose walls an increased lubricant consumption can be covered temporarily ("accumulator effect").

NOTE

If mineral oils or fluid grease (NLGI 000 and 00) are used, differences in the line lengths are insignificant.

Assembly and Start-up

6.3A-18004-B05

Safety



1013A94

CAUTION!

Risk of Crushing or Banging!

Carry out any preparation and assembly works only with the transport belt switched off.



1013A94

During the test run with disassembled protective devices, make sure to particularly observe all automated moving procedures in the catchment and slewing area of the COBRA 1X-2.

Attach the respective protective devices upon completion of assembly and start-up.

Preparation

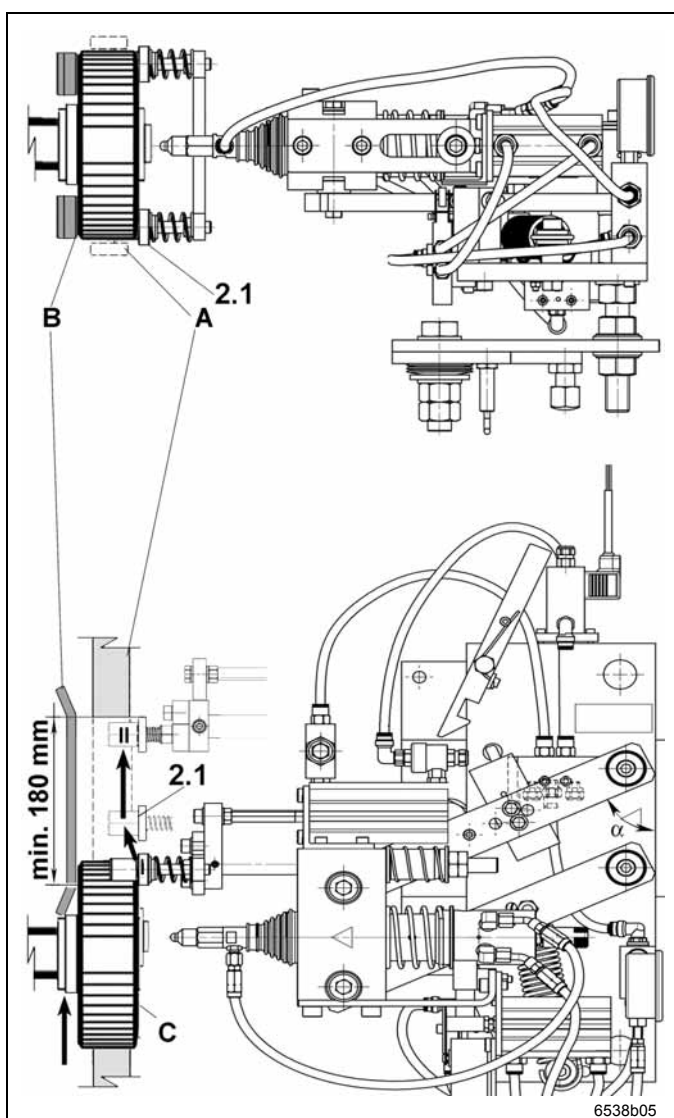


Fig. 4 Guidance of the chain rollers

2.1 - Pick-up rollers

I - Pick-up roller, waiting position ($\alpha = 25.2^\circ$)

II - Pick-up roller, backstroke position ($\alpha = 90^\circ$)

A - Vertical guidance

B - Horizontal guidance

C - Chain rollers of the transport chain

Guidance of the conveyor belt

Vertical guidance (pos. A):

The COBRA 1X-2 can compensate a vertical excursion of the chain rollers (pos. C) of ± 1.5 mm.

- In case of bigger excursions, mount vertical guidances (pos. A) in the catchment area of the pick-up rollers (pos. 2.1).



6001a02

NOTE

The vertical guidances (pos. A) must not limit the moving process of the pick-up rollers (pos. 2.1) during the pick-up and lubrication phase (see pages 17 and 18).

The distance between the vertical guidances (pos. A) must be big enough so that the chain rollers (pos. C) will not stick between them during their passage.

- If necessary, spare the vertical guidance (pos. A) of the conveyor chain in the catchment area (min. 180 mm) of the pick-up rollers (Pos. 2.1).

Horizontal guidance (pos. B):

The COBRA 1X-2 can compensate a horizontal excursion of the chain rollers (pos. C) of ± 25 mm.

- In case of bigger excursions, mount horizontal guidances (pos. B) in the catchment area of the pick-up rollers (pos. 2.1).



1013A94

CAUTION!

If there are no guidances for the chain rollers, some rollers may suffer poor lubrication and the lubrication head may be damaged.

Assembly and Start-up, continuation

6.3A-18004-B05

Assembly, continuation

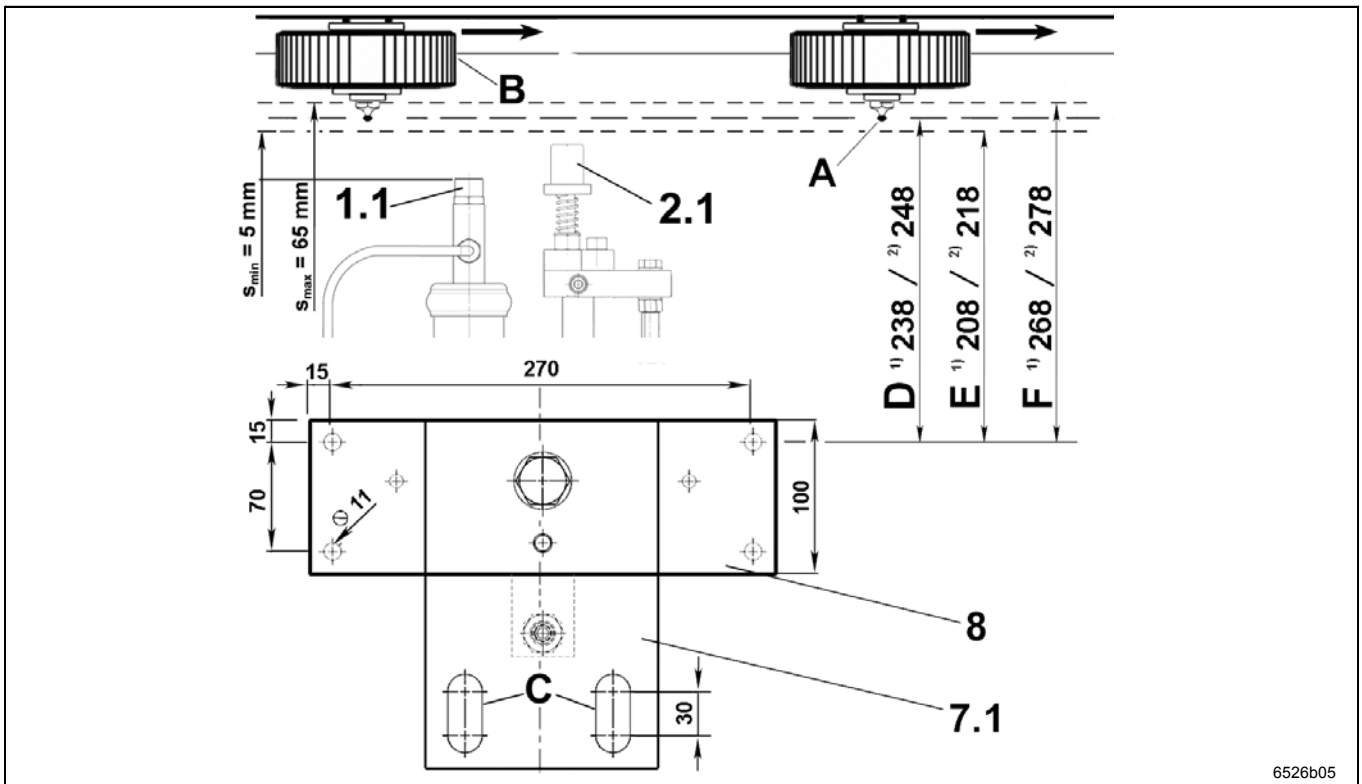


Fig. 5 Assembly of the COBRA 1X-2 ⁽¹⁾ nozzle for hydraulic lubrication fitting/ ⁽²⁾ flush coupler)

- | | | |
|--|---------------------|---------------------------------------|
| 1.1 - Lubrication head, nozzle for hydraulic lube fitting (off-position) | 7.1 - Slewing plate | 8 - Mounting plate |
| A - Lubrication fitting of the transport chain | B - Chain roller | C - Oblong holes of the slewing plate |
| D - Medium distance from the Cobra to the front edge of the lube fitting in the area of max. horizontal variation of the transport chain | | |
| E - L_{min} = min. distance from the Cobra to the front edge of the lube fitting in the area of max. horizontal variation of the transport chain | | |
| F - L_{max} = max. distance from the Cobra to the front edge of the lube fitting in the area of max. horizontal variation of the transport chain | | |

1. Preparation for adjustment

- Loosen the fastening nuts (see page 30, fig. 27, pos. 4.5) on the threaded rods M 20 (pos. 4.4).
- Separate the mounting and slewing plate (fig. 5, pos. 7.1 and 8) from the COBRA 1X-2.
- Fix the mounting plate (pos. 8) with four fastening screws M10 to the holding construction (see page 9, chapter "Layout of the holding construction").
- Make sure that for execution of item 1 to 3 the COBRA 1X-2 is in off-position (see page 15).
- Make sure that the mounting plate is supported horizontally and evenly by the holding construction.
- Tighten the four fastening screws M10 upon the positioning of the mounting plate: M10 ... 35 Nm

2. Vertical adjustment

- Put the threaded rod M20 (see page 30, pos. 4.4) of the COBRA 1X-2 back into the oblong holes (pos. C) of the slewing plate (pos. 7.1).
- Tighten the fastening screws M20 (pos. 4.5) slightly.
- Place the nozzle coupler (pos. 1.1) respectively the axis of the lubrication head (pos. 1) horizontally to the height of the lubrication fitting (pos. A). To do so, use the thread pitch of the threaded rods M20 (pos. 4.4) in combination with fastening nuts M20 (pos. 4.5).

- Make sure that the axis of the lubrication head is in parallel to and at the same height as the axis of the lubrication fitting. This is valid for the complete moving area of the COBRA 1X-2.

3. Horizontal adjustment

- Move the threaded rods M20 (see page 30, pos. 4.4) along the oblong holes (pos. C). In off position, the distance from the transport chain to the next parts of the COBRA 1X-2 (lubrication head and pick-up rollers) must be that big that even at the maximum possible transport chain variation there cannot occur any collision. However, position the COBRA 1X-2 as close to the transport chain as possible so that the lubrication procedure with the contact of the nozzle coupler on the lubrication fitting can start as early as possible.



6001a02

IMPORTANT

Even in case of the maximum horizontal chain roller variation, the distance s_{max} must not be more than 65 mm (see fig. 5).

- Tighten the fastening nuts after completion of the positioning: M20 ... 290 Nm
- Check all adjustments after tightening all screws.
- If necessary, carry out the corrections.

Assembly and Start-up, continuation

6.3A-18004-B05

Assembly, continuation

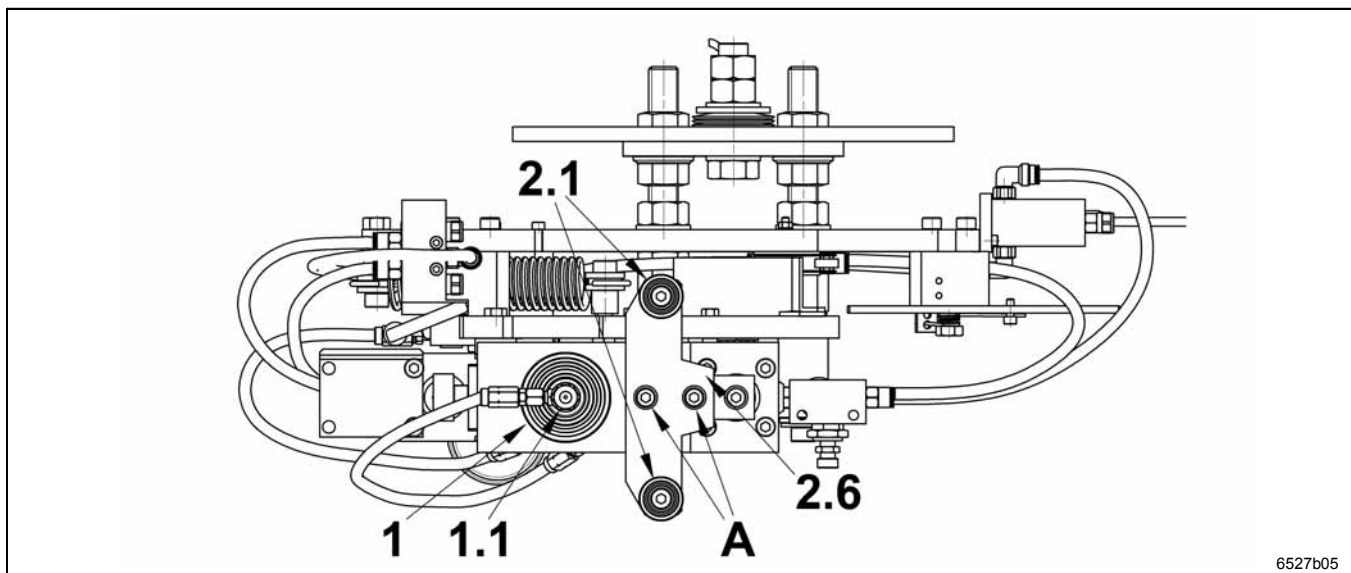


Fig. 6 Horizontal fine adjustment

4. Horizontal fine adjustment

- Provide the air supply for the COBRA 1X-2.
- If necessary, carry out the installation for electrically operated 3/2-way valves.



4273a00

CAUTION!

Before connecting the lubrication devices make sure to disconnect the system from the power supply.

Only qualified electricians should proceed with assembly and installation of electrical equipment. Observe all pertinent safety regulations and standards.

- Make sure that the COBRA 1X-2 is in waiting position (see page 16).

Adjust distance nozzle coupler – pick-up rollers

- For the fine adjustment, loosen the fastening screws (pos. A) on the oblong holes of the pick-up arm (see pos. 2.6).
- Move the transport chain to that extent that one chain roller stops at the pick-up rollers (pos. 2.1, see page 17, fig. 14).
- Vary the distance between the pick-up rollers (pos. 2.1) and the lubrication head (pos. 1) along the oblong holes (pos. A).
- Position the nozzle coupler (pos. 1.1) exactly to a lubrication point whereby the pick-up rollers (pos. 2.1) must in no case lose the contact to the chain roller.
- Retighten the fastening screws (pos. A) after completion of the positioning: M 10 ... 35 Nm
- Check all adjustments after tightening all screws.

Adjust pick-up stroke

- In the operating status "Waiting position" the pick-up rollers are to move 7 to 15 mm into the catchment area of the chain rollers (feeding depth 10^{+5}_{-3} mm, see pages 27 and 28, fig. 25 and 26).



6001a02

IMPORTANT

Observe the minimum measure of 7 mm for all horizontal chain roller and transport chain variations.

The measure of 15 mm may be exceeded under the following conditions only:

- if the pick-up rollers (pos. 2.1) do not run against stationary walls
- if the pick-up rollers (pos. 2.1) do not push the chain roller off the nozzle coupler (pos. 1.1).

- Loosen the nuts (see fig. 7, pos. C) on the pick-up guide rod (pos. 2.4¹⁾).
- Move the pick-up stop (pos. 2.5¹⁾) to the end of the pick-up guide rod (pos. 2.4¹⁾) in order to feed the pick-up rollers into the catchment area of the chain rollers. Otherwise, move the pick-up stop further on the pick-up guide rod.

¹⁾ see fig. 27, page 30



6001a02

NOTE

It is possible to move the stop up to 15 mm on the guide rod. This corresponds to a pick-up stroke of 60 to 75 mm.

Assembly and Start-up, continuation

6.3A-18004-B05

Assembly, continuation

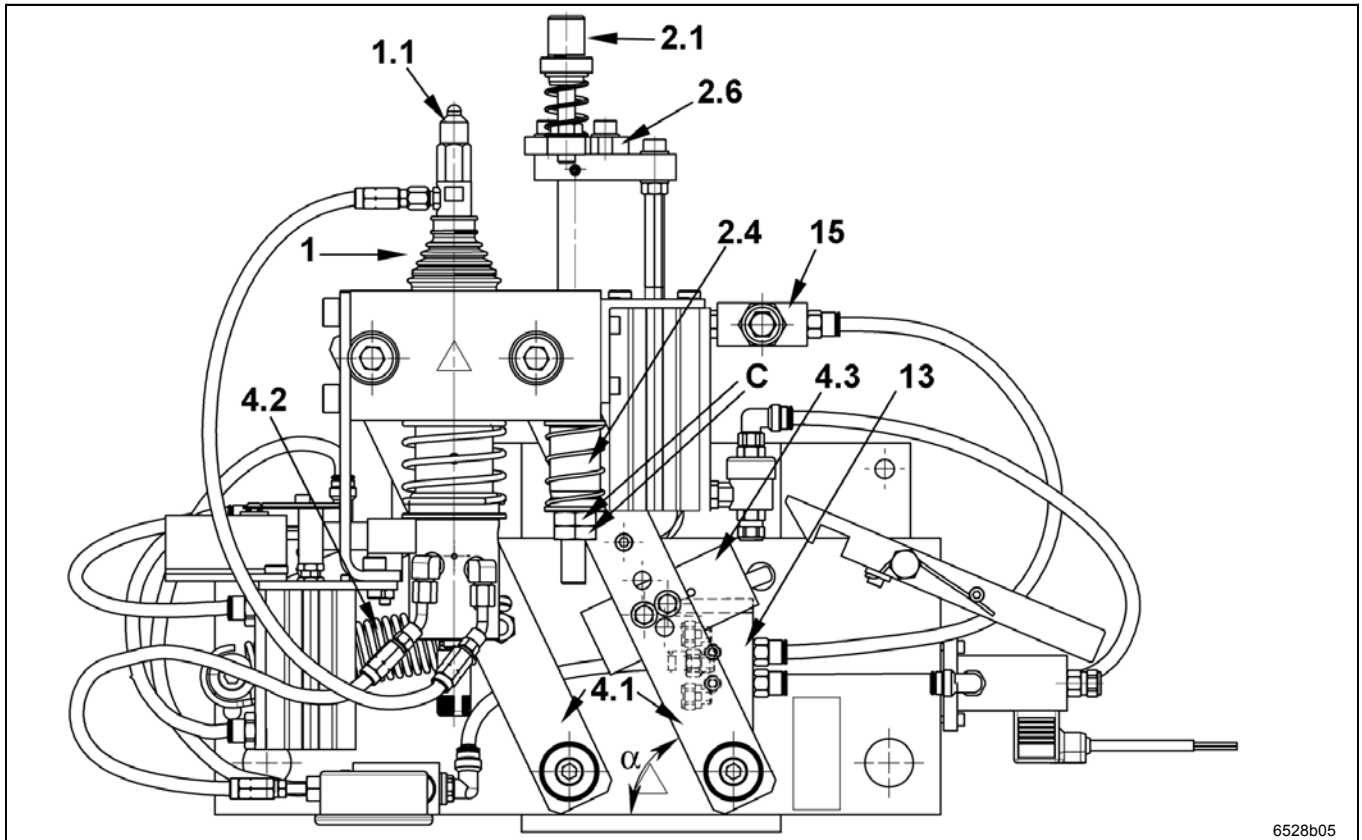


Fig. 7 Adjustment of swiveling distance and reverse travel speed

5. Adjustment of swiveling distance

- The actuating angle (pos. 4.3) stops the movement of the slewing cranks (pos. 4.1) at the end of the lubrication process. It actuates the 5/2-way valve (pos. 13).
- Loosen the two screws (M 6) of the actuating angle (pos. 4.3).

Modification of the swiveling distance

- Shortening: (**reduce angle α**) to increase the operating frequency and at the same time reduce the lubrication time
- Elongation: (**enlarge angle α**) to prolong the lubrication time
- Move/ turn the actuating angle as follows:

		Swiveling distance	
		Shortening	Elongation
COBRA 1X-2	Right-hand version	clockwise	counterclockwise
	Left-hand version	counterclockwise	clockwise

6. Adjustment of reverse travel speed

- Modify the reverse travel speed during the pull-back movement (see page 20) by screwing the throttle screw on the check valve in or out (pos. 15).

Reduce reverse travel speed

- By screwing-in the throttle screw
- During low chain speed
- To avoid the contact of the pick-up rollers (pos. 2.1) with an already lubricated chain roller during the pull-back movement
- To reduce the shock load at the end of the pull-back movement

Increase reverse travel speed

- by screwing-out the throttle screw
- to increase the lubrication frequency



6001a02

IMPORTANT

Adjust the actuating angle (pos. 4.3) in such way that the nozzle coupler (pos. 1.1) reliably leaves the lubrication fitting of the chain before the pick-up rollers (pos. 2.1) loose the contact to the chain roller (pos. A). Make sure this adjustment works reliably with the maximum possible as well as with the minimum possible chain speed.

Assembly and Start-up, continuation

6.3A-18004-B05

Assembly, continuation

7. Adjustment of output

- Make sure that the COBRA 1X-2 is in off-position (see page 15).

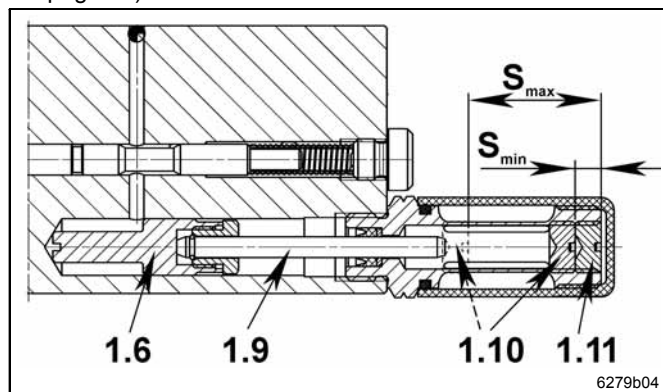


Fig. 8 Metering via lubrication head

Metering to zero

(broken-line representation of the metering screw pos. 1.10)

- Tighten the metering screw (pos. 1.10) up to the mechanical stop of the metering ram (pos. 1.9) and the supply piston (pos. 1.6).

Adjustment

- Turn the thread revolutions²⁾ indicated in the following chart back in order to adjust the corresponding output (with the maximum output being $S = 5.5 \text{ mm}^1$).
- Keep to the recommended range of adjustment ($S \leq 23.5 \text{ mm}$), as otherwise the inaccuracy of the output per stroke increases (minimum output $0.2 \text{ cm}^3/\text{stroke}$).

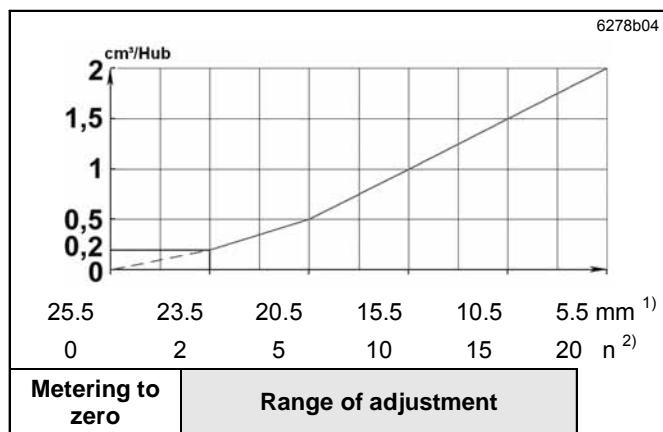


Fig. 9 Output diagram

¹⁾ Depth gauge S in mm

²⁾ Number of thread revolutions (n) of the metering screw (pos. 1.10) as of the metering to zero

- Fix the adjustment of the metering screw (pos. 1.10) by means of a fastening screw (pos. 1.11).
- Observe the note regarding the lubrication procedure (see page 21).

8. Adjustment of proximity switch

- Make sure that the COBRA 1X-2 is in off position (see page 15).
- The slewing plate is fastened to the mounting plate by screws and locked on the pressure piece (see page 30, pos. 7.2).
- Screw the proximity switch (pos. 7.3) into the threaded bore M12 x 1 of the mounting plate. The screwing depth is 0.5 mm less than the thickness of the mounting plate (10 mm). Exceeding this screwing depth will destroy the proximity switch during the slewing function.

Start-up

- Remove lines already connected.
- Clean, fill and mount the lines.
- Set the lubricant pressure:
 - for grease from 120 to 240 bar
 - for oil from 40 to 80 bar
- Check the adjustments of chapters 1, 2 & 3 (see page 11):
 - when the transport chain is standing
 - when the 3/2-way valve is not actuated (see page 15, pos. 14)
- Check the adjustments of chapter 4 (see page 12):
 - when the air supply is connected
 - when the 3/2-way valve is actuated (pos. 14)
 - when having contact between the chain rollers and the pick-up rollers
- Check the adjustments of chapters 5 and 6 (see page 13):
 - during the moving procedure of the COBRA 1X-2
 - if possible when the lubricant supply is shut-off
 - when the air supply is connected
 - when the 3/2-way valve is actuated (pos. 14)
 - applying the planned transport direction and speed of the running transport chain
- Check the adjustment of the output according to chapter 7 in off-position.
- Activate the lubricant supply:
 - switch the pump on
 - open the lubricant line
- Check the lubrication procedure several times with the COBRA 1X-2 in operation (see page 23, chapter "Functional Test").
- Adapt the pump pressure to the required lubricant injecting pressure into the roller respectively bold bearings of the transport chain.

Reconnection

- If necessary, eliminate the cause for the activation of a safety function (see page 8) before the reconnection. Also consider the chapter "Troubleshooting" (see pages 23 ff).
- Put the COBRA 1X-2 into the operating status "Off position" first, then into "Waiting position" (see pages 15 & 16).

Operating Method

6.3A-18004-B05

Pneumatics and Mechanics

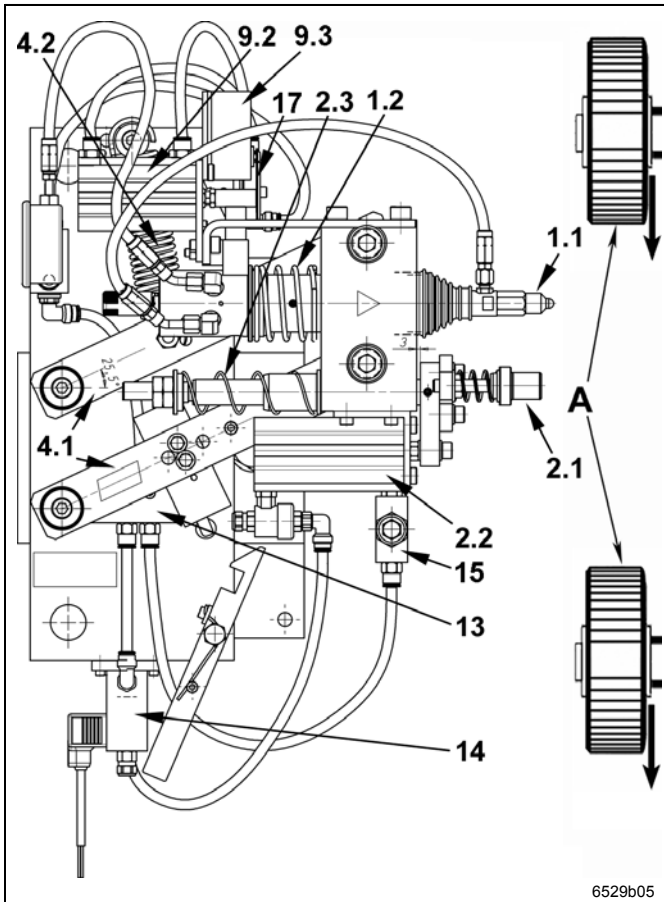


Fig. 10 COBRA 1X-2 in off position

Off Position

In the off position the COBRA 1X-2 is out of service.

Characteristics of the off position

- The valves (pos. 13, 14 and 17) are inoperative (valve position, see fig. 11). The compression springs (pos. 1.2 and 2.3) maintain the lubrication head (pos. 1) and the pick-up arm (pos. 2) in off position.
- The pick-up rollers (pos. 2.1) are positioned outside of the catchment area of the chain rollers (pos. A).

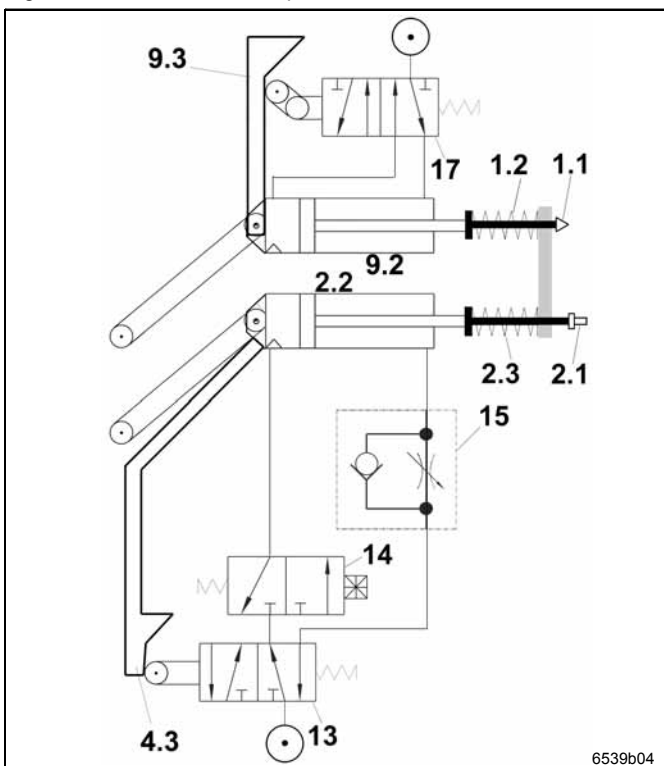


6001a02

NOTE

If the COBRA 1X-2 is not pressurized, the compression springs (pos. 1.2 and 2.3) maintain the lubrication head (pos. 1) and the pick-up arm (pos. 2) in off position.

- The lubricant supply pump is switched off.



- 1.1 - nozzle coupler
- 1.2 - compression spring for lubrication head
- 2.1 - pick-up rollers
- 2.2 - cylinder for pick-up arm
- 2.3 - compression spring for pick-up arm
- 4.1 - slewing arm
- 4.2 - pull-back spring for slewing unit
- 4.3 - switch angle for pick-up arm
- 9.2 - cylinder for lubrication head
- 9.3 - switch angle for lubrication head
- 13 - 5/2-way valve, mechanically-operated for pick-up arm
- 14 - 3/2-way valve, mechanically-operated (option: pneumatical, electrical)
- 15 - throttle check valve
- 17 - 5/2-way valve, mechanically-operated for lubrication head
- A - chain rollers

Fig. 11 Pneumatic wiring diagram in off position

Operating Method, continuation

6.3A-18004-B05

Pneumatics and Mechanics, continuation

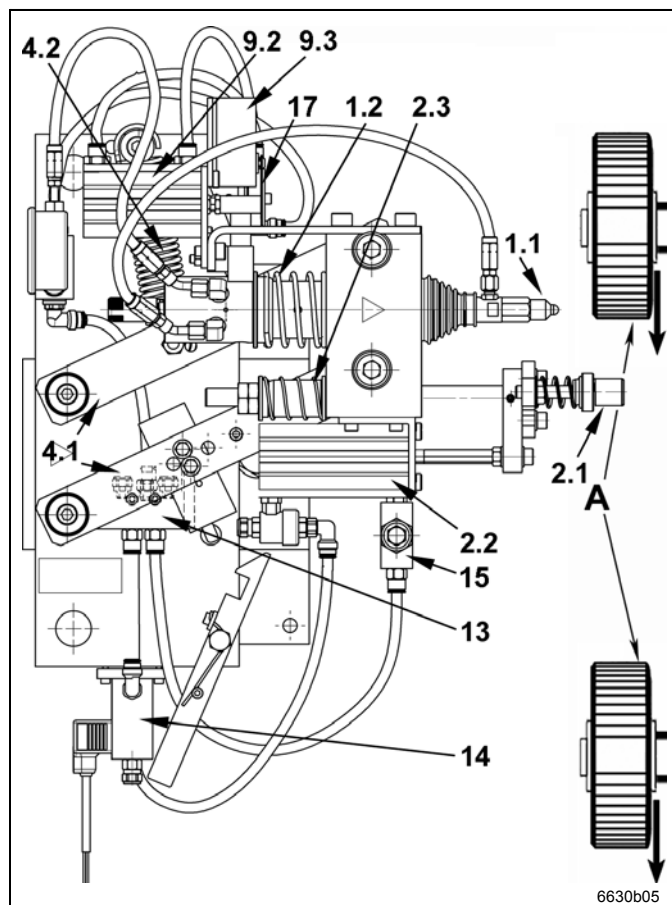
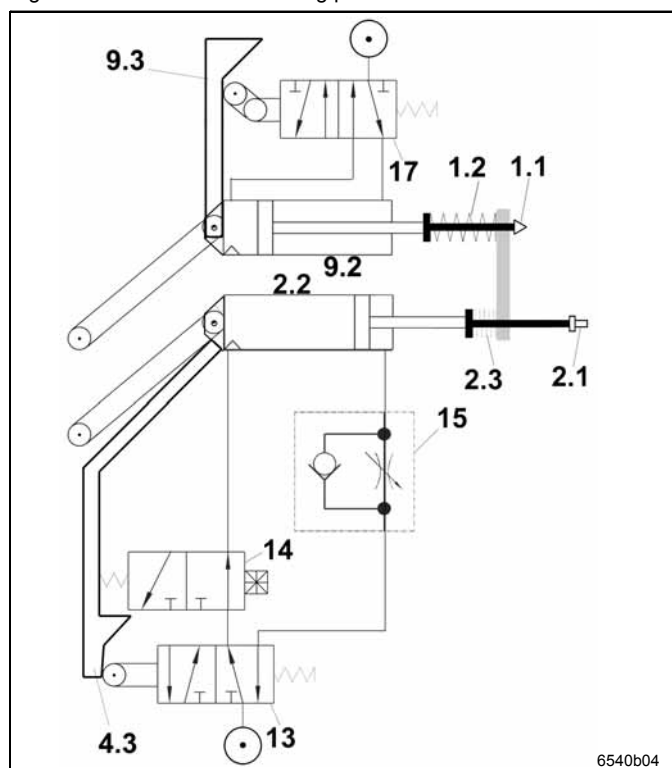


Fig. 12 COBRA 1X-2 in waiting position



Waiting position

In the waiting position the COBRA 1X-2 is ready for operation.

Characteristics of the waiting position

- The 3/2-way valve (pos. 14) is operative.
The 5/2-way valves (pos. 13 & 17) are operative (valve position see fig. 13).
- The pick-up cylinder (pos. 2.2) drives the pick-up (pos. 2) into the direction of the transport chain.
- The pick-up rollers (pos. 2.1) are positioned in the catchment area of the chain rollers (pos. A).



6001a02

NOTE

The extracting speed of the pick-up arm (pos. 2) can be adjusted on the throttle check valve (pos. 15).

- 1.1 - nozzle coupler
- 1.2 - compression spring for lubrication head
- 2.1 - pick-up rollers
- 2.2 - cylinder for pick-up arm
- 2.3 - compression spring for pick-up arm
- 4.1 - slewing crank
- 4.2 - pull-back spring for slewing device
- 4.3 - actuating angle for pick-up arm
- 9.2 - cylinder for lubrication head
- 9.3 - actuating angle for lubrication head
- 13 - 5/2-way valve, mechanically operated, for pick-up arm
- 14 - 3/2-way valve, mechanically operated (option: pneumatical, electrical)
- 15 - throttle check valve
- 17 - 5/2-way valve, mechanically operated, for lubrication head
- A - chain roller

Fig. 13 Pneumatical wiring diagram in waiting position

Operating Method, continuation

6.3A-18004-B05

Pneumatics and Mechanics, continuation

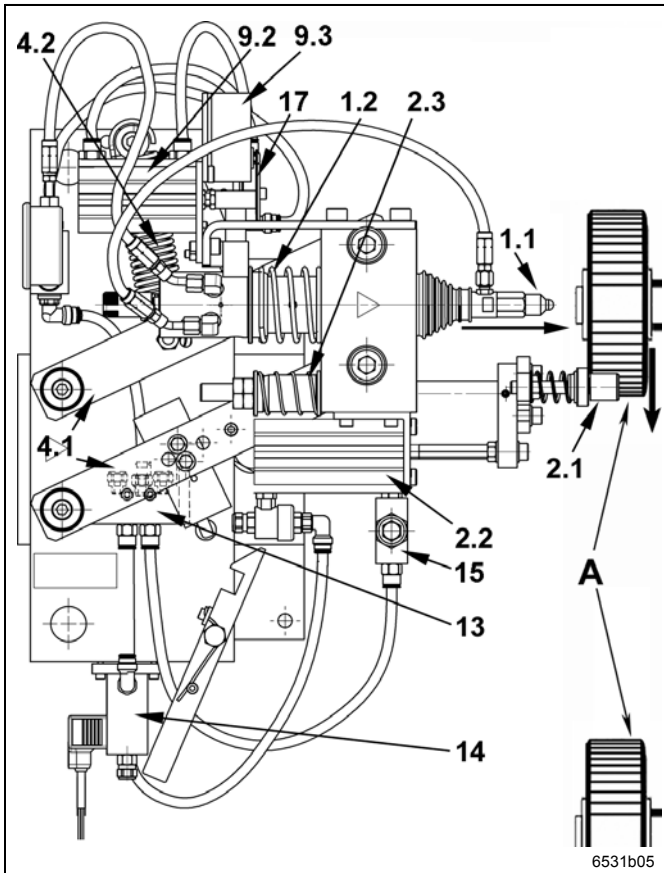


Fig. 14 COBRA 1X-2 in the pick-up initial phase

Pick-up initial phase

During the pick-up initial phase, the chain roller (pos. A) or the chain bolt catches the pick-up rollers (pos. 2.1) and moves the COBRA in the chain running direction.

Characteristics of the pick-up initial phase

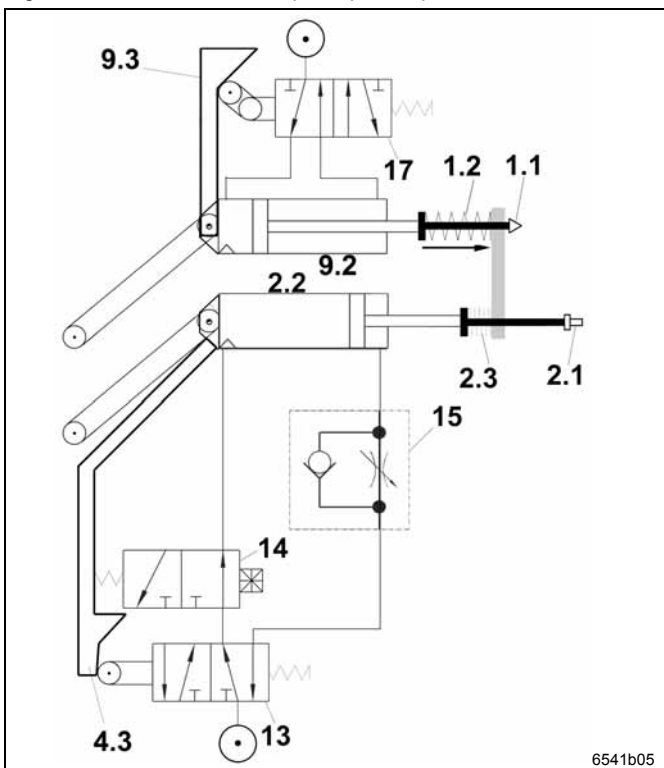
- The 3/2-way valve (pos. 14) is operative; the 5/2-way valve for the pick-up arm (pos. 13) is inoperative. (valve position see fig. 15).
- A chain roller (pos. A) reaches the pick-up rollers (pos. 2.1) and moves the complete slewing crank (pos. 4.1 and 4.2 with pos. 1 & 2) in the running direction of the transport chain.
- In the initial phase of the movement of slewing crank, the actuating angle (pos. 9.3) moves the 5/2-way valve for the lubrication head (pos. 17; valve position see fig. 15).
- The lubrication head cylinder (pos. 9.2) moves the lubrication head (pos. 2) towards the transport chain.
- The slewing movement of the slewing cranks (pos. 4.1) increases angle α during the pick-up phase. As a consequence the pull-back spring is bended and nozzle coupler as well as pick-up rollers are moved towards the transport chain.



6001a02

NOTE

The extraction speed of the pick-up arm (pos. 2) can be adjusted at the throttle check valve (pos. 15).



1.1 - nozzle coupler

- 1.2 - compression spring for lubrication head
- 2.1 - pick-up rollers
- 2.2 - cylinder for pick-up arm
- 2.3 - compression spring for pick-up arm
- 4.1 - slewing crank
- 4.2 - pull-back spring for slewing device
- 4.3 - actuating angle for pick-up arm
- 9.2 - cylinder for lubrication head
- 9.3 - actuating angle for lubrication head
- 13 - 5/2-way valve, mechanically operated for pick-up arm
- 14 - 3/2-way valve, mechanically operated (option: pneumatical, electrical)
- 15 - throttle check valve
- 17 - 5/2-way valve, mechanically operated for lubrication head
- A - chain roller

Fig. 15 Pneumatical wiring diagram during the pick-up initial phase

Operating Method, continuation

6.3A-18004-B05

Pneumatics and Mechanics, continuation

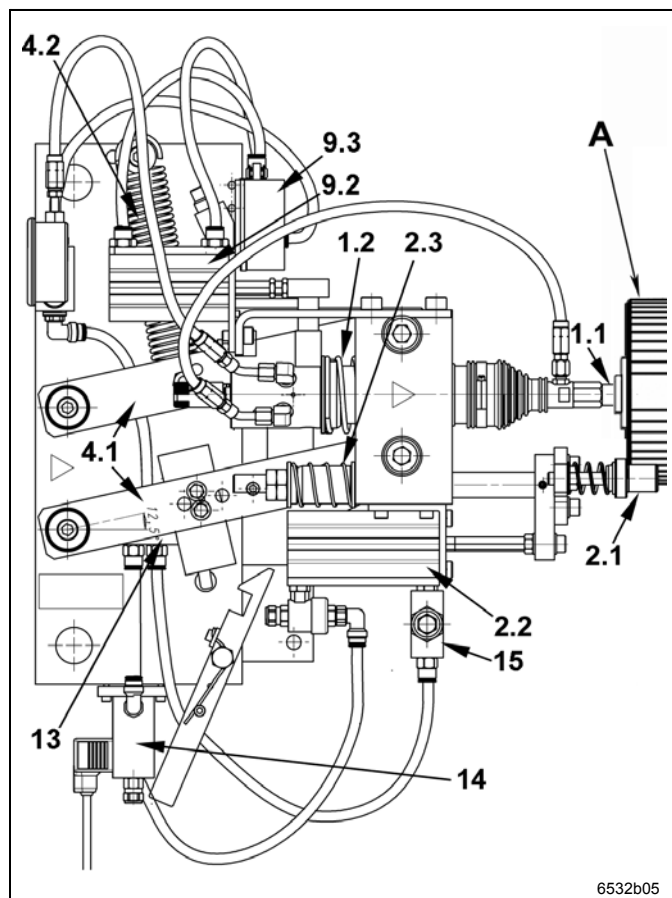
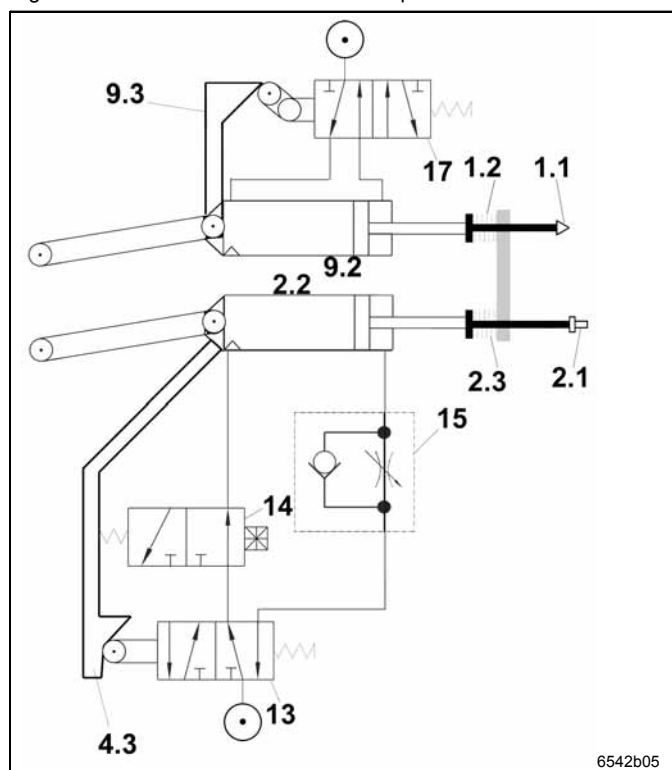


Fig. 16 COBRA 1X-2 in the lubrication phase



Lubrication phase

During the lubrication phase the pick-up rollers (pos. 2.1) and the nozzle coupler (pos. 1.1) are in contact with the transport chain; the COBRA 1X-2 dispenses lubricant to the lubrication point.

Characteristics of the lubrication phase

- The valve position (pos. 13 and 14) remains like in the pick-up initial phase (see fig. 15 and 17).
- The pull-back spring (pos. 4.2) is still bended.
- Nozzle coupler (pos. 1.1) and pick-up roller (pos. 2.1) move towards the transport chain.
- The nozzle coupler is pressed onto the lubrication fitting of the chain roller (pos. A).
- By doing so the lubrication head rod (pos. 1.3) is pressed into the lubrication head housing (pos. 1.4) and triggers the lubrication stroke (see chapter "Lubrication procedure", pages 21 and 22).



6001a02

NOTE

The function of the compression springs (pos. 2.8) prevents the pick-up rollers (pos. 2.1) from being damaged, even in case of a max. approach of the pick-up arm (pos. 2) to the chain rollers (pos. A).

- 1.1 - nozzle coupler
- 1.2 - compression spring for lubrication head
- 2.1 - pick-up rollers
- 2.2 - cylinder for pick-up arm
- 2.3 - compression spring for pick-up arm
- 4.1 - slewing crank
- 4.2 - pull-back spring for slewing device
- 4.3 - actuating angle for pick-up arm
- 9.2 - cylinder for lubrication head
- 9.3 - actuating angle for lubrication head
- 14 - 3/2-way valve, mechanically operated (option: pneumatical, electrical)
- 15 - throttle check valve
- 17 - 5/2-way valve, mechanically operated for lubrication head
- A - chain roller

Fig. 17 Pneumatical wiring diagram during the lubrication phase

Operating Method, continuation

6.3A-18004-B05

Pneumatics and Mechanics, continuation

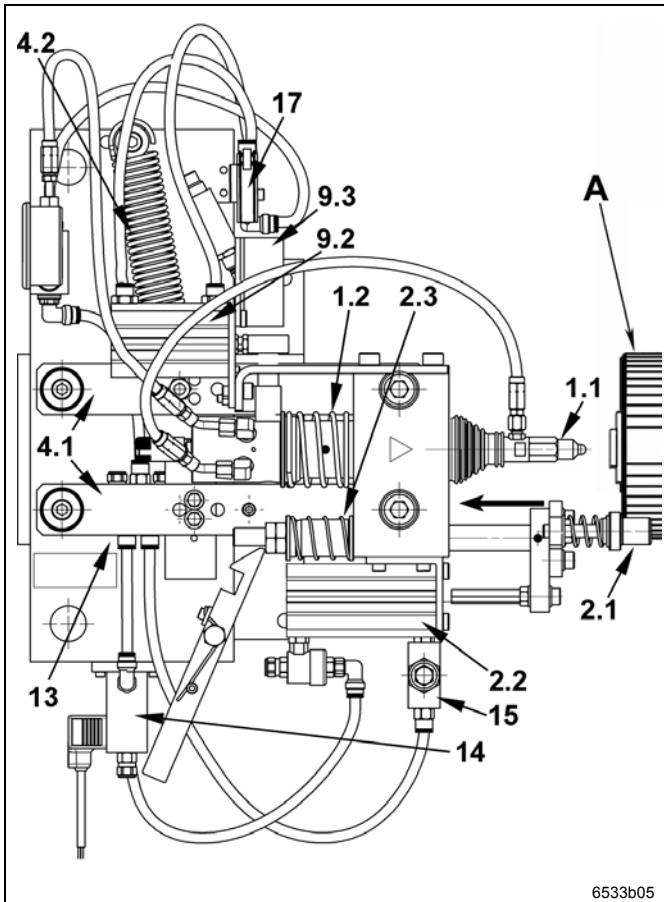


Fig. 18 COBRA 1X-2 at the end of the lubrication phase

End of the lubrication phase

At the end of the lubrication phase the COBRA 1X-2 is separated from the transport chain.

Characteristics at the end of the lubrication phase

- The 3/2-way valve (pos. 14) is actuated.
- The 5/2-way valve for the lubrication head (pos. 17) is switched into the initial position due to leaving the actuating angle (pos. 9.3).
- The 5/2-way valve for the pick-up arm (pos. 13) is actuated by a mechanical contact on the actuating angle (pos. 4.3; valve position, see fig. 19).
- The lubrication head cylinder (pos. 9.2) moves the lubrication head (pos. 1); the pick-up cylinder (pos. 2.2) move the pick-up arm (pos. 2) into the off position.



6001a02

NOTE

The angle α has reached its maximum value as soon as the 5/2-way valve (pos. 13) is actuated. Set the maximum value of α by adjusting the actuating angle (pos. 4.3; see page 13, chapter "Adjustment of the swiveling distance").

IMPORTANT

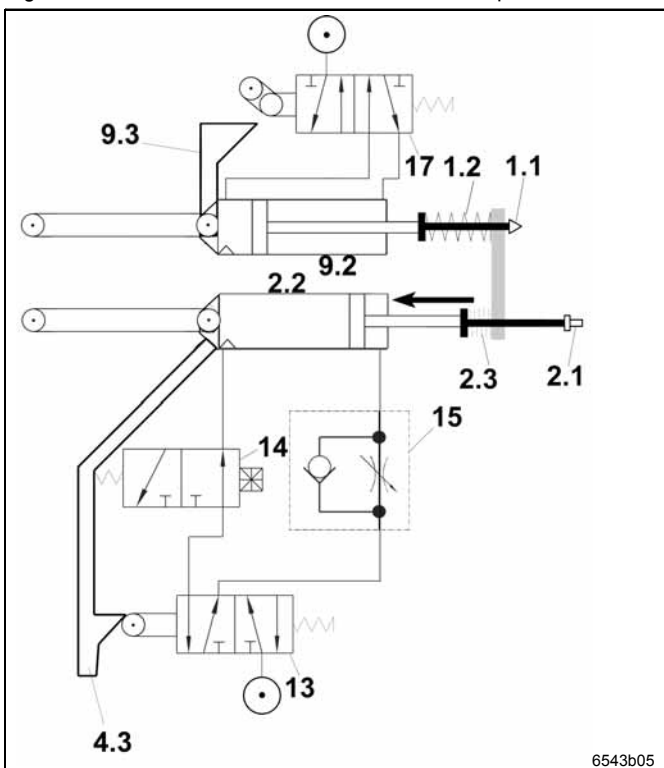
Adjust the actuating angle (pos. 4.3) in such way that the nozzle coupler (pos. 1.1) reliably leaves the lubrication fitting on the chain before the pick-up rollers (pos. 2.1) loose the contact to the chain roller (pos. A). Make sure this is the case with the maximum possible as well as with the minimum possible chain speed!



6001a02

NOTE

In case of a failure of the compressed air, the compression springs (pos. 1.2 and 2.3) move the lubrication head (pos. 1) and the pick-up arm (pos. 2) away from the transport chain.



- 1.1 - nozzle coupler
- 1.2 - compression spring for lubrication head
- 2.1 - pick-up rollers
- 2.2 - cylinder for pick-up arm
- 2.3 - compression spring for pick-up arm
- 4.1 - slewing crank
- 4.2 - pull-back spring for slewing crank
- 4.3 - actuating angle for pick-up arm
- 9.2 - cylinder for lubrication head
- 9.3 - actuating angle for lubrication head
- 13 - 5/2-way valve, mechanically operated for pick-up arm
- 14 - 3/2-way valve, mechanically operated (option, pneumatical, electrical)
- 15 - throttle check valve
- 17 - 5/2-way valve, mechanically operated for lubrication head
- A - chain roller

Fig. 19 Pneumatical wiring diagram at the end of the lubrication phase

Operating Method, continuation

6.3A-18004-B05

Pneumatics and Mechanics, continuation

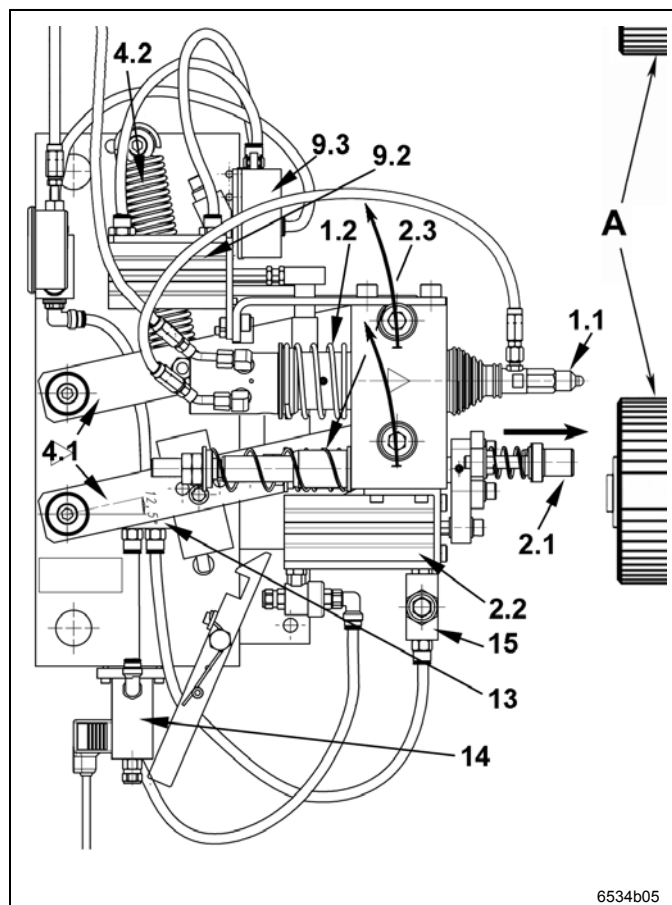


Fig. 20 COBRA 1X-2 during the pull-back movement

Pull-back movement

During the pull-back movement, the COBRA 1X-2 slews back into the waiting position.

Characteristics of the pull-back movement

- The 3/2-way valve (pos. 14) is actuated.
- During the pull-back movement of the actuating angle (pos. 9.3) the 5/2-way valve for the lubrication head (pos. 17) remains in the off position due to the swivel in the valve actuation.
- The 5/2-way valve for the pick-up arm (pos. 13) loses the mechanical contact on the actuating angle (pos. 4.3; valve position, see fig. 21).

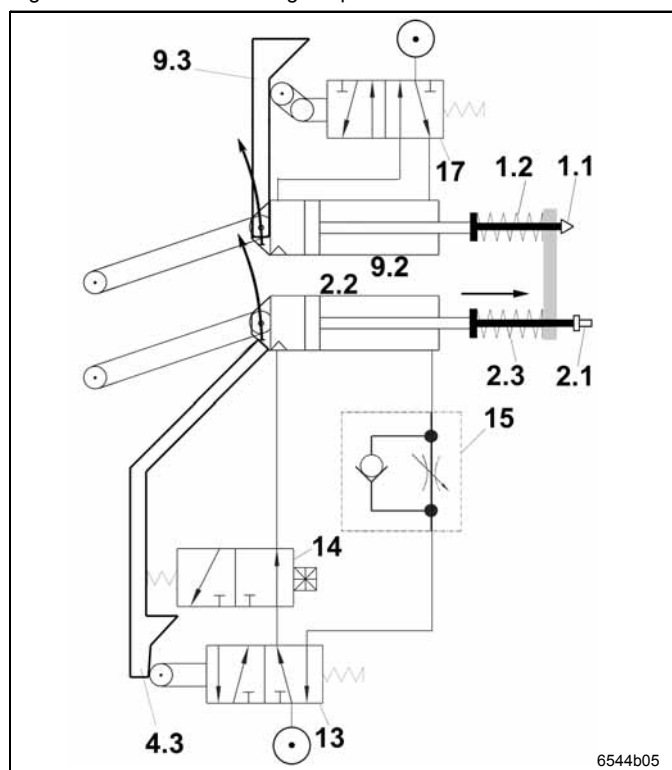


6001a02

NOTE

The extracting speed of the pick-up arm (pos. 2) can be adjusted on the throttle check valve (pos. 15).

- The bended pull-back spring (pos. 4.2) pulls the slewing cranks (pos. 4.1) back into the waiting position (see page 15).
- The pick-up cylinder (pos. 2.2) moves the pick-up arm (pos. 2) towards the transport chain.
- The pick-up rollers (pos. 2.1) move into the catchment area of the chain rollers (pos. A) again.



- 1.1 - nozzle coupler
- 1.2 - compression spring for lubrication head
- 2.1 - pick-up rollers
- 2.2 - cylinder for pick-up
- 2.3 - compression spring for pick-up arm
- 4.1 - slewing crank
- 4.2 - pull-back spring for slewing device
- 4.3 - actuating angle for pick-up arm
- 9.2 - cylinder for lubrication head
- 9.3 - actuating angle for lubrication head
- 13 - 5/2-way valve, mechanically operated, for pick-up arm
- 14 - 3/2-way valve, mechanically (option. Pneumatical, electrical)
- 15 - throttle check valve
- 17 - 5/2-way valve, mechanically operated, for lubrication head
- A - chain roller

Fig. 21 Pneumatical wiring diagram during the pull-back movement

Operating Method, continuation

6.3A-18004-B05

Lubricant Supply

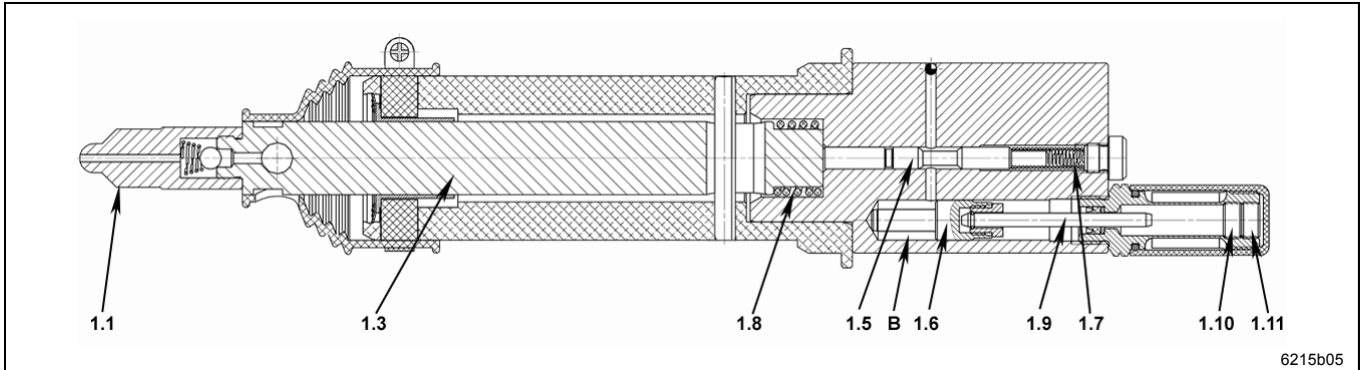


Fig. 22 Lubrication head during metering procedure

- 1.1 - nozzle coupler (here: flush coupler; option: coupler for hydraulic lubrication fitting)
- 1.3 - lubrication head rod
- 1.5 - control piston
- 1.6 - supply piston
- 1.7 - compression spring for control piston
- 1.8 - compression spring for lubrication head rod

- 1.9 - control pin
- 1.10 - metering screw
- 1.11 - fastening screw
- A - lubrication fitting
- B - metering chamber

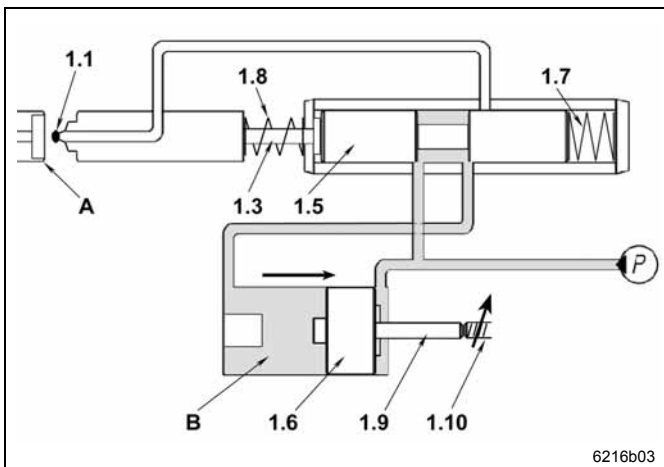


Fig. 23 Metering procedure

Lubricant lines:
- white: without pressure
- light-grey: pump pressure

Metering procedure

- When the lubricant pump (pos. P) is switched on, during the following operating states, the COBRA 1X-2 is in the metering procedure:
 - End of the lubrication procedure (see page 19)
 - Pull-back movement (see page 20)
 - Waiting position (see page 16)
 - Start of the pick-up phase and lubrication phase (see pages 17 and 18)
- The lubrication head rod (pos. 1.3) and the control piston (pos. 1.5) are maintained at their respective end positions by compression springs (pos. 1.7 and 1.8).
- The control piston (pos. 1.5) releases the feed line to the metering chamber (pos. B) on the left side of the supply piston (pos. 1.6) so that the pump pressure moves the supply piston (pos. 1.6) up to the metering pin (pos. 1.9).
- Turn the metering screw (pos. 1.10) in or out to adjust the output per lubrication stroke from 0.2 to 2.0 cm³.
- Fix the position of the metering screw (pos. 1.10) with the fastening screw (pos. 1.11).

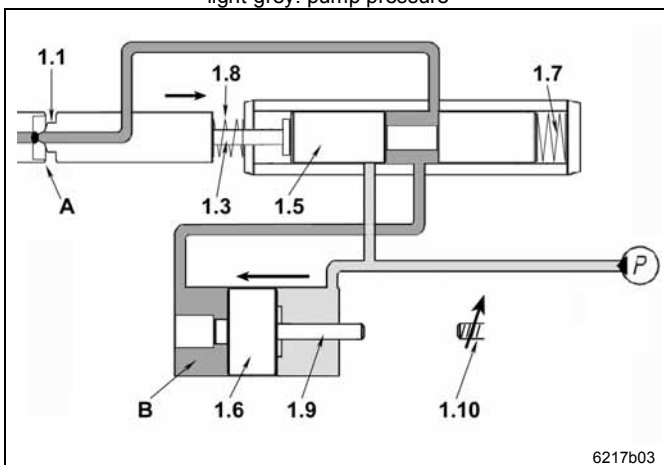


Fig. 24 Lubrication procedure

Lubrication procedure

- 1.1 - flush coupler
- 1.5 - control piston
- 1.7 - compression spring for control piston
- 1.9 - control pin
- 1.11 - fastening screw
- A - lubrication fitting
- 1.3 - lubrication head rod
- 1.6 - supply piston
- 1.8 - compression spring for lubrication head rod
- 1.10 - metering screw
- B - metering chamber
- white: without pressure
- light-grey: pump pressure
- dark-grey: supply pressure

Operating Method, continuation

6.3A-18004-B05

Lubricant Supply, continuation

Lubrication procedure, continuation

- At the end of the pick-up and lubrication phase (see pages 17 and 18) the COBRA 1X-2 is ready for lubrication.
- The nozzle coupler (pos. 1.1) is pressed onto the lubrication fitting (pos. A) of a chain roller and moves the control piston (pos. 1.5) backwards.
- Thus, the lubricant line towards the metering chamber is closed and the supply line towards the nozzle coupler (pos. 1) is opened.
- The output capacity of the pump (pos. P) presses the premeasured output quantity to the nozzle coupler (pos. 1.1) via the supply piston (pos. 1.6).
- At the beginning of the pull-back movement the nozzle coupler (pos. 1.1) frees itself from the lubrication fitting of the chain roller.
- The compression springs (pos. 1.6 and 1.7) press the lubrication head rod (pos. 1.3) and control piston (pos. 1.5) back into their end positions.
- Then another metering is initiated.



6001a02

IMPORTANT

The lubrication procedure is incomplete if the supply piston (pos. 1.6) could not reach its final position (see control pin, page 14, fig. 8, pos. 1.9) in time.

- Reduce the output (see page 14) so that the supply stroke can be completed within the lubrication phase (see page 17).
- Shorten the lubrication pauses of the transport chain accordingly.

Operation of the COBRA 1X-2

Manual operation

(electrical control not required)

- The COBRA 1X-2 can be switched on and off at any time via the mechanical 3/2-way valve (pos. 14).
- During one lubrication cycle, the COBRA 1X-2 changes between the following operating states:
 1. waiting position (see page 16)
 2. pick-up phase and lubrication phase (see pages 17 & 18)
 3. end of lubrication phase (see page 19)
 4. pull-back movement (see page 20)
 5. waiting position (see page 16)
 6. pick-up phase and lubrication phase, etc.

Operation of the COBRA 1X-2, continuation

Electrical operation (with electrical control)

- For remote control of the COBRA 1X-2
- The COBRA 1X-2 can be switched on and off at any time via the electrical 3/2-way valve (pos. 14).
- During one lubrication cycle, the COBRA 1X-2 changes between the following operating states:
 1. waiting position (see page 16)
 2. pick-up phase and lubrication phase (see pages 17 & 18)
 3. end of lubrication phase (see page 19)
 4. pull-back movement (see page 20)
 5. waiting position (see page 16)
 6. pick-up phase and lubrication phase, etc.

Electrical interval operation (with electrical control and sensor on the pick-up cylinder)

- If the supply speed of the transport chain exceeds the fastest lubrication cycle sequence of the COBRA 1X-2, only every second or third chain roller must be lubricated. This results in the following cycle of operating states:
 1. off position (see page 15)
 2. waiting position (see page 16)
 3. pick-up phase and lubrication phase (see pages 17 & 18)
 4. end of lubrication phase (see page 19)



6001a02

NOTE

In this operating state, the 3/2-way valve is switched into the off position by means of the sensor on the pick-up cylinder (pos. 2.9, fig. 27, page 30) if the operating state changes from "Sensor ON" to Sensor OFF".

5. pull-back movement (see page 20)
 6. off position (see page 15)
 7. waiting position, etc.
- The duration of the off positions must be actuated by means of an external control via the 3/2-way valve (pos. 14). The sensor signal switches the 3/2-way valve idle.
 - The pick-up arm remains in the off position until the re-start.
 - Depending on the adjustment of the actuating angle (see page 13, fig. 7, pos. 4.3), the throttle check valve (pos. 15) and the control sensory mechanism, every sixth operating state (6. = waiting position) can be suppressed.

Termination of readiness for operation

- When switching off the air supply via the 3/2-way valve, the COBRA 1X-2 changes into the off position (see page 15).
- Thereby the compression springs (pos. 1.2 and 2.3) remove the lubrication head (pos. 1) and the pick-up arm from the transport chain.
- The pick-up rollers (see page 15, pos. 2.1) are out of the catchment area of the chain rollers (see page 15, fig. 10, pos. A).

Maintenance, Repair and Functional Tests

6.3A-18004-B05

Maintenance



6001a02

NOTE

Whenever work is performed on the centralized lubrication system, special attention should be paid to absolute cleanliness. Dirt will cause failure of the system!

IMPORTANT

To clean the system, use petroleum spirit or petroleum. Do not use Tri, Per or similar solvents or polar or organic solvents such as alcohol, methanol, acetone, etc.

- Protect the COBRA 1X-2 against serious contamination, excessive influence of liquids or humidity and falling objects.
- Lubricate the sliding surfaces of the COBRA 1X-2 at the latest after 50,000 lubrication strokes or at least five times a year.
 - Sliding surfaces are found:
 - on the lubrication head (see page 31, pos. 1)
 - on the pick-up arm (pos. 2)
 - on the bearings of the slewing cranks (pos. 4.1)
 - For this purpose use commercial machine oil for sliding surfaces.
 - Differentiate between the friction pairings steel-steel and steel-plastic.

Repairs

- For repair works on the lubrication device use only original SKF spare parts.
- In case of warranty or for bigger repairs, send the lubrication device to the manufacturer.
- Contact:
See rear side of this User Manual.

Functional Test

When lubrication is active (see pages 15 to 21):

- During the pull-back movement (see page 20) a short drop in pressure can be stated on the pressure gauge of the lubricant supply.
- The functioning of the COBRA 1X-2 can be controlled via the movement of the metering pin (see page 21, pos. 1.9).
- Check whether the nozzle coupler (see page 21, pos. 1.1) contacts the lubrication fitting centrally. Make sure that no lubricant leaks out during the lubrication phase (see phase 18).
- Carry out a spot check to verify the proper condition of the lubrication fittings on the transport chain.

Troubleshooting

Fault: No or insufficient lubricant supply

Cause:	Remedy:
• Metering of lubricant is set to zero or too little supply value	➤ Verify adjustment of output and correct if necessary (see page 14, item 7).
• Lubricant inlet pressure too low (see page 30, fig. 27, pos. 3)	➤ Check pump function; if necessary, increase pump pressure (see page 26, chapter "Technical Data").
• Distance from lubrication head (pos. 1) to lubrication fitting on the chain roller is too big	➤ Control mounting position of the COBRA 1X-2 (see pages 11 and 12, item 1 to 4).
• Slewing distance of the slewing cranks (pos. 4.1) is too short	➤ Verify adjustments and correct if necessary (see page 13, item 5).
• The pick-up roller (pos. 2.1) pushes the chain roller off the lubrication head (pos. 1)	➤ Check adjustment of pick-up stroke and correct if necessary (see page 12, chapter "Adjust pick-up stroke").
• Lubrication head cylinder (pos. 9.2) does not press the lubrication head (pos. 1) onto the lubrication fitting on the chain	➤ Verify function of cylinder and corresponding valve (pos. 17) as well as of line connections. Further check mechanical connection between lubrication head and lubrication head cylinder and replace defective parts if necessary.
• Lubrication head (pos. 1) presses the chain roller too much into the moving direction of the lubrication head stroke	➤ Guide the chain (see page 10: "Guidance of the conveyor belt: horizontal guidance").

(Indications of positions without reference to figure or page refer to figure 27 & parts list, see pages 30 & 31)

Troubleshooting, continuation

6.3A-18004-B05

Fault: Lubrication head (pos. 1) and pick-up arm (pos. 2) do not move into waiting position (see page 15)

Cause:	Remedy:
<ul style="list-style-type: none"> 3/2-way valve (pos. 14) does not actuate 	<ul style="list-style-type: none"> ☞ Check air connections, and for the version with electrically operated 3/2-way valve (pos. 14) also check the electrical connections. ☞ Check the functioning of the valve and replace 3/2-way valve (pos. 14) if necessary. ☞ For the version with drive via chain sensor: Check the functioning of the proximity switch "chain sensor" and its electrical connections to the 3/2-way valve (pos. 14).
<ul style="list-style-type: none"> 5/2-way valve (pos. 13) does not switch to off position 	<ul style="list-style-type: none"> ☞ Verify mounting position of the 5/2-way valve (pos 13) and the actuating angle (pos. 4.3) and correct if necessary (see page 13, item 5). ☞ Check the functioning of the valve and replace 5/2-way valve (pos. 13) if necessary.
<ul style="list-style-type: none"> Throttle check valve (pos. 15) clogged 	<ul style="list-style-type: none"> ☞ Verify the functioning of the throttle check valve (pos. 15) by unscrewing the throttle screw; replace throttle check valve if necessary.
<ul style="list-style-type: none"> Cylinder (pos. 2.2) does not extract 	<ul style="list-style-type: none"> ☞ Check the functioning of the cylinder, air pressure and air connections; if necessary replace cylinder (pos. 2.2).
<ul style="list-style-type: none"> Mechanical connection interrupted between cylinder (pos. 2.2) and lubrication head (pos. 1) and/ or pick-up arm (pos. 2) 	<ul style="list-style-type: none"> ☞ Verify mechanical connections.

Fault: Pick-up rollers (pos. 2.1) do not go deep enough or too deep into the catchment area of the chain rollers

Cause:	Remedy:
<ul style="list-style-type: none"> Wrong COBRA 1X-2 mounting position 	<ul style="list-style-type: none"> ☞ Check COBRA 1X-2 mounting position and correct if necessary (see pages 11 and 12, items 1 to 4).
<ul style="list-style-type: none"> Pick-up stroke initiated by the cylinder (pos. 2.2) is wrong 	<ul style="list-style-type: none"> ☞ Verify adjustment of the pick-up stroke (see page 12, chapter "Adjust pick-up stroke").

Fault: Lubrication head (pos. 1) does not move far enough towards the lubrication point

<ul style="list-style-type: none"> Wrong COBRA 1X-2 mounting position 	<ul style="list-style-type: none"> ☞ Check the COBRA 1X-2 mounting position and correct if necessary (see pages 11 and 12, items 1 to 4).
<ul style="list-style-type: none"> Angle α (see fig. 7: Adjustment of the swiveling distance...) adjusted wrongly in the off position of the COBRA 	<ul style="list-style-type: none"> ☞ Verify angle α and correct if necessary (see technical data: factory setting $\alpha = 25.5^\circ$). Then verify mounting position of the COBRA 1X-2 and correct if necessary (see pages 11 and 12, items 1 to 4).
<ul style="list-style-type: none"> Wrong functioning of lubrication head cylinder (pos. 9.2) 	<ul style="list-style-type: none"> ☞ Check the functioning of the cylinder, the corresponding valve (pos. 17) and their line connections as well as the mechanical connection between the lubrication head and lubrication head cylinder. Replace defective parts if necessary.

Fault: Nozzle coupler (pos. 1.1) does not hit the lubrication fitting of the chain roller

Cause:	Remedy:
<ul style="list-style-type: none"> Wrong COBRA 1X-2 mounting position 	<ul style="list-style-type: none"> ☞ Check the COBRA 1X2 mounting position and correct if necessary (see pages 11 and 12, items 1 to 4).
<ul style="list-style-type: none"> Wrong distance between pick-up rollers (pos. 2.1) and lubrication head (pos. 1) 	<ul style="list-style-type: none"> ☞ Correct distance by adjusting the pick-up arm (pos. 2.6; see page 12, chapter "Adjust distance nozzle coupler – pick-up rollers").
<ul style="list-style-type: none"> Lubrication fitting is not positioned in the center of the chain roller 	<ul style="list-style-type: none"> ☞ Make sure that the lubrication fittings are center-positioned on the chain rollers.
<ul style="list-style-type: none"> Chain rollers have different diameters 	<ul style="list-style-type: none"> ☞ The transport chain must be equipped with chain rollers of equal diameters by the user of the system.

(Indications of positions without reference to figure or page refer to figure 27 & parts list, see pages 30 & 31)

Troubleshooting, continuation

6.3A-18004-B05

Fault: Lubricant leaks out between the nozzle coupler (pos. 1.1) on the lubrication head (pos. 1) and the lubrication fitting on the chain roller

Cause:	Remedy:
<ul style="list-style-type: none"> The nozzle coupler (pos. 1.1) does not hit the lubrication fitting of the chain roller in its center 	<ul style="list-style-type: none"> ➔ See fault "Nozzle coupler (pos. 1.1) does not hit the lubrication fitting of the chain roller".
<ul style="list-style-type: none"> Pressure force of the nozzle coupler (pos. 1.1) to the lubrication fitting of the chain roller is too little 	<ul style="list-style-type: none"> ➔ Check inlet pressure and correct if necessary (see page 26, chapter "Technical Data").
<ul style="list-style-type: none"> Lubrication fitting of the chain roller is damaged and/ or clogged 	<ul style="list-style-type: none"> ➔ The user must ensure to bring the lubrication fittings into full working order.

Fault: Pick-up rollers (pos. 2.1) don't go into the catchment area of the transport chain right before each chain roller

Cause:	Remedy:
<ul style="list-style-type: none"> Moving procedure too slow 	<ul style="list-style-type: none"> ➔ Verify inlet pressure and correct if necessary (see page 26, chapter "Technical Data"). ➔ Increase reverse travel speed (see page 13, item 6). ➔ Reduce swiveling distance of the slewing cranks (pos. 4.1; see page 13, item 5).

Fault: Slewing cranks (pos. 4.1) go into the safety notch (pos. 5)

Cause:	Remedy:
<ul style="list-style-type: none"> Swiveling distance of slewing cranks (pos. 4.1) is too big 	<ul style="list-style-type: none"> ➔ Reduce swiveling distance of slewing cranks (pos. 4.1; see page 13, item 5).

Fault: COBRA swivels against the proposed supply direction of the transport chain (see pos. 7 and 8)

Cause:	Remedy:
<ul style="list-style-type: none"> Wrong chain running direction 	<ul style="list-style-type: none"> ➔ The user of the system must ensure the correct chain running direction.

Fault: COBRA swivels in the proposed supply direction of the transport chain (see pos. 7 and 8)

Cause:	Remedy:
<ul style="list-style-type: none"> Slewing cranks (pos. 4.1) engaged in safety notch (pos. 5) 5/2-way valve (pos. 13) does not actuate 	<ul style="list-style-type: none"> ➔ Check the actuating angle (pos. 4.3) as well as position and function of the 5/2-way valve (pos. 13): If the slewing cranks (pos. 4.1) are positioned in the safety notch (pos. 5) the 5/2-way valve (pos. 13) must actuate reliably.

Fault: Lubricant leaks from the relief valve (pos. 16)

Cause:	Remedy:
<ul style="list-style-type: none"> Pump pressure is too high 	<ul style="list-style-type: none"> ➔ Adjust pump pressure (see page 26, chapter "Technical Data").
<ul style="list-style-type: none"> Relief valve (pos. 16) defective or contaminated 	<ul style="list-style-type: none"> ➔ Replace relief valve (pos. 16).

(Indications of positions without reference to figure or page refer to figure 27 & parts list, see page 30 & 31)

Technical Data

6.3A-18004-B05

COBRA 1X-2



6001a02

NOTE

An operation of the COBRA 1X-2 is admissible only with oiled air.

Air connection..... G 3/8
Lubricant connection G 3/8
Inlet air pressure 5.5 to 6 bar
Inlet lubricant pressure:
- for grease 120 to 240 bar
- for oil 40 to 80 bar



6001a02

NOTE

Opening pressure of the relief valve on the lubricant inlet: 270 bar +5% / -10%

Cylinder stroke (pos. 2.2 and pos. 9.3):
- pick-up cylinder stroke infinitely variable
..... from 60 to 75 mm
- max. possible lubrication head cylinder stroke 50 mm

Factory-set stroke of the slewing cranks in
the direction of the transport chain 27 mm
(see fig. 7: factory-setting of angle α : 25.5°)



6001a02

NOTE

Adjustment possible by modifying the mounting position of the dashpot (pos.4.6).

Control stroke of the lubrication head rod (pos. 1.3)
into the lubrication head housing (pos. 1.4) 8 mm

Output ¹⁾ infinitely adjustable 0.2 to 2.0 cm³/stroke
Lubricant ¹⁾ NLGI 2
- grease
- lubrication oil

..... min. 40 mm²/s (cST) at operating temperature
Operating temperature - 20 °C to + 60 °C
max. stroke frequency 1 lube cycle / second

$$strokefrequency = \frac{chainspeed}{chainpitch}$$

Max. chain speed ¹⁾ 0.4 m/s
¹⁾ The output depends on the chain speed and on the kind of lubricant.

Max. admissible excursion of the lubrication fitting
- horizontal ± 25 mm
- vertical ± 1.5 mm

Weight of the lubrication device 26 kg
Sound level < 70 dB/A

Data for electrically operated 3/2-way valve (option)
- Supply voltage 24 VDC ± 10 %
- Power consumption
(without control or additional equipment) 10 W
- Type of protection with mounted plug DIN 43650 IP 65

6.3A-18004-B05

The technical drawing illustrates the H 75-0.5 hydraulic pump assembly from two perspectives: a top view (left) and a side view (right).

Top View Dimensions:

- Overall width: A , $B^{(1)}$, $C^{(1)}$
- Distance from left edge to centerline: $D^{(1)}$, $E^{(1)}$
- Mounting plate height: 104 , 124 ± 20 , 172 ± 20
- Port locations labeled **F** and **G**.

Side View Dimensions:

- Total length: $455^{(1)}$
- Hub diameter: $\text{Hub } 60-75\text{mm}$
- Maximum hub length: $\text{max. } 225$
- Angle of mounting plate: $\alpha = 90^\circ$ and $\alpha = 25.5^\circ$
- Port diameters: $\phi 11$, $\phi 15$
- Port angles: 25.5° , $75 \pm 0.5^\circ$
- Internal component dimensions: 100 , 70 , 175 , 15
- Motor dimensions: 270 , 300 , 420 , $\text{ca. } 670$
- Pump body dimensions: $245 \pm 5^{(1)}$, 114 , 10 ± 2.5 , 36.5 ± 2.5 , 10 ± 0.5
- Bottom flange dimensions: 120 , $\text{ca. } 120$

A - customized B¹⁾ - 421 mm in off position D¹⁾ - 196 mm in off position F - lubricant inlet G 3/8
H - dashpot retracted C¹⁾ - 447.5 mm in waiting position E¹⁾ - 222.5 mm in waiting position G - air inlet G 3/8
¹⁾ dimensions for nozzle for hydraulic lubrication fitting minus 10 mm

Technical Data, continuation

6.3A-18004-B05

Dimensions, installation from the bottom

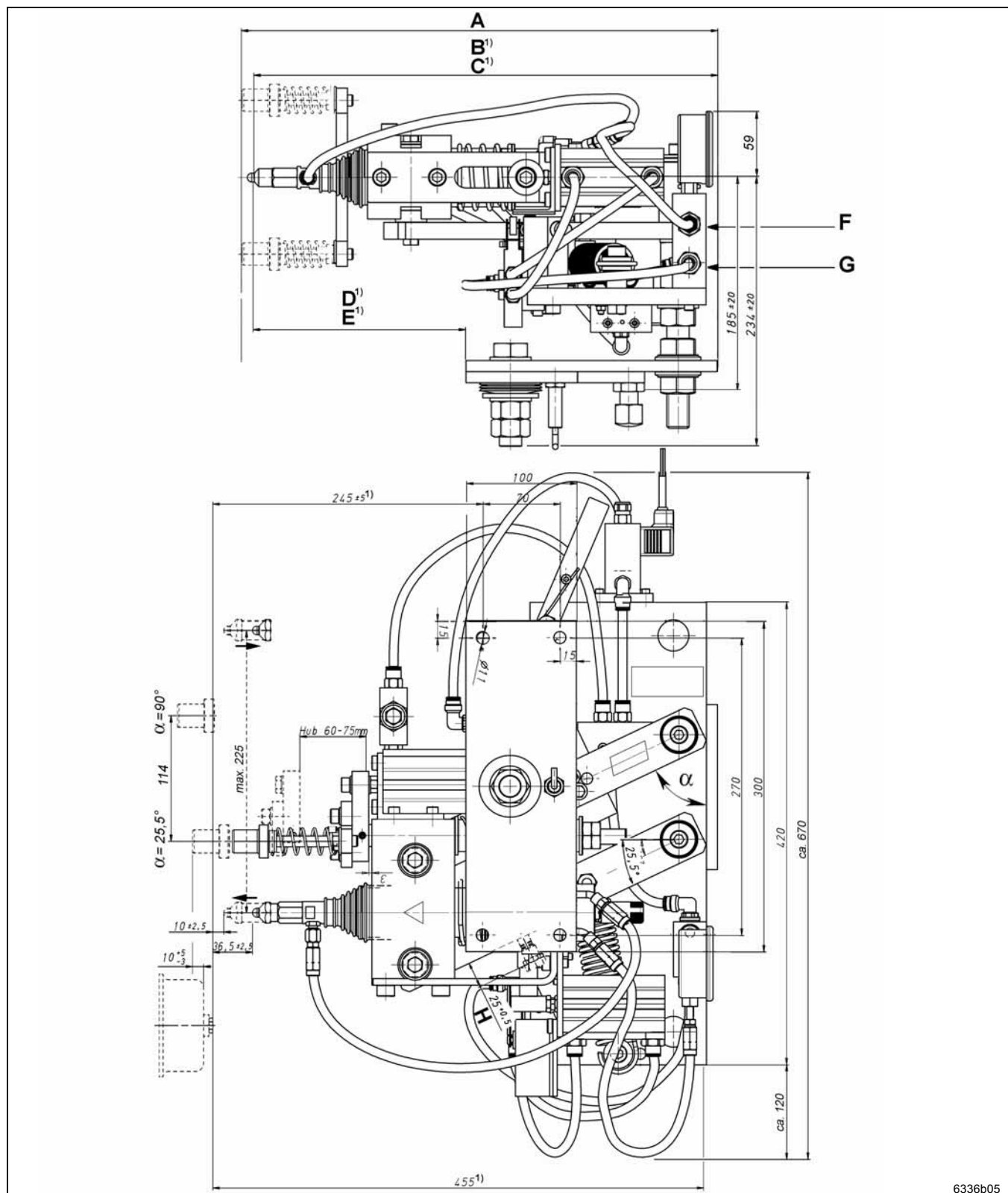


Fig. 26 View in off position, installation from the bottom, flush coupler

- | | | | |
|-----------------------|------------------------------------|------------------------------------|-----------------------------|
| A - customized | B¹) - 421 mm in off position | D¹) - 196 mm in off position | F - lubrication inlet G 3/8 |
| H - dashpot retracted | C¹) - 447.5 mm in waiting position | E¹) - 222.5 mm in waiting position | G - air inlet G 3/8 |

¹) dimensions for nozzle for hydraulic lubrication fitting minus 10 mm

Type Code

6.3A-18004-B05

Examples of Type Designations



6001a02

NOTE

The different versions of the COBRA 1X-2 can be ordered according to this type code.

Chain lubrication device COBRA

Series (version) 1X-2

L = left-side version ¹⁾ (= from the right to the left)
R = right-side version ¹⁾ (= from the left to the right)

¹⁾ in the moving direction of the transport chain

2 = possible horizontal transport chain variation up to max. 50 mm

O = installation from the top
U = installation from the bottom

Nozzle coupler on the lubrication head
H = nozzle for hydraulic lubrication fitting for
S = flush coupler for flush lubrication fitting
F = flat coupler

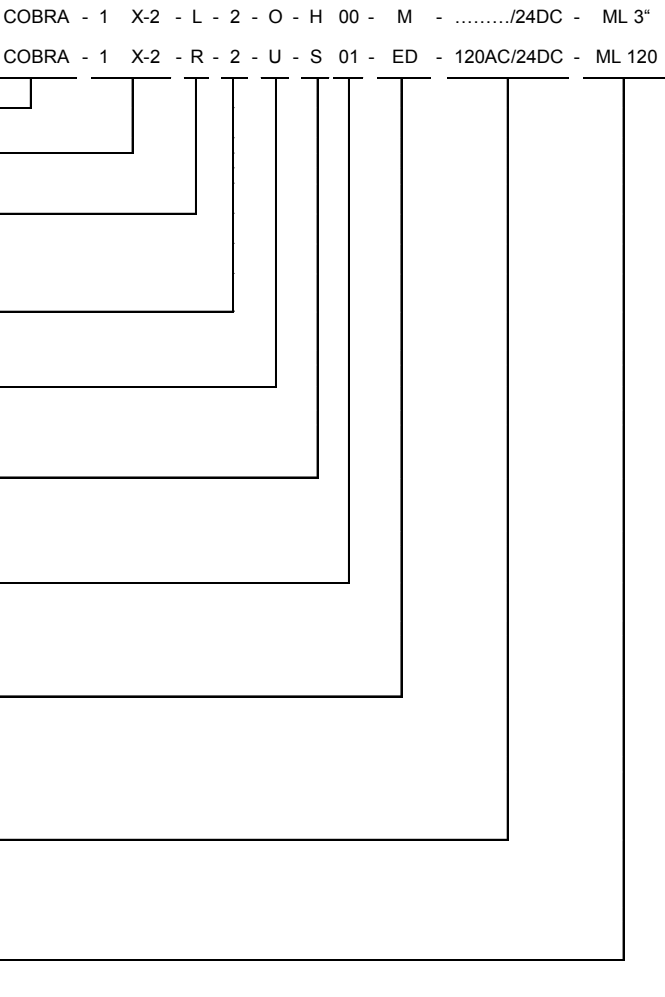
Nozzle coupler versions
00 = standard
01...99 = special version

Switching on and off - Function
M = manual
ED = electrical (remote control for permanent operation)
EI = electrical (remote control for interval operation)
with proximity switch on the pick-up cylinder

Connection voltage for solenoid valve
24DC = 24 VDC
120AC = 120 VAC

Connection voltage for sensors
24DC = 24 VDC

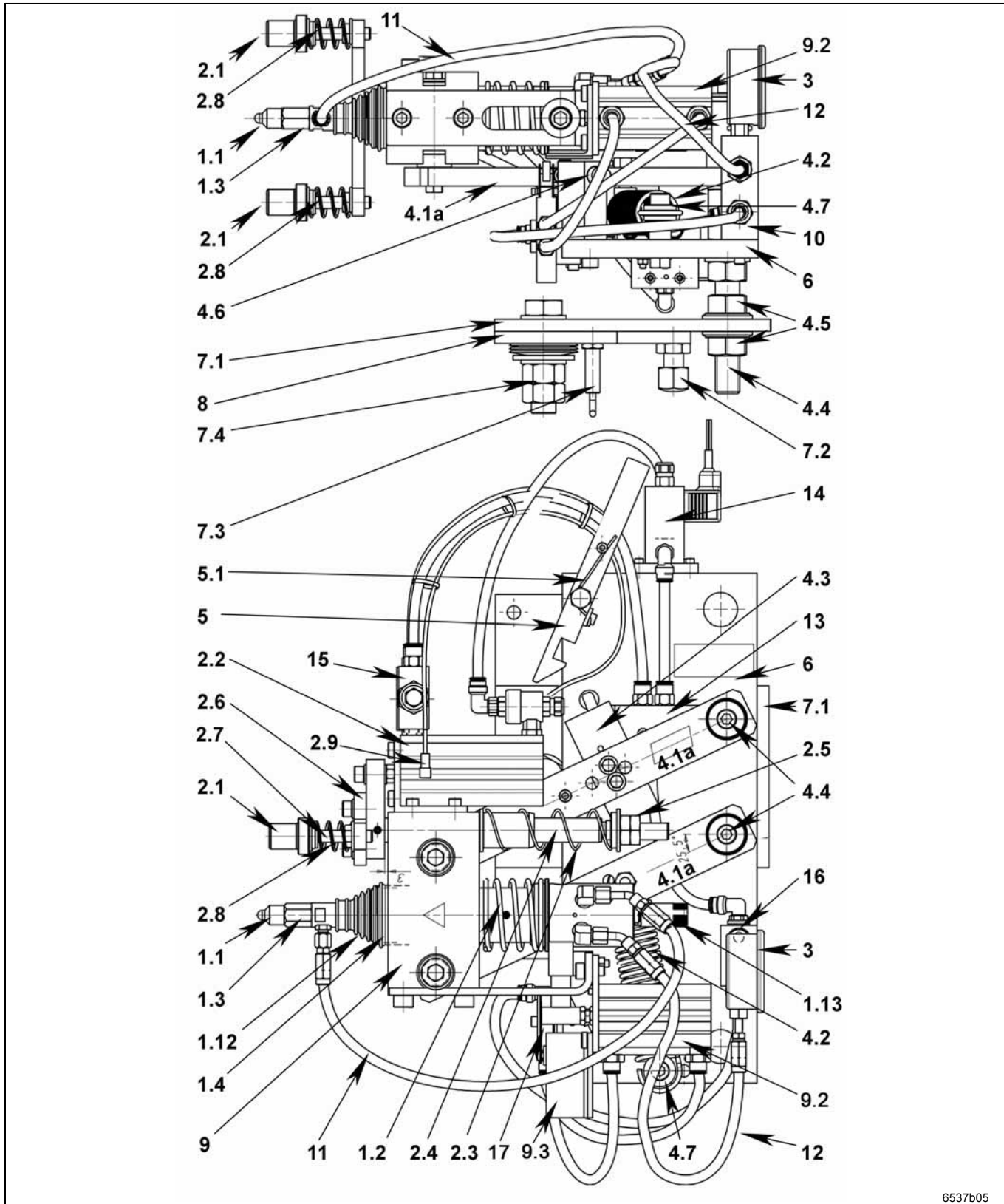
Pick-up arm
3" = for rivetless detachable chain 3 "
120 = for roller diameter 120 mm



Components and Kits

6.3A-18004-B05

COBRA 1X-2 in off-position, installation from the bottom



6537b05

Fig. 27 COBRA 1X-2 in off-position, installation from the bottom

Components and Kits, continuation

6.3A-18004-B05

Parts List

Item	Description	Qty.	Part No.
1	Lubrication head assy. - version: flush coupler (lateral view) - version: nozzle for hydraulic lube fitting (front view)	1	581-32744-1 581-32743-1
1.1	Flush coupler, option: nozzle f. hydr. lube fitting	1	581-32592-1 581-32609-1
1.2	Compression spring for lubrication head	1	218-70204-9
1.3	Lubrication head rod	1	1)
1.4	Lubrication head housing	1	1)
1.5	Control piston	1	1)
1.6	Supply piston	1	1)
1.7	Compression spring for control piston	1	1)
1.8	Compression spring for lubrication head rod	1	1)
1.9	Metering pin	1	1)
1.10	Metering screw	1	2)
1.11	Fastening screw	1	2)
1.12	Bellows	1	481-70497-1
1.13	Protective cap for metering device	1	420-24818-1
1.14	Metering device assy.	1	520-34011-1
2	Pick-up arm assy.	1	3)
2.1	Pick-up roller	1	acc. order
2.2	Cylinder for pick-up	1	253-10321-1
2.3	Compression spring for pick-up	1	218-10204-8
2.4	Guide bar for pick-up	1	3)
2.5	Stop for pick-up	1	3)
2.6	Pick-up arm	1	acc. order
2.7	Pick-up bolt	1	acc. order
2.8	Compression spring for pick-up	1	acc. order
2.9	Proximity switch ⁶⁾	1	234-13177-1
3	Pressure gauge	1	234-13132-7
4.1	Slewing crank assy.		↓
4.1a	Slewing crank, installation from the bottom	2	581-32719-1
4.1b	Slewing crank, installation from the top	2	581-32721-1

Item	Description	Qty.	Part No.
4.2	Pull-back spring	1	218-10312-1
4.3	Actuating angle for pick-up cyl.	1	481-70535-1
4.4	Threaded rod M20	2	4)
4.5	Nut M20	4	207-14176-2
4.6	Dashpot	1	233-10051-1
4.7	Pull-back spring bearing roller	1	481-70560-1
5	Safety notch	1	481-70551-1
5.1	Leg spring	1	300-17322-1
6	Base plate	1	481-70554-1
7	Slewing device with mounting plate	1	581-32639-1
7.1	Slewing plate	1	5)
7.2	Thrust piece	1	5)
7.3	Proximity switch (option)	1	234-13134-3
7.4	Slewing axis	1	5)
8	Mounting plate	1	5)
9	Pick-up and lubrication head bearing assy. - Version piston Ø = 40 mm - Version piston Ø = 50 mm	1	581-32802-1 581-32785-1
9.1	Rubber damper	1	233-13073-7
9.2	Cylinder for lubrication head - Version piston Ø = 40 mm - Version piston Ø = 50 mm	1	253-10321-4 253-10106-4
9.3	Actuating angle for lubrication head cylinder	1	3)
10	Connecting block assy.	1	581-32608-1
11	Pressure line, lubrication head, outlet	1	666-36998-2
12	Pressure line, lubrication head, inlet	1	666-36998-2
13	5/2-way valve, mechanically operated	1	235-10311-1
14	3/2-way valve - Version mechanically operated - Version electrically operated	1	253-10322-1 253-10322-2
15	Throttle check valve	1	253-14262-7
16	Relief valve	1	235-14343-2
17	5/2-way valve - mechanically operated	1	235-10311-3

Subject to modifications

- 1) included in kit item 1
2) included in kit item 1.14
3) included in kit item 9
6) version with switch on and off function (see item "EI" in the type code, page 30)

- 4) included in kit item 4.1
5) included in kit item 7

EC Declaration of Conformity

(in the sense of the Machinery Directive 2006/42/EC, Annex II Part 1 B)

The manufacturer

SKF Lubrication Systems Germany GmbH, Heinrich-Hertz-Str. 2-8, D - 69190 Walldorf

hereby declares that the incomplete machine

Designation: Lubrication device for moving lubrication points

Type: Cobra 1x2

Item number: 681-xxxxx-x

Year of construction: See type plate

satisfies all basic health & safety requirements of the Machinery Directive 2006/42/EC listed below

1.1.2 ○ 1.1.3 ○ 1.3.2 ○ 1.3.4 ○ 1.51 ○ 1.56 ○ 1.58 ○ 1.59 ○ 1.61 ○ 1.71 ○ 1.7.3 ○ 1.7.4

when launched.

The special technical documents according to Annex VII Part B of this Directive have been compiled. We undertake to transmit, in response to a reasoned request by the national authorities, the special documents for this partly completed machine. The head of standardisation is the authorised agent for the technical documentation. For the address, please refer to the manufacturer.

The following standards were also applied in the respective applicable areas:

2011/65/EU RoHS II

2014/30/EU Electromagnetic Compatibility | Industry

Harmonised / other standards:

DIN EN ISO 12100	2011	DIN EN 60947-5-1	2010	DIN EN 61000-6-2	2006	DIN EN 61000-6-4	2011
DIN EN 809	2012	DIN EN 61131-2	2008	Amendment	2011	DIN EN 60947-5-1	2010
DIN EN 60204-1	2007	Amendment	2009	DIN EN 61000-6-3	2011		
Amendment	2010	DIN EN 60034-1	2011	Amendment	2012		
DIN EN 50581	2013	DIN EN 61000-6-1	2007				

The incomplete machine may only be commissioned once it has been established that the system into which the incomplete machine is to be installed satisfies all provisions of the Machinery Directive 2006/42/EC and all other applicable guidelines.



Walldorf
2016-02-15

Jürgen Kreutzkämper
Manager R&D Germany
SKF Lubrication Business Unit