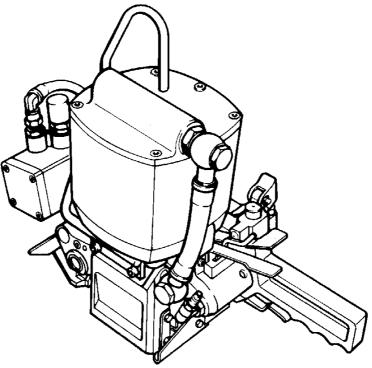


**OPERATION MANUAL / SPARE PARTS LIST** 

# PNEUMATIC STEEL STRAPPING TOOL MODEL A383.0001

**13.6740**.01



#### **CE Declaration of conformity**

We declare that the machine A383 is in conformity with the following standard or standardised documents: 98/37/EEC

> FROMM Holding AG Hinterbergstrasse 26 CH - 6330 Cham 27.03 2001

R.Fromm Director





1719 Kenny Rd Columbus, OH, 43212 CE

	INDEX	PAGE
1	SAFETY INSTRUCTIONS	3
2	WARRANTY CONDITIONS AND LIABILITY	4
3	APPROPRIATE USE	4
4	CHART OF TYPES	4
5	TECNICAL DATA	5
6	INSTALLATION	6
7	OPERATING CONTROLS	7
<b>8</b> 8.1 8.2 8.3 8.4 8.5	OPERATION Feeding the strap around the package Loading the strap Tensioning the strap Sealing the strap Removing the tool from the tensioned strap	7 8 8
9	SEAL CONTROL	9
10	SEAL ADJUSTMENT	10
<b>11</b> 11.1 11.2 11.3 11.4	MAINTENANCEAir-unitOil level in the pressure intensifier.CleaningLubrication	11 12
<b>12</b> 12.1 12.2 12.3 12.4	Exchange of wearing parts Exchange of punch and die halves Exchange of the feed wheel Exchange of the gripper Exchange of cutter	13 13
<b>13</b> 13.1 13.2	CONTROL SYSTEM Pneumatic schematic A383.0001 Details of the control system	
<b>14</b> 14.1	Functional characteristics Adjustments	<b>17</b> 18
15	SPARE PARTS LIST 13.6740.01	19



# **1** SAFETY INSTRUCTIONS

Read these instructions carefully. Failure to follow these instructions can result in severe personal injury.



#### Eye injury hazard

Failure to wear safety glasses with side shields can result in severe eye injury or blindness. Always wear safety glasses with side shields which conform to ANSI Standard Z87.1.



#### Operation

Tool must not be used by persons not properly trained in their use. Before tensioning strap, read and understand the tool operating instructions. Failure to follow the operating instructions or improper load positioning could result in strap breakage.

Become familiar with your tool and keep fingers away from areas that can pinch or cut.

#### Joints

You are fully responsible to review the joints made by your tool. Become familiar with the seal control and seal adjustment described in this operation manual. Misformed joints may not secure the load and could cause serious injury. Never handle or ship any load with improperly formed joints.

#### **Dispensing strap**

Only dispense strap from a dispenser specifically designed for strap.

Tuck strap end back into dispenser when not in use.

#### **Protective gloves**

When handling strap, always wear protective gloves.



#### Strap warnings

Never use strap as a means of pulling or lifting loads. Failure to follow these warnings can result in severe personal injury.

#### Strap breakage hazard

Improper operation of the tool, excessive tensioning, using strap not recommended for this tool or sharp corners on the load can result in a sudden loss of strap tension or in strap breakage during tensioning, which could result in the following:

- A sudden loss of balance causing you to fall.
- Both tool and strap flying violently towards your face.

#### Note as follows:

- If the load corners are sharp, use edge protectors.
- Place the strap correctly around a properly positioned load.
- Positioning yourself in-line with the strap, during tensioning and sealing, can result in severe personal injury from flying strap or tool. When tensioning or sealing, position yourself to one side of the strap and keep all bystanders away.
- Use the correct strap quality, strap width, strap gauge and strap tensile strength recommended in this manual for your tool. Using strap not recommended for this tool can result in strap breakage during tensioning.

#### Cutting tensioned strap

When cutting strapping, use the proper strapping cutter and keep other personnel and yourself at a safe distance from the strap. Always stand to side of the strap, away from the direction the loosened strap end will fly. Use only cutters designed for strap and never hammers, pliers, hacksaws, axes, etc.

#### Fall hazard

Keep your working area tidy. Untidiness of your working area may cause a risk of injury. Maintaining improper footing and/or balance when operating the tool can cause you to fall. Before tensioning and especially in elevated areas, always establish good balance. Both feet should be securely placed on a flat, solid surface, especially when working in elevated areas. Do not use the tool when you are in an awkward position.

Pay attention to the rules and regulations for preventions of accident which are valid for the work place.

#### **Tool hazards**

A well maintained tool is a safe tool!

Check tool regularly for broken or worn parts. Do not operate a tool with broken or worn parts.

Never modify any tool. Modification can result in severe bodily injury.



# 2 WARRANTY CONDITIONS AND LIABILITY

FROMM Holding AG warrants all its strapping tools and machine heads during a period of 90 days from the date of sale. The warranty includes all deficiencies clearly resulting from poor manufacturing or faulty materials. Damage claims as a result of production shutdowns and claims for damage to persons and to property resulting from warranty deficiencies cannot be asserted by the customer.

The warranty excludes:

- wearing parts,
- deficiencies resulting from improper installing, incorrect handling and maintaining the tool,
- · deficiencies resulting from using the tool without or with defective security- and safety devices,
- · disregard of directions in the operation manual,
- arbitrary modifications of the tool,
- · deficient control of wearing parts,
- deficient repair works of the tool.
- · Use of consumable products not recommended by FROMM Holding AG

We reserve the right to modify the product at any time in order to improve its quality.

# **3 APPROPRIATE USE**

The tool model A383 has been designed to strap packages with steel strapping exclusively.

The warranty / liability excludes:

- non appropriate use of the tool,
- disregard of directions in the operation manual,
- disregard of control- and maintenance instructions.

# 4 CHART OF TYPES

lten No		Model	Strap width	n Strap	o thickness	Max	. tension
				Uniflex	Ultraflex	kN	lbs.
13.670	)2	A383/19/150/0.80-0.9	90 19 mm / 3/4"	-	0.8 - 0.9mm/.031035"	15	3360
13.67	0	A383/25/100/0.80-0.9	90 25 mm / 1"	0.8 - 0.9mm/.031035	" 0.8 - 0.9mm/.031035"	10	2240
13.672	20	A383/25/150/0.80-0.9	90 25 mm / 1"	0.8 - 0.9mm/.031035	" 0.8 - 0.9mm/.031035"	15	3360
13.673	30	A383/25/150/1.0	25 mm / 1"	1 mm / .040"	-	15	3360
13.673	31	A383/25/150/1.3	25 mm / 1"	1.3 mm / .050"	-	15	3360
13.673	39	A383/32/100/0.63	32 mm /1 1/4"	-	0.63 mm / .025"	10	2240
13.674	10	A383/32/100/0.80-0.9	90 32 mm /1 1/4"	0.8 - 0.9mm/.031035	" 0.8 - 0.9mm/.031035"	10	2240
13.675	50	A383/32/150/0.80-0.9	90 32 mm /1 1/4"	0.8 - 0.9mm/.031035	" 0.8 - 0.9mm/.031035"	15	3360
13.676	60	A383/32/150/1.0	32 mm /1 1/4"	1 mm / .040"		15	3360
		•	•	of 850 N/mm <sup>2</sup> (123 000	. ,		
Ultraf	ex	= Strap with max.	tensile strength	of 1100 N/mm <sup>2</sup> (160 0	00 psi)		



## 5 TECNICAL DATA

#### **Dimensions without suspension bracket**

Length: 420 mm / 16.5"

Width: 195 mm / 7.6"

Height: 350 mm / 13.7"

Weight: 23.1 kg / 50.82 lbs

#### Sound information

The A-weighted equivalent continuous sound level at the work place of the machine operator is typical 78 dB (A). This value was determind according to DIN 45 635 T3 (11.85).

#### Vibration information

The weighted effective value of the acceleration typically amounts to less than  $2,5m/s^2$ . This value was determined according to DIN EN 28 662 T1 (01.93).

#### **Compressed air**

Joining thread:	G 1/4" min.		
Max. air pressure:	6 bar / 87 psi.		

#### **Air consumption**

Tensioning:	22 NI / 0.80 cu.ft uncompressed air per second with the air motor running.
Sealing:	12.3 NI / 0.44 cu.ft uncompressed air per cycle.

#### Steel strap

Width:	19 - 32 mm/ 3/4" - 1 1/4" (see chart of types).
Thickness:	0.63 mm - 1.3 mm / .025"050" (see chart of types).
Quality:	Fundamentaly the A383 allows the use of all current steel straps ranging from 700 to 1100 N/mm <sup>2</sup> (100 000 - 159 500 psi) in tensile (see chart of types). Strap with less than 600 N/mm <sup>2</sup> (87 000psi) in tensile is not suitable for the A383 tool.



# 6 INSTALLATION

#### **Compressed air connection**

The compressed air should be connected to the tool preferably by a quick disconnector.

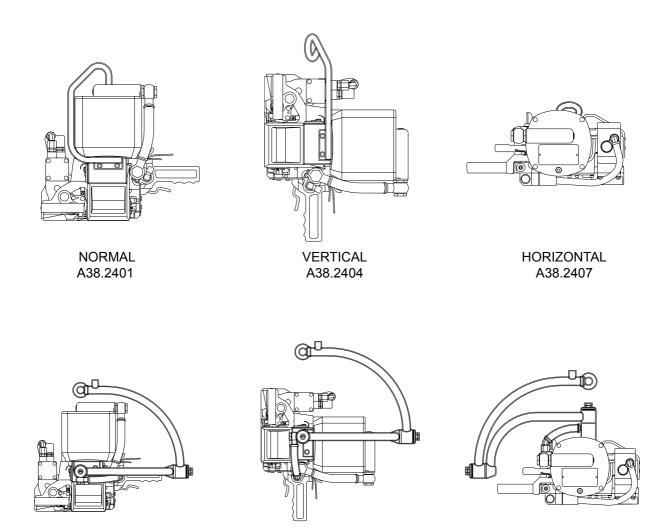
It is very important to clean the compressed air with an air unit consisting of a separator for water and dirt, a pressure regulator with a manometer and a lubricator.

The maximum length of the air tube between air unit and tool has to be 5 m / 15 ft.

#### **Suspension of tool**

It is possible to suspend the tool on a balancer using one of the various suspension brackets available. Depending on the application of the tool the appropriate suspension bracket is mounted.

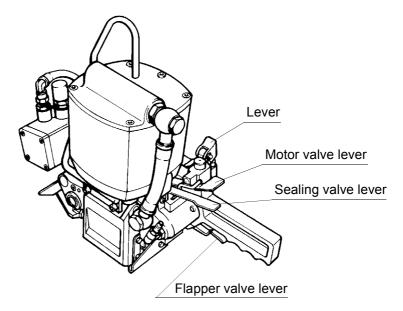
A38.2413 SUSPENSION UNIVERSAL (no picture)



NORMAL, VERTICAL, HORIZONTAL incl. air supply A38.2410

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# 7 OPERATING CONTROLS



# 8 OPERATION

# 8.1 Feeding the strap around the package

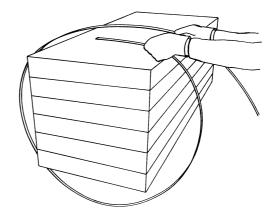
The strap is fed arround the package in the direction as shown in the illustration. The end of the strap is held tightly with the left hand and pulled firmly towards the operator with the right hand.



Always wear safety glasses with side shields which conform to ANSI Standard Z87.1.

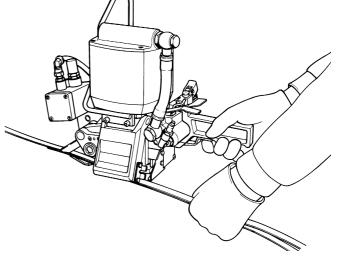


When handling strap, always wear protective gloves.



## 8.2 Loading the strap

Lift and hold the flapper valve lever with the index finger of the right hand. The left hand inserts the two straps lying precisely upon another into the tool until they hit the strap stops. The lower strap end must slightly protrude the end of the base plate. Release the flapper valve lever - the flapper closes and the feed wheel is lowered to the strap.



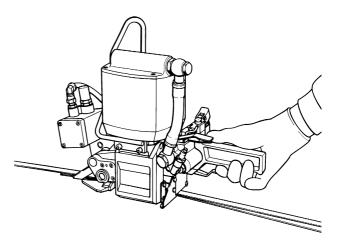


**Distributed By:** 

## 8.3 Tensioning the strap

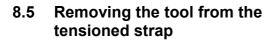
The motor valve lever is pressed down with the thumb of the right hand so that the catch locks. Let the tool tension until the motor stalls.

If the tensioning cycle has to be interrupted (faulty strapping, applying of corner protection angles) press the red lever.



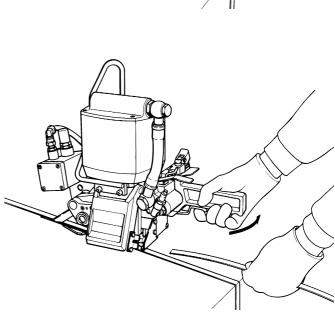
## 8.4 Sealing the strap

Hold the strap which is reeled off from the strap coil with the left hand . Press and hold down the sealing valve lever until the strap is cut off. Release the sealing valve lever.



Hold the cut strap end firmly with your left hand. Lift the flapper valve lever with the right hand and push the tool hard to the right from the tensioned strap.

Release the flapper valve lever.





## 9 SEAL CONTROL

A regular control of the seal is necessary. The seal can be checked visually and the person controlling can easily judge the quality of the seal. When checking the seal the following illustrations must be compared.

#### Correct seal

A correct seal must be conform to the illustration. This means that the depth with which the upper strap hooks into the lower one must be 1 - 1.5 mm in min. and 2 mm in max.. The upper strap must be sheared clean and the cutter must not leave scratch marks on the lower strap.



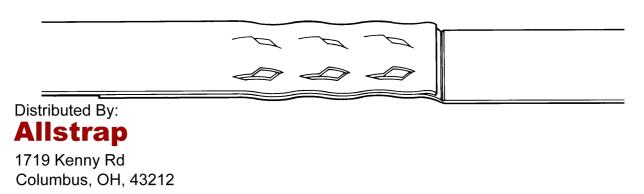
## Incorrect seal (the sealing mechanism is adjusted too high)

This stamped seal is not deep enough and the upper strap is not sheared. The tensile strength of this seal is not sufficient and the strapping must be taken away from the package. The tool must be readjusted immediately (see SEAL ADJUSTMENT).



#### Incorrect seal (the sealing mechanism is adjusted too low)

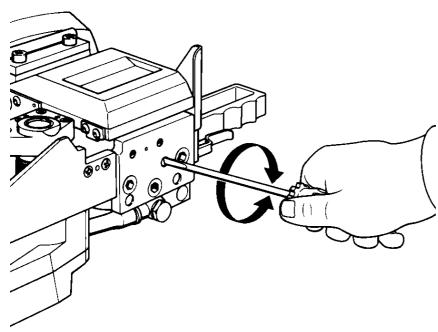
This stamped seal is too deep and the lower strap is scratched by the cutter. Although the tensile strength of this seal is sufficient the strapping must be taken away from the package because of the scratched lower strap. The tool must be readjusted immediately (see SEAL ADJUSTMENT).



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# **10 SEAL ADJUSTMENT**

The depth of the sealing mechanism and the cutter can be steplessly adjusted by turning the adjusting screw with a screw driver.



#### Sealing depth is excessive

Turn adjusting screw clockwise. A turn of  $90^{\circ}$  equals a stroke correction of 0.25 mm/.010".

## Sealing depth is insufficient

Turn adjusting screw counterclockwise. A turn of 90° equals a stroke correction of 0.25 mm/.010".

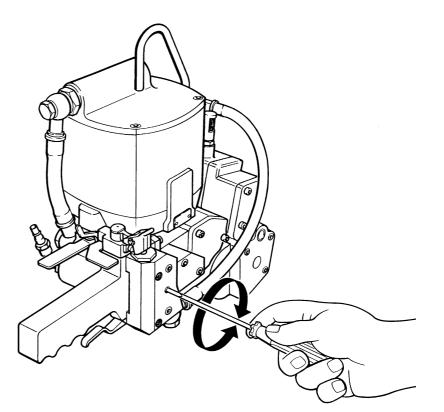
If low gauge and soft straps are used the sealless joint is not always properly formed (the straps do not interlock properly). In order to avoid inproper interlocking the timing of the interlock can be influenced by the adjustment of a throttle on the control valve body.

Under normal conditions the holding air throttle is screwed flush into the outside of the control valve body. If the straps do not interlock properly (one or two notches do not interlock at all) the throttle has to be turned in a clockwise direction.

#### Attention!

Adjust holding air throttle in such a way that no tension marks on the bottom of the seal caused by the punch will be noticed. If marks are noticed the punch might wear prematurely.





## **11 MAINTENANCE**

Depending on the working conditions and the use of the tool the following maintenance has to be made periodically:

#### 11.1 Air-unit

- Checking the air pressure daily.
- Checking the oil-level daily.
- The water separator must be emptied before it is full (unless automatic).
- The filter has to be cleaned following the instructions of the manufacturer of the air- unit.

## Oil for the air-unit

HL or CL ISO-VG 10

## 11.2 Oil level in the pressure intensifier

## Control

A proper operation of the tool is only warranted if there is the correct amount of oil in the pressure intensifier. The position of the piston in its idle position reveals whether there is enough, too much or not enough oil in the pressure intensifier. A flawless operation of the tool is guaranteed only if the amount of oil in the pressure intensifier is correct!

If there is too much oil in the pressure intensifier the position of the piston in its idle position is lower than the lower edge of the body (visible when flapper is open). As a result of this faulty position of the piston there is not enough space for the straps and the seal joint resp; it is difficult or impossible to insert the straps into the tool and to remove them from the tool resp..

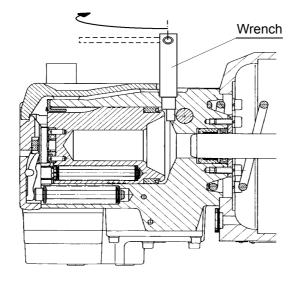
If there is not enough oil in the pressure intensifier the position of the piston in its idle position is higher than the lower edge of the body (visible when the flapper is open). As a result of this faulty position of the piston there is a risk that the stroke of the piston during the sealing action is too short and consequently the seal joint is not formed properly and the upper strap is not cut entirely in spite of the correct adjustment of the adjusting screw resp..

## Oil for the pressure intensifier in the tool

SAE 20 (for refilling)

## Refilling of oil into the pressure intensifier

- Turn tool with flapper in an upward position. Remove sealing screw.
- Introduce wrench (N7.3250) into boring with valve handle being parallel to the toggle, turn toggle by 90° (thus the sealing piston is moved into its correct position).
- Turn back the wrench and remove it.
- Fill in oil of type SAE 20 and let escape air bubbles. Screw in sealing screw again and tighten it.
- · Check the position of the sealing piston as per afore mentioned instructions.



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## 11.3 Cleaning

If impact of dirt and dust is considerable and if painted straps are used the feed wheel must be cleaned regularly. Normally it is sufficient to blow out this part by using an air gun.

## 11.4 Lubrication

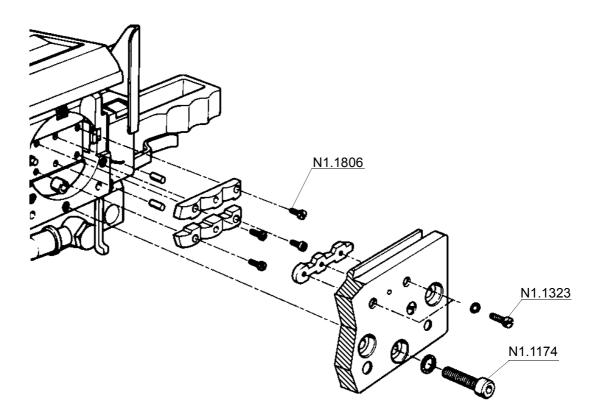
The gear is filled with MOLYKOTE BR 2 PLUS. Use the same type of grease after repairs. When being exchanged, all valve parts and other movable parts have to be greased with grease of type ESSO BEACON 2 or with any equivalent product.

# 12 Exchange of wearing parts

## 12.1 Exchange of punch and die halves

If in spite of a correct adjustment of the adjusting screw it is no longer possible to make a proper seal (see seal control) the base plate must be removed and the wear of the punch and the die halves must be examined.

If the cutting edges are destroyed or worn heavily (attention! the cutting edges of new punches and dies are also rounded slightly) the corresponding parts must be replaced.



## Important!

Make sure that the mounting surfaces are completely free from dirt before the new parts are installed.

After assembling the base plate, the base plate screws must be tightened using a torque wrench with a torque of 90 Nm.

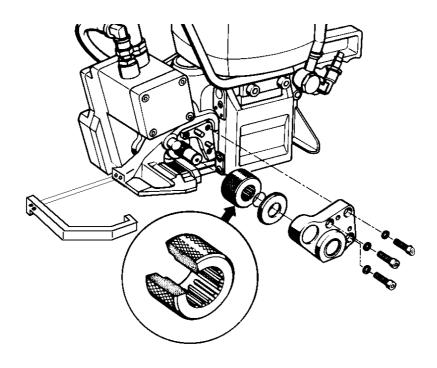
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The screws N1.1323 und N1.1806 have to be secured with Loctite 222.

## 12.2 Exchange of the feed wheel

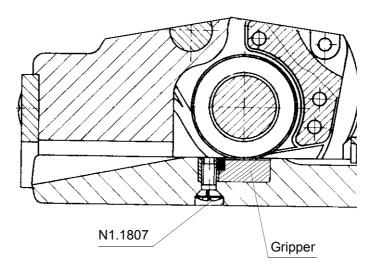
- Remove the left strap stop
- Unscrew the three screws and remove the bearing cover.
- Remove the front distance ring, the O-ring and the feed wheel from the feed wheel shaft.
- Assembling in opposite order.

#### Important! Take notice of the assembling position of the feed wheel.



## 12.3 Exchange of the gripper

- Remove the left strap stop and the bearing cover.
- Remove the front distance ring, the O-ring and the feed wheel from the feed wheel shaft.
- Remove cross-recess screw and holder so that the gripper can be removed.
- Clean the groove and firmly retighten the holder after insertion of the new gripper.
- Assembling in opposite order.

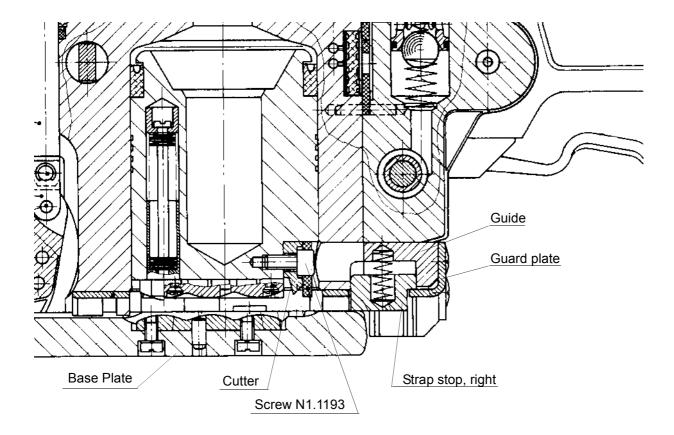


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Important! The screw N1.1807 has to be secured with Loctite 222..

## 12.4 Exchange of cutter

- Remove base plate, guard plate with guide and right strap stop.
- Using a hexagon socket spinner wrench to unscrew and remove cutter screw M6 x 12 across the appropriate boring in the sealing body.
- Replace cutter.
- Assemble in the opposite order.



Important! The screw N1.1193 has to be secured with Loctite 222.



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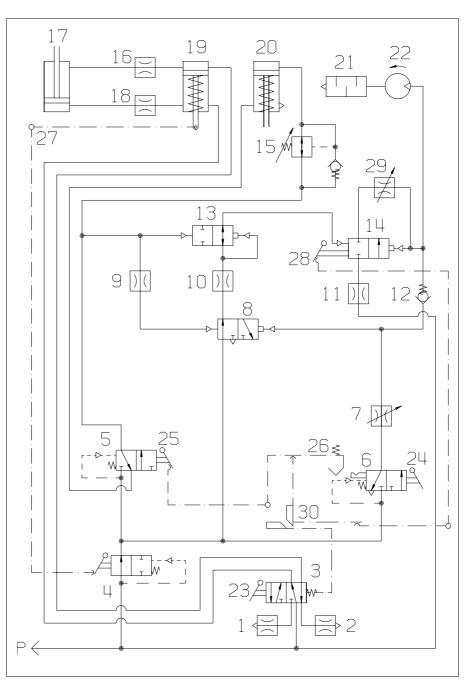
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#### **CONTROL SYSTEM** 13

#### 13.1 Pneumatic schematic A383.0001

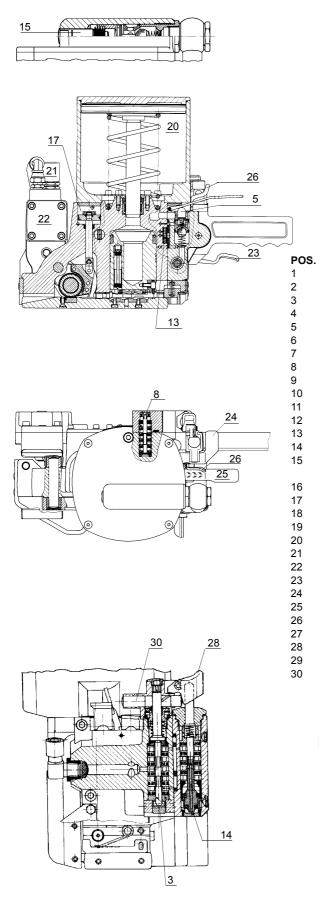
#### POS. DESCRIPTION

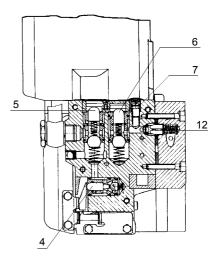
- Throttle 1,2 1
- 2 Throttle 1,2
- 3 Flapper valve
- Flapper security valve 4
- 5 Sealing valve
- 6 Motor valve
- 7 Throttle valve
- 8 Pilot valve
- 9 Throttle
- Throttle 1,8 10
- 11 Holding air throttle 2,0
- Non-return valve 12
- Diaphragm 13
- 14 Holding air valve
- Air-pressure-reduction-valve 15
- 16 Throttle 1,2
- Rocker cylinder 17
- 18 Throttle 1,2
- Flapper cylinder 19
- 20 Sealing cylinder
- Muffler 21
- 22 Air Motor
- 23 Flapper valve lever
- 24 Motor valve lever
- 25 Sealing valve lever
- 26 Catch
- 27 Flapper
- 28 Lever
- 29
- Holding air throttle 30 Ejection bolt

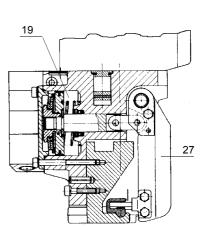


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## 13.2 Details of the control system







Flapper security valve Sealing valve Motor valve Throttle valve Pilot valve Throttle Throttle 1,8 Holding air throttle 2,0 Non-return valve Diaphragm Holding air valve Air-pressure-reductionvalve Throttle 1,2 Rocker cylinder Throttle 1,2 Flapper cylinder Sealing cylinder Muffler Air Motor Flapper valve lever Motor valve lever Sealing valve lever Catch Flapper Lever Holding air throttle Ejection bolt

29

DESCRIPTION

Throttle 1,2

Throttle 1,2 Flapper valve

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## **14** Functional characteristics

## Idle position

Because of the connection of the tool to the compressed air-net (connection P) compressed air flows through flapper valve 3 to the flapper cylinder 19 and rocker cylinder 17.

As a result of this air-flow, the closing force of the spring of the flapper cylinder 19 is supported by compressed air on the one hand (flapper closed) and the feed-wheel is lowered to the gripper on the other hand.

The closed flapper 27 holds open flapper security valve 4. Flapper security valve 4 opens the line to sealing valve 5 and motor valve 6 (both closed) and also to pilot valve 8, throttle 10, diaphragm 13 and holding air valve 14.

As a result, holding air valve 14 is kept closed. Compressed air is also conducted to the holding air throttle 11 directly from the main connection and stops at the closed holding air valve 14.

## Inserting the strap

To insert the strap, the flapper valve lever 23 of the flapper valve 3 is lifted. The valve switches, the flapper cylinder 19 opens the flapper 27 and the rocker cylinder 17 lifts the feed wheel.

After inserting the strap, the flapper valve lever 23 is released again; flapper valve 3 and both cylinders 17 and 19 stay again in their idle position. The throttles 1, 2, 16 and 18 avoid jerking motions.

## Tensioning

By pressing down the motor valve lever 24 the motor valve 6 is commuted and catches in an open position. Compressed air now flows from connection P through the flapper security valve 4 and motor valve 6, the adjustable throttle valve 7 and through the non-return valve 12 to the air motor 22 and drives the latter.

The used air leaves the air motor through the muffler 21. At the same time also the control pistons of the pilot valve 8 and the holding air valve 14 are admitted with pressure from the right.

The left control side of the holding air valve 14 is deaerated through pilot valve 8 and the holding air valve 14 opens the opening area from the holding air throttle 11 through the adjustable holding air throttle to the air motor 22.

This state remains unchanged until the air motor 22 stalls (through overcharge). If the tensioning cycle has to be interrupted the blocking of the motor valve 6 must be suspended (press down lever 28).

Because of this the catch 26 is hooked out through the ejection bolt 30. At the same time the holding air valve 14 is closed so that the air motor 22 stalls.

**Remark:** If the strap is not transported after pressing the motor valve lever the procedure "Inserting the strap" has to be done again. By pressing the flapper valve lever 23 the catch 26 is hooked out automatically. So the started tensioning process is stopped and has to be restarted.

## Sealing

The sealing action is started by pressing down the sealing valve lever 25. Sealing valve 5 switches and the blocking of motor valve 6 is suspended.

The air motor 22 is held under pressure by the holding air throttle 11 and the holding air valve 14 in order to avoid the rewinding of the feed wheel which is under pressure.

From sealing valve 5 compressed air flows to the pressure reduction valve 15 (to be adjusted at 5.3 bar/76 psi) as well as to the sealing cylinder 20. At the same time diaphragm 13 and through throttle 9 also pilot valve 8 are admitted with compressed air from the left.

Pilot valve 8 changes to opening and diaphragm 13 to locking. Since the right side of diaphragm 13 has a smaller control piston surface than the left side, diaphragm 13 remains in a locking position and consequently avoids the switching off of holding air valve 14. The piston of the cylinder 20 moves out and under the use of a hydraulic pressure intensifier produces the necessary power to cut the sealing profile into the two straps and to shear off the upper strap.



As soon as the upper strap is sheared off, the sealing valve lever 25 can be released. Sealing valve 5 switches to deaeration, the compressed air in cylinder 20 starts to flow back and escapes through the pressure reduction valve 15 (back stroke area), sealing valve 5 and the lower part of the cylinder 20 into the athmosphere.

The pressure in the line between pressure reduction valve 15 and sealing valve 5 drops continually. As a result of this, the pressure on the left control side of diaphragm 13 is reduced.

The surface relation of the left to the right control side is modulated in such a way that diaphragm 13 switches in dependence to the piston movement of the sealing cylinder and opens the input to the left control side of holding air valve 14.

Holding air valve 14 interrupts the holding air. The pressure in the air motor 22 drops; the air motor can be turned back by the tension in the strap. The two straps provided with the sealing profile can now interlock. At this point the piston (piston with dies and cutter) is positioned approx. one to two mm (.040" to .080") from its lowest position on its way to its initial position.

## Removing the tool

The tool is opened by pulling the Flapper valve lever 23; the tool is then pushed away from the seal to the right.

## 14.1 Adjustments

## Tension speed / tension force

Throttle valve 7 limits the tension speed and also the tension force in the lower range of adjustments. Factory presetting adjustment: 90 % of the maximum speed.

## Sealing cylinder

The air pressure reduction valve 15 limits the entry pressure to the sealing cylinder 20. Factory presetting adjustment: 5.3 bar (76 psi).

#### Important! The presetting adjustments must not be exceeded.

#### Timing of the interlock

Under normal conditions the holding air throttle 29 is screwed flush into the outside of the control valve body. If the straps do not interlock properly (one or two notches do not interlock at all) the throttle has to be turned in a clockwise direction; this causes a reduction of the holding air on the motor and the tensioned strap is held with less power so that it will interlock quicker after sealing.

#### Attention!

Adjust holding air throttle in such a way that no tension marks on the bottom of the seal caused by the punch will be noticed. If marks are noticed the punch might wear prematurely.



# 15 SPARE PARTS LIST 13.6740.01

13.6740.01	A383/32/0.80-0.90/10.0		A383.0001.01		09.11.99
Item-No.	in group	Pcs.	Description	Dimension	Field
A3H.1110		1	FILTER NETTING		B9
A3H.1111		1	NETTING FRAME		C9
A3H.1112		1	PROTECTION NETTING		B9
[A38.0109]		1	CONTROL VALVE		A17
[A38.0111]		1	TENSIONING UNIT	10KN	A22
[A38.0113]		1	VALVE HANDLE		C17
[A38.0114]		1	PISTON PLATE		B11
[A38.0115]		1	CYLINDER COVER		A12
[A38.0118]	A38.0111	1	AIR MOTOR	EXC. 3.0	A22
[A38.0132]	A38.0118	1	MOTOR CELL	EXC. 3,0	B20
A38.1114	A38.2118	1	BUSH		A6
A38.1138		1	SOCKET SET SCREW		B3
A38.1142		1	BOLT		C9
A38.1145		1	CYLINDER COVER		B10
A38.1147		1	FORK		C23
A38.1148		1			C23
A38.1149		1			B7
A38.1152			BLIND PLUG		C8+
A38.1156		1			B11
A38.1204	A38.0113	1			D14
A38.1205	A38.0113	1			D14
A38.1206	A38.0113	1			D13
A38.1208	A38.0113	1			B14
A38.1209	A38.0113		VALVE BOLT		A14
A38.1210	A38.0113	1			A15
A38.1211	A38.0113	1			B15
A38.1212	A38.0113		SHAFT		A14
A38.1213	A38.0113	1			A14
A38.1214	A38.0113	1			B15
A38.1215	A38.0113	1			C16
A38.1216	A38.0109		SUSTAINING RING		D9+
A38.1216	A38.0103		SUSTAINING RING		B18+
	A30.0113		SUSTAINING RING		C16+
A38.1216 A38.1217	A 20 0112				
	A38.0113				C17
A38.1218	A38.0113				C17
A38.1220	A38.0113		VALVE LEVER		D17
A38.1221	A38.0113		SHAFT		D17
A38.1222	A38.0113				D17
A38.1226	A38.0109				D18
A38.1227	A38.0109		CYLINDER RING		C18
A38.1228	A38.0109		PISTON BAR		C18
A38.1229	A38.0109				A18
A38.1231			SEAL PLATE		B17
[A38.1236]					A16
A38.1242	A38.0113		TENSIONER VALVE SHELL		B15
A38.1243			SEAL PLATE		C14
[A38.1244]	A38.0109		CONTROL VALVE BODY		A17
[A38.1246]			VALVE HEAD		D10
A38.1248			SEALING STRIP		D10
A38.1249			VALVE STEM		D10
A38.1250		1	DISTANCE SLEEVE		D9
A38.1251		1	COMPENSATOR RING		C10

13.6740.01	A383/32/0.80-0.90/	10.0	A383.0001.01		09.11.99
Item-No.	in group	Pcs.	Description	Dimension	Field
A38.1253	A38.0113	1	THROTTLE SCREW		C14
A38.1272		1	JOINT CONE		B16
A38.1274	A38.1244	1	HOLDING AIR THROTTLE		A17
A38.1275	A38.0113	1	SLIDE BOLT		C16
A38.1276	A38.0113	1	RING		B15
A38.1277	A38.0113	1	SCREW		A15
A38.1278	A38.0113	1	EJECTION HEAD		A15
A38.1279	A38.0113	1	EJECTING BOLT		A15
A38.1280	A38.0109	1	SEALING SCREW		A18
A38.1281	A38.0109	1			A18
A38.1282	A38.0113	1	LEVER		A16
A38.1283	A38.0113	1	SHAFT		A16
A38.1203 A38.1324	A30.0113	1	STRAP HOLDER		D21
A38.1324 A38.1351	* A38.0132	8			C20
	A00.0102	-			
A38.1352	A38.0132	1			B21
[A38.1353]	A38.0118	1			B21
A38.1354	A38.0118	1	COVER		A20
A38.1370	A38.0111	1	BEARING PLATE		C24
A38.1371	A38.0111	1			B23
[A38.1372]	A38.0111	1	BODY COVER		B24
A38.1374	A38.0132	16	FELT		C19+
A38.1376	A38.0132	1	ROTOR		C20
A38.1377	A38.0132	1	COUPLING		B20
A38.1378	A38.0132	1	DOWEL		B20
A38.1427	A38.2401	1	BUTT STRAP		
A38.1506	A38.0115	1	PRESSION SETTING SCREW		A10
A38.1507	A38.0115	1	VARIABLE PISTON		B11
A38.1508	A38.0115	1	BALL SEAT		B11
A38.1510	A38.0115	1	SEALING PLUG		A10
A38.2103		1	DIE AND CUTTER SUPPORT		B3
[A38.2104]		1	EJECTOR SPRING PACKAGE		C2
A38.2105	A38.2104	1	EJECTOR SPINDLE		C3
A38.2106	A38.2104		EJECTING BUSH		C3
A38.2107	A38.2104	1	CAP		C3
A38.2110	*		DIE HALF		D3
A38.2111	*		DIE HALF		D4
A38.2112	*		CUTTER		C4
A38.2112 A38.2114			STRAP CLAMP		C4 C4
A38.2114 A38.2117			GUIDE SHEET METAL		D3
			SPRING PACKAGE		
[A38.2118]	A 20 0440				A5
A38.2119	A38.2118				A6
A38.2120			BASE PLATE		C6
A38.2122	*		PUNCH		C6
A38.2123			ADJUSTING SCREW		C6
A38.2124			EJECTOR		B6
[A38.2125]			SPRING PACKAGE		B5
A38.2126	A38.2125		SPINDLE		B6
A38.2127			FLAPPER		C2
A38.2129		1	STRAP GUIDE		C2
A38.2131		1	STRAP GUIDE		B1
A38.2132		1	FLAP PIVOT PIN		B3
A38.2133		1	PISTON ROD		C9
A38.2134		1	PISTON ROD		C7
A38.2135		1	GUIDE RING		C8

13.6740.01	A38	3/32/0.80-0.90/	10.0	A383.0001.01		09.11.99
Item-No.		in group	Pcs.	Description	Dimension	Field
A38.2136			1	COVER DISK		C8
A38.2139			1	PLUNGER		C11
A38.2140		A38.0114	1	PISTON PLATE		B11
A38.2141		A38.0115	1	CYLINDER COVER		A11
A38.2143			1	STRAP STOP		B4
A38.2144			1	GUIDE GIB		B4
A38.2145			1	GUARD-PLATE		B4
A38.2147			1	STRAP STOP		C21
A38.2148		A38.0115	1	CONNECTING SCREW		B12
[A38.2149]			1	SEALING BODY		A4
A38.2151			1	SEALING CYLINDER		C8
A38.2152			1	HINGE		C9
A38.2153			1	HINGE PIVOT PIN		B2
A38.2154			1	HINGE PLATE		B1
[A38.2155]			1	PISTON PLATE		C9
A38.2156			1	STOP DISK		C9
A38.2157				SUPPORTING DISK		C9
A38.2158				HEXACON NUT		B9
A38.2201		A38.0113	1	SECURITY VALVE SHELL		D14
A38.2202		A38.0113	1	VALVE BOLT		D14
[A38.2203]		A38.0113	1	VALVE HOUSING		C15
[A38.2205]		///////////////////////////////////////	1	CYLINDER HOSE		C12
A38.2206		A38.0113	-	SPRING BUSHING		C15
A38.2301		A38.0132	1	END PLATE		C19
A38.2301 A38.2302		A38.0132	1			B21
[A38.2302]		A38.0111		HOUSING		C22
A38.2307		A38.0111	1	INTERMEDIATE WHEEL	2-3	B23
A38.2307 A38.2308		A38.0111 A38.0111	1		2-3	C23
A38.2308 A38.2310	*	A30.0111	-	TENSION SHAFT		D21
	^		1	SPACER RING		
A38.2311				BOLT		D21
A38.2312 A38.2313						D20
						C20
A38.2314						C20
A38.2316	*			GRIPPER		B5
A38.2317				HOLDER		B5
A38.2318				SPACER RING		D21
A38.2319		A38.0111	_	PINION		A23
A38.2320		A38.0111			1-2	A23
[A38.2401]				SUSPENSION		
[A38.2402]		A38.2401		SUSPENSION BRACKET		
A48.1234		A38.0113		CATCH		B15
A48.1237		A38.0113		SIEVE		C13
N1.1104		A38.2401		SCREW	M8 X 20	
N1.1106				SCREW	M6 X 20	B8+
N1.1113		A38.0111		SCREW	M5 X 20	A24
N1.1114				SCREW	M5 X 25	D19
N1.1125				SCREW	M6 X 16	C8
N1.1130		A38.0111		SCREW	M5 X 35	A24+
N1.1133				SCREW	M5 X 40	D10
N1.1141				SCREW	M6 X 40	D15
N1.1143			4	SCREW	M6 X 35	A17+
N1.1168			3	SCREW	M5 X 16	A10
N1.1174			5	SCREW	M10 X 1 X 40	D5
N1.1180		A38.0118	4	SCREW	M6 X 90	B19

13.6740.01	A383/32/0.80-0.90/	10.0	A383.0001.01		09.11.99	
Item-No.	in group	Pcs.	Description	Dimension	Field	
N1.1193		1	SCREW	M6 X 12	C4	
N1.1323		2	SCREW	M5 X 8	D6	
N1.1560		7	HEXAGON SCREW	M5 X 10	B1+	
N1.1806		4	SCREW	M4 X 10	D3+	
N1.1807		1	SCREW	M5 X 12	C5	
N1.1811		2	SCREW	M6 X 40	B5	
N1.1812		2	SCREW	M6 X 16	C21	
N1.2101		1	COUNTERSUNK SCREW	M8 X 25	B11	
N1.2102		4	COUNTERSUNK SCREW	M6 X 20	A11	
N1.2106		2	COUNTERSUNK SCREW	M4 X 8	C9	
N1.2212	A38.0113	7	COUNTERSUNK SCREW	M4 X 25	D16+	
N1.2214		2	COUNTERSUNK SCREW	M5 X 12	D3	
N1.5608		1	SLOTTED ROUND NUT	M8 X 1	B7	
N1.6207	A38.0111	8	SPRING LOCK WASHER	M5	C5+	
N1.6207		10		M5	A23+	
N1.6220	A38.0118	4	SPRING LOCK WASHER	M6	B8+	
N1.6220	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	14		M6	A20	
N1.6310	A38.0111	2	SPACER WASHER	14 X 26 X 0,5	B23	
N1.6501	A38.2401	2	SACER WASHER	M8	B23	
N1.6502	A30.2401	5	SAFETY WASHER	M10	 D5+	
		-			-	
N1.7302	400.0440	1	SEALING SCREW	M10 X 1		
N2.1125	A38.0113	2	SECURITY RING	E3.2	A15+	
N2.1125		2		E3.2		
N2.1215	A38.0113	1	SECURITY RING	J22	B15	
N2.1301	A38.2118	1	CIRCLIP	6 MM	A6	
N2.1302	A38.2125	1	SECURITY RING	8	B6	
N2.1701		1	SECURITY RING	17 MM		
N2.1702		1	SECURITY RING	26 MM		
N2.2101		4	PARALLEL PIN	5 M6 X 12		
N2.2107		2	PARALLEL PIN	5 M6 X 40		
N2.2109		2	PARALLEL PIN	8 M6 X 30		
N2.2114	A38.0113	1	PARALLEL PIN	4 M6 X 24	C14	
N2.2138		2	PARALLEL PIN	4 M6 X 12		
N2.2143	A38.0111	2	PARALLEL PIN	5 H6 X 16	A24	
N2.2144	A38.0111	1	PARALLEL PIN	14 H6 X 75	C23	
N2.2413	A38.0132	1	DOWEL PIN	4 X 20 MM	B21	
N2.2445	A38.0132	1	DOWEL PIN	2,5 X 6 MM	C19	
N2.4407	A38.0111	4	RIVET	2 X 3	A23+	
N2.4902		4	HAMMER HEAD BOLT	1,85 X 4,76		
N2.5102	A38.0109		PRESSURE SPRING	0.6 X 8 X 14/6	A18	
N2.5160	A38.0113		PRESSURE SPRING	1 X 12 X 26	C16+	
N2.5161	A38.0113	1		1 X 12 X 20	D14	
N2.5161	A38.0115	1	PRESSURE SPRING	1 X 12 X 20	B12	
N2.5162			PRESSURE SPRING	2 X 42 X 22		
N2.5168			PRESSURE SPRING	0.5 X 10 X 22		
N2.5171		1		1 X 8 X 26		
N2.5179	A38.0113		PRESSURE SPRING	0.32X2.82X34/30.5	 C15	
			PRESSURE SPRING	0.32X2.82X34/30.5		
N2.5192	A38.0113				B14	
N2.5193	400.0440	1		6.3X81.6X220		
N2.5601	A38.2118			12.5X6.2X0.7	A6	
N2.5609	A38.0118		CUP SPRING	45X22.5X1.75	A20	
N2.5612	A38.0115		CUP SPRING	20X10.2X0.5	A11	
N2.5613	A38.2125	57		16X8,2X0,9	B6	
N2.5614	A38.2104	72	CUP SPRING	10X4,2X0,6	C3	

13.6740.01	A383/32/0.80-0.90/10.0		A383.0001.01		09.11.99
Item-No.	in group	Pcs.	Description	Dimension	Field
N2.5616		2	CUP SPRING	50 X 25.4 X 2.5	
N3.1109	A38.1372	1	BALL BEARING		A23
N3.1109	A38.2303	1	BALL BEARING		B22
N3.1123	A38.0132	1	BALL BEARING		B21
N3.1133	A38.0132	1	BALL BEARING		C19
N3.1703	A38.0111	1	BALL	5 MM.	C24
N3.1706	A38.0113	2	BALL	15 MM	B14+
N3.1706	A38.0115	1	BALL	15 MM	B12
N3.1709	A38.0113	1	BALL	12 MM	D14
N3.2322	A38.1372	1	NEEDLE CASE		A23
N3.2322	A38.2303	1	NEEDLE CASE		B22
N3.2323	A38.1372	1			B24
N3.2323	A38.2303	1			B24 B22
N3.3129	A38.0111	2			B22 B23
N3.3129 N3.3130	A38.0111 A38.0111	2	HEADED PRESS FIT BUSH		C24
N3.3130 N3.3140	A38.0111 A38.0111		HEADED PRESS FIT BUSH		C24 C23
N3.3140 N3.3141	A30.0111	_			
		1	HEADED PRESS FIT BUSH		
N41.9128		1			
N41.9129		1			
N4.5110	A38.0113	1	САР		A16
N4.5110		1	САР		
N4.9132		1		< <a383>&gt;</a383>	
N4.9159		1	LABEL	< <ce>&gt;</ce>	
[N6.3404]		1	PISTON		
N6.3501	A38.0114	1	INNER PACKING	12.31X24.1X6.5	B11
N6.3504	N6.3404	1	INNER PACKING	8.3X12.1X4	
N6.3507	A38.2155	1	EXTERNAL PACKING RING		
N6.3508	N6.3404	1	EXTERNAL PACKING RING		
N6.5133	A38.0113	1	REDUCING COUPLING		C13
N6.5138	A38.0115	1	SEALING SCREW		A11
N6.5508	A38.0118	1	EXHAUST SILENCER	R 1/2"	A21
N6.5624	A38.0113	1	ANGLE		C13
N6.5627			HOLLOW SCREW		
N6.5634			PACKING RING		
N6.5637	A38.0118		ADAPTER		A21
N6.5673	7.00.0110		HOLLOW SCREW	M22X1,5	
N6.5674			PACKING RING	22 X 27 X 1.5	
N6.6108		4		16 X 24 X 5	
N6.6113			PACKING RING	10 X 24 X 5	
	A20.0400				
N6.6114	A38.0109		LIP SEAL	12 X 6 X 4	C18
N6.6115	A38.0109		LIP SEAL	16 X 10 X 4	C18
N6.6117	A38.0109		SEAL	6 X 13 X 2.3	
N6.6117	A38.0113		SEAL	6 X 13 X 2.3	B18+
N6.6117			SEAL	6 X 13 X 2.3	C16+
N6.6120			SEAL	16 X 9 X 2.3	
N6.6124	A38.0115		PACKING RING	25 X 18 X 2.3	B12
N6.6142			SEAL		
N6.6143		1	SEAL		
N6.6145		1	DIAPHRAGM		
N6.6202	A38.0111	1	O-RING	25 X 2,5	C22
N6.6204	A38.0113	4	O-RING	18 X 2	B14+
N6.6207	A38.1244	1	O-RING	3,1 X 1,6	A17
N6.6213			O-RING	20 X 2	
N6.6217	A38.0109		O-RING	15 X 2	A18+

13.6740.01	A383/32/0.80-0.90/10.0		A383.0001.01		09.11.99
Item-No.	in group	Pcs.	Description	Dimension	Field
N6.6217	A38.0113	8	O-RING	15 X 2	C16+
N6.6217		6	O-RING	15 X 2	
N6.6223	A38.0118	1	O-RING	50 X 2	B21
N6.6229	A38.0111	1	O-RING	14 X 1	B24
N6.6233	A38.0113	1	O-RING	6 X 2	B15
N6.6235	A38.0113	2	O-RING	12 X 2	B14+
N6.6237		1	O-RING	33 X 1,5	
N6.6238		1	O-RING	60 X 2	
N6.6241	A38.0132	2	O-RING	46 X 2	C19+
N6.6244	A38.0115	1	O-RING	22 X 2	B12
N6.6247		1	O-RING	5 X 2,5	
N6.6248	A38.0113	1	O-RING	10 X 1.5	D14
N6.6249	A38.0115	1	O-RING	155 X 3	A10
N6.6251		1	O-RING	18 X 1.5	
N6.6252		1	O-RING	12 X 1.5	
N6.6310	A38.0114	1	SEAL		B11
N6.6504	A38.0115	1	FLAT SEAL	13 X 10 X 1,5	A11
N6.6803	A38.0111	1	PACKING RING	10 X 19 X 9.8	C22
N7.1106		1	BUSH		
N7.1203		1	SEALING DISK		
N7.1204		1	SEALING DISK		



