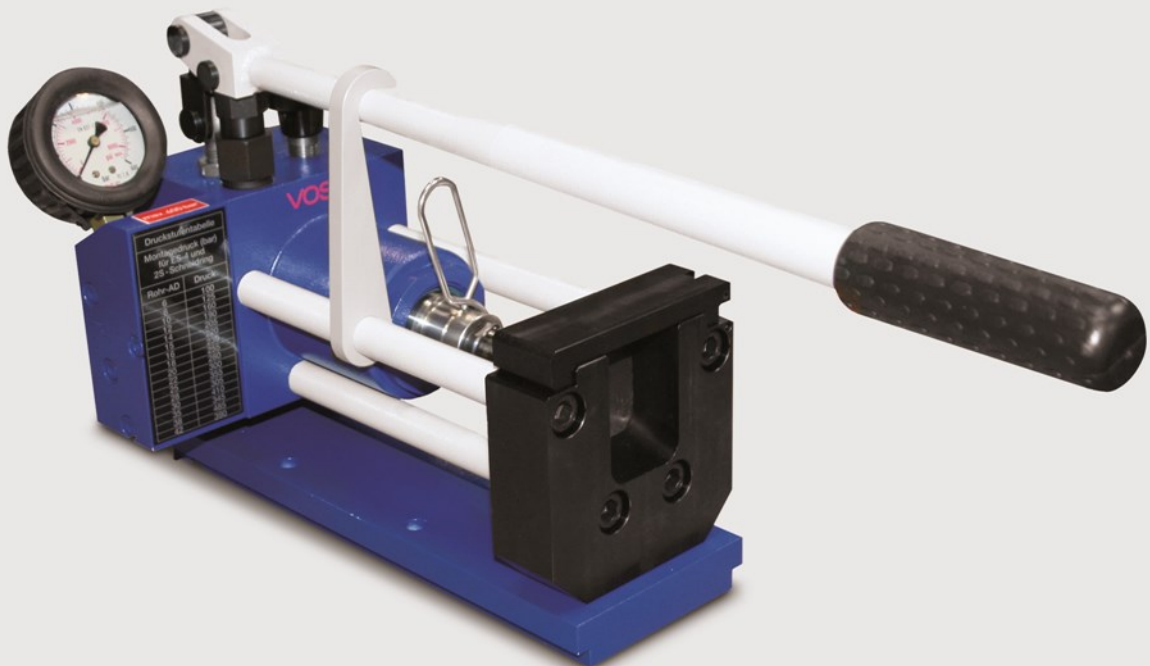


Original Operating Manual

Type 80 N3

Order designation:
TD-Type-80N3
5 9 91 08 04 00

Hand-held pre-assembly unit for
cutting ring pre-assemblies,
BV-10 flared cones and
ZAKO rings up to 1 ¼"



CONTENT

1. General instructions

1.1	Utilisation of this manual	3
1.2	Identification data	3
1.3	Customer registration.....	3
1.4	Manufacturer's address and document details	3
1.5	Scope of delivery	3
1.6	Copyright	3

2. Safety instructions

2.1	Purpose of this manual	3
2.2	Intended use	3
2.3	Warning symbols and signs.....	4
2.4	Organisational measures	4
2.5	Informal safety measures.....	4
2.6	Personnel training	4
2.7	Personal protective equipment	4
2.8	Safety measures during production.....	4
2.9	Hazards caused by hydraulic energy.....	4
2.10	Hazards in connection with handling the unit.....	4
2.11	Cleaning and disposal of the unit	5
2.12	Modifications to the unit.....	5
2.13	Commitment by the operating company.....	5
2.14	Training notes	5
2.15	Commitment by the personnel.....	5
2.16	Disposal	5

3. Technical data

3.1	Dimensions and weight.....	5
3.2	Hydraulic system	5
3.3	Operational limits	5

4. Transport and storage

4.1	Unpacking, cleaning.....	5
4.2	Indicating and documenting shipping damage.....	5
4.3	Storage location, storage duration.....	5

5. Installation and start-up

5.1	Location for installation and operation.....	6
5.2	Workplace for operating personnel	6

6. Preparations for operation

6.1	Overall view.....	7
6.2	Start-up	8
6.3	Application for tubes of 6-42 mm.....	8
6.4	Description.....	8
6.5	Tube quality	8
6.6	Tube preparation	8

7. Operation

7.1	Tooling the cutting ring pre-assembly	9
7.2	Pre-assembly of cutting rings	9
7.3	Checking the pre-assembled cutting ring.....	10
7.4	Pre-assembly of the VOSS BV-10 flared cones	11
7.5	Tooling the BV-10 cone pre-assembly	11
7.6	Performing the pre-assembly BV-10	11
7.7	Checking the pre-assembled flared cone	12
7.8	Pre-assembly of ZAKO	12

8. Maintenance

8.1	Safety instructions.....	13
8.2	Maintenance	13

9. Troubleshooting

9.1	Safety instructions.....	13
-----	--------------------------	----

10. Decommissioning and disposal

10.1	Decommissioning the unit.....	13
10.2	Disposal	13

11. Warranty and liability

11.1	Warranty and liability.....	14
------	-----------------------------	----

12. Annex

12.1	Directives	14
12.2	Standards relating to the machinery directive	14
12.3	Table of recommended pressures	14
12.4	Order designations	14
12.5	CE Declaration of Conformity.....	18

1. General instructions

This chapter provides information on this manual. Also general safety information related to handling of the unit is provided here.

With respect to the descriptions and information provided in this manual, the right of engineering changes serving the purpose of improving the unit is reserved. In this manual, custom versions are possibly also described which may not apply to the specific unit.

When selling the unit, this manual must always be included.

1.1 Utilisation of this manual

This manual shall assist you in getting to know the unit. It provides you with the ability to operate the unit within the scope of proper utilisation.

This manual includes information of primary importance so as to operate the unit safely, properly and economically. Observing this information helps to avoid dangers, reduce repair costs or downtimes as well as increase the reliability and service life of the unit.

Moreover, this manual serves to supplement instructions based on existing national regulations in respect to accident prevention and environmental protection.

This manual must always be at hand at the location where the unit is operated. The manual must always be in a readable condition.

The manual must be read and applied by every person commissioned to work with/at the unit, for example:

- Operation including setting up
- Troubleshooting during operation
- Removal of production waste
- Machine care
- Disposal of operating and auxiliary materials
- Maintenance (service, inspection)
- Transport

Besides the information provided in this manual, the accident prevention rulings which apply in the country of use and at the installation location must be observed. Also the relevant rulings for safe and proper work must be observed.

1.2 Identification data

Type 80 N3
Order designation: TD-Type-80N3
Order no.: 5 9 91 08 04 00

The unit serial number and date of manufacture are indicated on the nameplate.

1.3 Customer registration

Inventory no.:

Location:

1.4 Manufacturer's address and document details

See reverse of this manual.

1.5 Scope of delivery

Manual pre-assembly unit including oil filling and lock plate. Werkzeuge gehören nicht zum Lieferumfang.

1.6 Copyright

This manual is a certificate in the sense of the law against unfair competition.

The copyright of this certificate therefore remains with:
VOSS Fluid GmbH
Lüdenscheider Straße 52-54
D-51688 Wipperfürth Germany

This manual is only intended for the operating company that owns the unit and its personnel. The manual contains text and drawings which may not be copied, distributed or communicated by other means, either fully or partly, without our approval.

2. Safety instructions

2.1 Purpose of this manual

This manual contains important information to properly operate the manual pre-assembly unit.

- A basic requirement for handling the machine in accordance with safety requirements and for trouble-free operation is the knowledge of the fundamental safety instructions and the safety regulations.
- This manual, the safety instructions in particular, must be observed by all personnel working with the manual pre-assembly unit.
- Moreover, the accident prevention rulings and regulations for the location where the machine is used must be applied.

2.2 Intended use

The pre-assembly unit type 80 N3 is only intended for the pre-assembly of cutting rings, VOSS BV-10 flared cones and ZAKO rings up to 1 ¼". It must not under any circumstances be operated with more than **600 bar** indicated on the pressure gauge. Misuse can cause destruction of the unit.

For the assembly process, seamless precision steel tubes in accordance with EN 10305-4 - 1.0255+N or seamless cold-drawn, tin-free and heat-treated stainless steel tubes in accordance with EN 10305-4 and EN 10216-5 - 1.4571-CFA within a diameter range of 6 to 42 mm must be used.

Any other utilisation or utilisation beyond the scope detailed above is considered as non-conforming. VOSS Fluid shall not be liable for resultant damage.

Conforming utilisation includes also:

- Observing all notes and information provided in this manual.
- Compliance with the **specified** periods or the periods stated in the manual for inspection and maintenance work.

2.3 Warning symbols and signs

In this manual, the following designations and symbols are used to indicate dangers and additional information:



This symbol indicates:

- **There is an immediate risk to life and health of personnel!**
When not complying with this information, the health of personnel may suffer severely, possibly also including lethal injuries.



This symbol indicates:

- **Sharp edges!**
Risk of suffering cuts. When working at sharp edges wear your personal protective equipment.



This symbol indicates:

- **Danger of crushing!**
Do not touch moving machinery components or devices. Bring existing protection covers and facilities to the correct position. While operation of the machine is in progress, do not remove any protective covers and facilities.

2.4 Organisational measures

- All safety and danger information must be maintained on the unit in a readable condition.

2.5 Informal safety measures

- This manual must be constantly kept at hand at the location where the unit is operated.
- In addition to this manual, the general as well as the local accident prevention rulings must be observed.
- Damaged labels and safety facilities must be replaced immediately!
- For operation of the unit, the currently valid health, work safety and fire protection regulations must be observed!
- All safety and danger information at and on the unit must be observed!
- In the case of dangers to personnel or the unit, the necessary measures need to be introduced immediately to avoid this danger or injury or damage!
- Use the unit only after having made sure that it is in a technically fault-free condition. Ensure that all work is done in agreement with its conforming utilisation and in full awareness of the safety aspects and potential hazards and in consideration of this manual! In particular, malfunctions which have an effect on safety must be remedied immediately!
- Here in particular dangers caused by failure to attain or exceeding the performance characteristics given in the technical data must be considered! Moreover, neglecting measures by the operating company which prevent unauthorised utilisation is considered as a possible risk regarding operational reliability!
- Protection facilities must only be removed for repair and adjustment work with the drive units at standstill and with the unit secured!

After completion of the setting up and adjustment work, the protection facilities must be fitted again and checked as to proper functioning and operation!

- The expert responsible for commissioning the machine is committed to check that the unit corresponds to the nominal condition in agreement with the information provided in the manual!



- Each time before the unit is started, all safety engineering requirements must be fulfilled! This is a basic requirement for fault-free operation of the unit! The unit must be in an operationally ready and functionally safe state so as to avoid hazards to the personnel and the unit!
- In the case of deficiencies, damage, accidents, malfunctions or other unusual incidents, the operating personnel is committed to immediately inform the shift foreman!

2.6 Personnel training

- Only trained and instructed personnel may be allowed to operate the unit. The responsibilities of the personnel regarding installation, commissioning, selection and insertion of the tools, operating the unit and performing inspection and maintenance work on the unit must be defined clearly.
- Personnel undergoing training may only operate the unit under the supervision of an authorised person.
- Before starting with any work, the personnel ordered to work with the unit must have read this manual, in particular the chapter with the safety information. Doing so while work is in progress will be too late! This applies particularly to personnel operating the device only from time to time!
- The operating company is committed to define the tasks of the persons responsible for properly operating the unit!

2.7 Personal protective equipment

The regulations which apply at the installation location must be observed (wearing of safety shoes, for example).

2.8 Safety measures during production

- Operate the unit only after having ensured that the safety devices are fully operational.
- Check the unit on a daily basis as to any externally apparent damage.
- In the case of malfunctions immediately shut down the unit. Have the malfunction rectified by technicians (see chapter 9).

2.9 Hazards caused by hydraulic energy

Only personnel with special knowledge regarding hydraulic systems may work on the hydraulic facilities.

2.10 Hazards in connection with handling the unit

The unit has been manufactured according to the state-of-the-art and the generally approved safety regulations. Even so, there remains a risk to health and life of the user or third parties. There also remains the risk of impairments to the unit and other material assets.

The unit may only be used:

- for the intended purpose.
- in a fault-free condition in terms of safety engineering.

Malfunctions which may impair safety must be remedied immediately.



Only operate the unit if all protection facilities and facilities relevant to safety, such as releasable protection facilities, are present and fully operational!

2.11 Cleaning and disposal of the unit

- Properly handle and dispose of all substances and materials used. Observe national regulations.

2.12 Modifications to the unit

- Modifications, additions and conversions to the unit are prohibited without prior approval by VOSS Fluid.
- unit parts which are not in a fault-free condition must be replaced immediately.
- Use original spare parts only. In the case of parts purchased from third parties, it cannot be ensured that these have been designed and manufactured in line with the stress ratings and safety requirements.

2.13 Commitment by the operating company

The operating company is committed to let only such personnel work on the unit who:

- are acquainted with the basic regulations regarding work safety and accident prevention and who have been instructed in how to operate the unit.
- have read and understood the information given in this manual (safety and warning information, in particular), having confirmed this by means of their signature.

The awareness of the personnel regarding safe working must be checked within regular intervals. Moreover, the operator must receive general safety instructions at least once a year.

2.14 Training notes

Allow only instructed personnel to operate the machine! The responsibilities of the personnel as to operating, maintenance work, and repair work on the machine need to be clearly defined.

Personnel to be trained, educated, instructed or undergoing general training may only work at the unit under constant supervision by an experienced person!

2.15 Commitment by the personnel

All personnel ordered to work at the unit must be committed to:

- comply with the fundamental regulations on work safety and accident prevention.
- read the safety and warning information in this manual and confirm by means of their signature that they have understood this information.

2.16 Disposal

The operating company is committed to have the unit disposed of after the end of its utilisation period at its cost and in agreement with the laws freeing us from the commitment of accepting returned machines and claims of third parties.

3. Technical data

3.1 Dimensions and weight

Width: 190 mm
Height: 267 mm
Depth: 590 mm
Weight: 15 kg

3.2 Hydraulic system

Tank volume: approx. 200 ml
Active fluid medium: HLP – D22
Max. operating pressure: 600 bar

3.3 Operational limits

Operating temperature: +10 to +50°C

4. Transport and storage

The unit can be carried by a person by hand. To do so, hold the tie bar with both hands and carry with the pump cover upwards. The assembly lever is held by the transport lock.

4.1 Unpacking, cleaning

- Check the unit and the tools as to any shipping damage.
- Check the unit and the tools as to completeness with a reference to the delivery note and the order document.
- Clean with a dry cloth.

4.2 Indicating and documenting shipping damage

- Any shipping damage which is discovered must be noted down on the shipping documents.
- The forwarding agent responsible (normally the driver of the freight vehicle) must confirm the damage ascertained on the shipping document by means of his signature.
- VOSS Fluid must immediately be informed about any shipping damage.

4.3 Storage location, storage duration

- Store the unit only in closed, dry rooms.
- Ambient temperature: -10 to +70°C.
- Relative humidity of the air: 90% max. non-condensing.
- When storing the unit for more than six months (overseas shipments etc.) please contact VOSS Fluid for more information. The unit must be specially protected in this case.

5. Installation and start-up

5.1 Location for installation and operation

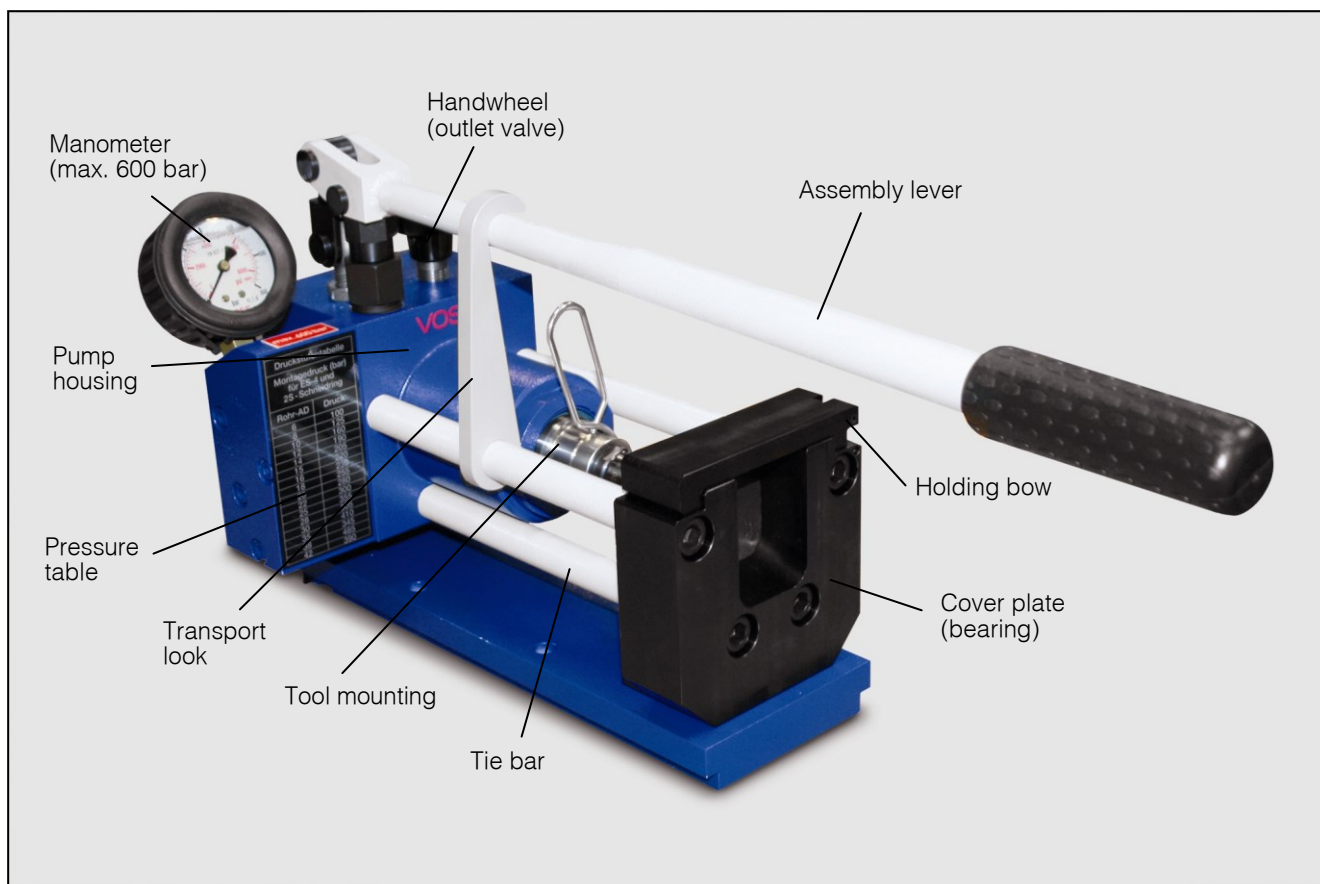
- Dimensions of the unit (see chapter 3.1).
- When selecting the place for the machine, it must be borne in mind that potentially long and bent tubes need to be pre-assembled.
- The foundations on which the unit rests must be rated so that these are capable of reliably bearing a device weight of 15kg.
- Horizontal and secure standing of the machine must be ensured.
- The unit can also be permanently screwed to corresponding underlays or devices via the holes in the base.

5.2 Workplace for operating personnel

- The workplace is located in front of the unit.
- Cleanliness and a clear layout of the workplace at and around the unit must be ensured. This must be checked regularly.

6. Preparations for operation

6.1 Overall view



General view Typ 80 N3

6.2 Start-up

The assembly procedure is started by operating the pump lever (assembly lever).

The unit may only be used corresponding to its intended application.

6.3 Application for tubes of 6-42 mm

Functional safe tube fittings must be assembled carefully. This requires a precise pre-assembly of the cutting rings or flared cones on the tube.

The relevant system parts can be pre-assembled quickly and precisely using the VOSS manual pre-assembly unit Type 80 N3.

The time-consuming tightening of the union nuts requiring considerable effort, e.g. as normally required during manual cutting ring pre-assembly, is performed by the unit.

The result are secure and reliable joints and not least economical pre-assemblies.

6.4 Description

The hand-held pre-assembly unit Type 80 N3 consists of a hand pump pressure unit with working piston and pre-flanged assembly mandrel (assembly mandrel not included in the scope of supply). A tool kit, comprising pre-assembly mandrel and pressure pad, is required for each tube outer diameter for the cutting ring pre-assembly. The assembly is carried out by pump movements of the assembly lever. In the case of 2S, 2S *plus*, ES-4 and VOSSRing^M cutting rings in steel and stainless steel (VA), a pressure gauge assists the correct pre-assembly result.

The following can be pre-assembled:

- VOSS 2S cutting rings of 6-42 mm tube OD (+VA)
- VOSS 2S *plus* cutting rings of 6-42 mm tube OD
- VOSS ES-4 cutting rings of 6-42 mm tube OD (+VA)
- VOSSRing^M cutting rings of 6-42 mm tube OD
- VOSS BV-10 flared cones of 6-42 mm tube OD
- ZAKO rings up to 1 1/4"
- All other cutting rings corresponding to applicable DIN standards (ISO 8434-1)

It can be used as a hand-held unit at any assembly site. However, clamping in a vice is recommended in the case of frequent assemblies. The stepped faces of the standing plate enable firm clamping and centring in the vice jaws. Alternatively, the unit can also be screwed via the baseplate onto corresponding underlays or holders. The safety must be ensured by the user.

6.5 Tube quality

For steel fittings we recommend the use of precision machined steel tubes in accordance with EN 10305-4 - 1.0255+N (St 37.4 in accordance with DIN 1630 in delivery condition NBK with a maximum hardness of 75 HRB) or seamless cold-drawn, tinner-free and heat-treated stainless steel tubes in accordance with EN 10305-4 and EN 10216-5 - 1.4571-CFA.

6.6 Tube preparation

- Saw off the tube at right angles, maximum angle deviation $\pm 1^\circ$.
- Deburr the tube ends inside and outside.

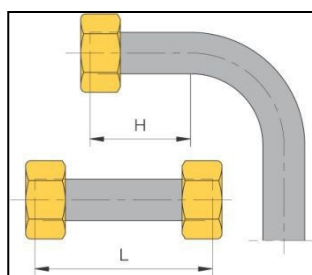
- The tube ends must not exhibit any inside or outside damage.
- The inside and outside of the tube, in particular in the clamping and forming area must be free of chips, dirt, paint, rust or other types of contamination.
- In the case of pipe bends, the straight tube end must be minimum 2x height of the union nut until the beginning of the bend radius (dimension H, see minimum tube lengths).

Series	Tube OD	H	L
L	6/8	31	39
	10/12	33	42
	15	36	45
	18	38	48
	22/28	42	53
S	35/42	48	60
	6/8	35	44
	10/12	37	47
	14/16	42	54
	20	50	63
	25	54	68
	30	58	72
	38	65	82

Minimum tube lengths per tube OD

The straight tube end must not exhibit any deviation from the roundness and straightness in the entire H range, which exceeds the dimensional tolerance of the tube according to DIN 2391-1.

In the case of straight tubes, a minimum length must be taken into consideration (dimension L, see minimum tube lengths).



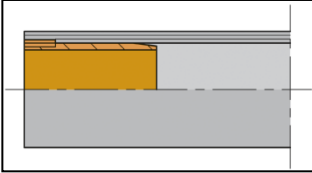
Minimum tube lengths

Slide union nut and cutting ring onto the tube end. The cut of the cutting ring must point to the tube end, as otherwise an incorrect assembly would result.



Position of cutting ring, union nut, tube

Strengthening sleeves must be used in the case of thin-walled tubes or soft tubes made from non-ferrous metals.



Use of strengthening sleeves

7. Operation



The Type 80 N3 may only be operated by a single person so that unintentional crushing caused by a second person is avoided.

7.1 Tooling the cutting ring pre-assembly

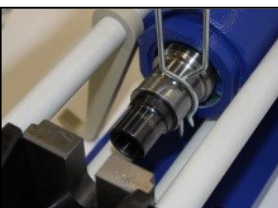
- Pre-assembly mandrels with "mushroom holder" and pressure pad are to be selected corresponding to the tube OD.



- The pre-assembly mandrel is introduced into the working piston by removing the retaining clip and fastened by reinserting the retaining clip.



- The pressure pad is inserted into the guide rails on the counter support. The milled edge for the tube holder must point upwards.



7.2 Pre-assembly of cutting rings

A separate pressure value must be complied with for each tube OD for the cutting ring assembly. The pressure value can be found in the pressure stage table below the pressure gauge (see also Appendix 12). The relevant pressure value only applies for VOSS 2S, 2S *plus* and ES-4 cutting rings. The VOSSRing^M pressure stage table see appendix 12.4.



Caution:

The pressure values in the pressure stage table are guide values. They refer to the indicated tube qualities (see 6.5). If necessary, a number of sample assemblies must be carried out.

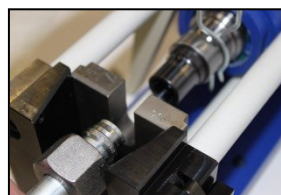
- Lightly oil cone of the pre-assembly mandrel at the start and assembly and occasionally.



- Light oil cutting ring on the cutting bevel during every pre-assembly.



- Insert the tube fitted with the union nut and cutting ring from above into the recess of the pressure pad (the tube must also be oiled for the pre-assembly of an ES-4 cutting ring).



- After this, slide the tube far enough forwards until it encounters the limit stop in the pre-assembly mandrel. The union nut is positioned in front of the pressure pad.



- Close drain valve and pre-pump the assembly piston using the hand lever, this continuing to press the tube slightly against the limit stop in the pre-assembly mandrel.



- The cutting ring begins to cut into the tube upon exerting the assembly resistance. Continue to hold the tube pressed against the pre-assembly mandrel here.
- Continue pre-pumping until the determined pressure value at the pressure gauge is reached. The cutting ring assembly is thus completed.
- Open drain valve, thereby allowing the assembly piston to move back to its initial position via the automatic return stroke.



Caution:
When doing so, make sure you hold the pump lever (assembly lever) with your left hand to prevent dropping.

- The pre-assembled tube can be removed.



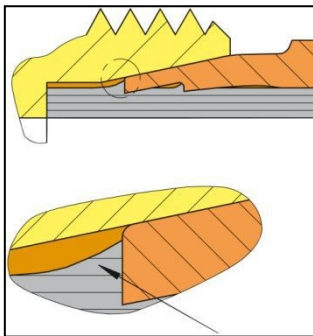
Caution:
Do not pressurise the pre-assembly unit without having inserted a tube with cutting ring and union nut, as this can damage the pressure pad and piston.

Nor must the pre-assembly unit be pressurised to max. pressure (600 bar) without the pre-assembly mandrel and pressure pad.



7.3 Checking the pre-assembled cutting ring

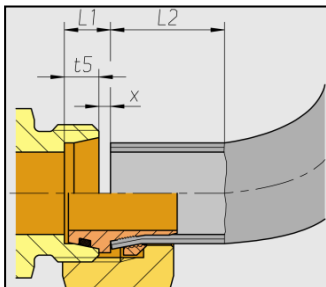
- As a rule, a visual inspection should be performed after each assembly run.
- The cut of the cutting ring is inspected based on the material burr. It is clearly visible and should cover approx. 80 % of the cutting ring face. That applies also for the VOSSRing^M cutting ring in combination with the universal pre-assembly stud. By using the VOSSRing pre-assembly stud it's pre-assembled by 100%. If this result is not attained, a renewed pre-assembly with increased assembly pressure will be necessary. See VOSS assembly instructions.



Checking the material burr before the first cut

7.4 Pre-assembly of the VOSS BV-10 flared cones

- For tube preparation see 6.6.
- Determine tube dimensions using the dimension table.



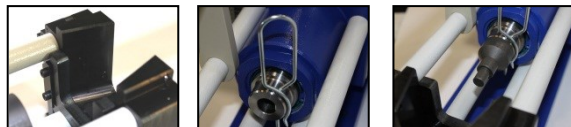
Series	Tube OD	t5 DIN 3861	x approx.	L1 approx.	L2 approx.
L	6	7,0	0,8	7,8	55
L	8	7,0	1,1	8,1	55
L	10	7,0	0,5	7,5	60
L	12	7,0	0,5	7,5	62
L	15	7,0	0,5	7,5	62
L	18	7,5	1,5	9,0	63
L	22	7,5	1,5	9,0	65
L	28	7,5	1,5	9,0	72
L	35	10,5	2,8	13,3	75
L	42	11,0	3,0	14,0	75
S	8	7,0	2,4	9,4	55
S	10	7,5	2,4	9,9	60
S	12	7,5	2,4	9,9	60
S	14	8,0	3,4	11,4	65
S	16	8,5	2,5	11,0	65
S	20	10,5	3,5	14,0	70
S	25	12,0	3,5	15,5	75
S	30	13,5	4,5	18,0	75
S	38	16,0	5,0	21,0	78

7.5 Tooling the BV-10 cone pre-assembly

- Select pre-assembly mandrel corresponding to the tube OD and the tube thickness. The clamping jaws must be selected corresponding to the tube OD. Lock plate. Select pre-assembly tools; pre-assembly mandrel, clamping jaw and lock plate.



- Insert lock plate to protect the clamping jaw from being pushed out. The pre-assembly mandrel is introduced into the working piston by removing the retaining clip and fastened by reinserting the retaining clip.



- The clamping jaw is inserted into the trapezoidal holder on the counter support. The 45° beveling of the clamping jaw must point downwards for this.



- It is then important to close the mounting bracket on the counter support. **This is strictly mandatory for BV-10 and ZAKO.**

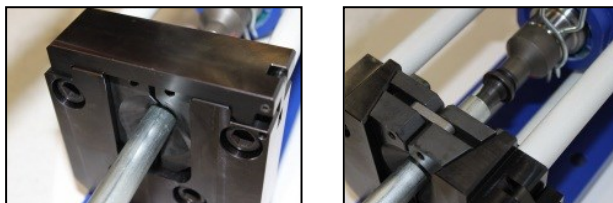


7.6 Performing the pre-assembly BV-10

- Place union nut with clamping ring on the tube.
- Lightly oil flared cone in the area of the toothed grooves and on the cylindrical shaft and slide onto the flared mandrel. The collar must point to the pre-assembly mandrel for this!



- Slide tube end from outside through the opening of the clamping jaw until it is centred with the flared cone (inserted in the pre-assembly mandrel). The union nut and clamping ring remain outside the assembly space.



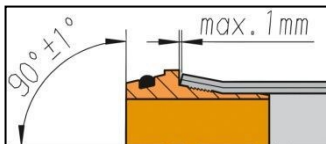
- Before beginning the assembly, press the clamping jaw back against the bevel area of the counter support, whereby at the same time the tube end continues to be pressed against the flared cone and is pre-tensioned between the clamping jaw and flared cone.
- Now close the drain valve and pre-pump the assembly piston using the hand lever. The flared cone is now driven into the tube so far until a distance of > 0 to max. 1 mm is reached between its collar and the tube end. The tube remains in the clamping jaw and is held axially during the assembly process. The pressure gauge pressure is not significant for the flared cone pre-assembly.



- Open drain valve (holding the assembly lever while doing so) and allow the assembly piston to move back to its initial position via the automatic return stroke.
- Open mounting bracket and remove pre-assembled tube together with the clamping jaw out of the unit.
- Remove clamping jaw from the tube.

7.7 Checking the pre-assembled flared cone

- The tube must not be flanged as far as the collar!
- Conduct visual inspection to ascertain whether the flared cone has been pressed into the tube as specified. See VOSS assembly instructions BV-10.
- A gap of up to 1 mm resulting from the material spring rebound does not have any effect on the function.
- The O-ring must not show any signs of damage. It should only be pulled on after assembly. Ensure cleanliness at all times!



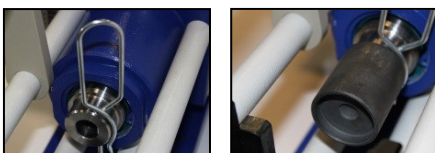
Checking the press-in depth

7.8 Pre-assembly of ZAKO

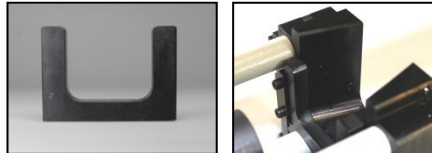
- The pressure plate and clamping jaws must be selected corresponding to the tube OD.



- The pressure plate is introduced into the working piston by removing the retaining clip and fastened by reinserting the retaining clip.



- The lock plate must be inserted in the guide rails to protect the clamping jaw from being pushed out during the tube insertion.



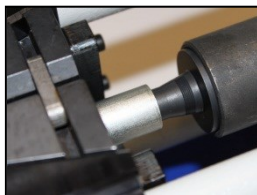
The clamping jaw is inserted into the trapezoidal holder on the counter support. The 45° beveling of the clamping jaw must point downwards for this.



- Slide the flange plate (with the bevel towards the tube end) onto the tube.
- Lightly oil ZAKO ring in the area of the toothed grooves and on the cylindrical shaft, then press into the pressure plate and hold.



- Slide tube from outside through the opening of the clamping jaw until it is centred with the ZAKO ring inserted in the pressure plate. Continue pushing the tube against the ZAKO ring. The flange plate remains outside the assembly space.



- Press the clamping jaw back against the bevel area of the counter support, whereby at the same time the tube end continues to be pressed against the ZAKO ring cone and is pre-tensioned between the clamping jaw and ZAKO ring.

- It is then important to close the mounting bracket on the counter support!**



- Now close the drain valve and pre-pump the assembly piston using the hand lever. The ZAKO ring is now driven into the tube so far until a distance of > 0 to max. 1 mm is reached between its collar and the tube end. The tube remains in the clamping jaw and is held axially during the assembly process. The pressure gauge pressure is not significant for the ZAKO ring pre-assembly.
- Open drain valve (holding the assembly lever while doing so) and allow the assembly piston to move back to its initial position via the automatic return stroke.
- Open mounting bracket and remove pre-assembled tube together with the clamping jaw out of the unit.
- Remove clamping jaw from the tube.



8. Maintenance

8.1 Safety instructions



Any screwed connections which were released during maintenance or repair work must always be retightened!

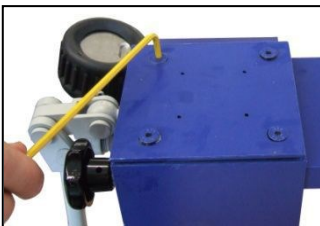
Before maintenance work, the maintenance personnel must have carefully read all safety information contained in these manuals!

Maintenance work must only be performed by personnel duly authorised by the operating company!

8.2 Maintenance

The unit is basically maintenance free. If, however, oil needs to be replenished, this is to be performed as follows.

- Position the pre-assembly unit vertically. The hydraulic drive will point upwards with the tank cover.
- Close the drain valve and pump out the assembly piston.
- Unscrew backplate (tank cover) and remove the diaphragm.



- Replenish hydraulic oil in the tank. Refill with enough oil until the tank is about $\frac{3}{4}$ filled.

- Open drain valve and slowly move the assembly piston back into the rest position. This vents the system. The procedure – pump out assembly piston and slowly move back – might have to be repeated several times until the system is fully vented.
- The oil level in the tank should be at about the level of the tank upper edge when the piston is retracted. Now replace the diaphragm. This allows surplus oil to escape. However, it also ensures that no air remains in the system.



Caution:

Properly dispose of hydraulic oil in line with environmental regulations!

- Replace tank cover and fasten.

9. Troubleshooting

Should you have any troubleshooting questions please get in touch with our after sales service.

☎ +49 (0)2267 / 63-5690

Occurring malfunctions should be remedied immediately so as to avoid greater damage.

9.1 Safety instructions



Any screwed connections which were released during maintenance or repair work must always be retightened! Do not leave any tools or repair materials over at the location of use!

10. Decommissioning and disposal

10.1 Decommissioning the unit

- Drain off hydraulic oil.
- Clean the inside of the tank and removal oil residues.



Caution:

Properly dispose of hydraulic oil in line with environmental regulations!

10.2 Disposal

- Separately dispose of the unit parts according to the type of material. Observe national regulations.
- Always dispose of unit parts in accordance with the locally valid environmental regulations.
- Dispose of hydraulic oil as hazardous waste.

11. Warranty and liability

11.1 Warranty and liability

As a rule, our "General Sales and Delivery Conditions" apply. These are available to the operating company at the latest since concluding the contract. Warranty and liability claims in connection with injury to personnel and damage to equipment are always rejected when these can be traced to one or several of the following causes:

- Improper use of the unit.
- Improper placement, commissioning, operation and maintenance of the unit.
- Operating the unit with defective safety facilities or improperly fitted or non-functional safety and protection facilities.
- Non-compliance with the information provided in the manual regarding transportation, storing, placement, commissioning, operation and maintenance of the unit.
- Unauthorised modifications to the unit without having consulted VOSS Fluid.
- Inadequate monitoring of unit parts which are subject to wear.
- Improperly performed repairs.
- Cases of catastrophes due to external causes and Acts of God.

12. Annex

12.1 Directives

In the design of the pre-assembly unit Type 80 N3, the following directives and standards were applied:

- Machinery Directive 2006/42/EC

12.2 Standards relating to the machinery directive

- DIN EN 614-1
Safety of machinery.
- DIN EN 894 1 and 2
Safety of machinery. Ergonomics requirements for the design of displays and control actuators.
- DIN EN 792-10
Hand-held non-electric power tools.

12.3 Table of recommended pressures

Typ 80 N3			Typ 80 N3		
	Universal			VOSSRing	
	VOSS Ring ^M 2S plus 2S ES-4	VOSS Ring ^M 2S plus 2SVA ES-4VA		VOSS Ring ^M	
	ST	SST (VA)		ST	SST (VA)
mm	~bar	~bar	mm	~bar	~bar
L/S 6	100	120	L/S 6	100	120
L/S 8	110	130	L/S 8	110	130
L/S 10	150	170	L/S 10	150	180
L/S 12	170	195	L/S 12	170	200
S 14	190	205	S 14	200	240
L 15	170	210	L 15	190	230
S 16	205	240	S 16	230	280
L 18	200	215	L 18	230	280
S 20	240	305	S 20	310	370
L 22	260	285	L 22	290	350
S 25	320	380	S 25	360	430
L 28	300	350	L 28	350	420
S 30	430	530	S 30	520	600
L 35	410	570	L 35	500	600
S 38	600	–	S 38	600	–
L 42	490	–	L 42	600	–
					

12.4 Order designations:

Lock plate



The lock plate is not included in the scope of supply of the assembly unit. If reordering, please request quoting the order no. 5 9 93 42 00 00.

Cutting ring pre-assembly mandrels and pressure pads

Series	Tube OD mm	Pre-assembly studs cutting ring Order No.	Pre-assembly studs cutting ring High-strength Order No.	Pressure pads Order No.
L	6	5 9 91 20 73 00	5 9 93 86 14 00	5 9 91 32 71 00
L	8	5 9 91 20 83 00	5 9 93 86 16 00	5 9 91 32 81 00
L	10	5 9 91 20 93 00	5 9 93 86 18 00	5 9 91 32 91 00
L	12	5 9 91 21 03 00	5 9 93 86 20 00	5 9 91 33 01 00
L	15	5 9 91 21 13 00	5 9 93 86 23 00	5 9 91 33 11 00
L	18	5 9 91 21 23 00	5 9 93 86 25 00	5 9 91 33 21 00
L	22	5 9 91 21 33 00	5 9 93 86 27 00	5 9 91 33 31 00
L	28	5 9 91 21 43 00	5 9 93 86 29 00	5 9 91 33 41 00
L	35	5 9 91 21 53 00	5 9 93 86 31 00	5 9 91 33 51 00
L	42	5 9 91 21 63 00	5 9 93 86 33 00	5 9 91 33 61 00
S	6	5 9 91 21 73 00	5 9 93 86 15 00	5 9 91 32 71 00
S	8	5 9 91 21 83 00	5 9 93 86 17 00	5 9 91 32 81 00
S	10	5 9 91 21 93 00	5 9 93 86 19 00	5 9 91 32 91 00
S	12	5 9 91 22 03 00	5 9 93 86 21 00	5 9 91 33 01 00
S	14	5 9 91 22 13 00	5 9 93 86 22 00	5 9 91 33 71 00
S	16	5 9 91 22 23 00	5 9 93 86 24 00	5 9 91 33 81 00
S	20	5 9 91 22 33 00	5 9 93 86 26 00	5 9 91 33 91 00
S	25	5 9 91 22 43 00	5 9 93 86 28 00	5 9 91 34 01 00
S	30	5 9 91 22 53 00	5 9 93 86 30 00	5 9 91 34 11 00
S	38	5 9 91 22 63 00	5 9 93 86 32 00	5 9 91 34 21 00
LL	6	5 9 91 10 21 00	5 9 93 86 74 00	5 9 91 32 71 00
LL	8	5 9 91 10 31 00	5 9 93 86 73 00	5 9 91 32 81 00
LL	16	not possible	5 9 93 86 81 00	5 9 91 33 81 00

VOSS*Ring*^M Pre-assembly stud

Series	Tube OD d1	Order No.	Designation Pre-assembly stud High-performance steel
L	6	5993230300	TD-VRPT-L6-MT-PM
L	8	5993230400	TD-VRPT-L8-MT-PM
L	10	5993230500	TD-VRPT-L10-MT-PM
L	12	5993230600	TD-VRPT-L12-MT-PM
L	15	5993230700	TD-VRPT-L15-MT-PM
L	18	5993230800	TD-VRPT-L18-MT-PM
L	22	5993230900	TD-VRPT-L22-MT-PM
L	28	5993231000	TD-VRPT-L28-MT-PM
L	35	5993231100	TD-VRPT-L35-MT-PM
L	42	5993231200	TD-VRPT-L42-MT-PM
S	6	5993231300	TD-VRPT-S6-MT-PM
S	8	5993231400	TD-VRPT-S8-MT-PM
S	10	5993231500	TD-VRPT-S10-MT-PM
S	12	5993231600	TD-VRPT-S12-MT-PM
S	14	5993231700	TD-VRPT-S14-MT-PM
S	16	5993231800	TD-VRPT-S16-MT-PM
S	20	5993231900	TD-VRPT-S20-MT-PM
S	25	5993232000	TD-VRPT-S25-MT-PM
S	30	5993232100	TD-VRPT-S30-MT-PM
S	38	5993232200	TD-VRPT-S38-MT-PM

BV-10 pre-assembly mandrels and clamping jaws

Series	Tube d x s mm	Pre-assembly mandrels Order No.	Clamping jaws Order No.	Series	Tube d x s mm	Pre-assembly mandrels Order No.	Clamping jaws Order No.
L	6 x 1	5 9 93 02 01 00	5 9 93 00 00 00	S	8 x 1,5	5 9 93 02 18 00	5 9 93 00 10 00
L	8 x 1	5 9 93 02 02 00	5 9 93 00 10 00	S	8 x 2	5 9 93 02 19 00	5 9 93 00 10 00
L	10 x 1	5 9 93 02 03 00	5 9 93 00 20 00	S	10 x 1,5	5 9 93 02 04 00	5 9 93 00 20 00
L	10 x 1,5	5 9 93 02 04 00	5 9 93 00 20 00	S	10 x 2	5 9 93 02 20 00	5 9 93 00 20 00
L	12 x 1	5 9 93 02 05 00	5 9 93 00 30 00	S	12 x 1,5	5 9 93 02 06 00	5 9 93 00 30 00
L	12 x 1,5	5 9 93 02 06 00	5 9 93 00 30 00	S	12 x 2	5 9 93 02 21 00	5 9 93 00 30 00
L	15 x 1,5	5 9 93 02 07 00	5 9 93 00 40 00	S	12 x 3	5 9 93 02 20 00	5 9 93 00 30 00
L	15 x 2	5 9 93 02 08 00	5 9 93 00 40 00	S	14 x 2	5 9 93 02 22 00	5 9 93 01 40 00
L	18 x 1,5	5 9 93 02 09 00	5 9 93 00 50 00	S	14 x 3	5 9 93 02 23 00	5 9 93 01 40 00
L	18 x 2	5 9 93 02 10 00	5 9 93 00 50 00	S	16 x 2	5 9 93 02 24 00	5 9 93 01 50 00
L	22 x 1,5	5 9 93 02 11 00	5 9 93 00 60 00	S	16 x 2,5	5 9 93 02 25 00	5 9 93 01 50 00
L	22 x 2	5 9 93 02 11 00	5 9 93 00 60 00	S	16 x 3	5 9 93 02 22 00	5 9 93 01 50 00
L	28 x 2	5 9 93 02 12 00	5 9 93 00 70 00	S	20 x 2	5 9 93 02 26 00	5 9 93 01 60 00
L	28 x 3	5 9 93 02 13 00	5 9 93 00 70 00	S	20 x 2,5	5 9 93 02 26 00	5 9 93 01 60 00
L	35 x 2	5 9 93 02 14 00	5 9 93 00 80 00	S	20 x 3	5 9 93 02 27 00	5 9 93 01 60 00
L	35 x 3	5 9 93 02 15 00	5 9 93 00 80 00	S	20 x 3,5	5 9 93 02 28 00	5 9 93 01 60 00
L	42 x 3	5 9 93 02 17 00	5 9 93 00 90 00	S	20 x 4	5 9 93 02 39 00	5 9 93 01 60 00
				S	25 x 2,5	5 9 93 02 30 00	5 9 93 01 70 00
				S	25 x 3	5 9 93 02 31 00	5 9 93 01 70 00
				S	25 x 4	5 9 93 02 32 00	5 9 93 01 70 00
				S	30 x 3	5 9 93 02 33 00	5 9 93 01 80 00
				S	30 x 4	5 9 93 02 34 00	5 9 93 01 80 00
				S	30 x 5	5 9 93 02 31 00	5 9 93 01 80 00
				S	38 x 3	5 9 93 02 35 00	5 9 93 01 90 00
				S	38 x 4	5 9 93 02 36 00	5 9 93 01 90 00
				S	38 x 5	5 9 93 02 37 00	5 9 93 01 90 00
				S	38 x 6	5 9 93 02 38 00	5 9 93 01 90 00

ZAKO pressure plates and clamping jaws

Series	Tube OD mm	ZAKO Pressure plates Order No.	Clamping jaws Order No.
ZAKO NW ½"-ø16	16 x 2	5 9 93 06 53 00	5 9 93 01 50 00
ZAKO NW ½"-ø16	16 x 2,5	5 9 93 06 53 00	5 9 93 01 50 00
ZAKO NW ½"-ø16	16 x 3	5 9 93 06 53 00	5 9 93 01 50 00
ZAKO NW ¾"-ø20/ 25	20 x 2,5	5 9 93 06 63 00	5 9 93 01 60 00
ZAKO NW ¾"-ø20/ 25	20 x 3	5 9 93 06 63 00	5 9 93 01 60 00
ZAKO NW ¾"-ø20/ 25	20 x 3,5	5 9 93 06 63 00	5 9 93 01 60 00
ZAKO NW ¾"-ø20/ 25	25 x 3	5 9 93 06 63 00	5 9 93 01 70 00
ZAKO NW ¾"-ø20/ 25	25 x 4	5 9 93 06 63 00	5 9 93 01 70 00
ZAKO NW 1"-ø30/ 38	30 x 4	5 9 93 06 73 00	5 9 93 01 80 00
ZAKO NW 1"-ø30/ 38	30 x 5	5 9 93 06 73 00	5 9 93 01 80 00
ZAKO NW 1"-ø30/ 38	38 x 5	5 9 93 06 73 00	5 9 93 01 90 00
ZAKO NW 1 1/4"-ø38	38 x 4	5 9 93 06 83 00	5 9 93 01 90 00
ZAKO NW 1 1/4"-ø38	38 x 5	5 9 93 06 83 00	5 9 93 01 90 00
ZAKO NW 1 1/4"-ø38	38 x 6	5 9 93 06 83 00	5 9 93 01 90 00
ZAKO NW 1 1/4"-ø38	42 x 2	5 9 93 06 83 00	5 9 93 00 90 00
ZAKO Universal- pressure plate	ø16/ 20/ 25/ 30/ 38/ 42	5 9 93 06 42 00	See above

12.5 CE Declaration of Conformity



EC Declaration of Conformity

In terms of the EC
Machinery Directive
2006/42/EC Annex II A

We,

VOSS Fluid GmbH
Lüdenscheider Straße 52-54
D- 51688 Wipperfürth,

hereby declare that the
machine designated below,
based on its design and
construction as well as in the
version supplied by us,
corresponds to the
fundamental safety and
health

requirements of the EC
directives. This declaration
shall lose its validity in the
case of a modification to the
machine not approved by us.

Designation of the
machine:

Pre-assembly machine
Type 80 N3 /
TD-Type-80N3

Order no.:

5 9 92 08 04 00

Authorised person:

Mr Papenhoff is authorised to
compile the technical docu-
ments

Relevant EC directives:

EC Machinery Directive
2006/42/EC

Applied harmonised
standards:

EN 12100-1 and 12100-2
Safety of machinery. DIN EN
13857-1, Safety distances to
prevent hazard zones being
reached by upper and lower
limbs.

Technical documentation is
fully available. The operating
manual belonging to the
machine is available in the
original version.

The signee is authorised
to sign the declaration
for the manufacturer.

19.06.2013

Date

VOSS Fluid GmbH
Postfach 1540 · D-51679 Wipperfürth
Lüdenscheider Straße 52-54
D-51688 Wipperfürth

Stamp, Signature



VOSS Fluid GmbH
Postfach 15 40
D-51679 Wipperfürth

Lüdenscheider Straße 52-54
D-51688 Wipperfürth

Telefon: +49 2267 / 63-0
Telefax: +49 2267 / 63-5621 / -5622 / -5623

fluid@voss.net
www.voss.net

Status: 03.03.2016