

Process safety for every coupling –
VOSS pre-assembly devices and services.



Reliability down to the last detail.



We at VOSS see ourselves not only as a manufacturer and supplier of high-quality coupling components, but also as a system partner who provides solid advice and support throughout the entire hydraulic tube coupling process to achieve success – all over the world. We manufacture our systems, galvanise our products in-house and supply you with pre-assembly equipment, tools and auxiliary media. Furthermore, we also offer training courses and audits. Logistics are also of great importance for us – our products can only be applied reliably if they are delivered to our customers on time and in good condition. Our goal: Every tube coupling must be absolutely reliable. VOSS pre-assembly devices, which are calibrated perfectly to match the couplings and stand out for their ingenious features, contribute significantly to this reliability.

Process safety in pre-assembly and final assembly.

Name of device	Typ 80 N3	Typ 90 Basic	Typ 90 Comfort	VOSSForm 100	VOSSForm 100 Compact	Typ 85	VOSSFlare 110
One-off assembly	X	X					
Series production			X	X	X	X	X
Automatic tool identification			X				
Return stroke optimisation		X	X	X	X		
Semi-automatic tooling			X	X	X		
Touch screen			X				X
Error detection			X				
Avoid mistakes				X	X		
Including calibration service			X				
Free parameterisation at the customer's request			X				X
"Countdown" tally counter		X					X
Tally counter is freely programmable			X				X
Optional pedal switch		X	X	X	X		X
Tube OD	6-42 mm	6-42 mm	6-42 mm	6-42 mm	6-42 mm	38-120 mm	6-38 mm
Bench-top device	X	X	X		X	X	
Floor-mounted device				X			X
Systems:							
Cutting ring systems	X	X	X				
BV-10 flared system	X		X				
ZAKO flange system	X		X			X	
VOSSForm ^{SOB} / VOSSForm ^{SOVA}				X	X		
VFS 90 (ORFS)							X
Electric connection	–	400 V	400 V	400 V	400 V	400 V	400 V
Dimensions (WxHxL) in mm	185x267x590	540x280x480	800x308x615	900x1122x943		340x320x650	900x1122x943
Weight	15 kg	66 kg	90 kg	630 kg		160kg	540 kg
Brochure Page	5	6	7	8	9	10	11

Our pre-assembly devices and tools are specifically designed to suit the needs of one-off assemblies and series production and harmonise with our overall system in every detail. We have a suitable solution for every requirement – for safe and economic pre-assembly in initial installation work or in maintenance. VOSS offers a broad range of products for tubes with outer diameters of 6 to 120 mm, ranging from simple manual tools up to automated devices with automatic tool identification.

Always at hand: the manual pre-assembly mandrel.



Single assembly of cutting rings in a vice.

If a cutting ring has to be installed on-site or during a maintenance call, the manually operated pre-assembly mandrel is the tool of choice. It enables the user to create a coupling manually without subjecting the actual coupling connecting piece to wear and tear.

- For manual one-off assembly
- Wear resistant

Systems	Cutting rings 2S, 2S <i>plus</i> , 2SVA, ES-4, ES-4VA	6 – 42 mm tube OD
Field of application	Servicing on site, vice required	

The ace on the building site: VOSS Type 80 N3.



Also suitable for 10° flared systems.

A lot of tubes in places that are hard to reach? The handy VOSS Type 80 N3 faces up to every servicing challenge. The stepped side surfaces allow firm fixation in a vice or direct bolting to a workbench, if necessary. Tool sets can be changed easily and the manometer, in connection with the imprinted setting values, ensures precise assembly results. This portable device for pre-assembly on construction sites requires no power connection.

- Manometer, table of setting values
- New: removable lever including bracket for more convenient transportation

Systems	Cutting rings 2S, 2S <i>plus</i> , 2SVA, ES-4, ES-4VA	6 – 42 mm tube OD
	BV-10	6 – 42 mm tube OD
	ZAKO	up to 38 mm tube OD
Field of application	Mobile device for servicing/maintenance purposes, easy assembly, with mounting option	

Reproducibility in series production: VOSS Type 90 Basic.



With automatic pre-assembly function and tally counter.

One workshop, various workstations? The portable VOSS 90 Basic device enables implementation of reliable series production of cutting ring pre-assemblies with reproducible results at any place. The automatic pre-assembly function ensures consistent quality at all times and the adjustable assembly pressure allows operators to adjust the pre-assembly process to changing assembly parameters. Particularly handy: a plate displaying the system-dependent setting values is attached to the casing of the device and the setting values are adjustable and clearly visible on a large display. The countdown-tally counter ensures that only the desired number of tubes is assembled.

- Weighs only 66 kg
- Easy to operate, tally counter, tools are easy to change
- Short cycle times thanks to intelligent control
- Optionally available with pedal switch

Systems	Cutting rings 2S, 2S <i>plus</i> , 2SVA, ES-4, ES-4VA	6 – 42 mm tube OD
Field of application	Bench-top device for use in workshops, allows processing of large unit quantities	

Maximum process safety: VOSS Type 90 Comfort.



Automatic RFID tool identification prevents errors and reduces costs per unit.

Pre-assembly in large-batch production involves special requirements. This calls for a quick change of tools, extremely short cycle times and prevention of errors, since any mistake can render an entire batch useless. The ideal solution here is our VOSS Type 90 Comfort. By a wireless process, it reads out the RFID chips integrated in the VOSS tools and is automatically readjusted to suit the tool, allowing very short setup times and effectively preventing operating errors, even if the tools are changed frequently. Simple, precise, safe – for narrow tube elbows.

- Automatic pressure adjustment
- Tool identification via RFID chip
- Freely programmable tally counter
- Position dependent pre-assembly
- Touch panel, intuitive menu navigation
- On-site calibration service
- Optionally available with pedal switch
- Error detection

Systems	Cutting rings 2S, 2S <i>plus</i> , 2SVA, ES-4, ES-4VA	6 – 42 mm tube OD
	BV-10 (device conversion by VOSS-Service)	6 – 42 mm tube OD
	ZAKO (device conversion by VOSS-Service)	up to 38 mm tube OD
Field of application	For series production in workshops, maximum process reliability	

Perfect and quick tube forming: VOSSForm 100.



Reliable manufacturing of VOSSForm^{SQR} in large-batch production thanks to an integrated stop plate.

Fitting the VOSSForm^{SQR} contour to tubes is simple and safe with VOSSForm 100. Clear labelling of both tools minimises assembly errors, and the stop plate for the tube end prevents workpiece placement errors. This ensures that there is always enough material for the contour and makes it practically impossible to produce a defective coupling. Automatic forming pressure settings and visual display of the next operating step prevent operating errors. After each forming process, the device automatically returns to the start position, guided by a photoelectric sensor – ideal for producing a large number of units in short cycle times. This is one of the reasons why VOSSForm 100 is designed as a complete workplace, i. e. it is equipped with an integrated tray for the tools, which can be changed easily, and with an additional 230V power outlet on the back of the device.

- Automatic adjustment to tube size
- Cycle times of 7 (6-10 mm OD) to 15 seconds (25-42 mm OD)
- A photoelectric sensor identifies the end of a process step and makes sure the device returns to the start position
- Ergonomic operation: One-hand interlocking of the tool tray, simple handling thanks to an intuitive control concept
- Optionally available with pedal switch

Systems	VOSSForm ^{SQR} and VOSSForm ^{SQR} VA	6 – 42 mm tube OD
Field of application	Stationary device, series production, maximum process reliability	

The space-saving alternative: VOSSForm 100 Compact.



Ready for transport.

The metal forming machine VOSSForm 100 Compact is the alternative to the VOSSForm 100 when it comes to compact external dimensions. This table device has been designed so intelligently that it even offers the same benefits as the standalone device. It is 100% compatible, as the forming unit is identical – tools can be used with both the table and standalone device, ensuring that steel and stainless steel tubes can be formed reliably. It also comes with an integrated limit plate to prevent insertion errors. The intuitive operating concept is user-friendly and easy to learn. The advantages of the compact variant are especially apparent during transport within the plant: a special support for forklifts is integrated on the base, sturdy crane lugs for cranes having been mounted on the top.

- Compact bench-top version of Type 100
- The same scope of performance and ease of use
- Optionally available with pedal switch

Systems	VOSSForm ^{SQR} and VOSSForm ^{SQRVA}	6 – 42 mm tube OD
Field of application	Portable, series production, maximum process reliability	

Perfect results that can be seen - with ZAKO: VOSS Type 85.



Wear-free processes and protection against excessive flaring.

For pre-assembling ZAKO collar-ring flared flanges up to an outer tube diameter of 120 mm, we offer a compact, electrohydraulic device: Type 85. The pre-assembly device consists of two separate parts: the assembly cylinder with pre-flanged assembly head and the external electrohydraulic pump unit. This allows easy transportation. A further advantage of the modular design: the process is fully visible for monitoring. The ZAKO collar ring is used directly for crimping – there is no tool wear since the tool is integrated into the tube coupling. Crimping of the tube is no longer necessary, either. As the system is so incredibly simple, pre-assembly is extremely easy and ensures high precision.

- The tool remains in the tube, wear is eliminated.
- Easy operation
- Complete assembly process is visible, allowing monitoring

Systems	ZAKO	38 – 120 mm tube OD
Field of application	Portable, for one-off assembly and series production	

Tumbling involves less stress: VOSSFlare 110.



Flaring tube ends by 90 degrees, fully-automated.

Flaring a tube end by 90 degrees in a single step puts tremendous stress on the material. For this reason, our fully-automatic VOSSFlare 110 uses a tumbling motion which is easy on the material and saves time: the tool carries out a tumbling movement and the tube end is flared out bit by bit, several times over, applying only slight force and involving only slight contact with the tool. The fibre structure of the tube's steel is not damaged and the stability of the steel is maintained. What's more, the surface quality of the seal is extremely good since no marks are created during processing. VOSSFlare 110 is not only perfect for economical series production owing to the high quality and speed, but also because operator errors are avoided thanks to the integrated stop plate and easy operation via touch screen.

- Fully-automatic crimping by 90 degrees by means of a tumbling process
- Excellent surface quality
- Integrated stop plate prevents operator errors.
- Programmable, with touch screen

Systems	VSF 90 (ORFS)	6 – 42 mm tube OD
Field of application	Stationary device, series production.	

100% error-free cutting ring assembly:
pre-assembly mandrel made of heavy-duty steel.



More than 20-fold service-life increase and integrated wear inspection.

VOSS cutting ring pre-assembly tools are available in two versions: as a basic version and as an enhanced version made of heavy-duty steel. Normal pre-assembly mandrels are subject to wear and tear and therefore have to be checked for accuracy to gauge after every 50th pre-assembly procedure. This wastes time, is a potential source of error and thus requires an inspection schedule. Our solution: high-durability tools made of heavy-duty steel. No typical wear and tear, no inspection intervals, extremely long service life – up to 20 times longer than that of common mandrels. And when the end of its service life is reached, the pre-assembly mandrel breaks at the front end, forcing the operator to change the mandrel. This ensures fault-free processing on your shop floor.

- Basic version: Accuracy to gauge check after every 50th pre-assembly
- Version made of heavy-duty steel: no inspection required, service life is increased by up to 20 times, clear signal upon reaching the end of service life
- Also available as manual pre-assembly mandrel for use with a vice
- Version Type 90 Comfort: with additional RFID chip
- All tools have the same mounting system

Trusting a device is good, but zero tolerance is better: Our test equipment.



Precise check of accuracy to gauge: cone gauges.



VOSS pre-assembly mandrels in basic version for cutting ring assembly have a lower tolerance range than normal connection pieces and are resistant to wear and tear. Nevertheless, these mandrels also have to be inspected from time to time: the inner cone of the connection pieces has to be checked for accuracy to gauge at least after every 50th pre-assembly. The ideal test equipment for these inspections are our VOSS cone gauges, supplied individually or as a complete set for all sizes.

Cutting ring geometry at a glance: inspection gauges.



VOSS inspection gauges enable faster quality inspection of cutting ring pre-assemblies in series production and during incoming goods inspections. Simply connect the tube end (6 -42 mm), tighten it hand-tight and read out the result. An additional visual inspection of the material bulge on the cutting ring completes the inspection procedure.

To avoid mistakes: the “Gewindeboard” thread gauge.



Which thread does the threaded stud comply with? Metric and inch threads are sometimes hard to distinguish. The VOSS “Gewindeboard“ allows the user to quickly identify thread size and type – both metric and in inches. This avoids incompatible thread and stud combinations and thus prevents leakage.

Radii you can rely on: VOSS tube bending unit.



Lightweight manual bending device for clamping in a vise, ensuring precise bends in pipes from 8 to 22 mm.

Safety is obtained and maintained by training.


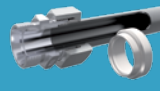







Assembly training courses and VOSS quality audits.

Leakages are the worst enemy of any hydraulic system. There are any number of possible fault sources, but in most cases the operator is the key factor. Only highly qualified employees are able to identify potential causes of defects in a timely manner and thus avoid them. VOSS offers regular training courses to qualify your employees – at our premises in Wipperfürth or at your own premises - anywhere around the globe. In the context of an assembly audit, we watch your employees at work, analyse processes, inspect assembly workplaces and equipment and subsequently compile a customized training course which sustainably increases your company's productivity. Less faults, faster results, reduced costs.

- Assembly training courses for our customers' employees, including both theory and practice
- Assembly audits for process reliability: including inspection of all assembly processes
- On-site inspection of pre-assembly devices and tools

One system, one partner.

Requirements System features	2S	2S plus	ES-4	VOSSForm ^{SOR}	BV-10	VFS 90 (ORFS)	ZAKO
							
Standard	DIN EN ISO 8434-1	DIN EN ISO 8434-1	DIN EN ISO 8434-1	DIN EN ISO 8434-1	DIN EN ISO 8434-1	DIN EN ISO 8434-3 und SAE J 1453	DIN EN ISO 8434-1
Sealing type	Metallic	Metallic	Metallic + gasket sealing	Metallic + gasket sealing	Metallic + gasket sealing	Metallic + gasket sealing	Metallic + gasket sealing
Material	Steel/stainless steel	Steel/stainless steel	Steel/stainless steel	Steel/stainless steel	Steel	Steel	Steel
Series Tube OD	L/S 6-42	L/S 6-42	L/S 6-42	L/S 6-42	L/S 6-42	6-38	16-120
Pressure resistance - static/dynamic compressive strength - ability to transmit external forces	⊘	●	●	●●	●	●●	●●
Temperature resistance	●	●	●	●	●	●	●
Corrosion resistance	●●	●●	●●	●●	●●	●●	●●
Media resistance	●	●	●	●	●	●	●
Assembly-friendliness - pre-assembly and final assembly - sources of error, inspection options	⊘	●●	●●	●●	●	●●	●
On-site assembly - without special tools - viable repair solutions	●	●	●	○	●	○	●
Maintenance requirements - settling behaviour under continuous loads - durable fine sealing	⊘	●	●●	●●	●●	⊘	●●
Flow behaviour - constriction of tube diameter, stagnant regions - pressure loss, noise development	⊘	⊘	⊘	⊘	○	⊘	○
System reliability - shearing and tearing, tube bursts - assembly reliability	⊘	●	●	●●	●●	⊘	●●

●● excellent

● very good

⊘ good

○ average

VOSS

VOSS Fluid GmbH
P.O. Box 1540
51679 Wipperfürth
Lüdenscheider Str. 52-54
51688 Wipperfürth
Germany
Telephone +49 2267 63-0
Fax +49 2267 63-5621
fluid@voss.de
www.voss.net