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1 Recommended equipment for disassembling, assembling and rework a Pilot Operated Safety Valve

2 Purpose

This document describes the recommended Tool KIT requirements for equipping an agency or a warehouse for goods receiving/storage, adjusting, testing and shipping of a POSV

3 Competences

The generation, maintenance and distribution of the documentation takes place in the organisation department. The defaults will be generated by the technical department in consultation with the final assembly department and production planning department.

4 Scope

This document must be applied to the disassembling, assembling, rework and refinishing parts of a Pilot Operated Safety Valve in agencies and subsidiaries of LESER GmbH & Co. KG, customers and independent service center.

5 Disclaimer

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6 Tools for the pilot operated safety valves

6.1 Double open-end spanner

The open-end spanner is used for tightening or unscrewing bolts and nuts.

Designated use

- Tool for tightening or unscrewing bolts and nuts such as on the top plate.



Figure 1: Unscrewing a screw connection



Figure 2: Unscrewing an eyelet

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Technical requirements

Requirements/quality	Data	Data	Data	Data	Data
DIN	3110	3110	3110	3110	3110
Spanner width in mm	8 x 10	13 x 15	18 x 21	19 x 22	34 x 36
Length	140	188	236	236	328
Manufacturer	GEDORE				
Material	Chrome-vanadium-steel				
Vendor	e.g. Hahn & Kolb				
External order number	52012070	52012180	52012245	52012250	52012405
LESER order number	Not defined yet				
Tool Kit number	Not defined yet				
Internet	www.hahn-kolb.de				

Technical illustration



Illustration 1

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6.2 Ring spanner

The ring spanner is used for tightening or unscrewing bolts and nuts.

Designated use

- Tool for tightening or unscrewing bolts and nuts such as top plates.



Figure 3: Ring spanner

Technical requirements

Requirements/ quality	Data	Data	Data	Data	Data	Data
DIN	3113	3113	3113	3113	3113	3113
Spanner width in mm	13	18	24	30	41	46
Length	185	245	318	390	520	550
Manufacturer	GEDORE					
Material	Chrome-vanadium-steel					
Vendor	e.g. Hahn & Kolb					
External order number	52042630	52042680	52042740	52042800	52042880	52042890
LESER order number	Not defined yet					
Tool Kit number	Not defined yet					
Internet	www.hahn-kolb.de					

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6.3 Deep cranked ring spanner

The deep cranked ring spanner is used for tightening or unscrewing nuts which are located deeper than the surrounded surface. They are not approachable with an usual open-end spanner.


Designated use

- Tool for tightening or unscrewing nuts in difficult approachable areas



Figure 4: Deep cranked ring spanner

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Requirements/ quality	Data	Data	Technical illustration  Illustration 2
DIN	3113B	3113B	
Spanner width in mm	17	19	
Length	232	258	
Manufacturer	GEDORE		
Material	Chrome-vanadium-steel		
Vendor	e.g. Hahn & Kolb		
External order number	52042670	52042690	
LESER order number	Not defined yet		
Tool Kit number	Not defined yet		
Internet	www.hahn-kolb.de		

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6.4 Single-ended open spanner

Single-ended open spanners are required for tightening or unscrewing the lever and cap.

Designated use

- For example lever and cap screw connections



Figure 5: Tightening a cap



Figure 6: Tightening a cap

Requirements / Quality	Data	Data
DIN	894	
Spanner width in mm	70 cranked	
Manufacturer	ORION	
Material	Special steel	
Length	575	
Vendor	e.g. Hahn & Kolb	
External order number	52002070	
LESER order number	Not defined yet	
Tool kit number	Not defined yet	
Internet	www.hahn-kolb.de	

Single open end spanner



Technical illustration 3

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6.5 Allen key

The allen key is used for tightening or unscrewing allen screws.

Designated use

- Tool for tightening or unscrewing screws such as used at the manifold block



Figure 7: Allen key with torque wrench

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Requirements / Quality	Data	Illustration : Tool box with allen keys for ratchet/ torque wrench  Technical illustration 4
DIN	-	
Sizes in mm	4, 5, 6, 8, 10, 12, 14, 17, 19	
Manufacturer	ORION	
Material	Special steel	
Vendor	e.g. Hahn & Kolb	
External order number	52458150	
LESER order number	Not defined yet	
Tool kit number	Not defined yet	
Internet	www.hahn-kolb.de	

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6.6 Socket

The socket is used together with the torque wrench (see LGS 4456 standard tool kit) and the plug-in reversible ratchet (see LGS 4456 standard tool kit). It is used, for example, for the screw connection of the top plate to the body.

Designated use

- Screw connections of top plates



Figure 8: Tightening a nut



Figure 9: Tightening a nut

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Technical requirements

Requirements / Quality	Data		
DIN	3120		
Size	8mm	41 mm	50 mm
Material	Special steel		
Vendor	e.g. Hahn & Kolb		
External order number	58612080	58972041	58972050
LESER order number	Not defined yet		
Tool kit number	Not defined yet		
Internet	www.hahn-kolb.de		

Technical illustration



Illustration 5: Socket

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6.7 Impact wrench

The Impact wrench is used for tightening or unscrewing bolts and nuts mechanically. It is just a helpful tool, but not necessary for disassembly or assembly the POSV valve.

Designated use

- Tool for tightening or unscrewing nuts such as used at the top plate of the POSV



Figure 11: Impact wrench

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7 Customized tools for the pilot operated safety valve

7.1 O-ring mounting aid

The O-ring mounting aid is used for an easier assembly of the O-rings. It is just a helpful tool, but not necessary for disassembly or assembly the POSV valve.

Designated use

- Tool for pulling O-rings on their foreseen components such as pistons or seats

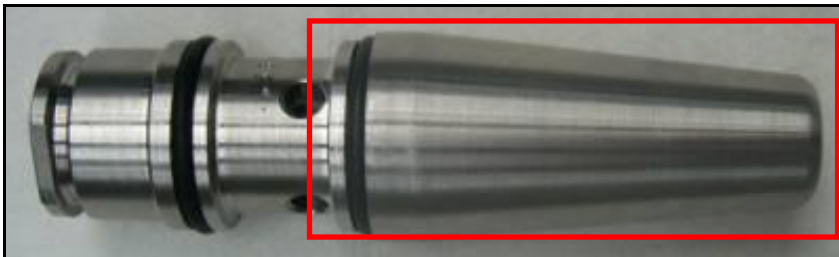


Figure 12: O-ring mounting aid



Figure 13: O-ring mounting aid

Technical requirements

Requirements / Quality	Data
Diameter [mm]	30 ; 32 ; 34
Length	Not defined yet
Vendor	LESER

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LESER order number	Not defined yet
Tool kit number	Not defined yet
Order	sales@leser.com

7.2 Hook for O-rings

The hook for O-rings is used for an easier assembly and disassembly of O-rings.



Figure 14: O-ring tool box

Technical requirements

Requirements / Quality	Data
Manufacturer	APSOparts
Material	metal
Vendor	e.g. Angst+Pfister Gruppe
External order number	11.4052.5000
LESER order number	Not defined yet
Tool kit number	Not defined yet
Internet	Angst-pfister.com

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7.3 Nozzle assembly tool

The nozzle assembly tool is used to insert the nozzle into the main valve body.

Designated use

- Tool for assembly the nozzles such as in the main valve body of the POSV

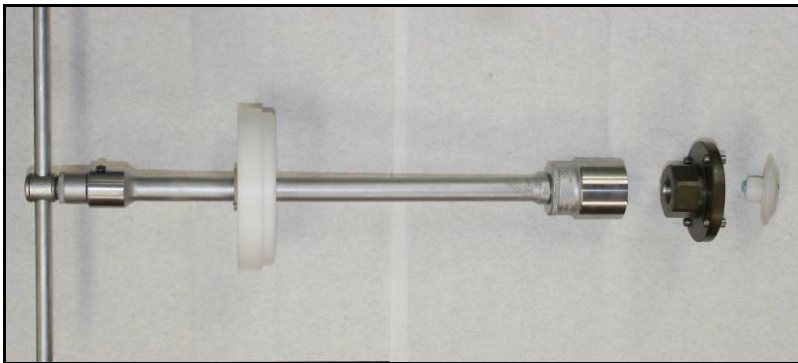


Figure 15: Complete components of the nozzle assembly tool

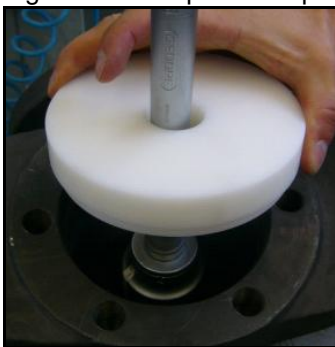


Figure 16: Nozzle assembly tool Figure 17: Nozzle assembly tool

NOTE: The socket wrench extension and T-handle are not included in scope of delivery and must be provided by the customer!

Technical requirements

Requirements / Quality	Data	Data	Data	Data
Size	1,5 x 2	1,5 x 3	1 x 2	2 x 3

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Global Standard	LESER Global Standard Recommended Equipment POSV	LGS 4122
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Material	Metal ; plastic			
Vendor	LESER			
LESER order number	445.5239.0000	445.5339.0000	445.5939.0000	445.5439.0000
Tool kit number	Not defined yet			
Internet	Leser.com			
Order	sales@leser.com			

Requirements / Quality	Data	Data	Data	Data
Size	3 x 4	4 x 6	6 x 8	8 x 10
Material	Metal ; plastic			
Vendor	LESER			
LESER order number	445.5539.0000	445.5639.0000	445.5739.0000	445.5839.0000
Tool kit number	Not defined yet			
Internet	www.leser.com			
Order	sales@leser.com			

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7.4 Pitot tube assembly tool

The pitot tube assembly tool is used to align the pitot tube while tightening the fitting the main valve body.

Designated use

- Tool to align the pitot tube such as in the main valve body of the POSV.

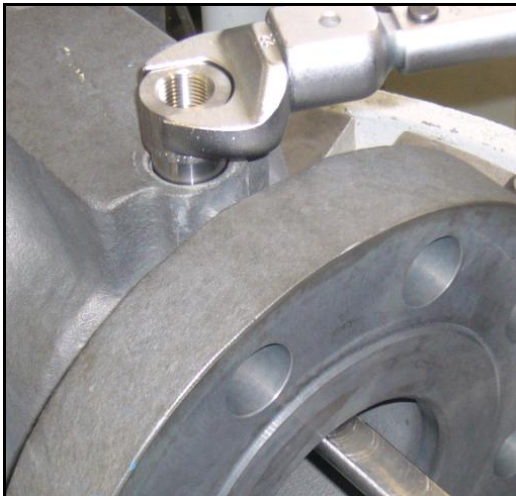


Figure 18: Pitot tube assembly tool



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Figure 19 : Pitot assembly tool

Figure 20: Pitot assembly tool

Technical requirements

Requirements / Quality	Data
Length	Not defined yet
Quantity	1
Vendor	LESER
LESER order number	Not defined yet
Tool kit number	Not defined yet
Internet	www.sales@leser.com

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7.5 Piston disassembly tool

The disassembly tool is used to pull the piston out of the piston guide. It is just a helpful tool, but not necessary for disassembly or assembly the POSV valve.

Designated use

- Use the piston disassembly tool during the disassembly process by screwing the tool into the top of the piston. Afterwards you can easily pull the piston out of the guide.

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Figure 21: Piston disassembly tool



Figure 22: Disassembly of a piston

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Technical requirements

Requirements / Quality	Data
Length	Not defined yet
Quantity	1
Vendor	LESER
LESER order number	Not defined yet
Tool kit number	Not defined yet
Internet	www.sales@leser.com

7.6 Gap gage for clamp ring

The gap gage is used to check the connections of the compression fittings.


Designated use

- Tool to examine a right connection such as between the tube and main valve.
 1. Screw the nut up to the gap gage
 2. Pull out the gap gage
 3. Tighten the nut a further $\frac{1}{4}$ - $\frac{1}{2}$ turn

For further details refer to the manufacturer of the compression fitting

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Technical requirements

Requirements / Quality	Data	Technical illustration 6 
Manufacturer	Schwer	
Material	metal	
Vendor	e.g. Schwer	
External order number	GG	
LESER order number	Not defined yet	
Tool kit number	Not defined yet	
Internet	www.schwer.com	

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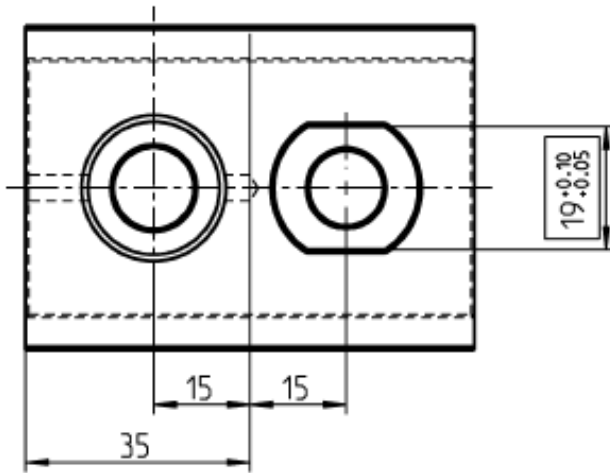
7.7 Assembling aid pilot

The assembling aid is used for an easier assembly of the seats/ discs and adjusting screws. It is just a helpful tool, but not necessary for disassembly or assembly the POSV valve.

Designated use

- Aid in which you can place the adjusting screw or the disc and seat unit of the pilot valve. Therefore it is easier to assembly or disassembly these components

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Technical requirements

Requirements / Quality	Data
Width [mm]	Not defined yet
Length [mm]	Not defined yet
Vendor	LESER
LESER order number	60S.2512.4012
Tool kit number	Not defined yet
Order	sales@leser.com

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