



LESER Global Standard Overview of the Tightening Torques POSV

LGS
3322_EN
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1 Purpose

This LESER global standard (LGS) describes tightening torques and lubrication of pilot safety valves.

2 Scope

This LGS pertains to all LESER quality associates.

3 References

None

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4 Pop Action Pilot Type 8104.1000 und 8104.2000

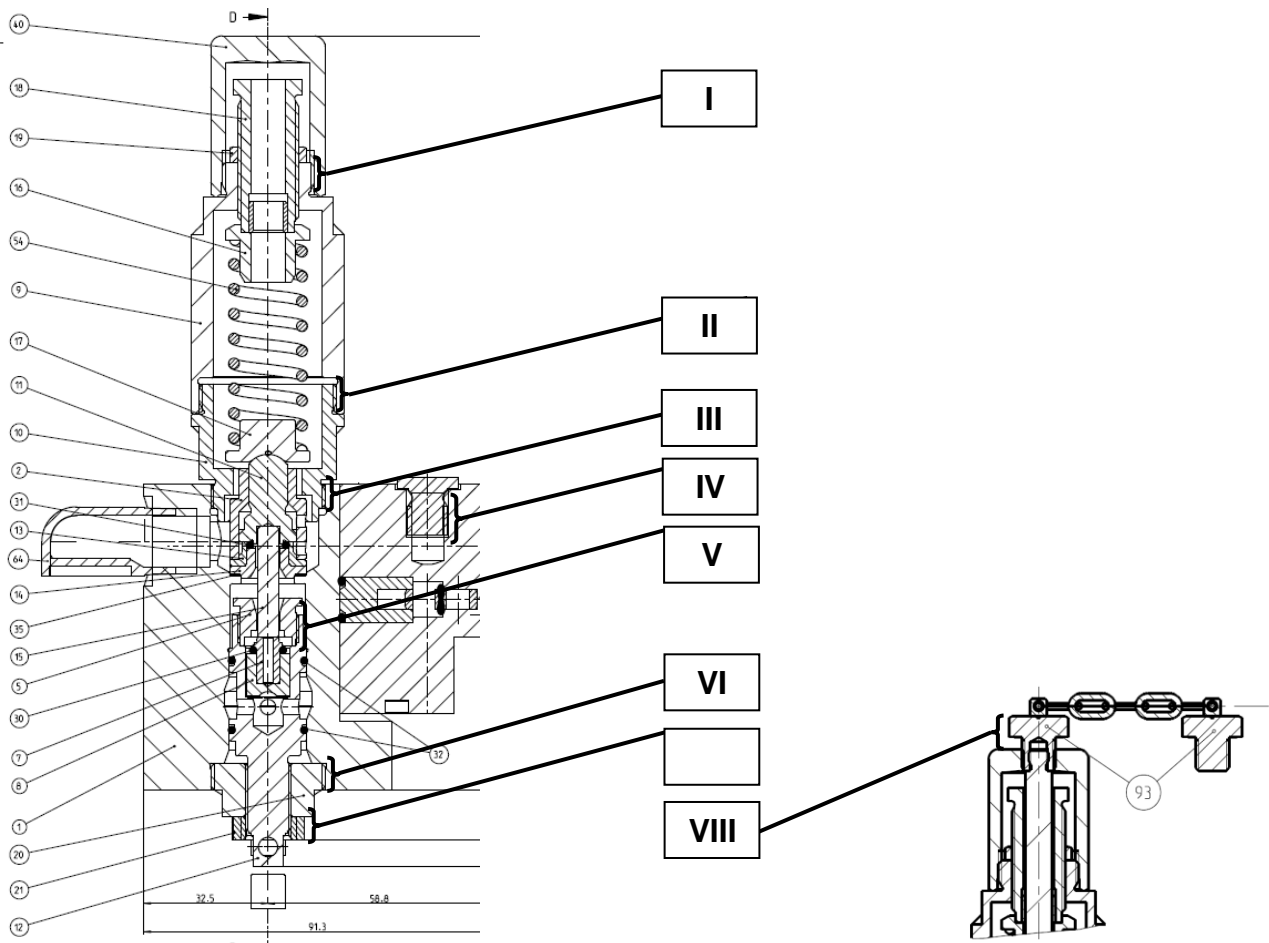


Figure 1: Cross section pop action pilot valve

Index	Thread connections [pos. number]	Thread	SW	Torque [Nm]	Lubrication	Tool
I	Bonnet [9] / cap / lever [40]	M24 x 1,5	27	50-55	Molykote D Paste	Open-end spanner
II	Bonnet [9] / bonnet base part [10]	M36 x 1,5	34	60-70	Halocarbon-oil 56 S	Open-end spanner
III	Bonnet base part [10] / bod [1]	M30 x 1,5	36 cranked	70-80	Halocarbon-oil 56 S	Open-end spanner
IV	Manifold block [24.1] / plug [24.7]	G1/4	6	55-60	Halocarbon-oil 56 S	Allen key
V	Seat, feeding [5] / adjusting screw [12]	M16 x 1	16	30-35	Halocarbon-oil 56 S	Open-end spanner
VI	Nut [20] / body [1]	M33 x 1,5	24	45-50	Molykote D paste	Open-end spanner
VII	Counter nut [21] / adjusting screw [12]	M12 x 1	19	25-30	Molykote D Paste	Open-end spanner
VIII	Test gag [93] / bonnet [9]	M10	16	40-50	Halocarbon-oil 56 S	Open-end spanner

Table 1: Overview of the pop action pilot valve screw connections

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5 Modulate action pilot valve Type 8204.1000 (diaphragm)

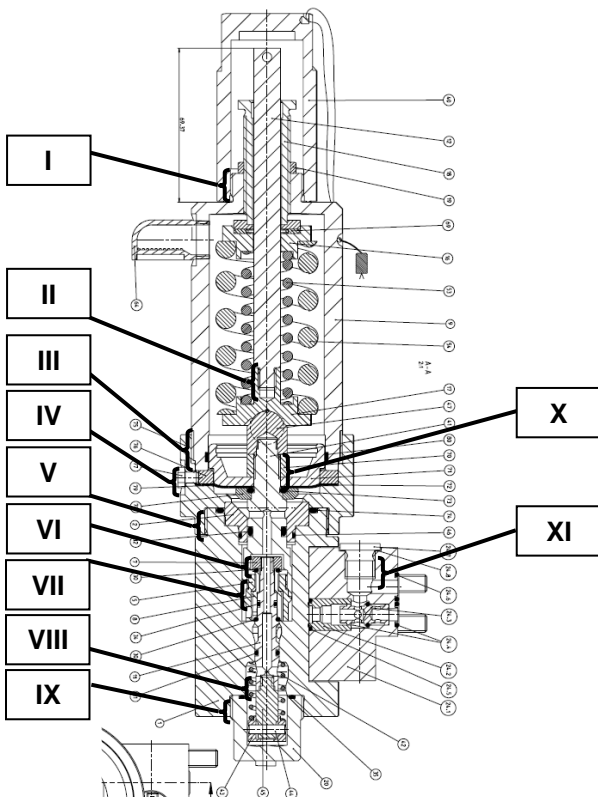


Figure 2: Cross section of the modulate action pilot valve (diaphragm)

Index	Thread connection [Pos. Nummer]	Thread	SW	Torque [Nm]	Lubrication	Tool
I	Bonnet [9] / cap [40]	M33 x 1,5	41	55-65	Molykote D paste	Open-end spanner
II	Spidle [12] / spring plate [17]	M8	10	Paste into Delo ML 5449	---	Open-end spanner
III	Bonnet [9]/ spacer [75]	M68 x 1,5	60	140-150	Halocarbon-oil 56 S	Open-end spanner
IV	Hexagon-screw	M5	8	4-6	---	Ring spanner
V	Spacer [75] / body [1]	M56 x 1,5	70 cranked	170-180	Molykote D paste	Open-end spanner
VI	Disc feeding (upper) [7] / disc exhaust (lower) [11]	M6	13	8-10	---	Open-end spanner
VII	Seat feeding [5] / piston [41]	M18 x 1	21	65-70	---	Open-end spanner
VIII	Disc exhaust (lower) [11]/ disc extension [45]	M6	8	8-10	---	Open-end spanner
IX	Plug [20] / body [1]	M33 x 1,5	24	45-50	Molykote D paste	Open-end spanner
X	Nut [70] / piston [41]	M12	19/8	22-26	---	Deep cranked double ring spanner + os
XI	Manifold block [24.1] / plug [24.7]	G1/4	6	55-60	Halocarbon-oil 56 S	Allen key

Table 2: Overview of the modulate action pilot valve (diaphragm) screw connections

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6 Modulate action pilot valve Type 8204.2000 und 8204.3000 (piston up to 3713psi)

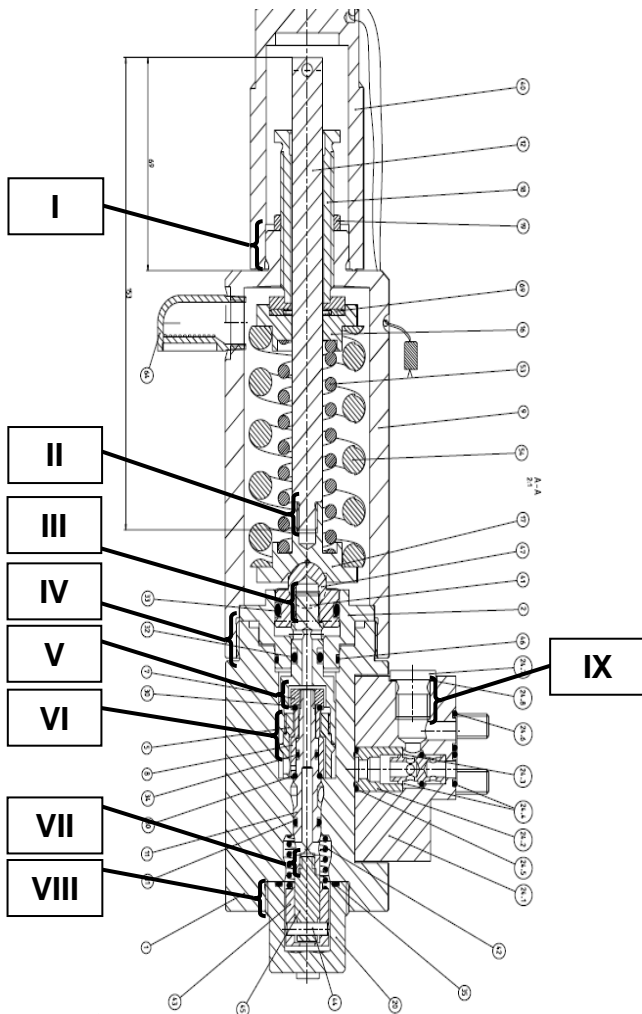


Figure 3: Cross section of the modulate pilot valve (piston)

Index	Thread connection [Pos. Nummer]	Thread	SW	Torque [Nm]	Lubrication	Tools
I	Bonnet [9]/ cap [40]	M33 x 1,5	41	55-65	Molykote D paste	Open-end spanner
II	Spindle[12]/ Spring plate (lower) [17]	M8	10	Paste into Delo ML 5449	---	Open-end spanner
III	Piston (upper) [47] / piston [41]	M10	15	22-26	---	Open-end spanner
IV	Body [1] / bonnet [9]	M56 x 1,5	60	140-150	Molykote D paste	Open-end spanner
V	Disc feeding (upper) [7] / disc exhaust (lower) [11]	M6	13	8-10	---	Open-end spanner
VI	Seat,feeding [5] / piston [41]	M18 x 1	21	65-70	---	Open-end spanner
VII	Disc exhaust (lower) [11] / Disc extension [45]	M6	8	8-10	---	Open-end spanner
VIII	Plug [20]/ Body [1]	M33 x 1,5	24 ⁽²⁰⁰⁰⁾ 26 ⁽³⁰⁰⁰⁾	45-50	Molykote D paste	Open-end spanner
X	Manifold block [24.1] / plug [24.7]	G1/4	6	55-60	Halocarbon-oil 56 S	Allen key

Table 3: Overview of the modulate action pilot valve (piston) screw connections

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7 Modulate action pilot valve Type 8204.4000 (piston over 3713psi)

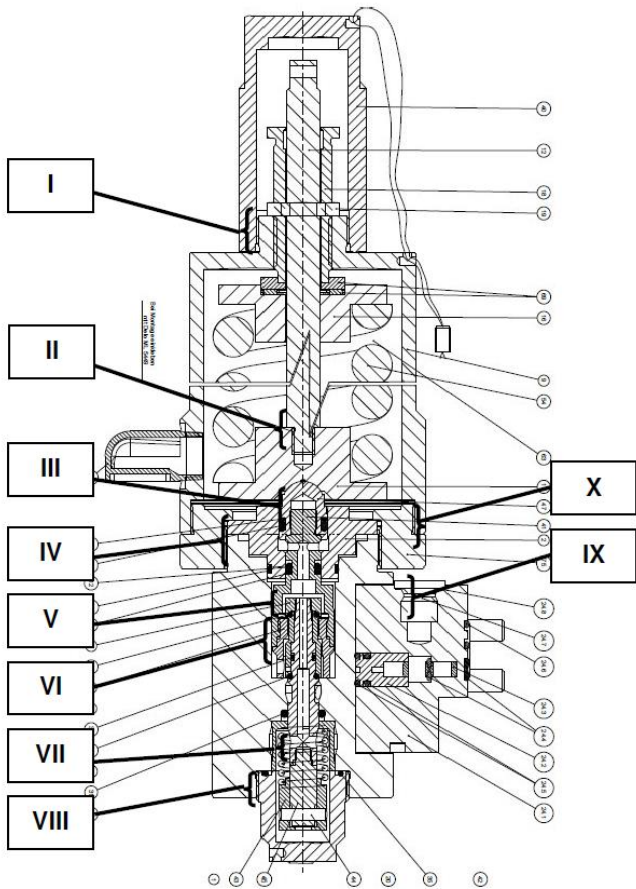


Figure 4: Cross section of the modulate pilot valve (piston)

Index	Thread connection [Pos. Number]	Thread	SW	Torque [Nm]	Lubrication	Tools
I	Bonnet [9]/ cap [40]	M33 x 1,5	41	55-65	Molykote D paste	Open-end spanner
II	Spindle[12]/ Spring plate (lower) [17]	M8	10	Paste into Delo ML 5449	---	Open-end spanner
III	Piston (upper) [47] / piston [41]	M10	15	22-26	---	Open-end spanner
IV	Body [1] / distance ring [75]	M56 x 1,5	70	140-150	Molykote D paste	Open-end spanner
V	Disc feeding (upper) [7] / disc exhaust (lower) [11]	M6	13	8-10	---	Open-end spanner
VI	Seat,feeding [5] / piston [41]	M18 x 1	21	65-70	---	Open-end spanner
VII	Disc exhaust (lower) [11] / Disc extension [45]	M6	8	8-10	---	Open-end spanner
VIII	Plug [20]/ Body [1]	M33 x 1,5	26	45-50	Molykote D paste	Open-end spanner
IX	Manifold block [24.1] / plug [24.7]	G1/4	6	55-60	Halocarbon-oil 56 S	Allen key
X	distance ring [75] / Bonnet [9]	M80x1	80	130-140	Molykote D paste	Open-end spanner

Table 4: Overview of the modulate action pilot valve (piston) screw connections

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8 Main valve Semi Nozzle and Full Nozzle

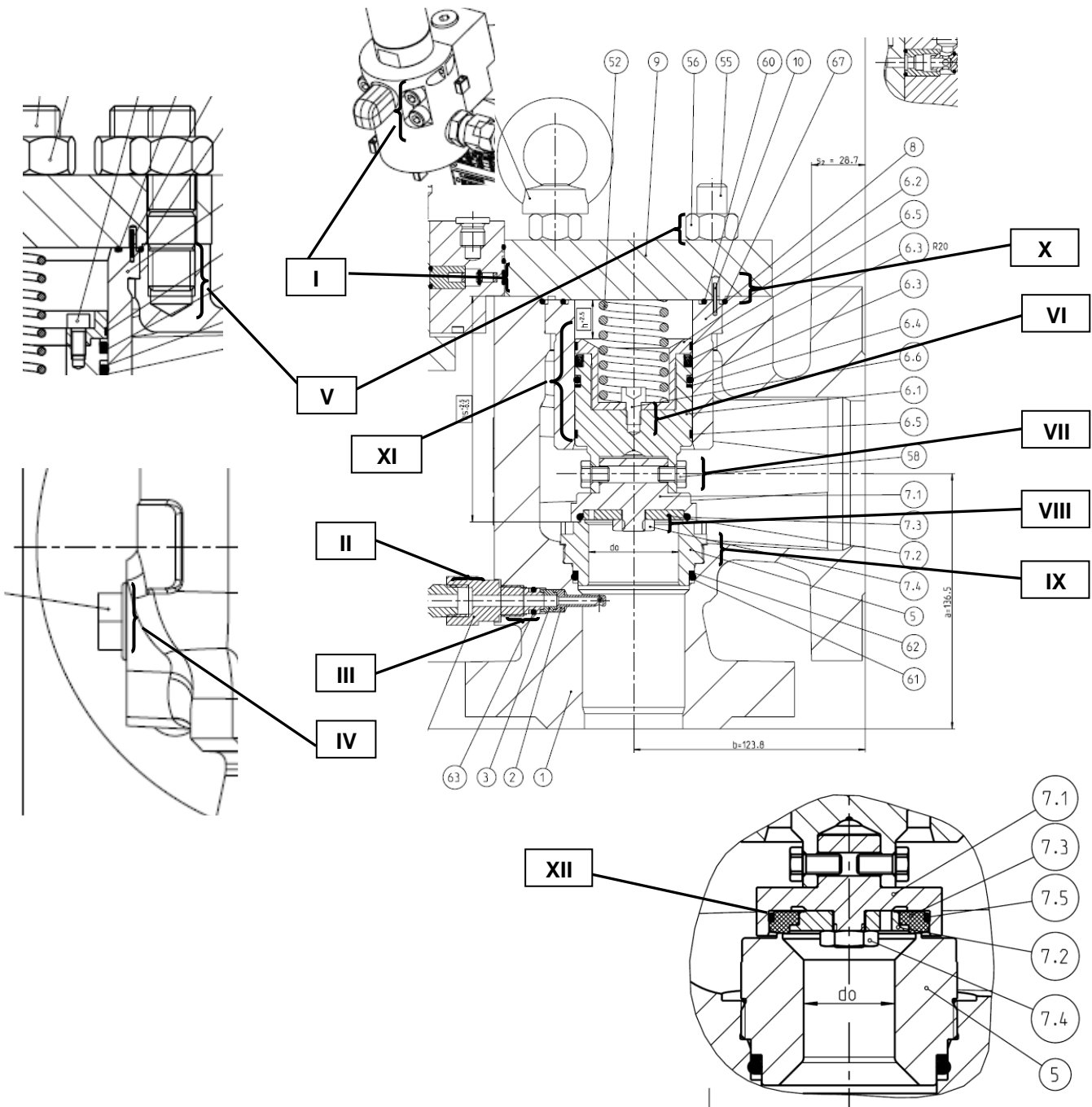


Figure 5: Cross section of the main valve, Semi-Nozzle


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Size	Index	Components [Pos. Number]	Thread	SW	Torque [Nm]	Lubrication	Tool
AII	I	M8-allen head screw / top plate [9]	M8	6	18-20	---	Allen key
	II	Tubing / pitot tube [4]	NPT 3/8"	27	Tighten clamp ring with gap gage acc. manufactor		Open-end spanner
	III	Pitot tube [4] / body [1]	G 3/8"	22	65-75	Molykote D paste	Open-end spanner
	IV	Drain hole [84] / body [1]	G 1/4" 1x2 till 1,5x3		45-55		Open-end spanner
			G 1/2"		80-120	Molykote D paste	Open-end spanner
			NPT 1/2"		---	---	Open-end spanner
	X	O Ring [67] / Top Plate [9]	---	---	---	Schmierfett Klübersynth UH 1-14/151	---
	XI	Piston compl. [6] / Liner [8]	---	---	---	Halocarbon oil 56S	---
XII	O Ring [7.5] / Sealing plate disc [7.1]	---	---	---	Halocarbon oil 56S	---	

1 x 2	V	Top plate [9] / nut [56] Stud Bolt [55] / body [1]	M16 M20	24 30	80 140	Molykote D paste	Impact wrench + ring spanner
	VI	Piston top [6.2] / piston body [6.1]	M8	6	35-40	---	Allen key
	VII	Pisto compl. [6] / disc compl. [7]	M5	8	25-30	---	Socket
	VIII	Sealing Plate [7.1], O-ring disc [7.1] / nut [7.4]	M8	13	12-15	---	Ring spanner
	IX	Nozzle [5] / body [1]	M45 x 1,5	41	100-110	Molykote D paste	Socket+ nozzle assembly tool
1,5 x 2	V	Top plate [9] / nut [56] Stud Bolt [55] / body [1]	M16 M20 M27	24 30 41	80 140 290	Molykote D paste	Impact wrench + ring spanner
	VI	Piston top [6.2] / piston body [6.1]	M8	6	35-40	---	Allen key
	VII	Piston compl. [6] / disc compl. [7]	M5	8	25-30	---	Socket
	VIII	Sealing Plate [7.1], O-ring disc [7.1] / nut [7.4]	M8	13	12-15	---	Ring spanner
	IX	Nozzle [5] / body [1]	M56 x 1,5	50	115-125	Molykote D paste	Socket + nozzle assembly tool


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Size	Index	Components [Pos. Number]	Thread	SW	Torque [Nm]	Lubrication	Tool
1,5 x 3	V	Top plate [9] / nut [56] Stud Bolt [55] / body [1]	M16 M20 M27	24 30 41	80 140 290	Molykote D paste	Impact wrench + ring spanner
	VI	Piston top [6.2] / piston body [6.1]	M8	6	35-40	---	Allen key
	VII	Piston compl. [6] / disc compl. [7]	M5	8	25-30	---	Socket
	VIII	Sealing Plate [7.1], O-ring disc [7.1] / nut [7.4]	M8	13	12-15	---	Ring spanner
	IX	Nozzle [5] / Body [1]	M56 x 1,5	50	115-125	Molykote D paste	Socket + nozzle assembly tool
2 x 3	V	Top plate [9] / nut [56] Stud Bolt [55] / body [1]	M16 M27	24	80 290	Molykote D paste	Impact wrench + ring spanner
	VI	Piston top [6.2] / Piston body [6.1]	M8	6	35-40	---	Allen key
	VII	Piston compl. [6] / disc compl. [7]	M8	13	35-40	---	Socket
	VIII	Sealing Plate [7.1], O-ring disc [7.1] / Nut [7.4]	M12	18	45-50	---	Ring spanner
	IX	Nozzle [5] / Body [1]	M75 x 1,5	41	130-150	Molykote D paste	Socket + nozzle assembly tool
3 x 4	V	Top plate [9] / nut [56] Stud Bolt [55] / body [1]	M20 M27	30 41	140 290	Molykote D paste	Impact wrench + ring spanner
	VI	Piston top [6.2] / piston body [6.1]	M8	6	35-40	---	Allen key
	VII	Piston comp. [6] / disc compl. [7]	M8	13	35-40	---	Socket
	VIII	Sealing Plate [7.1], O-ring disc [7.1] / nuts [7.4]	M12	18	45-50	---	Ring spanner
	IX	Nozzle [5] / body [1]	M100 x 2	41	150-170	Molykote D paste	Socket + nozzle assembly tool
4 x 6	V	Top plate [9] / nut [56] Stud Bolt [55] / body [1]	M20 M27	30 41	140 290	Molykote D paste	Impact wrench + ring spanner
	VI	Piston top [6.2] / piston body [6.1]	M8	6	35-40	---	Allen key
	VII	Piston compl. [6] / disc compl. [7]	M8	13	35-40	---	Socket
	VIII	Sealing Plate [7.1], O-ring disc [7.1] / nut [7.4]	M16	24	65-70	---	Ring spanner
	IX	nozzle [5] / body [1]	M126 x 2	41	180-200	Molykote D paste	Socket + nozzle assembly tool

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Size	Index	Components [Pos. Number]	Thread	SW	Torque [Nm]	Lubrication	Tool
6 x 8	V	Top plate [9] / nut [56] Stud Bolt [55] / body [1]	M27	41	290	Molykote D paste	Impact wrench + ring spanner
	VI	Piston top [6.2] / piston body [6.1]	M8	6	35-40	---	Allen key
	VII	Piston compl. [6] / disc compl. [7]	M8	13	35-40	---	Socket
	VIII	Sealing Plate [7.1], O-ring disc [7.1] / nut [7.4]	M30	46	85-90	---	Ring spanner
	IX	nozzle [5] / body [1]	M175 x 2	41	230-250	Molykote D paste	Socket + nozzle assembly tool
8 x 10	V	Top plate [9] / nut [56] Stud Bolt [55] / body [1]	M27	41	290	Molykote D paste	Impact wrench + ring spanner
	VI	Piston top [6.2] / piston body [6.1]	M8	6	35-40	---	Allen key
	VII	Piston compl. [6] / disc compl. [7]	M8	13	35-40	---	Socket
	VIII	Sealing Plate [7.1], O-ring disc [7.1] / nut [7.4]	M30	46	85-90	---	Ring spanner
	IX	Nozzle [5] / body [1]	M220 x 2	41	230-250	Molykote D paste	Socket + nozzle assembly tool

Table 5: Overview main valve screw connections

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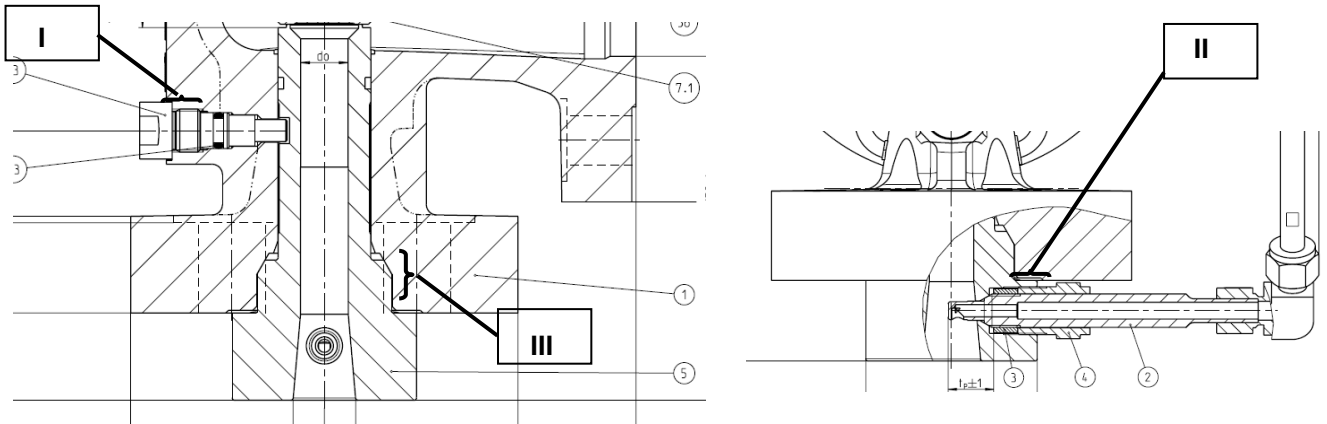


Figure 6: Cross section of the main valve, Full-Nozzle

Size	Index	Components [Pos. Number]	Thread	SW	Torque [Nm]	Lubrication	Tool
All	I	Locking Screw [73] / body [1]	G 3/8"	19	65 - 75	Molykote D paste	Open-end spanner
All	II	Tube Fitting – High Pressure [4] / Full Nozzle [5]	M20 x 1	21	75	Molykote D paste	Open-end spanner
All	III	Body [1] / Full Nozzle [5]	----	----	----	Molykote D paste	----

Table 6: Overview main valve screw connections

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9 Accessories

9.1 Standard tubing

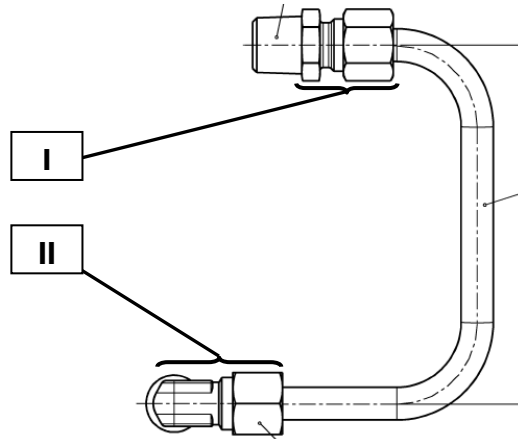


Figure 7: Standard tubing

Components		Index	Thread	SW	Torque [Nm]
Standard tubing	Pilot valve	I	NPT 3/8"	18 / 19	Tighten clamp ring with gap gage acc. manufactor
	Body	II	NPT 3/8"	16 / 19	Tighten clamp ring with gap gage acc. manufactor

Table 7: Overview of the standard tubing screw connections

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9.2 Field-test-connector (FTC)

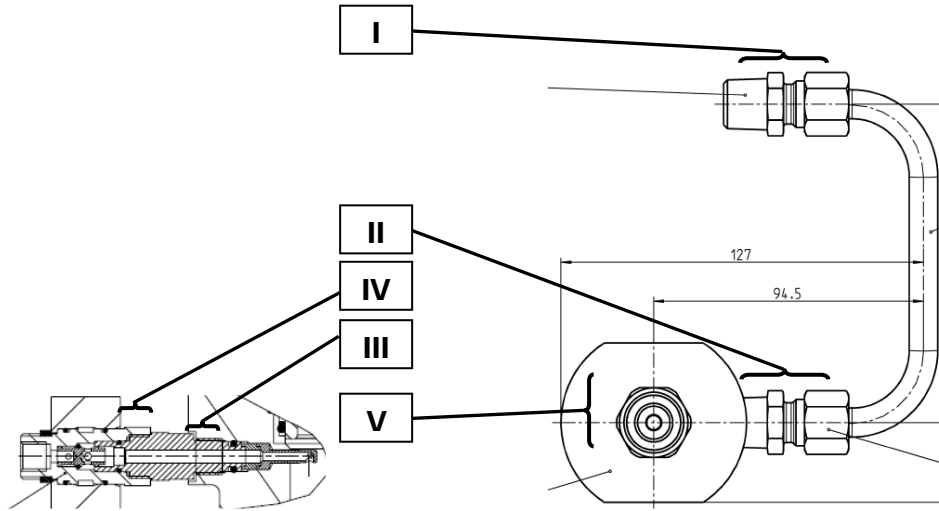


Figure 8: Tubing with FTC

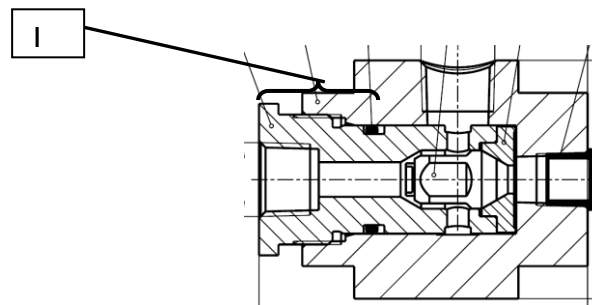


Figure 9: Tubing with FTC full-nozzle

Components	Index	Thread	SW	Torque [Nm]	Lubrication	Tool	
FTC	Pilot valve	I	NPT 3/8"	18 / 19	Tighten clamp ring with gap gage acc. manufactor	---	Open-end spanner
	Tube	II	NPT 3/8"	18 / 19	Tighten clamp ring with gap gage acc. manufactor	---	Open-end spanner
	Pitot tube	III	G 3/8"	22	60-70	Molykote D Paste	Open-end spanner
	Body (FTC) / Clasp (FTC)	IV	M20x1,5	27/ 22	100-120	Halocarbo-oil 56 S	Open-end spanner
	Body (FTC) / Clasp (FTC) Full Nozzle	VI	M30x1,5	32	100 -120	Halocarbo-oil 56 S	Open-end spanner
	Nut FTC	V	G 1/2"	24	45-50	Halocarbo-oil 56 S	Open-end spanner

Table 8: Overview of the FTC screw connections

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9.3 FTC and Pilot supply filter

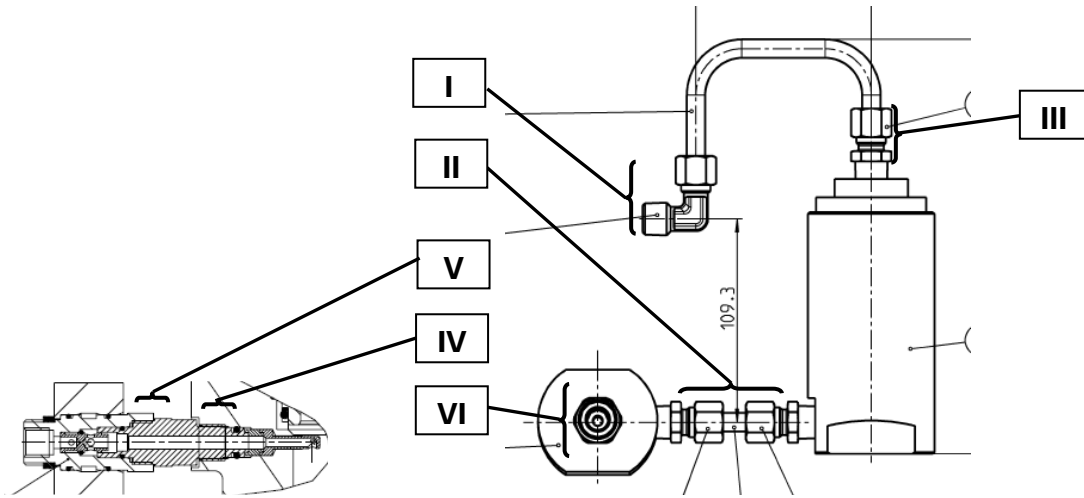


Figure 10: Tubing with FTC and pilot supply filter

Components		Index	Thread	SW	Torque [Nm]	Lubrication	Tool
FTC + filter	Pilot valve	I	NPT 3/8"	16 / 19	Tighten clamp ring with gap gage acc. manufactor	---	Open-end spanner
	Tube	II	NPT 3/8"	18 / 19	Tighten clamp ring with gap gage acc. manufactor	---	Open-end spanner
	Filter	III	NPT 3/8"	18 / 19	Tighten clamp ring with gap gage acc. manufactor	---	Open-end spanner
	Pitot tube	IV	G 3/8"	22	60-70	Molykote D Paste	Open-end spanner
	Body (FTC) / Clasp (FTC)	V	M20x1,5	27/ 22	100-120	Halocarbo-oil 56 S	Open-end spanner
	Nut FTC	VI	G 1/2"	24	45-50	Halocarbo-oil 56 S	Open-end spanner

Table 9: Overview of the FTC and filter screw connections

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9.4 Manual blowdown

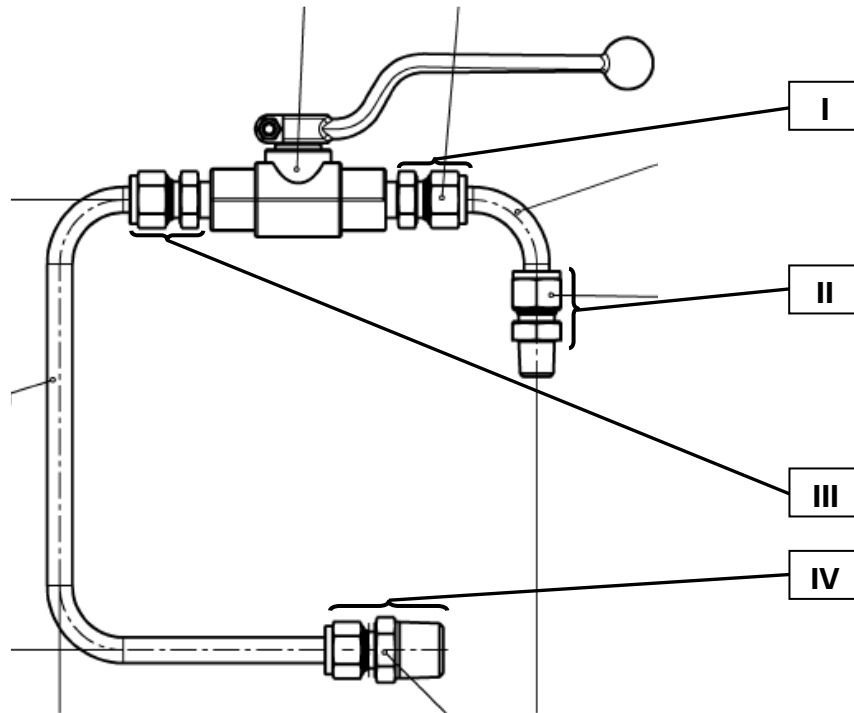


Figure 11: Manual Blowdown

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Components		Index	Thread	SW	Torque [Nm]
Manual Blowdown	Manual Blowdown	I	NPT 1/8"	18 / 19	Tighten clamp ring with gap gage acc. manufactor
	Top plate	II	NPT 1/8"	18 / 19	Tighten clamp ring with gap gage acc. manufactor
	Tube	III	NPT 1/8"	18 / 19	Tighten clamp ring with gap gage acc. manufactor
	Body	IV	NPT 1/2"	18 / 19	Tighten clamp ring with gap gage acc. manufactor

Table 10: Overview of the manual blowdown screw connections

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9.5 Needle valve for FTC

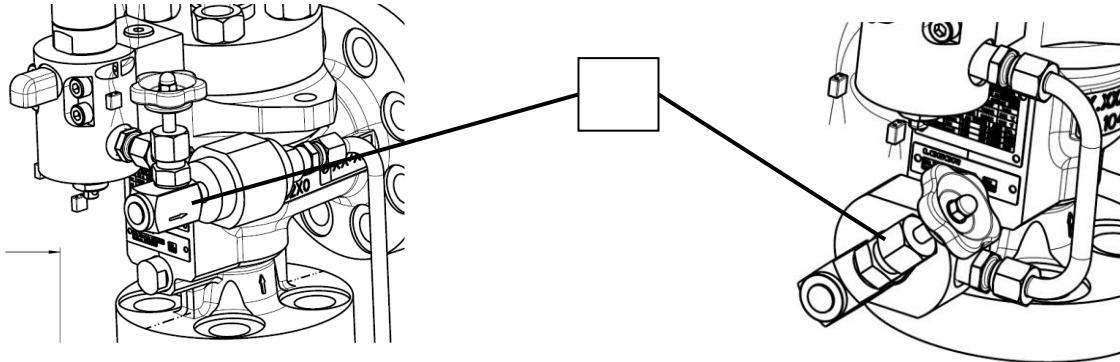


Figure 11: Field test connector with needle valve (left see full nozzle, right see semi nozzle)

Components		Index	Thread	SW	Torque [Nm]
FTC	Nadelventil	I	NPT 1/4"	25	Insert with Teflon tape and adjust as shown in figure

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