Dimensions for maintenance of nozzles and discs - Type 526

Content

1 Purpose

This LGS gives information about the dimensions and the surface quality which must be observed during the refinishing work, it also provides the work instructions.

2 Scope

This LGS applies to the LESER sites Hamburg and Hohenwestedt as well as for valve repair shops repairing and / or maintaining LESER valves. This LGS is valid for:

- full nozzles
- semi nozzles
- discs without lifting gear
- discs with removable lifting gear

3 References

Not applicable

4 Conditional Agreement

The further mentioned rules for the refinishing of nozzles and discs have been issued and explained in all conscience and describe the final design of the components.

LESER reserves the right to make necessary modifications at the components without determining these changes in this standard directly. So, if there are any doubts on user side when applying these guidelines, LESER must be contacted before performance of rework to clarify the actual situation.

When applying these guidelines, it must be considered generally that they describe the refinishing at components which influence the function and capacity of the safety valves. Even marginal deviations to this guideline can affect a malfunction or constricted capacity of the safety valve and therewith an inadmissible pressure increase can arise during application/operation. This could possibly have serious consequences for humans and environment. Therefore, it must be proceeded carefully when applying these rules.

LESER assumes no liability for safety devices which have been repaired or reworked in accordance with this LGS. The repair shop is solely responsible for the function and capacity of the re-introduced safety device.

The user of this LGS should be clear on the fact that the repair of a safety device against inadmissible overpressure is subjected to international laws. The violation of valid rules will be traced and avenged acc. to relevant legislations.

In case of any doubts during application of this LGS, LESER must be consulted before starting repair or rework of LESER safety devices.

5 Introduction

If the sealing surfaces of nozzles and discs have been damaged, the original sealing quality can be restored by refinishing of the sealing surfaces. The minimum and maximum dimensions given in the tables below must be ensured.

Other additional rework like Hardfacing (build-up welding) or similar activities at the surfaces are not allowed.

6 Execution

The refinishing by smooth turning and grinding with final lapping should be done on the nozzle and if necessary, also on the disc with the least possible material removal. Please refer to the limiting values in the following tables.

6.1 Measures and facing profile

Tables 1, together with the corresponding illustrations, contain the linear and square dimensions which shall be observed. After processing of the nozzle surface, it is also important that the profile of the sealing area is restored moderately using inner and outer chamfers. If necessary, the contact surface between the spindle guide and the body must be refinished coplanar and concentric to the sealing area.

6.2 Surface Quality

A surface quality to a mean roughness depth of R_z 0,25 (DIN EN ISO 4287) or AA 1 (ASME B46.1) must be achieved on both sealing surfaces through lapping.

6.3 Test

In a final test on the mounted valve, it must be guaranteed that:

- The semi rings on the spindle must be off the guide when the valve is closed.
- The lower spring plate may not touch the guide when the spring is assembled.
- In lift restricted valves, the lift restriction must be checked and if necessary, the lift restriction bushing extended.

7 Refinishing of nozzle and disc type 526, metal sealing

Work is to be carried out according to the illustrations 1.1, 1.2 and according to Table 1.

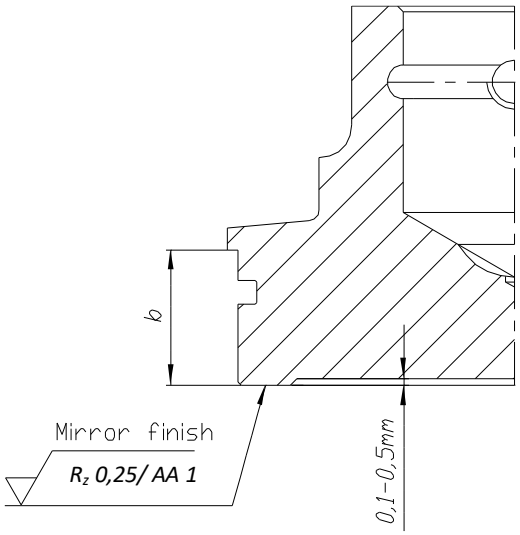

Illustration 1.1

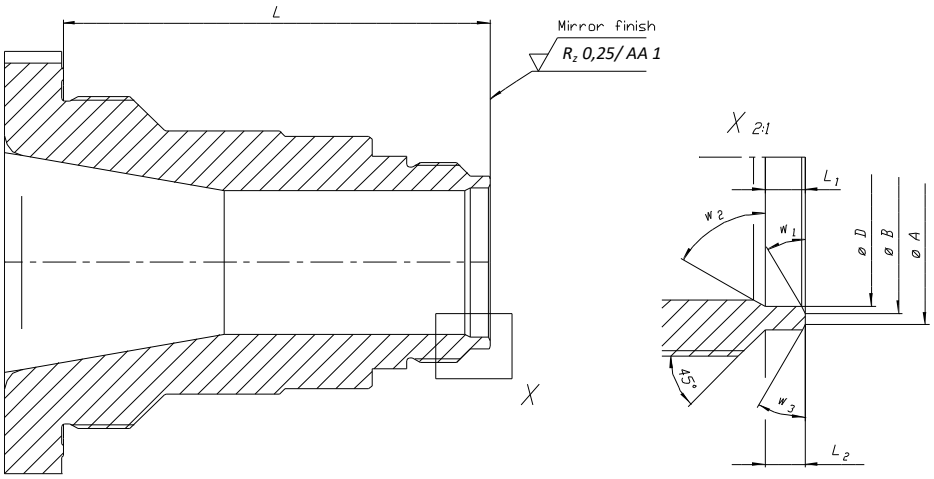

Illustration 1.2

Changes in dimension may only be such as not to reduce dimensions b and/or L below the lowest allowable tolerance (see Table 1). The dimensions A and B on the sealing area of the nozzle shall be restored with inner and outer chamfering.

These critical dimensions apply to Type 526 valves and supersede any dimensions provided in previous versions or revisions.

Table 1: nozzles and discs type 526 in mm

Orifice	Size in NPS	Pressure range Inlet / Outlet in Class	Nozzle											Disc
			Diameter					Length			Angle			Thickness b in mm
			A Ø in mm		B Ø in mm		D Ø	L in mm	L_1 in mm	L_2 in mm	W_1 in °	W_2 in °	W_3 in °	
			lower limit	upper limit	lower limit	upper limit	in mm	lower limit	lower limit	lower limit				lower limit
D/E	1 x 2	300 x 150	19.6	19.8	17.8	18.0	17.4	87.1	9.8	-	45.0	60.0	45.0	10.4
	1 ½ x 2	1500 x 300	18.7	18.9	16.4	16.6	16.1	87.1	4.8	2.8	45.0	60.0	60.0	10.4
	1 ½ x 3	2500 x 300	18.6	18.8	16.4	16.6	16.1	122	4.8	2.8	45.0	60.0	60.0	10.4
F	1 ½ x 2	900 x 300	22.5	22.7	20.3	20.5	19.5	106.1	4.8	2.8	45.0	60.0	60.0	10.3
	1 ½ x 3	2500 x 300	20.5	20.7	18.9	19.1	19.5	122.4	4.8	2.8	45.0	60.0	60.0	10.3
G	1½ x 3	900 x 300	27.5	27.7	24.8	25.0	23.5	106.1	4.8	2.8	45.0	60.0	60.0	10.3
	2 x 3	1500 x 300	27.5	27.7	24.8	25.0	23.5	127.9	4.8	2.8	45.0	60.0	60.0	10.3
H	1½ x 3	150 x 150	36.0	36.2	32.8	33.0	30.5	106.1	4.8	2.8	45.0	60.0	45.0	10.3
	2 x 3	600 x 150	35.2	35.4	32.8	33.0	29.4	102.0	4.8	2.8	30.0	60.0	30.0	10.3
	2 x 3	1500 x 300	35.2	35.4	32.8	33.0	29.4	126.3	4.8	2.8	30.0	60.0	30.0	10.3
J	2 x 3	150 x 150	43.5	43.7	40.8	41.0	39.0	102.0	5.8	5.8	30.0	60.0	30.0	12.3
	3 x 4	900 x 300	43.5	43.7	40.8	41.0	37.0	156.2	5.7	5.7	30.0	60.0	30.0	12.3
K	3 x 4	150 x 150	50.5	50.8	46.8	47.0	45.0	127.7	5.8	5.7	30.0	60.0	30.0	12.3
	3 x 6	600 x 150	50.5	50.8	46.8	47.0	45.0	156.2	5.7	5.7	30.0	60.0	30.0	12.3
	3 x 6	1500 x 300	50.5	50.8	46.8	47.0	45.0	168.7	5.7	6.7	30.0	60.0	45.0	12.3

Orifice	Size in NPS	Pressure range Inlet / Outlet in Class	Nozzle											Disc
			Diameter					Length			Angle			Thickness b in mm
			A Ø in mm		B Ø in mm		D Ø	L in mm	L_1 in mm	L_2 in mm	W_1 in °	W_2 in °	W_3 in °	
			lower limit	upper limit	lower limit	upper limit	in mm	lower limit	lower limit	lower limit				lower limit
L	3 x 4	150 x 150	61.5	61.8	57.8	58.0	56.0	127.7	5.8	5.8	30.0	60.0	30.0	14.8
	4 x 6	600 x 150	61.5	61.8	57.8	58.0	56.0	149.7	5.8	5.8	30.0	60.0	30.0	14.8
	4 x 6	600 x 150	61.5	61.8	57.7	58.0	56.0	149.7	4.8	5.8	30.0	60.0	30.0	14.8
	4 x 6	1500 x 150	61.5	61.8	57.7	58.0	56.0	168.7	5.7	5.7	30.0	60.0	30.0	14.8
M	4 x 6	600 x 150	68.0	68.3	64.2	64.5	61.5	149.6	4.7	5.7	30.0	60.0	30.0	14.8
	4 x 6	900 x 150	69.0	69.3	64.2	64.5	61.5	168.7	4.7	6.2	30.0	60.0	30.0	14.8
N	4 x 6	900 x 150	74.0	74.3	69.7	70.0	67.0	168.7	3.7	5.7	30.0	60.0	30.0	14.8
P	4 x 6	150 x 150	89.0	89.3	84.7	85.0	82.0	152.8	4.7	5.7	30.0	45.0	45.0	14.8
	4 x 6	900 x 150	89.0	89.3	84.7	85.0	82.0	197.2	4.7	5.7	30.0	45.0	45.0	14.8
Q	6 x 8	300 x 150	114.5	114.8	110.7	111.0	108.5	209.2	5.7	5.7	45.0	45.0	45.0	16.8
R	6 x 8	300 x 150	137.5	137.8	132.7	133.0	131.0	209.2	24.7	5.7	45.0	60.0	45v	16.8
	6 x 10	600 x 150	137.5	137.8	132.7	133.0	131.0	189.0	24.7	5.7	45.0	60.0	45.0	16.8
T	8 x 10	300 x 150	171.5	171.9	166.6	167.0	164.0	225.4	5.7	5.7	30.0	60.0	45.0	16.7

Table 2: nozzles and discs type 526 in inch

Orifice		Size in NPS	Pressure range Inlet / Outlet in Class	Nozzle											Disc
				Diameter					Length			Angle			Thickness b in inch
				A Ø in inch		B Ø in inch		D Ø in inch	L in inch	L_1 in inch	L_2 in inch	W_1 in °	W_2 in °	W_3 in °	
				lower limit	upper limit	lower limit	upper limit		lower limit	lower limit	lower limit				lower limit
D/E		1"x2"	300 x 150	0.772	0.780	0.780	0.700	0.685	3.429	0.386	-	45.0	60.0	45.0	0.409
		1 ½"x2"	1500 x 300	0.736	0.744	0.646	0.654	0.634	3.429	0.189	0.110	45.0	60.0	60.0	0.409
		1 ½"x3"	2500 x 300	0.732	0.740	0.646	0.654	0.634	4.803	0.189	0.110	45.0	60.0	60.0	0.409
F		1 ½"x2"	900 x 300	0.886	0.894	0.799	0.807	0.768	4.177	0.189	0.110	45.0	60.0	60.0	0.406
		1 ½"x3"	2500 x 300	0.807	0.815	0.744	0.752	0.768	4.819	0.189	0.110	45.0	60.0	60.0	0.406
G		1½"x3"	900 x 300	1.083	1.091	0.976	0.984	0.925	4.177	0.189	0.110	45.0	60.0	60.0	0.406
		2"x3"	1500 x 300	1.083	1.091	0.976	0.984	0.925	5.035	0.189	0.110	45.0	60.0	60.0	0.406
H		1½"x3"	150 x 150	1.417	1.425	1.291	1.299	1.201	4.177	0.189	0.110	45.0	60.0	45.0	0.406
		2"x3"	600 x 150	1.386	1.394	1.291	1.299	1.157	4.016	0.189	0.110	30.0	60.0	30.0	0.406
		2"x3"	1500 x 300	1.386	1.394	1.291	1.299	1.157	4.972	0.189	0.110	30.0	60.0	30.0	0.406
J		2"x3"	150 x 150	1.713	1.720	1.606	1.614	1.535	4.016	0.228	0.228	30.0	60.0	30.0	0.484
		3"x4"	900 x 300	1.713	1.720	1.606	1.614	1.457	6.150	0.224	0.224	30.0	60.0	30.0	0.484
K		3"x4"	150 x 150	1.988	2.000	1.843	1.850	1.772	5.028	0.228	0.224	30.0	60.0	30.0	0.484
		3"x6"	600 x 150	1.988	2.000	1.843	1.850	1.772	6.150	0.224	0.224	30.0	60.0	30.0	0.484
		3"x6"	1500 x 300	1.988	2.000	1.843	1.850	1.772	6.642	0.224	0.264	30.0	60.0	45.0	0.484

Orifice		Size in NPS	Pressure range Inlet / Outlet in Class	Nozzle											Disc
				Diameter					Length			Angle			Thickness b in inch
				A Ø in inch		B Ø in inch		D Ø in inch	L in inch	L_1 in inch	L_2 in inch	W_1 in °	W_2 in °	W_3 in °	
				lower limit	upper limit	lower limit	upper limit		lower limit	lower limit	lower limit				lower limit
L		3"x4"	150 x 150	2.421	2.433	2.276	2.283	2.205	5.028	0.228	0.228	30.0	60.0	30.0	0.583
		4"x6"	600 x 150	2.421	2.433	2.276	2.283	2.205	5.894	0.228	0.228	30.0	60.0	30.0	0.583
		4"x6"	600 x 150	2.421	2.433	2.272	2.283	2.205	5.894	0.189	0.228	30.0	60.0	30.0	0.583
		4"x6"	1500 x 150	2.421	2.433	2.272	2.283	2.205	6.642	0.224	0.224	30.0	60.0	30.0	0.583
M		4"x6"	600 x 150	2.677	2.689	2.528	2.539	2.421	5.890	0.185	0.224	30.0	60.0	30.0	0.583
		4"x6“	900 x 150	2.717	2.728	2.528	2.539	2.421	6.642	0.185	0.244	30.0	60.0	30.0	0.583
N		4"x6“	900 x 150	2.913	2.925	2.744	2.756	2.638	6.642	0.146	0.224	30.0	60.0	30.0	0.583
P		4"x6"	150 x 150	3.504	3.516	3.335	3.346	3.228	6.016	0.185	0.224	30.0	45.0	45.0	0.583
		4"x6"	900 x 150	3.504	3.516	3.335	3.346	3.228	7.764	0.185	0.224	30.0	45.0	45.0	0.583
Q		6"x8"	300 x 150	4.508	4.520	4.358	4.370	4.272	8.236	0.224	0.224	45.0	45.0	45.0	0.661
R		6"x8"	300 x 150	5.413	5.425	5.224	5.236	5.157	8.236	0.972	0.224	45.0	60.0	45.0	0.661
		6"x10"	600 x 150	5.413	5.425	5.224	5.236	5.157	7.441	0.972	0.224	45.0	60.0	45.0	0.661
T		8"x10"	300 x 150	6.752	6.768	6.559	6.575	6.457	8.874	0.224	0.224	30.0	60.0	45.0	0.657