Dimensions for maintenance of nozzles and discs - Clean Service

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:

- nozzles
- discs with removable lifting gear

Type 448/488 is equipped with a disc with non-removable lifting gear. Therefore, these discs do not fall within the scope of this LGS.

The scope of the product group Clean Service Type 481, 483/484/485/488 HyTight assembly, 448/488.

For Type 481 refer to LGS 3309.03 Dimensions for maintenance of nozzles and discs – Compact Performance.

3 References

LGS 3309.03 Dimensions for maintenance of nozzles and discs - Compact Performance

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.

These critical dimensions apply to Type 483/484/485/488 HyTight assembly and 488/448 valves and supersede any dimensions provided in previous versions or revisions.

6.1 Measures and facing profile

Tables, together with the corresponding illustrations, contain the linear and angle 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.

6.2 Surface Quality

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

In the case of soft sealing, different surface qualities may be as shown in the figures. These sealing surfaces may be achieved alternatively through smooth turning.

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 case of lift restricted valves, the lift restriction must be checked and if necessary, the lift restriction bushing extended or lift restriction screw adjusted.

7 Refinishing of nozzle, Clean Service valves

Work is to be carried out according to Figure 1 and Figure 2 and according to Table 1 to Table 2.

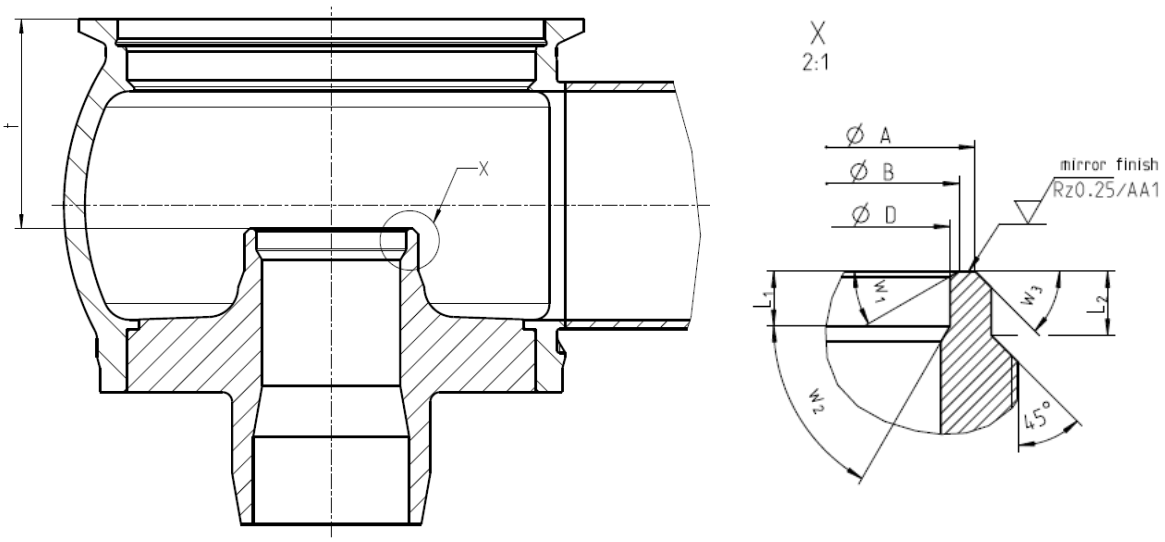

Figure 1. Nozzle, 448/488 and 488 HyTight assembly, all sealings

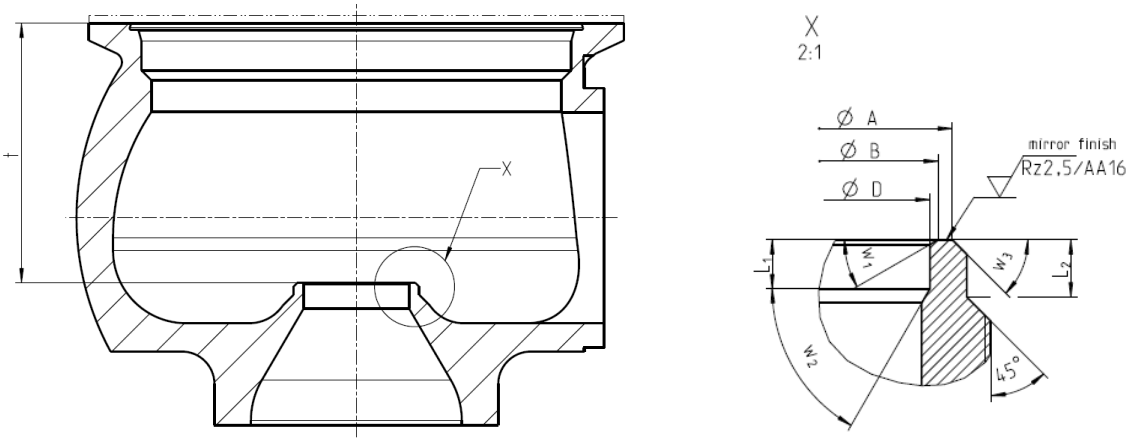

Figure 2. Nozzle, 483/484/485 HyTight assembly, soft sealing

Changes in dimension may only be such as not to exceed dimension t above its upper limit.

The dimensions A and B of the sealing area of the nozzle shall be restored with inner and outer chamfering within its limits.

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

8 Refinishing disc, Clean Service valves, soft sealing

It is not permitted to rework the soft sealing disc. If damaged, a replacement is recommended. For nozzles refer to Table 1 to Table 2.

9 Tables

Table 1: Nozzles, Clean Service, in mm

Type	Orifice	Size in NPS (O.D. in inch)	Size in DN	Nozzle											
				Diameter					Length			Angle			
				A Ø in mm		B Ø in mm		D Ø in mm	t 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	upper limit	upper limit	lower limit	lower limit				
488 Hy* 488 448	23	1 x 1,5 1,5 x 2	25 x 40	27,5	27,7	25,5	25,7	25,1	35,5	3,0	-	45	60	45	
488 Hy* 488 448	37	1,5 x 2,5 2 x 3	40 x 65	42,3	42,5	40,3	40,5	40,1	53,5	3,0	-	45	60	45	
488 Hy* 488 448	46	2 x 3 2,5 x 4	50 x 80	53,3	53,5	50,3	50,5	50,1	55,0	3,5	-	45	60	45	
488 Hy* 488 448	60	3 x 4 3 x (4,5)	65 x 100	70,9	71,1	66,9	67,1	65,1	66,5	3,0	-	45	60	45	
488 Hy* 488 448	74	4 x 5 4 x (5,5)	80 x 125	85,8	86,2	81,8	82,2	78,1	87,8	5,0	-	45	60	45	
488 Hy* 488 448	92	4 x 6 (4,5 x 6,625)	100 x 150	107,8	108,2	102,8	103,2	98,1	105,8	6,0	-	45	60	45	
483 484 485	13	1 x 1,5 1,5 x 1,5	25 x 40 40 x 40	14,5	14,6	13,2	13,3	-	32,05	-	1,5	45	-	45	

Type	Orifice	Size in NPS (O.D. in inch)	Size in DN	Nozzle										
				Diameter					Length			Angle		
				A Ø in mm		B Ø in mm		D Ø in mm	t 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	upper limit	upper limit	lower limit	lower limit			
483 **484** **485**	25	1,5 x 1,5 1,5 x 2 2 x 2	40 x 40 40 x 50 50 x 50	27,4	27,5	25,3	25,4	-	47,05	-	1,5	45	-	45

* 488 Hy ➔ 488 HyTight assembly

Table 2: Nozzles, Clean Service, in inch

Type	Orifice	Size in NPS (O.D. in inch)	Size in DN	Nozzle										
				Diameter					Length			Angle		
				A Ø in inch		B Ø in inch		D Ø in inch	t 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	upper limit	upper limit	lower limit	lower limit			
488 Hy* 488 448	23	1 x 1,5 1,5 x 2	25 x 40	1.083	1.091	1.004	1.012	0.988	1.398	0.118	-	45	60	45
488 Hy* 488 448	37	1,5 x 2,5 2 x 3	40 x 65	1.665	1.673	1.587	1.594	1.579	2.106	0.118	-	45	60	45
488 Hy 488 448	46	2 x 3 2,5 x 4	50 x 80	2.098	2.106	1.980	1.988	1.972	2.165	0.138	-	45	60	45
488 Hy* 488 448	60	3 x 4 3 x (4,5)	65 x 100	2.791	2.799	2.634	2.642	2.563	2.618	0.118	-	45	60	45
488 Hy* 488 448	74	4 x 5 4 x (5,5)	80 x 125	3.378	3.394	3.220	3.236	3.075	3.457	0.197	-	45	60	45
488 Hy* 488 448	92	4 x 6 (4,5 x 6,625)	100 x 150	4.244	4.260	4.047	4.063	3.862	4.165	0.236	-	45	60	45
483 484 485	13	1 x 1,5 1,5 x 1,5	25 x 40 40 x 40	0.571	0.575	0.520	0.524	-	1.262	-	0.059	45	-	45

Type	Orifice	Size in NPS (O.D. in inch)	Size in DN	Nozzle										
				Diameter					Length			Angle		
				A Ø in inch		B Ø in inch		D Ø in inch	t 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	upper limit	upper limit	lower limit	lower limit			
483 **484** **485**	25	1,5 x 1,5 1,5 x 2 2 x 2	40 x 40 40 x 50 50 x 50	1.079	1.083	0.996	1.000	-	1.852	-	0.059	45	-	45

* 488 Hy ➔ 488 HyTight assembly