

The safe choice for High Purity applications

Alfa Laval LKB UltraPure Automatic or Manual Butterfly Valve

Concept

LKB UltraPure is an automatic or manually operated butterfly valve for on/off duties. The UltraPure execution is designed and documented to meet the demand in industries like BioPharm and Personal Care.

Working principles

LKB UltraPure is either remote controlled by means of an air-actuator or manually by means of a handle.

The actuator is designed so that an axial movement of a piston is transformed into a 90° rotation of a shaft. The torque of the actuator is increased when the valve disc contacts the seal of the valve.

The air-actuator comes in three standard versions, normally closed (NC), normally open (NO) and air/air activated (A/A).

Two actuator sizes, $\varnothing 85$ mm and $\varnothing 133$ mm, cover all valve sizes and are available in two versions, LKLA and LKLA-T (T for mounting of indication unit on actuator).

The handle for manual operation mechanically locks the valve in its open or closed position.

Handles are available in 2 positions, 4 positions, regulating 90° and lockable multi-position.

The valve can be supplied with either welding or clamp connections.



TECHNICAL DATA

Valve

Max. product pressure:	1000 kPa (10 bar)
Min. product pressure:	Full vacuum
Temperature range:	-10°C to + 140°C (EPDM) However max. 95°C when operating the valve

Actuator

Max. air pressure:	700 kPa (7 bar)
Min. air pressure, NC and NO:	400 kPa (4 bar)
Temperature range:	-25°C to +90°C.
Air consumption (litres free air):	
- $\varnothing 85$ mm:	0.24 x p (bar)
- $\varnothing 133$ mm:	0.95 x p (bar)
Weight:	
- $\varnothing 85$ mm:	3 kg.
- $\varnothing 133$ mm:	12 kg



PHYSICAL DATA

Product wetted steel part	1.4404 (316L) acc. to EN 10088
Other steel parts	1.4301 (304) acc. to EN 10088
Bushings for valve disc	PVDF

Elastomers

Product wetted seals	EPDM acc. to FDA and USP Class VI
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Connections

Weld ends**	Matching tubes and fittings: ISO 2037 / DIN / ASME BPE Acc. to ISO, DIN or ASME BPE
Clamp ends	Matching tubes and fittings: ISO 2037 / DIN / ASME BPE Acc. to ISO, DIN or ASME BPE

** Weld ends on ASME BPE valves are according to ASME BPE 2009 316L Table DT-3 with low sulfur and suitable for orbital welding

Actuator

Actuator body:	1.4307 (304L)
Piston:	Light alloy Air/air version (for $\varnothing 85$ mm: Bronze).
Seals:	NBR
Housing for switches:	PPO

Surface specification (Product wetted steel parts)

ISO 2037 / DIN:

Internal:0.5 µm
 ASME BPE designation:SF1
 External:Semi-bright

ASME BPE*:

Internal:0.5 µm
 ASME BPE designation:SF1
 External:Semi-bright

ASME BPE*:

Internal:0.4 µm electro polish
 ASME BPE designation:SF4
 External:Semi-bright

* According to ASME BPE 2009 table SF-3

Options

- A. Product wetted seals: FPM (acc. to FDA and USP Class VI), Q and PFA
- B. ThinkTop® for control and indication.*
- C. Indication unit with micro switches.*
- D. Indication unit with inductive proximity switches.*
- E. Indication unit with Hall proximity switches.*
- F. Explosion proof indication unit with inductive proximity switches.*
- G. Bracket for actuator.
- H. Handle with two or four positions.
- I. Handle for electrical position indication.
- J. Handle with infinite intermediate positions.
- K. Multipositioning handle**.
- L. Lockable Multiposition Handle. Padlock can be mounted as shown in fig. 3.

Note! Padlock is not delivered.

M. Special cap for 90° turned handle position.

N. Service tool for actuator.

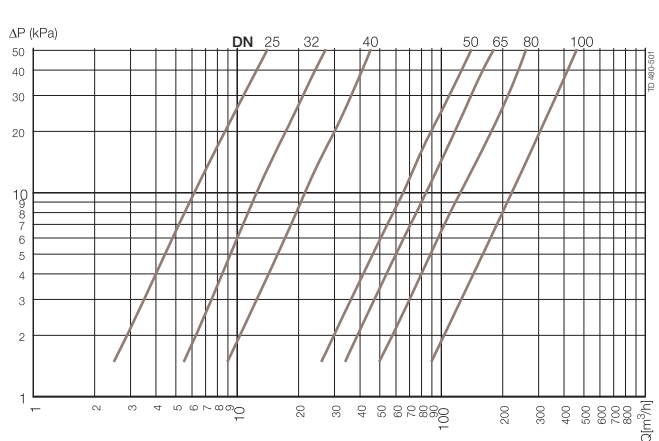
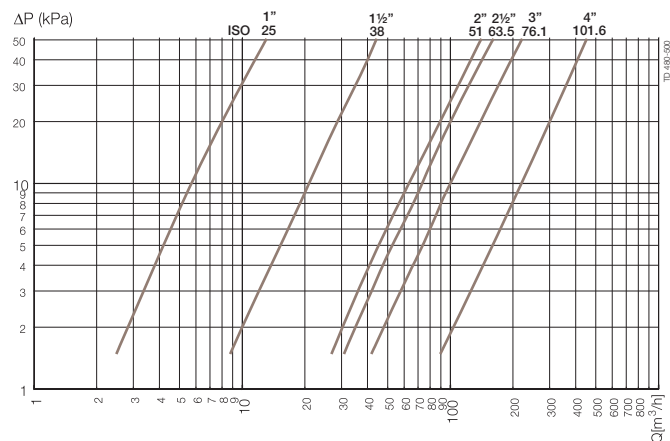
O. Service tool for fitting 25-38 mm (DN25 - DN40) valve discs.

* For further information see Product Catalogue chapter "Control & Indication".

** A padlock can be mounted on the Lockable Multiposition Handle as shown in the opposite figure.

Note! Padlock is not delivered.

Capacity/Pressure drop diagrams



NOTE!

For the diagrams the following applies:

Medium: Water (20°C).

Measurement: In accordance with VDI 2173.

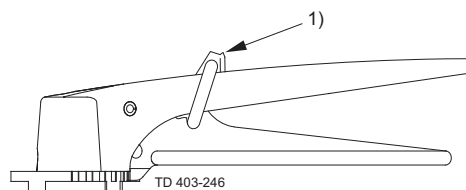


Fig. 1. Lockable Multiposition Handle with padlock.

1. Padlock

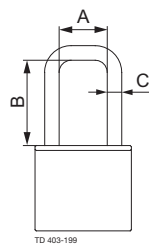


Fig.2. Dimensions - padlock.

- A. Min. 20 mm
- B. Min. 35 mm
- C. ø6 mm

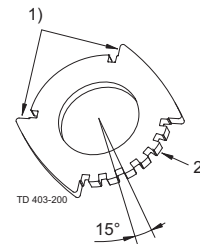


Fig. 3 Positioning cap.

- 1. On/Off
- 2. Multi positioning

Note for Ultra Pure ASME BPE clamp valve (size 1" - 2½")!

Installation and removal of some clamp rings is easiest by removal of the lockable multi position handle first.

Documentation

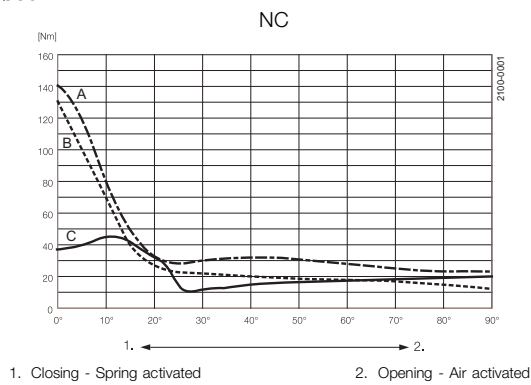
All valves are delivered with Alfa Laval Q-doc.

Note!

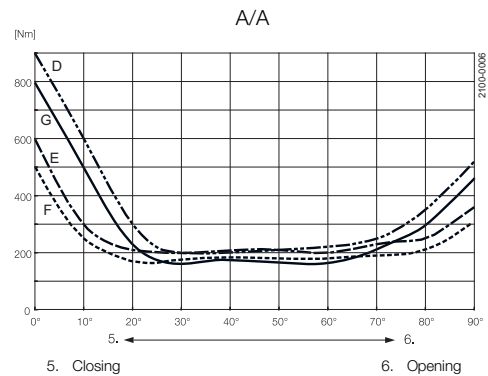
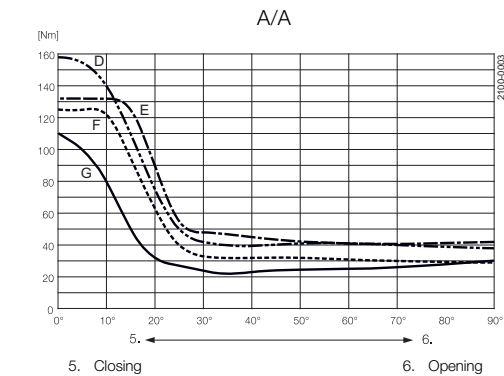
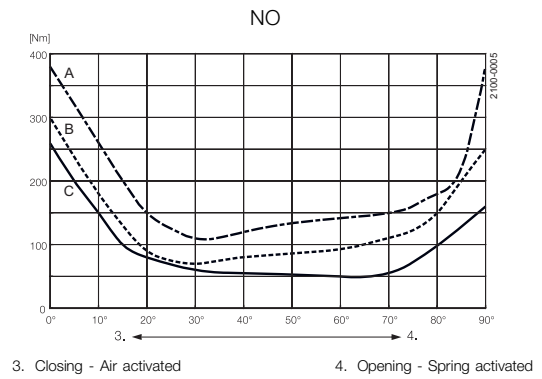
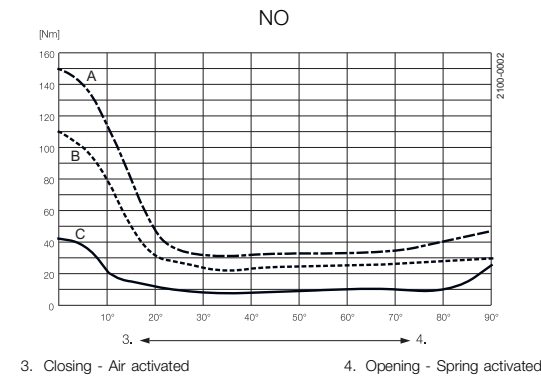
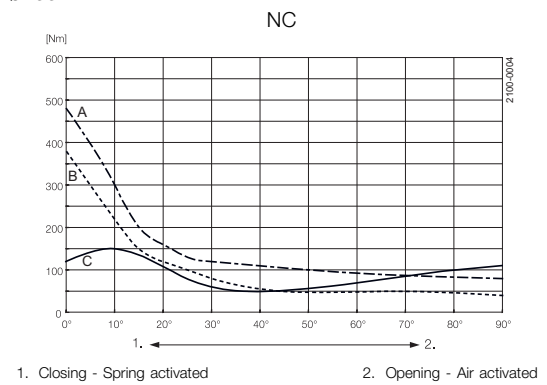
For further details, see also ESE01699.

Torque diagrams - Actuator

LKLA ø85 mm:



LKLA ø133 mm:



A = 6 bar air pressure
 B = 5 bar air pressure
 C = Closing/opening with spring

D = 6 bar air pressure connection on top
 E = 6 bar air pressure connection on bottom
 F = 5 bar air pressure connection on top
 G = 5 bar air pressure connection on bottom

Torque values (for rotating the valve disc in a dry seal ring)

Size		Max. Nm
25 mm	DN25	15
	DN32	15
38 mm	DN40	15
51 mm	DN50	20
63.5 mm	DN65	25
76 mm	DN80	30
101.6 mm	DN100	35

Dimensions

Fig. 1. Dimensions - valve.

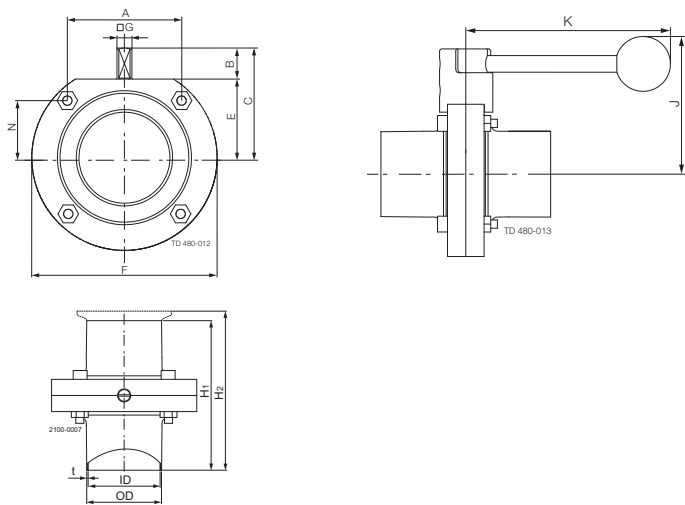
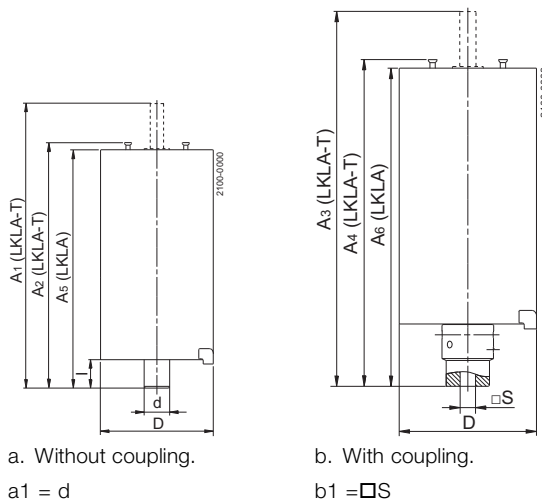


Fig. 2. Dimensions - actuator.



Dimensions (mm)

LKB UltraPure

Size	25	38	51	63.5	76.1	101.6	DN	DN	DN	DN	DN	DN	DN
	mm	mm	mm	mm	mm	mm	25	32	40	50	65	80	100
A	42.00	42.00	61.00	61.00	79.50	106.00	42.00	42.00	42.00	61.00	61.00	79.00	106.00
B	15.50	16.70	16.60	17.50	16.60	16.00	14.70	15.90	16.70	16.60	17.50	16.00	160.00
C	49.00	49.00	58.50	69.50	73.50	93.00	48.00	49.00	54.00	63.00	75.00	79.00	93.00
OD	25.00	38.00	51.00	63.50	76.10	101.60	29.00	35.00	41.00	53.00	70.00	85.00	104.00
ID	22.60	35.60	48.60	60.30	72.90	97.60	26.00	32.00	38.00	50.00	66.00	81.00	100.00
t	1.20	1.20	1.20	1.60	1.60	2.00	1.50	1.50	1.50	1.50	2.00	2.00	2.00
E	32.50	32.50	42.00	52.00	57.00	77.00	33.30	33.30	37.70	46.60	57.30	63.00	77.00
F	78.00	78.00	99.00	117.00	132.00	169.00	79.00	79.00	86.50	105.70	125.00	143.00	169.00
□ G	8	8	8	8	10	12	8	8	8	8	10	10	12
H1	127.00	127.00	132.00	134.00	162.00	180.00	127.00	127.00	127.00	132.00	142.00	164.00	180.00
H2	104.20	104.20	109.20	111.20	176.40	194.40	90.00	90.00	90.00	95.00	118.00	120.00	136.00
J	82.00	82.00	92.00	102.00	107.00	127.00	74.00	74.00	78.00	88.00	98.00	104.00	118.00
K	120.00	120.00	120.00	120.00	162.00	162.00	120.00	120.00	120.00	120.00	162.00	162.00	162.00
N	26.50	26.50	30.50	40.50	43.50	53.00	27.30	27.30	31.70	35.10	45.80	49.50	53.00
Weight (kg)	1.2	1.0	1.5	2.1	3.0	4.7	1.2	1.1	1.3	1.8	3.1	3.5	5.1

NOTE! Weights are for valves with welding ends and handles.

Dimensions (mm) - Actuator

LKLA and LKLA-T:

Valve size	25-63.5 mm DN25-50	76.1 mm DN65-80	101.6 mm DN100	101.6 mm DN100
A ₁	244	242	242	363
A ₂	193	191	191	316
A ₃	244	244	244	337
A ₄	173	173	173	290
A ₅	185	183	183	308
A ₆	165	165	165	282
D	85	85	85	133
d	17	17	17	30
l	16.5	16.5	16.5	34
□ s	8	10	12	12
Function	NC, NO, A/A	NC, NO, A/A	NC, NO, A/A	NC, NO, A/A

900593

Connections

Compressed air

R¹/₈" (BSP), internal thread.

Product code:: 5219

Material: 1.4404 (316L)
 Connection: Orbital welding ends/Clamp ends
 Seals: EPDM - FDA and USP Class VI
 Seals: FPM - FDA and USP Class VI
 Inside surface finish: Ra 0.5 µm

Item No.	PPL EUR	Item No.	PPL EUR	Item No.	PPL EUR	Size DN/OD		Dimension (mm)			
EPDM		FPM				(mm)	DIN	E	H ¹	ISO 2037	
9613857801	380	9614051701	399			25		32.5	127.0		
9613857802	391	9614051702	415			38		32.5	127.0		
9613857803	415	9614051703	430			51		42.0	132.0		
9613857804	479	9614051704	505			63.5		52.0	134.0		
9613857805	564	9614051705	599			76.1		57.0	162.0		
9613857806	684	9614051706	726			101.6		77.0	180.0		
HNBR		Silicone (Q)		PFA							
9614051713	398	9614051725	388	N/A		25		32.5	127.0		
9614051714	409	9614051726	398	9614099401	625	38		32.5	127.0		
9614051715	434	9614051727	424	9614099402	697	51		42.0	132.0		
9614051716	499	9614051728	488	9614099403	800	63.5		52.0	134.0		
9614051717	592	9614051729	575	9614099404	956	76.1		57.0	162.0		
9614051718	719	9614051730	698	9614099405	1139	101.6		77.0	180.0		
EPDM		FPM									ISO 2037 Clamp
9613857901	462	9614051707	491			25		32.5	104.2		
9613857902	513	9614051708	547			38		32.5	104.2		
9613857903	536	9614051709	534			51		42.0	109.2		
9613857904	616	9614051710	615			63.5		52.0	111.2		
9613857905	803	9614051711	803			76.1		57.0	176.4		
9613857906	1110	9614051712	1110			101.6		77.0	194.4		
HNBR		Silicone (Q)		PFA							
9614051719	482	9614051731	471	N/A		25		32.5	104.2		
9614051720	535	9614051732	523	9614099406	750	38		32.5	104.2		
9614051721	557	9614051733	547	9614099407	821	51		42.0	109.2		
9614051722	639	9614051734	628	9614099408	940	63.5		52.0	111.2		
9614051723	835	9614051735	820	9614099409	1201	76.1		57.0	176.4		
9614051724	1156	9614051736	1132	9614099410	1574	101.6		77.0	194.4		
EPDM		FPM								DIN 11850	
9613858001	392	9614051801	412			DN25		33.3	127.0		
9613858002	428	9614051802	454			DN32		33.3	127.0		
9613858003	411	9614051803	430			DN40		37.7	127.0		
9613858004	435	9614051804	459			DN50		46.6	132.0		
9613858005	494	9614051805	523			DN65		57.3	142.0		
9613858006	624	9614051806	665			DN80		63.0	164.0		
9613858007	745	9614051807	794			DN100		77.0	180.0		
HNBR		Silicone (Q)		PFA							
9614051815	410	9614051829	400	N/A		DN25		33.3	127.0		
9614051816	447	9614051830	437	N/A		DN32		33.3	127.0		
9614051817	431	9614051831	420	9614099301	646	DN40		37.7	127.0		
9614051818	455	9614051832	444	9614099302	718	DN50		46.6	132.0		
9614051819	515	9614051833	390	9614099303	816	DN65		57.3	142.0		
9614051820	655	9614051834	636	9614099304	1018	DN80		63.0	164.0		
9614051821	782	9614051835	759	9614099305	1203	DN100		77.0	180.0		

Product code:: 5219

Material: 1.4404 (316L)
 Connection: Orbital welding
 ends/Clamp ends
 Seals: EPDM - FDA and USP Class VI
 Seals: FPM - FDA and USP Class VI
 Inside surface finish: Ra 0.5 µm

Item No.	PPL EUR	Item No.	PPL EUR	Item No.	PPL EUR	Size DN/OD	Dimension (mm)			
EPDM		FPM								DIN 11850 Clamp
9613858101	480	9614051808	500			DN25	33.3	90.0		
9613858102	545	9614051809	571			DN32	33.3	90.0		
9613858103	528	9614051810	547			DN40	37.7	90.0		
9613858104	559	9614051811	583			DN50	46.6	95.0		
9613858105	638	9614051812	667			DN65	57.3	118.0		
9613858106	784	9614051813	825			DN80	63.0	120.0		
9613858107	922	9614051814	972			DN100	77.0	136.0		
HNBR		Silicone (Q)		PFA						
9614051822	501	9614051836	489	N/A		DN25	33.3	90.0		
9614051823	567	9614051837	556	N/A		DN32	33.3	90.0		
9614051824	550	9614051838	539	9614099306	765	DN40	37.7	90.0		
9614051825	580	9614051839	571	9614099307	844	DN50	46.6	95.0		
9614051826	661	9614051840	650	9614099308	961	DN65	57.3	118.0		
9614051827	815	9614051841	799	9614099309	1179	DN80	63.0	120.0		
9614051828	962	9614051842	941	9614099310	1383	DN100	77.0	136.0		

LKB UltraPure Automatic or Manual Butterfly Valve

Butterfly valves

2.2

Product code:: 5219

Material: 1.4404 (316 L)
 Connection: Orbital welding ends/Clamp ends
 Seals: EPDM - FDA and USP Class VI
 Seals: FPM - FDA and USP Class VI
 Inside surface finish: Ra 0.5 µm, Ra 0.4 µm Electro-polished

Item No.	PPL EUR	Item No.	PPL EUR			Size	Dimension (mm)		Ra 0.5 µm
							E	H ¹	
EPDM		FPM					E	H¹	ASME BPE
9613858201	368	9614051901	387			1"	32.5	127.0	
9613858202	379	9614051902	398			1½"	32.5	127.0	
9613858203	401	9614051903	417			2"	42.0	132.0	
9613858204	463	9614051904	488			2½"	52.0	134.0	
9613858205	546	9614051905	579			3"	57.0	162.0	
9613858206	661	9614051906	700			4"	77.0	180.0	
HNBR		Silicone (Q)		PFA			E	H²	ASME BPE Clamp
9614051925	386	9614099201	376	N/A		1"	32.5	127.0	
9614051926	397	9614099202	387	9614099225	613	1½"	32.5	127.0	
9614051927	420	9614099203	409	9614099226	683	2"	42.0	132.0	
9614051928	482	9614099204	471	9614099227	784	2½"	52.0	134.0	
9614051929	573	9614099205	557	9614099228	938	3"	57.0	162.0	
9614051930	695	9614099206	675	9614099229	1116	4"	77.0	180.0	
9613858301	447	9614051913	475			1"	32.5	72.4	
9613858302	497	9614051914	529			1½"	32.5	72.4	
9613858303	518	9614051915	533			2"	42.0	77.4	
9613858304	594	9614051916	620			2½"	52.0	79.4	
9613858305	775	9614051917	808			3"	57.0	87.4	
9613858306	1071	9614051918	1109			4"	77.0	111.8	
HNBR		Silicone (Q)		PFA			E	H²	
9614051931	466	9614099213	456	N/A		1"	32.5	72.4	
9614051932	517	9614099214	507	9614099235	733	1½"	32.5	72.4	
9614051933	539	9614099215	527	9614099236	802	2"	42.0	77.4	
9614051934	616	9614099216	607	9614099237	917	2½"	52.0	79.4	
9614051935	806	9614099217	790	9614099238	1173	3"	57.0	87.4	
9614051936	1115	9614099218	1092	9614099239	1535	4"	77.0	111.8	

Product code:: 5219

Material: 1.4404 (316 L)
 Connection: Orbital welding
 ends/Clamp ends
 Seals: EPDM - FDA and USP Class VI
 Seals: FPM - FDA and USP Class VI
 Inside surface finish: Ra 0.5 µm, Ra
 0.4 µm Electro-polished

Item No.	PPL EUR	Item No.	PPL EUR			Size	Dimension (mm)		Ra 0.4 µm Electro-polished	
							E	H ¹		
EPDM		FPM					E	H¹	ASME BPE	
9613858207	394	9614051907	413			1"	32.5	127.0		
9613858208	416	9614051908	435			1½"	32.5	127.0		
9613858209	442	9614051909	457			2"	42.0	132.0		
9613858210	509	9614051910	534			2½"	52.0	134.0		
9613858211	591	9614051911	623			3"	57.0	162.0		
9613858212	726	9614051912	766			4"	77.0	180.0		
HNBR		Silicone (Q)		PFA			E	H²		ASME BPE Clamp
9614051937	412	9614099207	402	N/A		1"	32.5	127.0		
9614051938	435	9614099208	424	9614099230	650	1½"	32.5	127.0		
9614051939	461	9614099209	451	9614099231	726	2"	42.0	132.0		
9614051940	527	9614099210	518	9614099232	832	2½"	52.0	134.0		
9614051941	618	9614099211	604	9614099233	984	3"	57.0	162.0		
9614051942	763	9614099212	740	9614099234	1181	4"	77.0	180.0		
9613858307	474	9614051919	500			1"	32.5	72.4		
9613858308	535	9614051920	568			1½"	32.5	72.4		
9613858309	558	9614051921	572			2"	42.0	77.4		
9613858310	640	9614051922	665			2½"	52.0	79.4		
9613858311	821	9614051923	853			3"	57.0	87.4		
9613858312	1136	9614051924	1174			4"	77.0	111.8		
HNBR		Silicone (Q)		PFA			E	H²		
9614051743	494	9614099219	483	N/A		1"	32.5	72.4		
9614051744	556	9614099220	546	9614099240	772	1½"	32.5	72.4		
9614051745	579	9614099221	570	9614099241	843	2"	42.0	77.4		
9614051746	612	9614099222	652	9614099242	964	2½"	52.0	79.4		
9614051747	853	9614099223	838	9614099243	1217	3"	57.0	87.4		
9614051748	1179	9614099224	1159	9614099244	1601	4"	77.0	111.8		