

Bosch Rexroth LC16DB20B7X/ pressure-control logic cartridge insert

Manufacturer: Bosch Rexroth
Manufacturer part number / published order designation: R900926012
Published model: LC16DB20B7X/

About this compilation

Prepared by Hydmaster from selected manufacturer documentation. Original technical pages follow without cropped drawings, rewritten data or altered units. This cover and index are Hydmaster editorial material, not a manufacturer-issued exact-execution datasheet.

Coverage: selected pages relevant to the identified size and configuration. Other options or neighbouring models retained on an original page apply only where explicitly identified.

Execution notes and conditions

Actual assembly pressure setting, pilot-orifice tuning and current delivery availability are not inferred.

Only the individual factory component is identified; no insert/cover combination or complete valve is created.

Source-page index

Source page numbers below are physical pages of each complete original PDF. The original printed page labels and technical content remain unchanged. Compiled page numbers count this cover/index.

Source A: Bosch Rexroth Pressure Logic Lc Lfa Re21050 2003

Original pages	Compiled pages	Relevant content
1-2	2-3	Manufacturer pressure-function component overview and compiled edition; Component functions and distinction between pressure relief and normally-open pressure reduction
4-6	4-6	ISO 7368 receiving cavity dimensions and installation interface; Exact LCDB construction key, spring classes and individual insert ratings; LCDB size 16 pressure-flow curves for the actual insert form; reference pilot/cover test arrangement is not included hardware
12	7	Published preferred material-number/model rows; exact current identity independently checked by SPC

RE 21 050/02.03

Replaces: 02.99

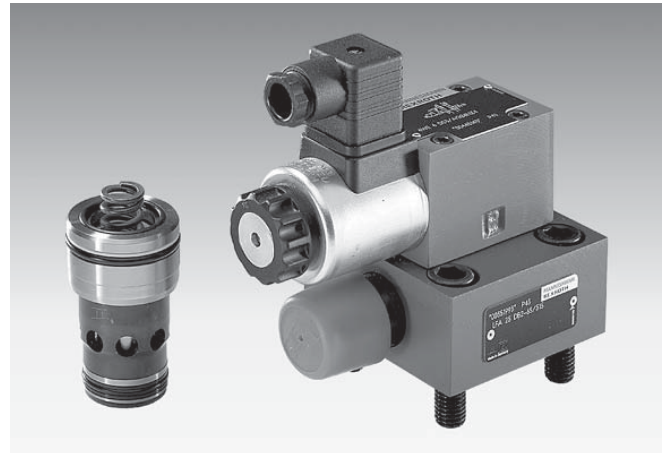
2-way cartridge valves; pressure functions
Cartridge valves type LC...
Control covers type LFA...

Nominal sizes 16 to 100

Series 6X; 7X

Maximum operating pressure 420 bar

Maximum flow 7000 L/min



H/A/D 5593

Cartridge valve type LC 25 DB40E-7X
Control cover type LFA 25 DBW2-7X/315 with manual pressure
adjustment, electrical unloading with built-on directional valve.

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– Type DRW	55 to 56	– Type DZW	66 to 67
– Types DREV; DREZ	57 to 58		
– Types DREVV; DREWZ			

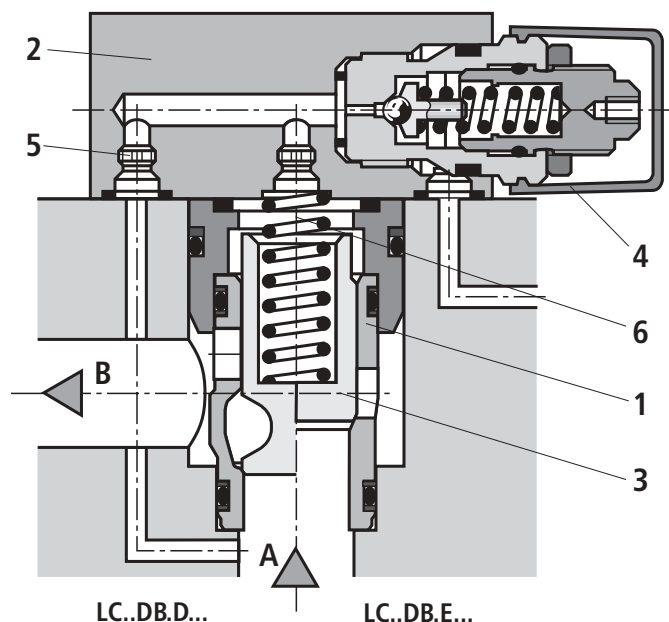
Function, section, symbols

General

The 2-way cartridge valves for pressure control functions are pilot operated poppet or spool valves. The main component designed as a cartridge valve (1) is inserted into a cavity which is standardised to DIN ISO 7368 and is sealed by the control cover (2).

The pilot valve (4) for either manual or electrical proportional pressure control is integrated into the control cover (2) or mounted onto the control cover (2) as a pilot valve with interface connections to DIN 24 340.

By combining the cartridge valve with the control covers different pressure functions can be realised.

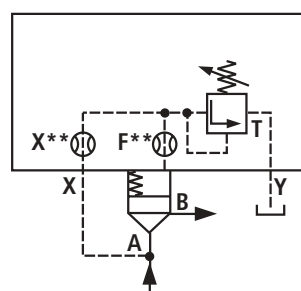


Pressure relief function

Control cover type LFA..DB...

Cartridge valve type LC..DB...

The cartridge valve (1) for the pressure relief function (type LC . DB...) is a poppet valve without an area differential (no effective area at port B). The pressure acting at port A is fed via the pilot supply orifice (5) to the spring side (6) of the element. At pressures below the setting of pilot valve (4) the forces on spool (3) are balanced and the spool remains closed due to the spring force. On reaching the set pressure, spool (3) opens and limits the pressure at port A in relation to the pressure-flow characteristics.



Type LFA..DB...

Type LC..DB...

Pressure reducing function

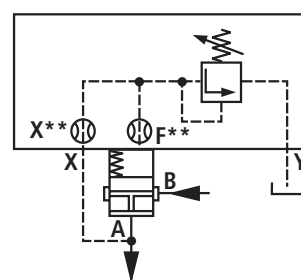
a) Normally open: Control cover type LFA..DB... Cartridge valve type LC..DR...

The cartridge valve for the pressure reducing function is a spool valve without an area differential (no effective area at port B).

The same types of cover are used as pilot valves that are used for the pressure relief functions (type LFA..DB...).

The pressure acting at port A is fed to the spring side of the spool via the pilot oil supply orifice. Below the performance limit and pressure set at the pilot valve, the spool is pressure-balanced and is held open by the spring force, so that oil is free to flow from port B to port A.

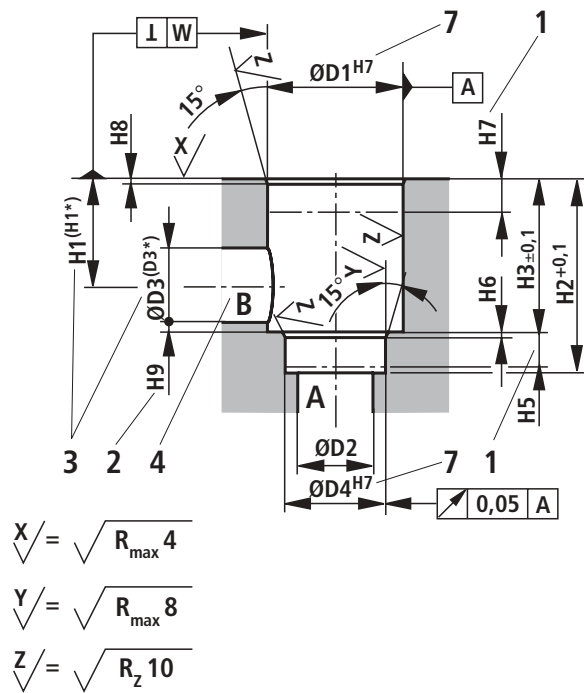
On reaching the set pressure, the spool closes and reduces the pressure at port A in relation to the pressure-flow characteristics.



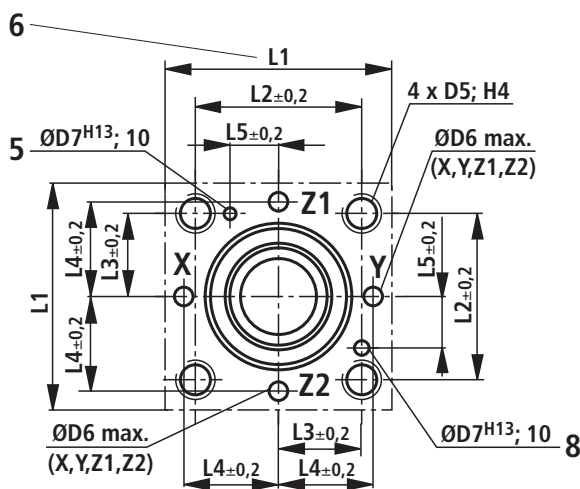
E.g.

Type LFA..DB...

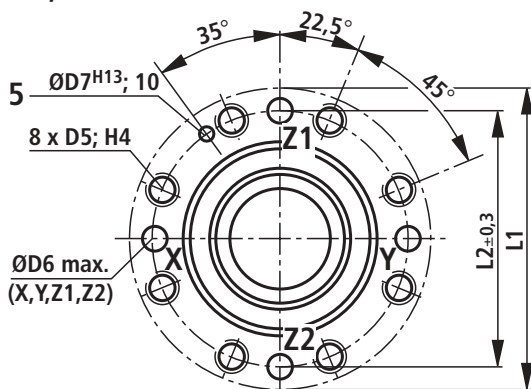
Type LC..DR40...



NS 16 to 63



NS 80, 100



NS	16	25	32	40	50	63	80	100
ØD1 ^{H7}	32	45	60	75	90	120	145	180
ØD2	16	25	32	40	50	63	80	100
ØD3	16	25	32	40	50	63	80	100
(ØD3*)	25	32	40	50	63	80	100	125
ØD4 ^{H7}	25	34	45	55	68	90	110	135
ØD5	M8	M12	M16	M20	M20	M30	M24	M30
ØD6 ¹⁾	4	6	8	10	10	12	16	20
ØD7 ^{H13}	4	6	6	6	8	8	10	10
H1	34	44	52	64	72	95	130	155
(H1*)	29.5	40.5	48	59	65.5	86.5	120	142
H2	56	72	85	105	122	155	205	245
H3	43	58	70	87	100	130	175±0.2	210±0.2
H4	20	25	35	45	45	65	50	63
H5	11	12	13	15	17	20	25	29
H6	2	2.5	2.5	3	3	4	5	5
H7	20	30	30	30	35	40	40	50
H8	2	2.5	2.5	3	4	4	5	5
H9	0.5	1	1.5	2.5	2.5	3	4.5	4.5
L1	65/80	85	102	125	140	180	Ø250	Ø300
L2	46	58	70	85	100	125	Ø200	Ø245
L3	23	29	35	42.5	50	62.5	—	—
L4	25	33	41	50	58	75	—	—
L5	10.5	16	17	23	30	38	—	—
W	0.05	0.05	0.1	0.1	0.1	0.2	0.2	0.2

¹⁾ Max. dim.

- 1 Depth of fit
- 2 Reference dimension
- 3 For diameters of port B other than ØD3 or (ØD3*), the distance from the cover mounting surface to the centre of this hole must be calculated.
- 4 Port B may be moved about the central axis of port A. Care must however be taken to ensure that the fixing holes and control holes are not damaged.
- 5 Drilling for location pin (cover location pin fitted to DIN 24 342)
- 6 **Note on NS 16 porting pattern:**
Length L1 (axis x–y drilling) is 80 mm.
- 7 For Ø ≤ 45 mm → fit H8 is permitted!
- 8 Drilling for locating pin with functions as a main pressure relief valve (cover locating pin has to be appropriately relocated during assembly)

Pressure relief function

Ordering details: pressure relief cartridge valve (without control cover)

		LC		DB					
Nominal size 16	(Series 7X)	= 16							No code = V NBR seals FKM seals (other seals on request) ⚠ Attention! The compatibility of the seals and pressure fluid has to be taken into account!
Nominal size 25		= 25							
Nominal size 32		= 32							
Nominal size 40		= 40							
Nominal size 50		= 50							
Nominal size 63	(Series 6X)	= 63							7X = (NS 16 to 63) Series 70 to 79 (70 to 79: unchanged installation and connection dimensions) 6X = (NS 80 and 100) Series 60 to 69 (60 to 69: unchanged installation and connection dimensions)
Nominal size 80		= 80							
Nominal size 100		= 100							
Opening pressure approx. 0 bar (without spring)		= 00							
Opening pressure approx. 2 bar		= 20							
Opening pressure approx. 3 bar		= 30 ¹⁾							
Opening pressure approx. 4 bar		= 40							
Opening pressure approx. 5 bar		= 50 ²⁾							
Opening pressure approx. 8 bar		= 80 ³⁾							

¹⁾ Opening pressure 3.0 bar only with NS16 for fitting a pilot operated pressure relief valve type DBC . -5X/...SO187 (see catalogue sheet RE 25 802)

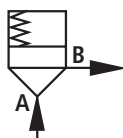
²⁾ Only with NS 16, 25 and 32

³⁾ Special installation space is required (see page 12)

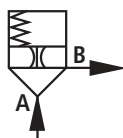
Preferred; types, see page 12, are readily available!

Symbols: cartridge valves (for versions see ordering details)

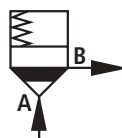
Poppet valve **without** orifice
Version „E“



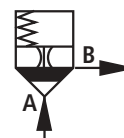
Poppet valve **with** orifice
Version „A“



Spool poppet valve **without** orifice
Version „D“



Spool poppet valve **with** orifice
Version „B“



Technical data (for applications outside these parameters, please consult us!)

Pressure fluid	Mineral oil (HL, HLP) to DIN 51 524 ¹⁾ ; Fast bio-degradable pressure fluids to VDMA 24 568 (also see RE 90 221); HETG (rape seed oil) ¹⁾ ; HEPG (polyglycols) ²⁾ ; HEES (synthetic ester) ²⁾ ; Other pressure fluids on request	
¹⁾ Suitable for NBR and FKM seals ²⁾ Only suitable for FKM seals		
Pressure fluid temperature range	°C	– 30 to + 80 for NBR seals – 20 to + 80 for FKM seals
Viscosity range	mm ² /s	2.8 to 380
Cleanliness class to ISO code	Maximum permissible degree of contamination of the pressure fluid is to ISO 4406 (C) class 20/18/15 ³⁾	

2-way cartridge valve

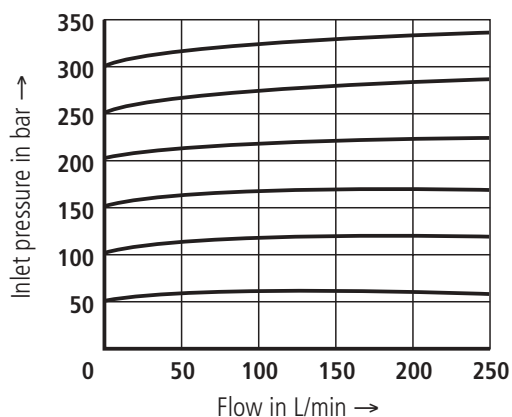
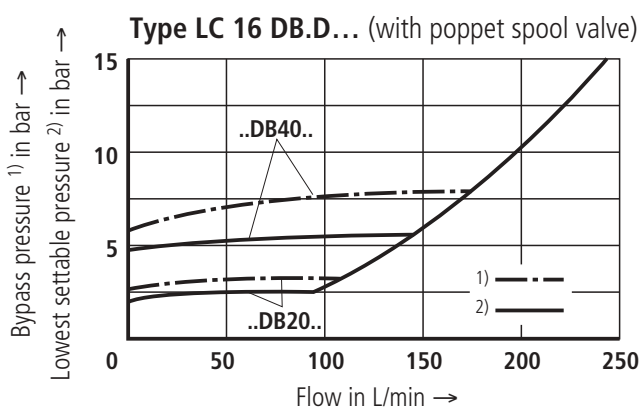
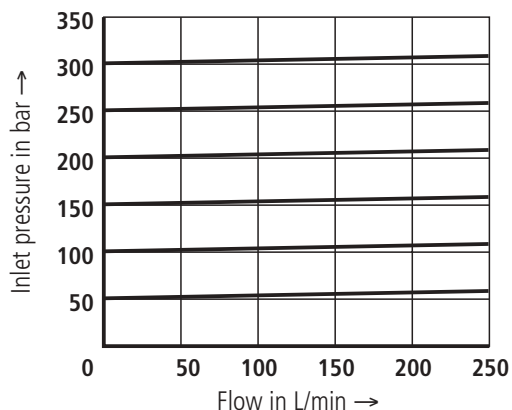
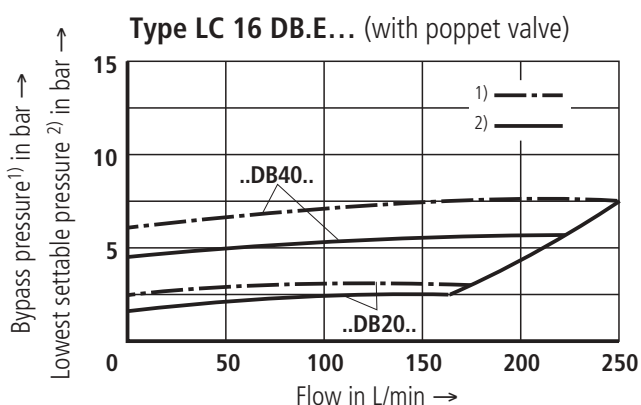
Maximum operating pressure – Ports A and B	bar	420							
Maximum flow (recommended)	NS	16	25	32	40	50	63	80	100
– Poppet valve cartridges „E“ and „A“	L/min	300	450	600	1000	1600	2500	4500	7000
– Spool valve cartridges „D“ and „B“	L/min	175	300	450	700	1400	1750	3200	4900

³⁾ The cleanliness class stated for the components must be adhered too in hydraulic systems. Effective filtration prevents faults from occurring and at the same time increases the component service life.
For the selection of filters see catalogue sheets RE 50 070, RE 50 076 and RE 50 081.

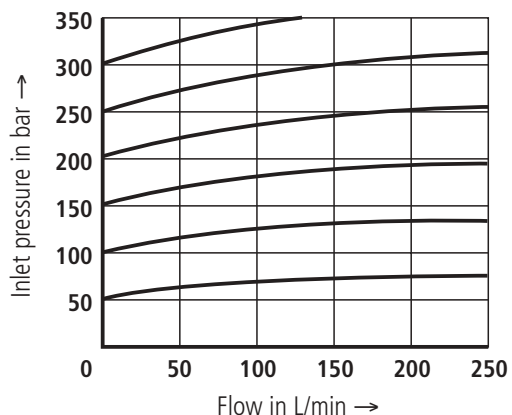
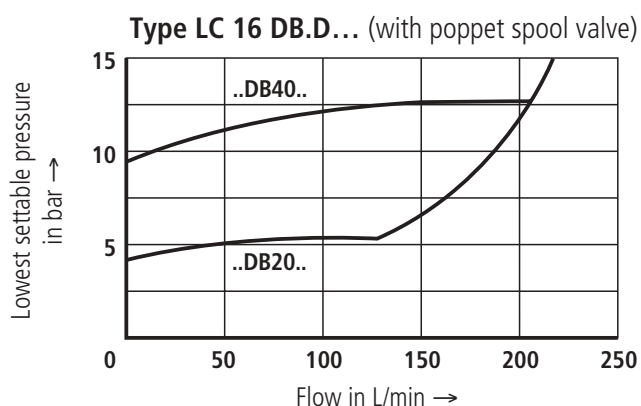
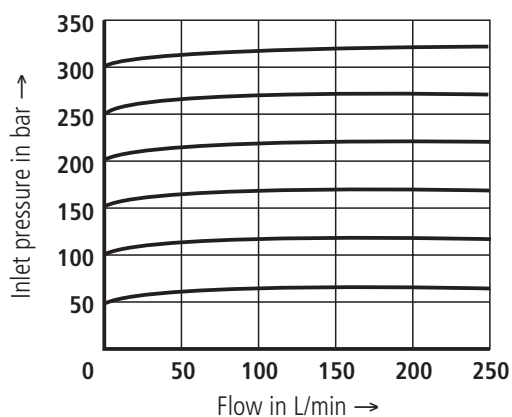
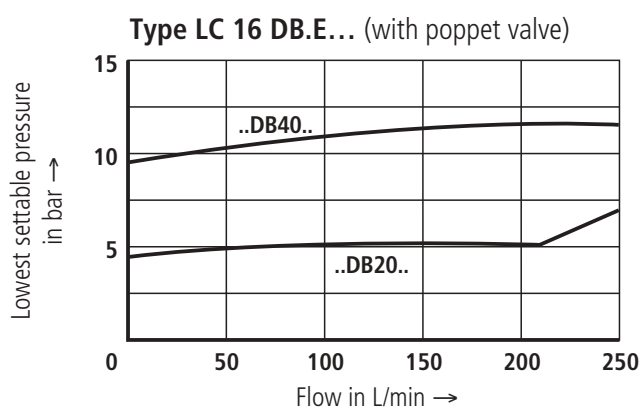
Characteristic curves: NS 16 (measured with HLP 46; $\vartheta_{oil} = 40\text{ °C} \pm 5\text{ °C}$)

The characteristic curves were measured with an external pilot oil drain at zero pressure. With an internal pilot oil drain the inlet pressure is increased by the pressure being applied at port B.

Manual pressure adjustment, type LFA 16 DB... and type LFA 16 DBW...



Electrical proportional pressure adjustment, type LFA 16 DBE...



Seal kits for cartridge valves type LC...

Nominal size	Material No.	
	NBR seals	FKM seals
16	R900313104	R900313107
25	R900313105	R900313108
32	R900313106	R900313109
40	R900873022	R900873025

Nominal size	Material No.	
	NBR seals	FKM seals
50	R900873023	R900873026
63	R900873024	R900873027
80	R900314058	R900314067
100	R900314059	R900314068

Compression springs for cartridge valves type LC...

NS	Spring dimensions in mm	Opening pressure in bar	Material No.
16	10.2/1.3 x 40.5/8.0	2.0	R900062747
	10.0/1.6 x 38.2/9.0	3.0	R900062753
	9.8/1.7 x 38.0/9.0	4.0	R900062754
	9.7/1.9 x 35.7/8.5	5.0	R900062757
	9.2/2.4 x 60.5/14.5	8.0 ¹⁾	R900082073
25	15.3/2.25 x 55.0/8.0	2.0	R900062762
	14.9/2.7 x 53.4/8.5	3.0	R900062764
	14.7/2.8 x 53.5/8.5	4.0	R900062820
	14.6/3.0 x 52.5/8.5	5.0	R900062819
	14.1/3.5 x 78.5/12.0	8.0 ¹⁾	R900082072
32	19.6/2.8 x 69.5/7.5	2.0	R900062813
	19.2/3.2 x 71.0/8.5	3.0	R900062783
	19.1/3.4 x 72.0/9.5	4.0	R900062810
	19.1/3.5 x 72.8/9.0	5.0	R900062805
	18.5/4.0 x 109/14.5	8.0 ¹⁾	R900082071

NS	Spring dimensions in mm	Opening pressure in bar	Material No.
40	25.9/4.25 x 63.0/6.0	2.0	R900206675
	25.7/4.5 x 68.5/6.0	4.0	R900206673
	24.8/5.3 x 105.0/10.0	8.0 ¹⁾	R900206671
50	33.2/5.0 x 82.0/5.5	2.0	R900206684
	32.8/5.3 x 92.0/6.5	4.0	R900206681
	31.7/6.5 x 137.0/10.5	8.0 ¹⁾	R900206680
63	40.6/6.5 x 108.0/7.0	2.0	R900206690
	40.7/6.5 x 127.5/7.5	4.0	R900206692
	38.6/8.5 x 183.5/11.5	8.0 ¹⁾	R900206689
80	48.5/8 x 138/7.5	2.0	R900012353
	49/8 x 152.5/7.5	4.0	R900024113
100	52.3/9.5 x 176/9.5	2.0	R900012385
	52.3/9.5 x 195.5/9.5	4.0	R900024483

¹⁾ These springs require an additional installation length.
When using standard control covers an additional sandwich plate type LFA..D22... must be used.



Exception:

Control cover type "D" can be replaced by type LFA..D8-../F (no sandwich plate required).

Preferred types (readily available)

Typ LC (Einbauventil)	Material-Nummer
LC 16 DB40E7X/	R900912532
LC 16 DB40D7X/	R900912547
LC 40 DB40E7X/	R900927969
LC 40 DB40D7X/	R900938014
LC 50 DB40E7X/	R900938041
LC 50 DB40D7X/	R900938040
LC 63 DB40E7X/	R900938070
LC 63 DB40D7X/	R900938069

Typ LFA (Steuerdeckel)	Material-Nummer
LFA 16 DB2-7X/315	R900912757
LFA 32 DB2-7X/315	R900912768
LFA 40 DB2-7X/315	R900927972
LFA 50 DB2-7X/315	R900938163
LFA 63 DB2-7X/315	R900938230
LFA 16 DBW2-7X/315	R900912805
LFA 25 DBW2-7X/315	R900912810
LFA 32 DBW2-7X/315	R900912815
LFA 40 DBW2-7X/315	R900938096
LFA 50 DBW2-7X/315	R900938191
LFA 63 DBW2-7X/315	R900938238

Further preferred types and standard components are shown in the EPS (standard price list).