

Bell-Housing



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Noise is a particularly pervasive problem so much so that there have been statutory regulations in place now for some years, designed to limit harmful occupational exposure.

Many of the machines used in industry today are equipped with oil-hydraulic systems, which happen to be a major source of noise.

1 THEORY AND DEFINITION OF NOISE

From a health and hygiene standpoint, noise can be defined as an unpleasant and undesirable sound, or an unpleasant and annoying or intolerable auditory sensation (noise being any sound phenomena that may be accompanied by sensations of disturbance and pain). By definition, acoustic phenomena are oscillatory in character, propagated in a flexible medium and causing pressure variations at the points, and the areas adjacent to those points, through which they pass.

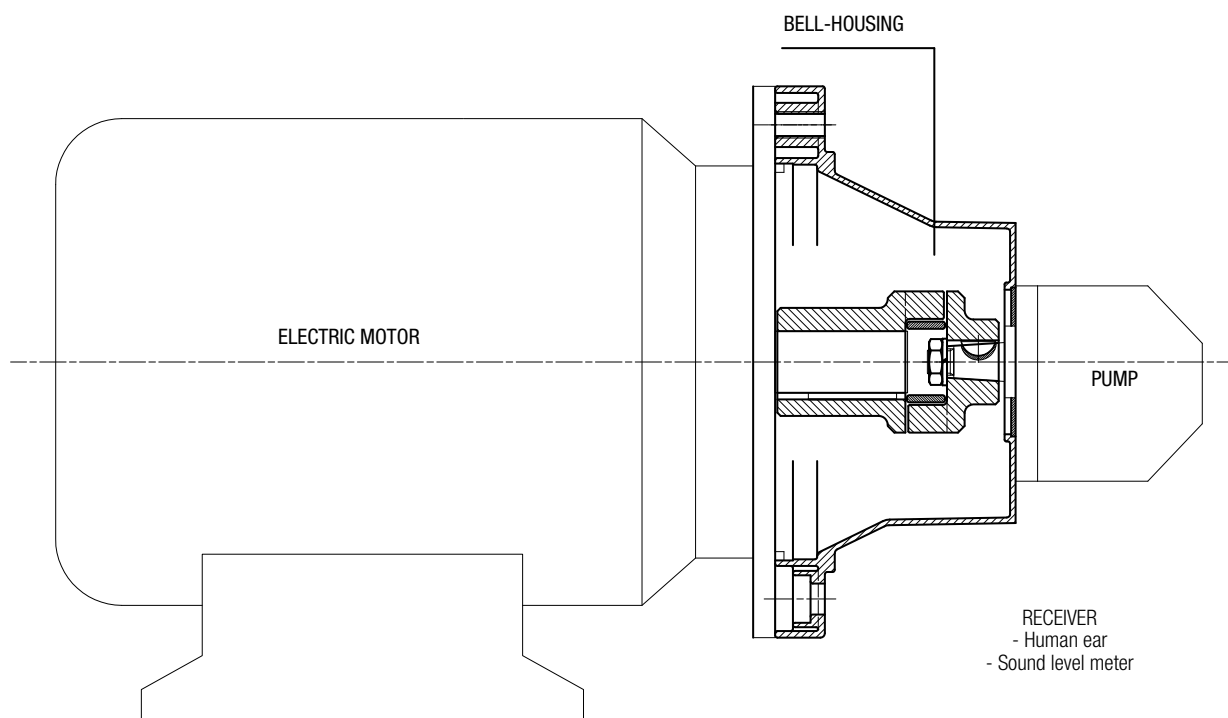
2 SOUND

Technically considered, certain elements must be present simultaneously for acoustic phenomena to occur:

- Sound source
- Transmission medium
- Receive

The electric motor and the pump, together with the drive coupling, are the SOURCE OF THE NOISE. The Bell-housing is the noise transmission medium. Depending on whether the monobloc bell-housing is a rigid or low noise type, there will be variations in the flexible properties of the transmission medium. The acoustic phenomena are dissimilar in the two cases, given the differences in pressure variation and particle displacement.

MOTOR AND PUMP UNIT



As mentioned in the presentation, low noise bell-housing will help to attenuate the transmission of vibrations and the emission of noise generated by the system. Self-evidently, however, the mere adoption of a low noise bell-housing will achieve little unless the motor and pump are correctly installed on the machine or on the tank of the hydraulic power unit.

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By definition, acoustic phenomena are oscillatory in character, propagated in a flexible medium and causing pressure variations at the points, and the areas adjacent to those points, through which they pass.

Should be followed in order to achieve best possible results and correct installation:

1 MOTOR AND PUMP UNIT MOUNTED HORIZONTALLY ON OIL TANK LID

- The suction pipe attached to the pump must be rigid, and fitted using a resilient bulkhead flange of the FTA series, which helps to cushion the vibrations propagated between the pipe and the tank lid.
If pipes need to be bent, the radius of curvature must be at least 3 times the pipe diameter.
Do not use elbow fittings, as these will significantly increase pressure losses.
- The pressure pipeline of the pump must be flexible, and long enough to include bends with the minimum radius of curvature recommended by the manufacturer for the specified operating pressure.
- The return pipeline running from the service to the filter must be flexible.
Where oil is returned directly to the tank of the hydraulic power unit through a rigid pipe, it is advisable to use a resilient bulkhead flange of the FTR series, which helps to cushion the vibrations propagated between the pipe and the tank lid.
- Anti-vibration devices (resilient mounts or damping rods) must be located under the feet of the electric motor or the PDM foot brackets, depending on the mounting position of the motor.
- The lids of hydraulic oil tanks must be sturdy enough to support the load they carry.

2 MOTOR AND PUMP UNIT MOUNTED HORIZONTALLY ON MACHINE

- As a matter of good practice, the oil tank and motor-pump unit should be mounted on a single supporting frame of strength sufficient to support the load.
- If the hydraulic system is fitted with a side-mounted filter, the suction pipeline to the pump must be flexible, and long enough to include bends with the minimum radius of curvature recommended by the manufacturer.
- If the suction filter is not side mounted, the pipeline should be rigid and installed in conjunction with a compensating coupling.
- The pressure pipeline of the pump must be flexible, and long enough to include bends with the minimum radius of curvature recommended by the manufacturer for the specified operating pressure.

- The return pipeline running from the service to the filter must be flexible.
Where oil is returned directly to the tank of the hydraulic power unit through a rigid pipe, it is advisable to use a resilient bulkhead flange of the FTR series, which helps to cushion the vibrations propagated between the pipe and the tank lid.
- Anti-vibration devices (resilient mounts or damping rods) must be located under the feet of the electric motor or the PDM foot brackets, depending on the mounting position of the motor.

Note:

The above guidelines are indicative only, and subordinate to the solutions adopted ultimately by design engineers.

IN CONCLUSION

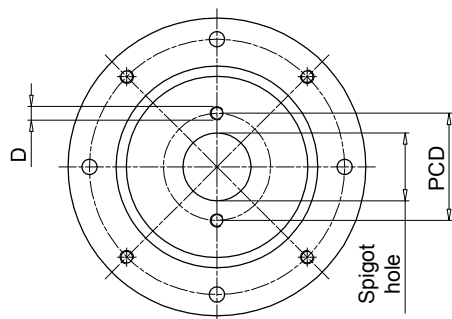
For best results, in any event, the motor-and-pump unit should be incorporated into the hydraulic system in such a way that no one component is rigidly associated with another, resulting in the propagation of vibration, and consequently noise.



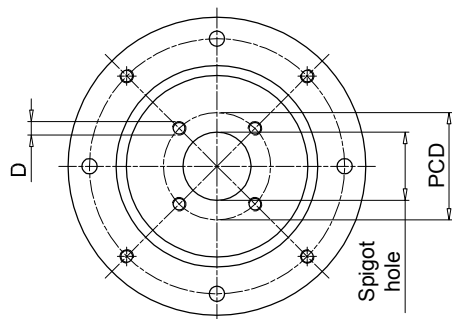
GENERAL INFORMATION

PUMP INTERFACE CODES

Valid configuration for bell-housing up to ø400

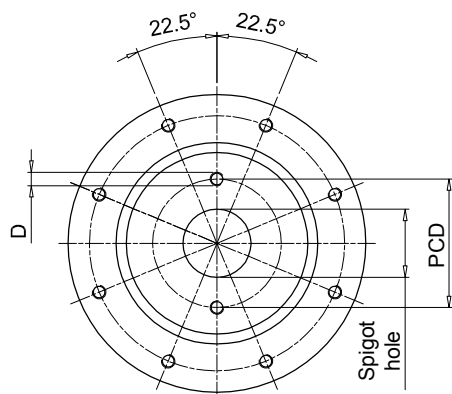


Bell-housing with nr. 2 holes at pump interface, aligned with through holes at motor interface.

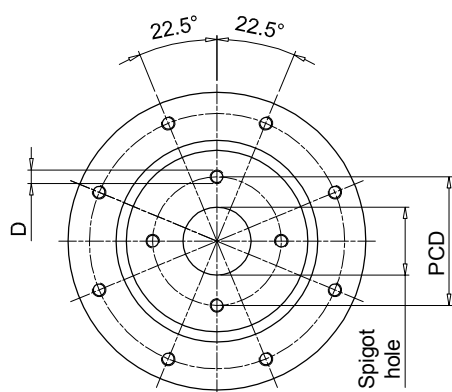


Bell-housing with nr. 4 holes at pump interface, aligned with thread holes at motor interface.

Valid configuration for bell-housing from ø450 to ø660



Bell-housing with nr. 2 holes at pump interface + 22.5° compared to through holes at motor interface.



Bell-housing with nr. 4 holes at pump interface + 22.5° compared to thread holes at motor interface.

Spigot hole [mm]	PCD	D	Nr. holes	Code	Type
40	72.00	M8	2	191	-
45.2	88.90	M8	4	096	-
	71.80	M8	4	120	-
50	80.00	M8	2	052	ISO3019-2-50-B2
	93.00	M10	2	053	-
	60.00	M5	4	280	-
	63.00	Ø7	4	057	-
	93.00	M8	2	287	-
50.8	82.50	M8	2	050	SAE A-A 50-2
56	76.00	M6	4	234	-
57.15	106.40	Ø11	2	212	-
60	74.00	M10	4	098	-
	98.50	M6	4	147	-
	75.00	M6	4	227	-
62.7	157.20	M12	4	231	-
63	100.00	M8	2	042	ISO3019-2-63-B2
	125.00	M6	4	043	-
	85.00	M8	4	044	-
	80.00	M8	2	051	-
	80.00	Ø8,5	4	058	-
	100.00	M10	2	062	-
	85.00	M8	4	168	ISO3019-2-63-B4
	90.00	M8	4	271	-
65	90.00	M8	4	073	-
70	84.00	Ø7	4	289	-
71.8	88.90	M10	4	047	-
75	102.00	M10	4	139	-
80	100.00	M8	4	024	ISO3019-2-80-B4
	103.20	M8	2	045	ISO3019-2-80-B2
	100.00	Ø11	4	059	-
	100.00	M10	2	061	-
	110.00	M10	2	063	-
	140.00	M10	2	064	-
	115.00	M10	2	065	-
	100.00	M10	4	067	-
	106.40	M10	2	083	-
	130.00	M8	4	087	-
	100.00	Ø8,5	4	093	-
	113.00	M12	4	104	-
	95.00	M8	4	169	-
	103.00	M8	4	242	-
	110.00	M10	4	272	-
82.55	106.40	M10	2	060	SAE A 82-2
	105.00	M10	4	097	-
	106.40	M8	2	254	-
	146.00	M12	2	260	-
	110.00	M10	2	284	-
85	106.40	M10	2	066	-
90	112.00	M8	2	134	-
	105.00	M8	4	156	-
	118.00	Ø9	2	163	-
92	112.00	Ø9	2	164	-
	140.00	M8	4	088	-
	145.00	M10	4	089	-

"-": out of ISO & SAE Standard



PUMP INTERFACE CODES GENERAL INFORMATION

Spigot hole [mm]	PCD	D	Nr. holes	Code	Type
95	115.00	M8	4	137	-
	127.00	M10	4	131	-
98.4	125.00	Ø11	4	128	-
100	125.00	M10	4	023	ISO3019-2-100-B4
	125.00	M10	2	025	ISO3019-2-100-B2
	125.00	Ø11	2	031	-
	125.00	M5	4	032	-
	190.00	Ø7	4	038	-
	125.00	Ø13	4	041	-
	125.00	M12	2	071	-
	140.00	M12	2	072	-
	146.00	M12	2	075	-
	126.00	M10	2	106	-
	120.00	M8	4	122	-
	160.00	M10	4	141	-
	150.00	M10	4	150	-
101.6	161.50	M12	4	029	-
	146.00	M12	2	070	SAE B 101-2
	127.00	M12	4	125	-
	146.00	M10	2	159	-
	127.00	M10	4	224	-
105	146.00	M12	2	076	-
110	175.00	M10	4	110	-
	130.00	M8	4	154	-
	200.00	M10	4	202	-
	135.00	M10	4	219	-
	145.00	M12	4	273	-
112	140.00	M12	2	074	-
	140.00	M10	2	138	-
	130.00	M10	4	264	-
115	180.00	M12	4	198	-
116	160.00	M14	2	084	-
120	210.00	M16	2	094	-
	145.00	M10	4	155	-
	150.00	Ø13	4	267	-
125	160.00	M12	4	026	ISO3019-2-125-B4
	160.00	Ø13	4	033	-
	160.00	M12	2	079	-
	180.00	M16	2	082	ISO3019-2-125-B2
	155.00	M10	4	102	-
	160.00	Ø17	4	113	-
	200.00	M12	4	114	-
	181.20	M16	2	136	-
	200.00	M16	4	200	-
	180.00	Ø20	4	215	-
	170.00	Ø18	4	237	-
127	161.50	M12	4	021	-
	181.20	M16	2	080	SAE C 127-2
	161.50	M14	4	140	-
130	165.00	Ø11	4	054	-
	150.00	M12	4	068	-
	181.20	M16	2	085	-
	165.00	M12	4	124	-
	165.00	M14	4	135	-

"-": out of ISO & SAE Standard

Spigot hole [mm]	PCD	D	Nr. holes	Code	Type
130	165.00	M10	4	253	-
135	160.00	M10	4	151	-
	175.40	M12	4	220	-
140	180.00	M14	4	077	ISO3019-2-140-B4
	180.00	M12	2	081	-
	165.00	M10	4	157	-
	200.00	M16	4	176	ISO3019-2-140-B2
	165.00	M10	4	223	-
	180.00	M16	2	232	-
150	185.00	M16	4	069	-
152.4	228.60	M16	4	022	-
	228.60	M18	2	090	-
	228.60	M18	4	108	-
	217.50	Ø17	4	118	-
	228.60	M20	2	166	SAE D 152-2
	228.60	M20	4	192	SAE D 152 -4
160	190.50	M8	4	207	-
	200.00	M16	4	027	ISO3019 - 2 -160 B4
	200.00	Ø17	4	035	-
	200.00	M16	2	091	-
	224.00	M20	2	092	ISO3019 - 2 -160 B2
	200.00	M12	2	107	-
162	230.00	M22	4	111	-
	185.00	M12	4	152	-
	224.00	M16	4	184	-
	230.00	M22	4	228	-
	188.00	M12	4	263	-
	317.35	M20	4	143	SAE E 165 - 4
165.1	317.35	M24	2	145	SAE E 165 - 2
	229.00	M20	4	201	-
	317.35	M18	4	204	-
175	200.00	M12	4	153	-
	230.00	M18	2	185	-
177.8	350.00	M24	4	146	SAE F 177 - 4
	216.00	M12	4	222	-
	350.00	M24	2	203	SAE F 177 - 2
180	216.00	M12	4	055	-
	216.00	M16	4	078	-
	224.00	M16	4	112	ISO3019 - 2 -180 B4
	216.00	M12	4	132	-
	215.00	M22	4	148	-
	230.00	M22	4	226	-
200	250.00	M20	4	028	ISO3019 - 2 -200 B4
	250.00	Ø22	4	095	-
	280.00	M24	2	117	-
	230.50	M12	4	214	-
203.2	254.00	M14	4	210	-
205	240.00	M16	4	133	-
224	280.00	M20	4	144	ISO3019 - 2 -224 B4
	280.00	Ø22	4	205	-
250	310.00	M24	4	238	-
	315.00	M20	4	282	ISO3019 - 2 -250 B4
275	355.00	M16	4	233	-
	355.00	Ø18	4	281	-

"-": out of ISO & SAE Standard

LMS/LDS series

Range from IEC motor size 100 to size 315



Technical data

Bell-Housing range from IEC motor size 100 to IEC motor size 315**Materials**

- Motor base bell-housing: Pressure diecast aluminium alloy
- Pump flange: Pressure diecast aluminium alloy
- Internal ring: Pressure diecast aluminium alloy
- Damping ring: Vulcanized aluminium / NBR 75 Shore A
- Damping ring : NBR 75 Shore A

Temperature

- From -30 °C to +80 °C

Note

For temperatures outside this range, contact the MP Filtri Technical and Sales Department.

Compatibility with fluids

Modular bell-housing components compatible for use with:

- Mineral oils types HH-LL-HM-HR-HV-HC, to ISO 6743/4 standard
- Water based emulsions types HFAE-HFAS, to ISO 6743/4 standard
- Water glycol type HFC, to ISO 6743/4 standard
- Ask for anodized version

Special Applications

Any applications not covered by the normal indications contained in this catalogue must be evaluated and approved by the MP Filtri Technical and Sales Department.





Range

Bell-Housing size	Flange ISO 3019-2							IEC Motors size				
	50 B2-B4	63 B2-B4	80 B2-B4	100 B2-B4	125 B2-B4	160 B2-B4	200 B2-B4					
LMS250	●	●	●	●	●			IEC 100 Ø 250 - Ø 28x60				
LMS250	●	●	●	●	●			IEC 112 Ø 250 - Ø 28x60				
LMS300			●	●	●	●		IEC 132 Ø 300 - Ø 38x80				
LMS350			●	●	●	●		IEC 160 Ø 350 - Ø 42x110				
LMS350			●	●	●	●	●	IEC 180 Ø 350 - Ø 48x110				
LMS400			●	●	●	●	●	IEC 200 Ø 400 - Ø 55x110				
LMS450			●	●	●	●	●	IEC 225 Ø 450 - Ø 60x140				
LMS550					●	●	●	IEC 250 Ø 550 - Ø 65x140				
LMS550					●	●	●	IEC 280 Ø 550 - Ø 75x140				
LMS660					●	●	●	IEC 315 Ø 660 - Ø 80x170				
Bell-Housing size	Flange SAE J 744										IEC Motors size	
	50-2 (A-A)	82-2 (A)	101-2 (B)	127-2 (C)	152-2 (D)	165-2 (E)	101-4 (B)	127-4 (D)	152-4 (D)	165-4 (E)		
LMS250	●	●	●				●				IEC 100 Ø 250 - Ø 28x60	
LMS250	●	●	●	●			●				IEC 112 Ø 250 - Ø 28x60	
LMS300		●	●	●			●	●			IEC 132 Ø 300 - Ø 38x80	
LMS350		●	●	●			●	●			IEC 160 Ø 350 - Ø 42x110	
LMS350		●	●	●	●		●	●	●		IEC 180 Ø 350 - Ø 48x110	
LMS400		●	●	●	●	●	●	●	●	●	IEC 200 Ø 400 - Ø 55x110	
LMS450			●	●	●	●		●	●	●	IEC 225 Ø 450 - Ø 60x140	
LMS550				●	●	●		●	●	●	IEC 250 Ø 550 - Ø 65x140	
LMS550				●	●	●		●	●	●	IEC 280 Ø 550 - Ø 75x140	
LMS660				●	●	●		●	●	●	IEC 315 Ø 660 - Ø 80x170	



LMS/LDS

Designation & Ordering code

LMS

Bell-Housing series and size

LMS250AFRA	LMS450AF6A
LMS250AFBB	LMS550AF6A
LMS250AFRE	LMS660AF6A
LMS300AFRB	
LMS300AFRC	
LMS300AF5G	
LMS350AF5A	
LMS400AF6A	

Configuration example: **LMS250AFRA** **070** **DI**

Pump interface codes

070 See page 48

Options

DI	Drain hole + inspection hole
FG	Holes rotated through 45° in relation to standard position
DP	Double set of hole
AN	Black anodized finish
SA	Clearance holes at motor interface
Pxx	Customer specification

LDS

Bell-Housing series and size

LDS250AFSA	LDS400AFSL
LDS250AFSB	LDS400AFSM
LDS300AFSC	LDS400AFSN
LDS300AFSD	LDS450AFS0
LDS300AFSE	LDS550AFSP
LDS350AFSF	LDS550AFSR
LDS350AFSG	LDS550AFSS
LDS350AFSH	LDS660AFST

Configuration example: **LDS250AFSA** **070** **DI**

Pump interface codes

070 See page 48

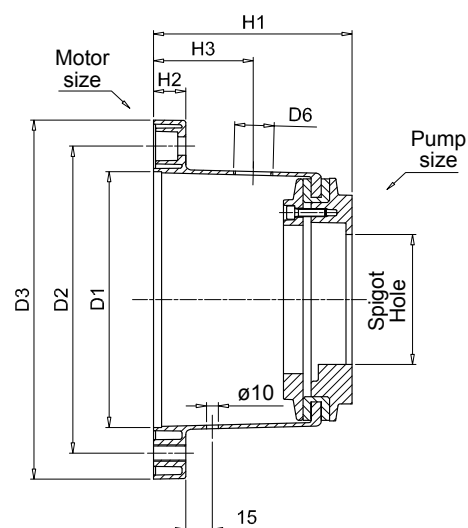
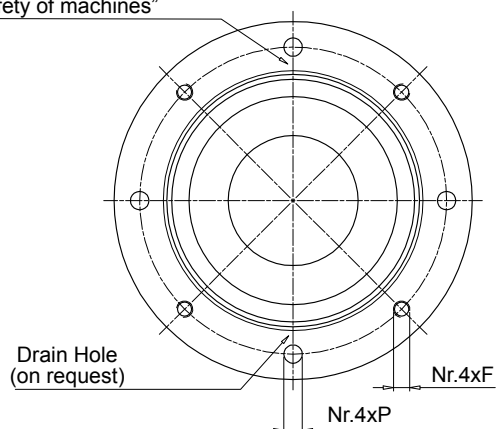
Options

DI	Drain hole + inspection hole
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DP	Double set of hole
AN	Black anodized finish
SA	Clearance holes at motor interface
Pxx	Customer specification

Note:

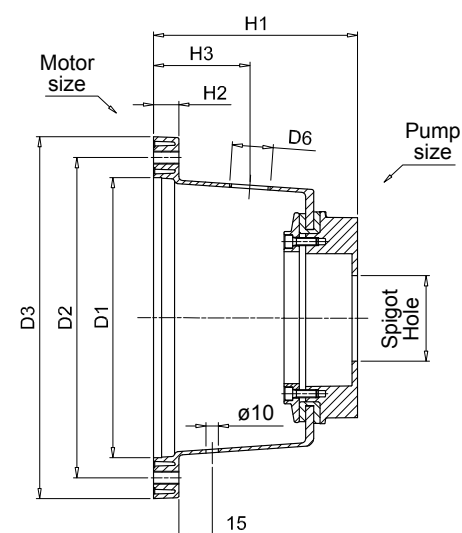
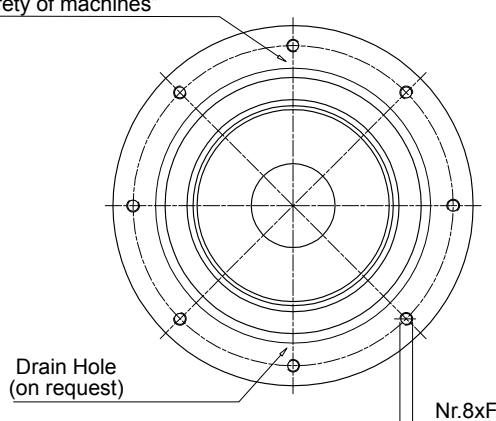
- Bell-housings with DI options are supplied complete with threaded closure plug.
- For customization features other than those indicated on this page, contact the technical/sales department

Inspection Hole
Plastic threaded plug mounted
(protection according
to DIN EN 292 part 2)
"Safety of machines"



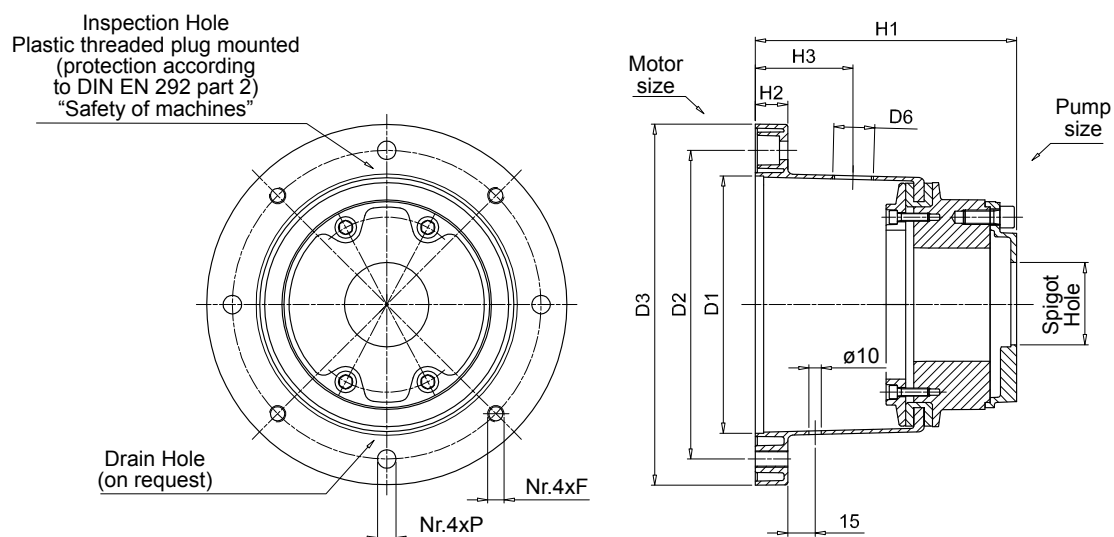
IEC - Electric motors		Bell-housing code	Dimensions [mm]							On request		Spigot hole Minimum	Weight [kg]
Motor size	Shaft end [d x l]		D1	D2	D3	H1	H2	F	P	H3	D6		
100 - 112	28x60	LMS250AFSA***	180	215	250	128	19	M12	14	75	3/4"	50	3.72
		LMS250AFSB***	180	215	250	148	19	M12	14	75	3/4"	50	4.10
132	38x80	LMS300AFSC***	230	265	300	155	23	M12	14	80	3/4"	50	4.20
		LMS300AFSD***	230	265	300	168	23	M12	14	80	3/4"	80	4.45
		LMS300AFSE***	230	265	300	194	23	M12	14	80	3/4"	80	6.51
160	42x110	LMS350AFSF***	250	300	350	204	31	M16	18	95	1"	80	6.80
		LMS350AFSG***	250	300	350	228	31	M16	18	95	1"	80	7.10
180	48x110	LMS350AFSH***	250	300	350	204	31	M16	18	95	1"	80	8.51
200	55x110	LMS400AFSL***	300	350	400	228	31	M16	18	125	1 1/2"	80	8.80
		LMS400AFSM***	300	350	400	256	31	M16	18	125	1 1/2"	80	9.10
		LMS400AFSN***	300	350	400	240	31	M16	18	125	1 1/2"	80	11.61

Inspection Hole
Plastic threaded plug mounted
(protection according
to DIN EN 292 part 2)
"Safety of machines"

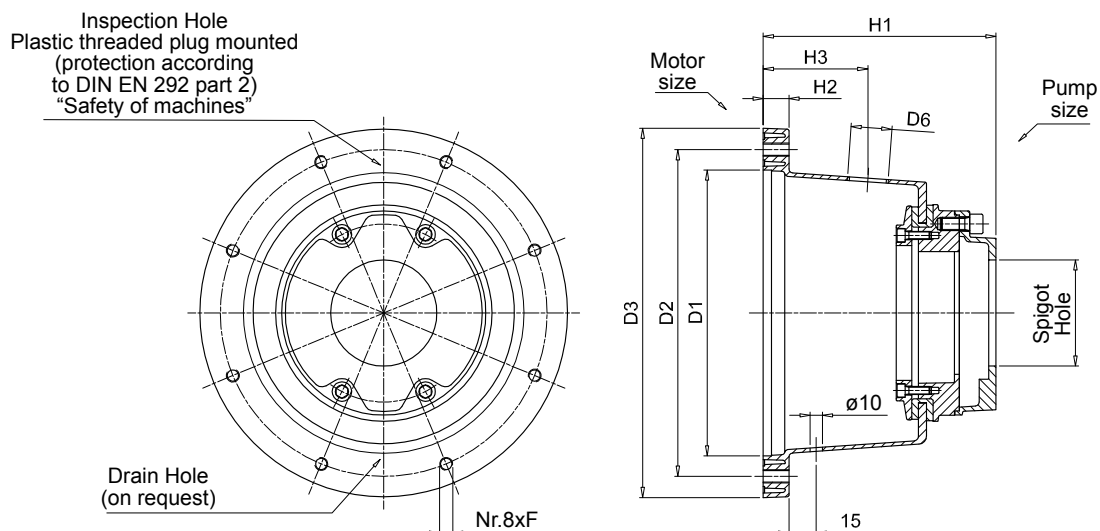


IEC - Electric motors		Bell-housing code	Dimensions [mm]							On request		Spigot hole Minimum	Weight [kg]
Motor size	Shaft end [d x l]		D1	D2	D3	H1	H2	F	P	H3	D6		
225	60x140	LMS450AFS0***	350	400	450	255	31	M16	-	175	1 1/2"	80	12.1
250	65x140	LMS550AFSP***	450	500	550	255	31	M16	-	176	1 1/2"	80	15.2
		LMS550AFSR***	450	500	550	270	31	M16	-	177	1 1/2"	80	15.9
280	75x140	LMS550AFSS***	450	500	550	290	31	M16	-	178	1 1/2"	80	19.2
315	80x170	LMS660AFST***	550	600	660	305	42	M20	-	179	1 1/2"	80	20.2

Dimensions



IEC - Electric motors		Bell-housing code	Dimensions [mm]							On request		Spigot hole Minimum	Weight [kg]
Motor size	Shaft end [d x l]		D1	D2	D3	H1	H2	F	P	H3	D6		
100 - 112	28x60	LDS250AFRA***	180	215	250	158	19	M12	14	75	3/4"	50	3.97
		LDS250AFRB***	180	215	250	165	19	M12	14	75	3/4"	50	4.10
		LDS250AFRE***	180	215	250	173	19	M12	14	75	3/4"	50	4.70
132	38x80	LDS300AFRB***	230	265	300	185	23	M12	14	80	3/4"	50	4.75
		LDS300AFRC***	230	265	300	188	23	M12	14	80	3/4"	80	4.85
		LDS300AF5G***	230	265	300	232	23	M12	14	80	3/4"	80	6.70
160 180	42x110 48x110	LDS350AF5A***	250	300	350	254	31	M16	18	95	1"	80	8.10
200	55x110	LDS400AF6A***	300	350	400	288	31	M16	18	125	1 1/2"	80	10.00



IEC - Electric motors		Bell-housing code	Dimensions							On request		Spigot hole Minimum	Weight [kg]
Motor size	Shaft end [d x l]		D1	D2	D3	H1	H2	F	P	H3	D6		
225	60x140	LDS450AF6A***	350	400	450	287	31	M16	-	175	1"1/2	80	14.10
250	65x140	LDS550AF6A***	450	500	550	300	31	M16	-	176	1"1/2	80	17.20
280	75x140												
315	80x170	LDS660AF6A***	550	600	660	335	42	M20	-	179	1"1/2	80	23.00

Comparative table

MP Filtri code	KTR code	OMT code	Raja code
LMS250A***	PK+D150/190	BS251***	R250***DF
LMS300A***	PK+D150/190	BS300***	R300***DF
LMS350A***	PK+D150/D190/D230/260	BS350***	R350***DF
LMS400A***	PK+/D190/D230/260	BS400***	R400***DF
LMS450A***	PK+/D190/D230/260D/D330	BS451***	R450***DF
LMS550A***	PK+/D190/D230/260D/D330	BS551***	R550***DF
LMS660A***	PK+/D190/D230/260D/D330	BS661***	R660***DF

Note:

The above table is guideline only.

Not all bell-housings are fully interchangeable.