A guide to select the correct bell-housing and drive coupling components

DATA REQUIRED

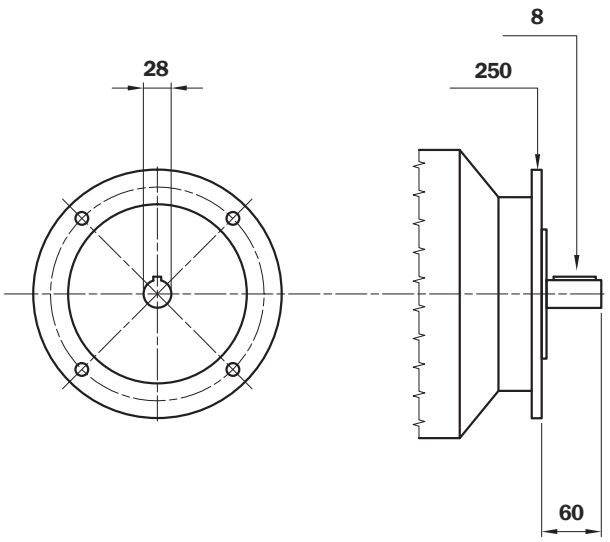
Electric motor power/motor size
Manufacturer and pump type

TO VERIFY:

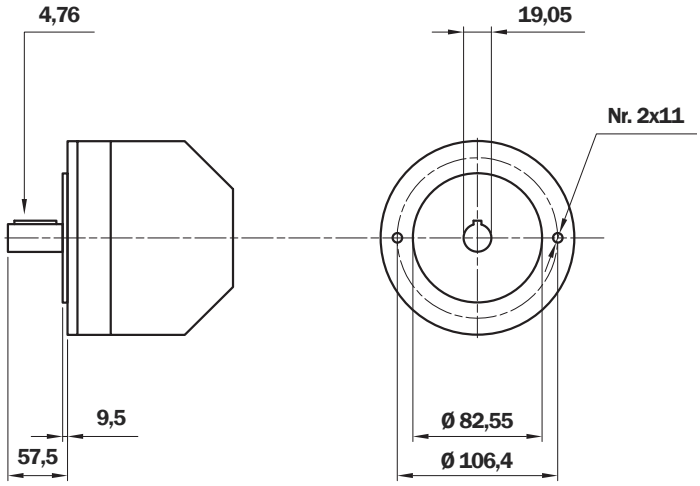
1 - Pump and motor shaft dimensions (see page 67)
2 - Shaft and flange pump (see pump data sheet)

Example:
- Electric motor 2 kW - 4 poles - Motor size 110/112
- Atos pump code PFE31 - Shaft 1

Electric motor's dimension



Pump's dimensions



Bell-Housing's length calculation

- H= 60 + 18 + 57,5 = 135,5 mm (18= Sp spider - see page 49)
- Choose type of bell-housing (LMC - LMS)
  - For LMC see tab. 3 at page 11
  - For LMS see tab. 22 at page 32
  - For MODUL 2/3 see at page 36

Note: The length of bell-housing must be ≥ than the length calculated (135,5 mm)

Case A - solution with LMC bell-housing

Tab. 3 at page 11 - for electric motor 2 kW LMC 250
LMC 250 bell-housing with height ≥ 135,5 - LMC250AFSQ

- The bell-housing code must be completed with drilling pump code (see tab. 35 at page 47)
  For the specific case C= 82,5 - Nr. 2 holes M10: Code drilling 060
- Definitive bell-housing code **LMC250AFSQ060**

Case B - solution with LMS bell-housing

Tab. 22 at page 32 - for electric motor 2 kW LMS 250
LMS 250 bell-housing with heigh ≥ 135,5 - LMS250AFSQ

- The bell-housing code must be completed with drilling pump code (see tab. 35 at page 47)
  For the specific case C= 82,5 - Nr. 2 holes M10: Code for. 060
- Definitive bell-housing code **LMS250AFSQ060**

Choose coupling

- **Motor half-coupling** (see tab. 38 at page 50)

  - For electric motor Gr. 100/112, the half-coupling is **SGEA21M05060**

- **Spider** (see tab. 36 - 37 at page 49)

  - For SGEA21, EGE2 - EGE2RR
    (choose spider material on the base of the application, oil, temperature and cycle machine, etc.)

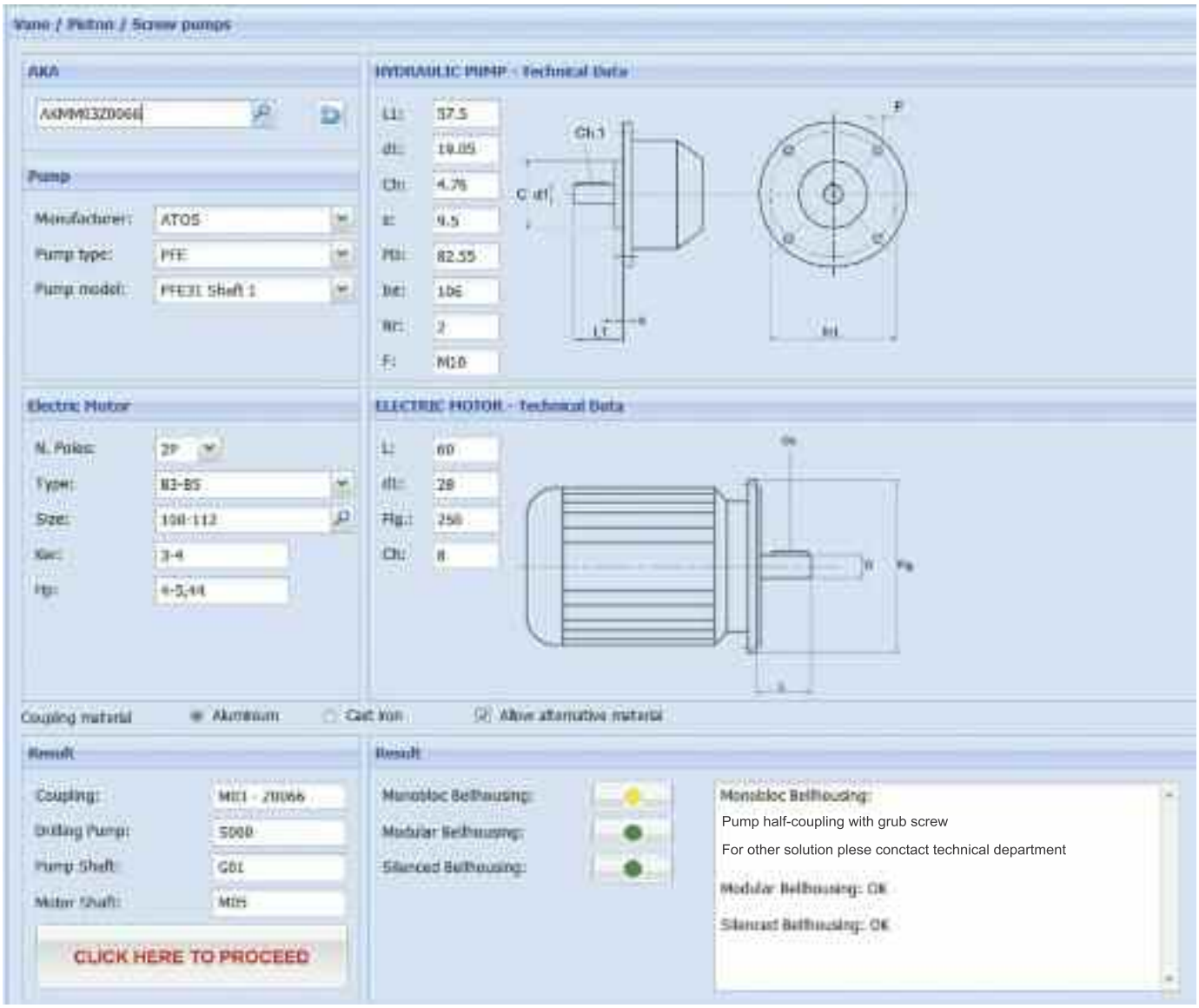
- **Pump half-coupling**

  - Choose the drilling code tab. 44 - 45 at page 53 for shaft 19,05 - Ch. 4,76 - code: **G01**

  - Half-coupling length = L BH lenght – THK Spider – THK Spigot
    LMC= 138 mm - 60 - 18 - 9,5= 50,5 mm
    LMS= 148 mm - 60 - 18 - 9,5= 60,5 mm

  - LMC - Choose the half-coupling's length on tab. 39 at page 50 ≤ 50,5 mm.
  - LMS - Choose the half-coupling's length on tab. 39 at page 50 ≤ 60,5 mm.
  - LMC - Availabe length for SGEA21= 50 mm
  - LMS - Availabe length for SGEA21= 60 mm
  - LMC=LMS - Code half-coupling code: **SGEA21G01050**

Software for automatic calculation available on the web site
www.mpfiltri.com - tools - software



Note: For multi pumps we recommend to use a specific support on the base of the pump's dimensions and weight.

Half-coupling SGE*** series

The half-couplings series SGE*** allow secure transmission between the electric motor and the driven side; they are able to absorb shocks and vibration, in addition to compensating radial misalignment, angular and axial.
The assembly of the couplings can be horizontal/vertical, withstanding vibration and load reversals.

The complete range of couplings are extrapolated from the on-line software, with a length equal than the shaft on which must be mounted and they are completed with grub screw for fixing located on the key.
Available for cilindrical shaft with metric and imperial dimensions as well for splined shafts as per specification DIN, ISO and SAE.

Admissible misalignment radial, angular and axial

Max admissible radial misalignment

Half coupling	R (mm)
SGE * 01	0,5
SGE * 21	1,0
SGE * 31	1,0
SGE * 40	1,0
SGE * 51	1,5
SGE * 60	1,5
SGE * 80	2,0
SGE * 90	2,0

Max admissible angular misalignment

Half coupling	β (°)
SGE * 01	1,5°
SGE * 21	
SGE * 31	
SGE * 40	
SGE * 51	
SGE * 60	
SGE * 80	
SGE * 90	

Max admissible angular misalignment

Half coupling	A (mm)
SGE * 01	2,0
SGE * 21	2,5
SGE * 31	3,0
SGE * 40	3,5
SGE * 51	3,5
SGE * 60	3,5
SGE * 80	4,0
SGE * 90	5,0

Normative ATEX 94/9/CE

Half-couplings SGE*** series are available to use in hazardous area.
The couplings are certified according to ATEX 94/9/CE (ATEX 95).
Category certified 2G - area 1 and 2.
Other information available on our web site “www.mpfiltri.com”.

MP Filtri couplings are developed with:

CAD 3D

FEM (calculation)

Drawings 3D available on website www.mpfiltri.com at section TOOLS/2D-3D COMPONENTS

The half-couplings SGE*** series are in conformity to normative **DIN 740/2**.
The max torque to transmit is always less than the max torque that the coupling can transmit.

Examples verification of the coupling

Torque transmitted by electric motor:

Mt: 9560 x kW / rpm = Nm

Me > Mt x S = Nm

Where:

Mt: Torque transmitted by electric motor

Me: Torque transmitted by coupling (see table 14)

kW: Power of electric motor

Rpm: Revolutions per minute of electric motor

S: Service factor (see table 14)

TABLE 1

Small pumps, uniform load, low operating pressures e.g. rotary action machine tools - 5/8 work cycles per hour	**1.3**
Small pumps, uniform load, high working pressures e.g. lifting equipment - 120-150 work cycles per hour	**1.5**
Pumps, non-uniform load e.g. lifting equipment - 280-300 work cycles per hour	**1.7**

Example
Electric motor, 4 pole - 4 kW
hydraulic pump, uniform load, low operating pressure

Mt: 9560 x 4 / 1500 = 25.45 Nm

Me > 25.49 x 1.3 = 33 Nm

Half-coupling SGEA21 meets the above requirement.

Select the half-coupling of the calculated size from the motor half-couplings table.

Note: When selecting the coupling, remember that for pumps with splined shaft, only cast iron couplings of the SGEG series can be used.

Determine the size of the coupling according to the type of installation and application envisaged, on the basis of the following formulas and tables:

TABLE 2

	Half-coupling type	External diameter mm	Nominal torque Me - Nm	Maximum transmissible torque Me - Nm
ALUMINIUM	SGEA01	43	15	20
	SGEA21	68	160	190
	SGEA31	85	340	380
	SGEA51	109,5	550	620
CAST IRON	SGEG01	40	20	30
	SGEG30	80	400	450
	SGEG40	95	550	620
	SGEG60	120	760	850
	SGEG80	160	2200	2500
	SGEG90	200	5500	6100
STEEL	SGES40	95	550	620
	SGES60	120	760	850
	SGES80	160	2200	2500

Nominal and maximum torque values are referred to couplings assembled with standard flexible spiders of the **EGE**** series (see page 49).
Where higher torques are to be transmitted, use flexible spiders of the **EGE**RR** series (see page 49).

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

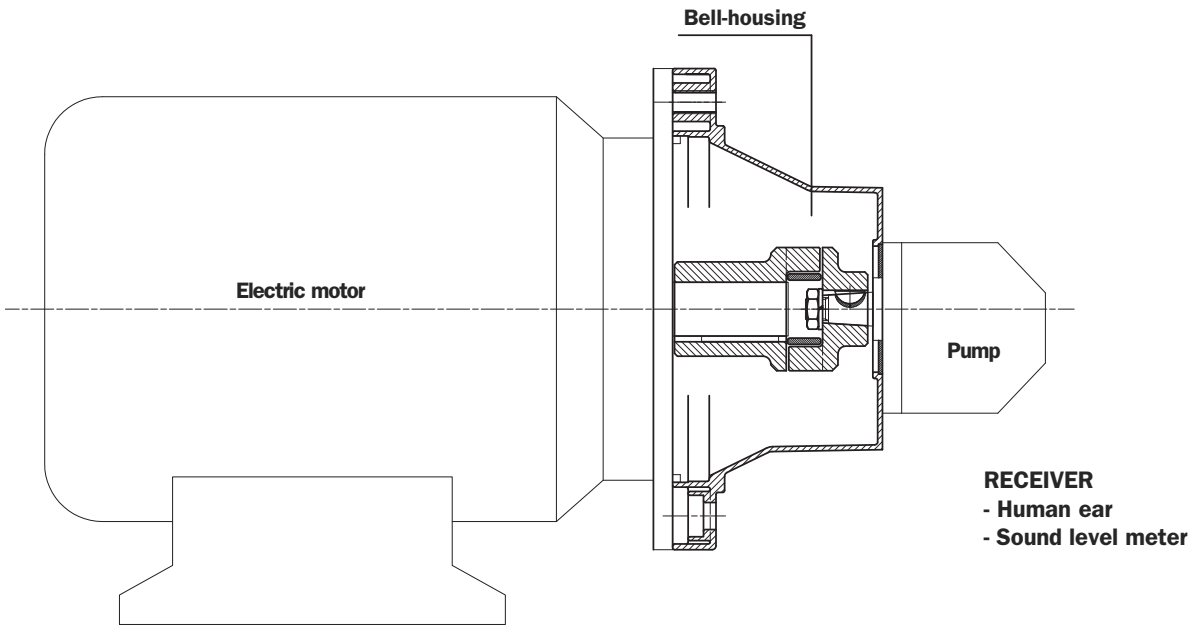
From a health and hygiene standpoint, noise can be defined as an unpleasant and undesirable sound, or an unpleasant and annoying or intolerable auditory sensation (noise being any sound phenomena that may be accompanied by sensations of disturbance and pain). By definition, acoustic phenomena are oscillatory 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
- Receiver

Motor and pump unit



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.

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 hydralic power unit.

• 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.

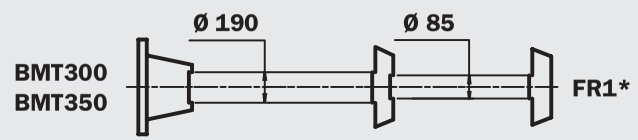
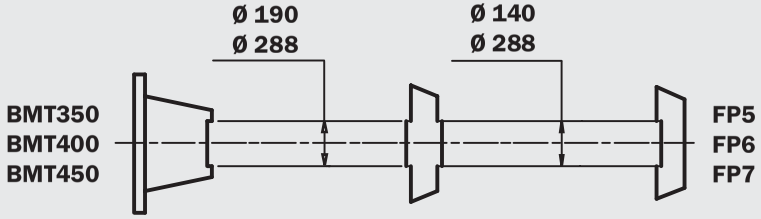
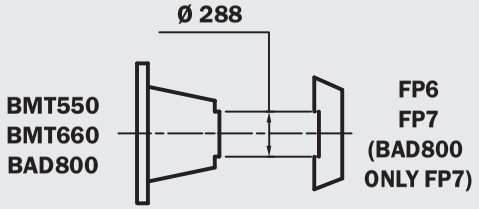
- The pressure pipeline of the pump must be flexible, and long enough to include bends with the minimum radius of curvature recommended by the manufacturer for the specified operating pressure.

- 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.

	5.5 - 7.5 kW	11 - 22	30	37 - 45	55 - 90	110 - 200	250 - 400
	7.5 - 10.2 Hp	15 - 30 Hp	40.80 Hp	50.32 - 61.2 Hp	75 - 125 Hp	150 - 272 Hp	340 - 544 Hp
	Size 225 - D. 450	Size 160/180 D. 350	Size 200 - D. 350	Size 225 - D.450	Size 250/280 D. 550	Size 315 - D. 660	Size 355/400 D. 800
MODUL 3	AR*  Kit of assembly KVG5 (Q.ty 1) + Kit of assembly KVG1 (Q.ty 1)						
	AD*  Kit of assembly KVG5/7 (Q.ty 2)						
MODUL 2						 Kit of assembly KVG6/7 (Q.ty 1)	
	5.5 - 7.5 kW	11 - 22	30	37 - 45	55 - 90	110 - 200	250 - 400
	7.5 - 10.2 Hp	15 - 30 Hp	40.80 Hp	50.32 - 61.2 Hp	75 - 125 Hp	150 - 272 Hp	340 - 544 Hp
	Size 225 - D. 450	Size 160/180 D. 350	Size 200 - D. 350	Size 225 - D. 450	Size 250/280 D. 550	Size 315 - D. 660	Size 355/400 D. 800

Monobloc bell-housings

LMC series

Motors from 0,5 to 45 kW
LMC series monobloc bell-housings are used as connecting elements between **B3 - B5** flanged **UNEL-MEC** electric motors and a wide range of hydraulic pumps available on the international market.
With special machining, they can be modified to serve as motors base that will accept standard flanges manufactured by **MP Filtri S.P.A.** (MODUL-2).
Thanks to their considerable versatility and to the extensive range of pump flanges available, **LMC** series monobloc bell-housings are compatible with electric motors from **size 80, rated 0.5 kW**, up to **size 225, rated 37/45 kW**, and therefore suitable for most applications..

Motors from 55 to 200 kW
LMC 550 - 660 series monobloc bell-housings, are suitable for electric motors **UNEL-MEC flanged B3 - B5** of power **55/75/90/110/200 kW**.
Sized to support very heavy weights and torques, they are particularly suitable for applications with very hard cycles machine.
Thanks to their very strong structure, can be used both for the horizontal and vertical mounting, with individual or tandem pumps.
On request they are available with drain hole to check oil leaks and with inspection hole to check the spiders conditions.

Technical specifications

LMC

Materials

- **Monobloc bell-housing**
  Pressure diecast aluminium alloy.
- **Pump flange**
  Pressure diecast aluminium alloy.
- **Foot bracket**
  Pressure diecast aluminium alloy.

Temperature

- -30°C ÷ +80°C
  For temperatures outside this range, consult the MP Filtri Technical and Sales Department.

Compatibility with fluids

- **Monobloc bell-housings compatible for use with:**

  Mineral oils
  Types HH-HL-HM-HR-HV-HG, to ISO 6743/4 standard

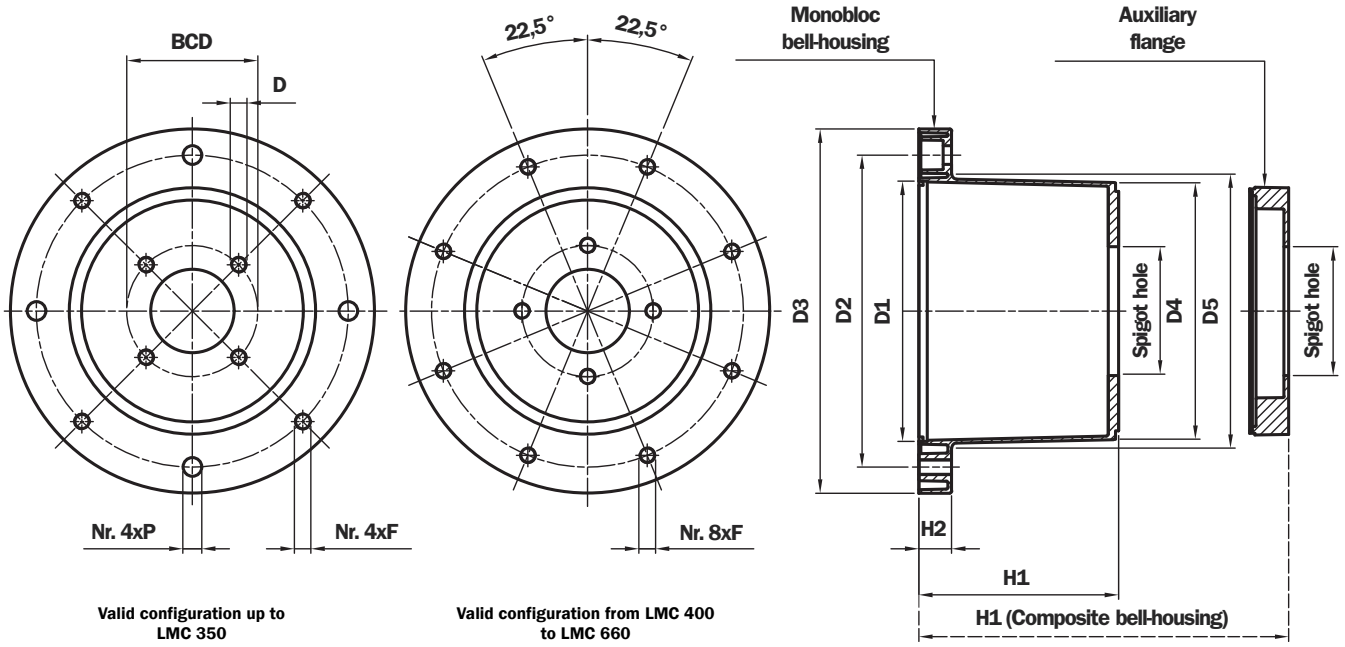
  Water based emulsions
  Types HFAE – HFAS, to ISO 6743/4 standard

  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**



The auxiliary flange, if specified, is supplied already fitted to the bell-housing (MODUL-2).

- **For loose components see pages 15 - 16 - 17**
- **Check that the pump interface dimensions are compatible with those of the bell-housing**

Note: The hole made in the tank cover should be 2 mm larger than dimension D5

Machining tolerances

D1	**F8**
pigot hole	**H7**
H1	**± 0,15 mm**

Concentricity of D1/Spigot hole

LMC 200 - LMC 350	**0,20 mm**
LMC 300 - LMC 660	**0,25 mm**

TABLE 3

Electric motor, 4-pole, 1500 rpm				Dimensions of LMC monobloc bell-housing											
Frame size	kW	Hp	Shaft	Bell-housing code	Foot bracket code	D1	D2	D3	D4	D5	H1	H2	F	P	Spigot hole Minimum
80	0.53-0.75	0.75-1	19x40	**LMC 200**	**PDM A 200**	130	165	200	125	135		18	M10	11	50
90	1.1-1.5	1.5-2	24x50	**LMC 200**	**PDM A 200**	130	165	200	125	135		18	M10	11	50
100-112	2.2-4	3-5.5	28x60	**LMC 250**	**PDM A 250**	180	215	250	175	186		19	M12	14	50
132	5.5-7.5	7.5-12.5	38x80	**LMC 300**	**PDM A 300**	230	265	300	230	235		23	M12	14	80
160	11-15	15-20	42x110	**LMC 350**	**PDM A 350**	250	300	350	240	254		31	M16	18	50/80*
180	18.5-22	25-30	48x110	**LMC 350**	**PDM A 350**	250	300	350	240	254		31	M16	18	50/80*
200	37	45	55x110	**LMC 400**	/	300	350	400	280	305		31	M16	-	80
225	37-45	50-60	60x140	**LMC 450**	/	350	400	450	320	350		31	M16	-	80
250	55	74,80	65x140	**LMC 550**	/	450	500	550	-	-		35	M16	-	100
280	75-90	102-122	75x140	**LMC 550**	/	450	500	550	-	-		35	M16	-	100
315	110-200	150-272	80x170	**LMC 660**	/	550	600	660	-	-		45	M20	-	100
					For dimension see page 55						**See Tab. 4 - 5**				

To determine dimension H1 of the bell-housing see table 12
For dimensions of the foot bracket see page 55

* The minimum spigot hole Ø 50 is related to the LMC350**AFSY** (see table 4)
The minimum spigot hole Ø 80 is related to the LMC350**AFSU** (see table 4)

LMC bell-housing, dimension H1

TABLE 4

Monobloc bell-housing		
Code	**H1**	**Weight (kg)**
LMC200AFSJ***	100	0,75
LMC200AFSW***	125	0,95
LMC250AFSM***	114	1,50
LMC250AFSQ***	138	1,60
LMC250AFSR***	159	1,75
LMC300AFST***	155	3,20
LMC300AFSX***	170	3,30
LMC350AFSY***	178	4,80
LMC350AFSU***	194	4,90
LMC400AFSV***	201	6,50
LMC450AFSZ***	250	9,00
LMC550AFSN***	265	15,00
LMC550AFSO***	310	17,00
LMC660AFSP***	295	27,00
LMC660AFSS***	325	31,00

TABLE 5a

Modul 2 bell-housing		
Code	**H1**	**Weight (kg)**
LMC200AFRB***	125	1,85
LMC200AFRC***	133	1,95
LMC200AFRD***	158	2,10
LMC250AFRB***	156	2,50
LMC250AFRC***	161	2,75
LMC250AFRA***	185	4,20
LMC300AFRB***	191	4,45
LMC300AFRC***	193	4,60
LMC300AFRD***	201	4,95
LMC300AF5A***	192	4,50
LMC300AF5B***	198	4,80

TABLE 5b

Modul 2 bell-housing		
Code	**H1**	**Weight (kg)**
LMC350AF6A***	239	6,80
LMC350AF6B***	252	7,30
LMC400AF5A***	228	7,50
LMC400AF5B***	234	7,90
LMC400AF6A***	247	8,50
LMC400AF6B***	260	9,00
LMC450AF5A***	226	10,00
LMC450AF5B***	234	10,40
LMC450AF6A***	295	11,20
LMC450AF6B***	308	11,60

Note: The three asterisks in the designation code represent the three digits identifying the pump interface (see page 47).

Specified tightening torques for auxiliary flange

- FR* 15 Nm
- F5* 100 Nm
- F6* 180 Nm

Recommended tightening torques for motor/pump assembly bolts

- M6 10 Nm
- M8 15 Nm
- M10 50 Nm
- M12 84 Nm
- M14 135 Nm
- M16 205 Nm
- M18 280 Nm
- M20 400 Nm
- M22 530 Nm
- M24 690 Nm

These values are calculated to exploit the performance of the bolt at 70% of its elastic limit.
This means in practice that the shank of the bolt will be stressed typically to 60-70% of its limit of elasticity in the course of being tightened.
The values indicated are valid for hexagon head bolts to UNI 5737 and hexagon socket screws to UNI 5931, property class 8.8, tightened by degrees using a torque wrench.
If bolts or screws are tightened using impact or hammer action drivers, the applied torque should be reduced by 10%.

Comparative table

MP Filtri		OMT	Hydrapp	Raja	KTR
Nuovo codice	**Vecchio codice**	**code**	**code**	**code**	**code**
LMC200A* **	**LMB200A100*** **	TH20A***	/	R200/99-115/...	PK200/3/...
LMC200A* **	/	TH1***	HLC1	R200/120-135/...	PL200/8/...
LMC250A* **	**LMB250A109*** **	TH2***	HLC3	R250/120-135/...	PL250/6/...
LMC300A* **	**LMB300A130*** **	TH3***	HLC5	R300/155-170/...	PL300/4/...
LMC350A* **	**LMB350A179*** **	TH4***	HLC8	R350/173-194/...	PK350/4/...
LMC400A* **	/	TH15***	HLC12	R400/194-210/...	PK400/4/...
LMC450A* **	/	TH18***	/	R450/250-210/...	PK450/4/...

Monobloc bell-housing

LMC

	1	2	3	4	5
	☐	☐	☐	☐	☐
Example: LMC	**200**	**A**	**FSJ**	**070**	**FG**

1 - Sizes

- **200**
- **250**
- **300**
- **350**
- **400**
- **450**
- **550**
- **660**

2 - Product revision code

- **A**

3 - Bell-housing

- **FSJ** See table 4 page 12
- **FRA** See table 5 page 12

4 - Pump interface codes

- **070** See table page 47

5 - Opzioni

- **FG** Holes rotated through 45° in relation to standard position (page 47)
- **DI** Drain hole + inspection hole
- **DP** Double set of hole
- **AN** Black anodized finish
- **SA** Clearance holes at motor interface
- **Pxx** Customer specification

N.B. Bell-housings with DI options are supplied complete with threaded closure plug

Note: For customization features other than those indicated on this page, contact the Technical and Sales Department

A guide to select the correct bell-housing and drive coupling components

DATA REQUIRED

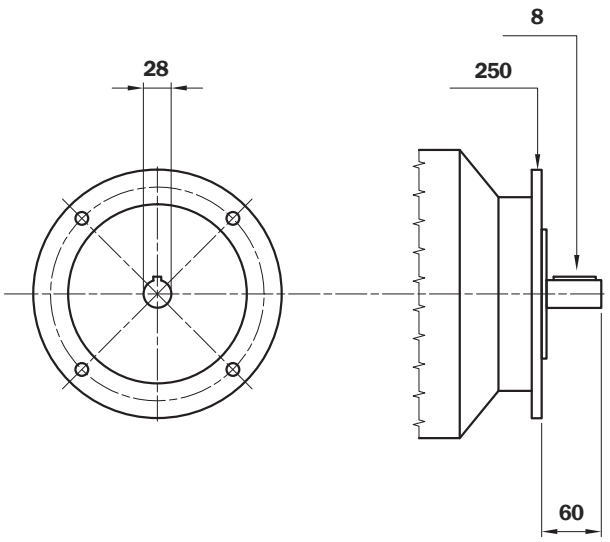
Electric motor power/motor size
Manufacturer and pump type

TO VERIFY:

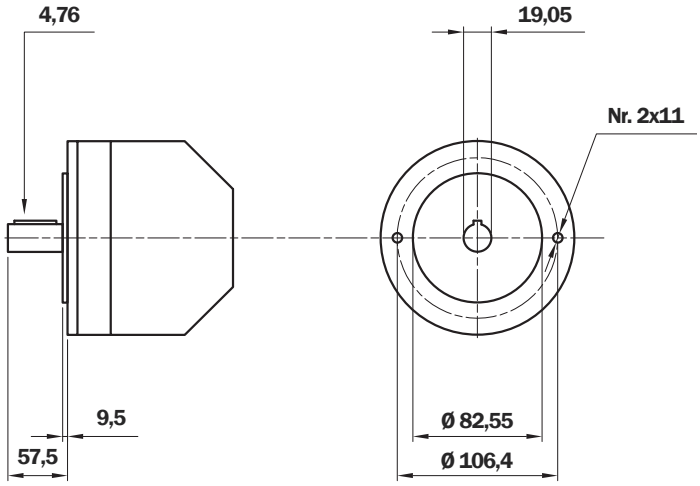
1 - Pump and motor shaft dimensions (see page 67)
2 - Shaft and flange pump (see pump data sheet)

Example:
- Electric motor 2 kW - 4 poles - Motor size 110/112
- Atos pump code PFE31 - Shaft 1

Electric motor's dimension



Pump's dimensions



Bell-Housing's length calculation

- H= 60 + 18 + 57,5 = 135,5 mm (18= Sp spider - see page 49)
- Choose type of bell-housing (LMC - LMS)
  - For LMC see tab. 3 at page 11
  - For LMS see tab. 22 at page 32
  - For MODUL 2/3 see at page 36

Note: The length of bell-housing must be ≥ than the length calculated (135,5 mm)

Case A - solution with LMC bell-housing

Tab. 3 at page 11 - for electric motor 2 kW LMC 250
LMC 250 bell-housing with height ≥ 135,5 - LMC250AFSQ

- The bell-housing code must be completed with drilling pump code (see tab. 35 at page 47)
  For the specific case C= 82,5 - Nr. 2 holes M10: Code drilling 060
- Definitive bell-housing code **LMC250AFSQ060**

Case B - solution with LMS bell-housing

Tab. 22 at page 32 - for electric motor 2 kW LMS 250
LMS 250 bell-housing with heigh ≥ 135,5 - LMS250AFSQ

- The bell-housing code must be completed with drilling pump code (see tab. 35 at page 47)
  For the specific case C= 82,5 - Nr. 2 holes M10: Code for. 060
- Definitive bell-housing code **LMS250AFSQ060**

Choose coupling

- **Motor half-coupling** (see tab. 38 at page 50)

  - For electric motor Gr. 100/112, the half-coupling is **SGEA21M05060**

- **Spider** (see tab. 36 - 37 at page 49)

  - For SGEA21, EGE2 - EGE2RR
    (choose spider material on the base of the application, oil, temperature and cycle machine, etc.)

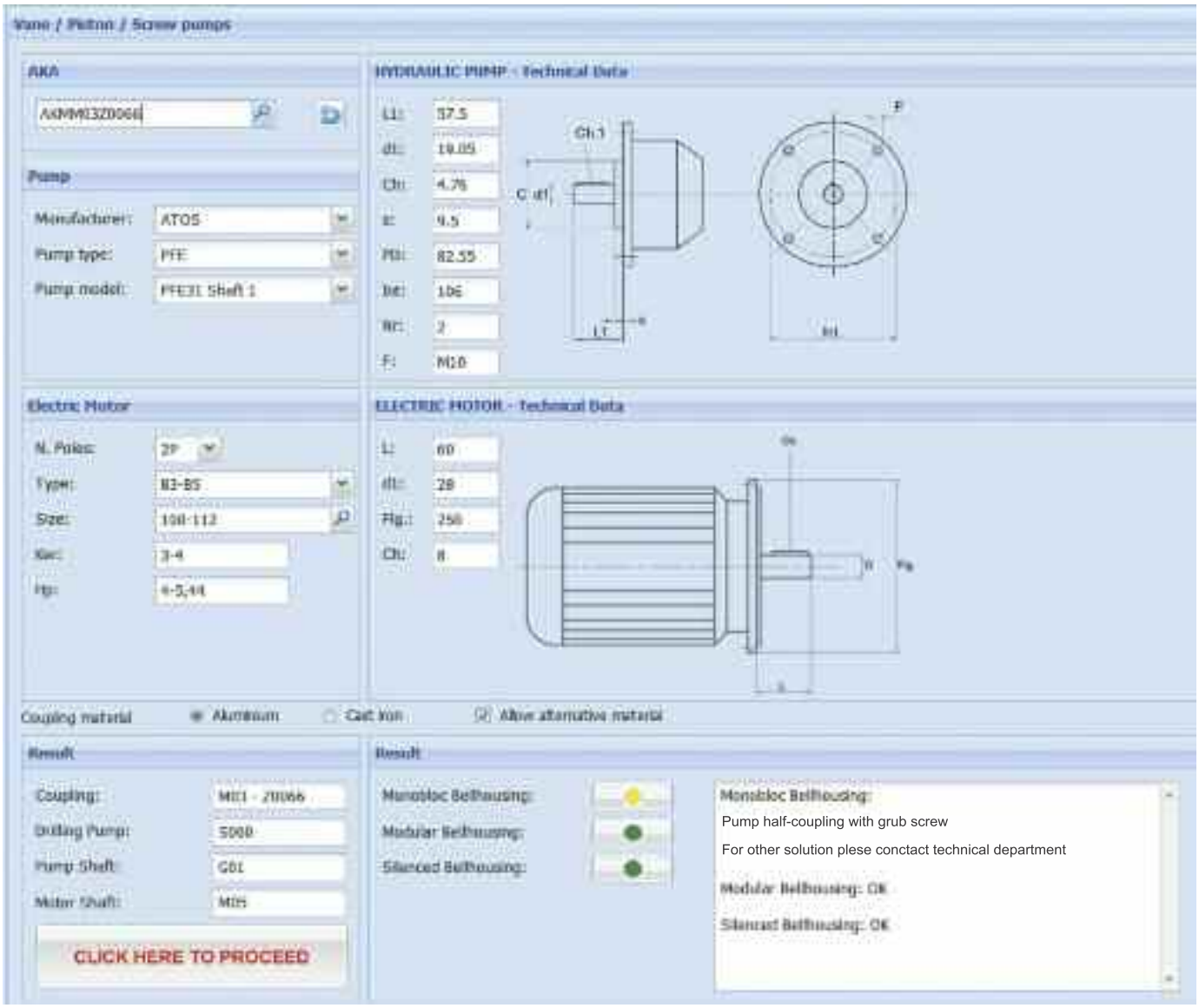
- **Pump half-coupling**

  - Choose the drilling code tab. 44 - 45 at page 53 for shaft 19,05 - Ch. 4,76 - code: **G01**

  - Half-coupling length = L BH lenght – THK Spider – THK Spigot
    LMC= 138 mm - 60 - 18 - 9,5= 50,5 mm
    LMS= 148 mm - 60 - 18 - 9,5= 60,5 mm

  - LMC - Choose the half-coupling's length on tab. 39 at page 50 ≤ 50,5 mm.
  - LMS - Choose the half-coupling's length on tab. 39 at page 50 ≤ 60,5 mm.
  - LMC - Availabe length for SGEA21= 50 mm
  - LMS - Availabe length for SGEA21= 60 mm
  - LMC=LMS - Code half-coupling code: **SGEA21G01050**

Software for automatic calculation available on the web site
www.mpfiltri.com - tools - software



Note: For multi pumps we recommend to use a specific support on the base of the pump's dimensions and weight.

Half-coupling SGE*** series

The half-couplings series SGE*** allow secure transmission between the electric motor and the driven side; they are able to absorb shocks and vibration, in addition to compensating radial misalignment, angular and axial.
The assembly of the couplings can be horizontal/vertical, withstanding vibration and load reversals.

The complete range of couplings are extrapolated from the on-line software, with a length equal than the shaft on which must be mounted and they are completed with grub screw for fixing located on the key.
Available for cilindrical shaft with metric and imperial dimensions as well for splined shafts as per specification DIN, ISO and SAE.

Admissible misalignment radial, angular and axial

Max admissible radial misalignment

Half coupling	R (mm)
SGE * 01	0,5
SGE * 21	1,0
SGE * 31	1,0
SGE * 40	1,0
SGE * 51	1,5
SGE * 60	1,5
SGE * 80	2,0
SGE * 90	2,0

Max admissible angular misalignment

Half coupling	β (°)
SGE * 01	1,5°
SGE * 21	
SGE * 31	
SGE * 40	
SGE * 51	
SGE * 60	
SGE * 80	
SGE * 90	

Max admissible angular misalignment

Half coupling	A (mm)
SGE * 01	2,0
SGE * 21	2,5
SGE * 31	3,0
SGE * 40	3,5
SGE * 51	3,5
SGE * 60	3,5
SGE * 80	4,0
SGE * 90	5,0

Normative ATEX 94/9/CE

Half-couplings SGE*** series are available to use in hazardous area.
The couplings are certified according to ATEX 94/9/CE (ATEX 95).
Category certified 2G - area 1 and 2.
Other information available on our web site “www.mpfiltri.com”.

MP Filtri couplings are developed with:

CAD 3D

FEM (calculation)

Drawings 3D available on website www.mpfiltri.com at section TOOLS/2D-3D COMPONENTS

The half-couplings SGE*** series are in conformity to normative **DIN 740/2**.
The max torque to transmit is always less than the max torque that the coupling can transmit.

Examples verification of the coupling

Torque transmitted by electric motor:

Mt: 9560 x kW / rpm = Nm

Me > Mt x S = Nm

Where:

Mt: Torque transmitted by electric motor

Me: Torque transmitted by coupling (see table 14)

kW: Power of electric motor

Rpm: Revolutions per minute of electric motor

S: Service factor (see table 14)

TABLE 1

Small pumps, uniform load, low operating pressures e.g. rotary action machine tools - 5/8 work cycles per hour	**1.3**
Small pumps, uniform load, high working pressures e.g. lifting equipment - 120-150 work cycles per hour	**1.5**
Pumps, non-uniform load e.g. lifting equipment - 280-300 work cycles per hour	**1.7**

Example
Electric motor, 4 pole - 4 kW
hydraulic pump, uniform load, low operating pressure

Mt: 9560 x 4 / 1500 = 25.45 Nm

Me > 25.49 x 1.3 = 33 Nm

Half-coupling SGEA21 meets the above requirement.

Select the half-coupling of the calculated size from the motor half-couplings table.

Note: When selecting the coupling, remember that for pumps with splined shaft, only cast iron couplings of the SGEG series can be used.

Determine the size of the coupling according to the type of installation and application envisaged, on the basis of the following formulas and tables:

TABLE 2

	Half-coupling type	External diameter mm	Nominal torque Me - Nm	Maximum transmissible torque Me - Nm
ALUMINIUM	SGEA01	43	15	20
	SGEA21	68	160	190
	SGEA31	85	340	380
	SGEA51	109,5	550	620
CAST IRON	SGEG01	40	20	30
	SGEG30	80	400	450
	SGEG40	95	550	620
	SGEG60	120	760	850
	SGEG80	160	2200	2500
	SGEG90	200	5500	6100
STEEL	SGES40	95	550	620
	SGES60	120	760	850
	SGES80	160	2200	2500

Nominal and maximum torque values are referred to couplings assembled with standard flexible spiders of the **EGE**** series (see page 49).
Where higher torques are to be transmitted, use flexible spiders of the **EGE**RR** series (see page 49).

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

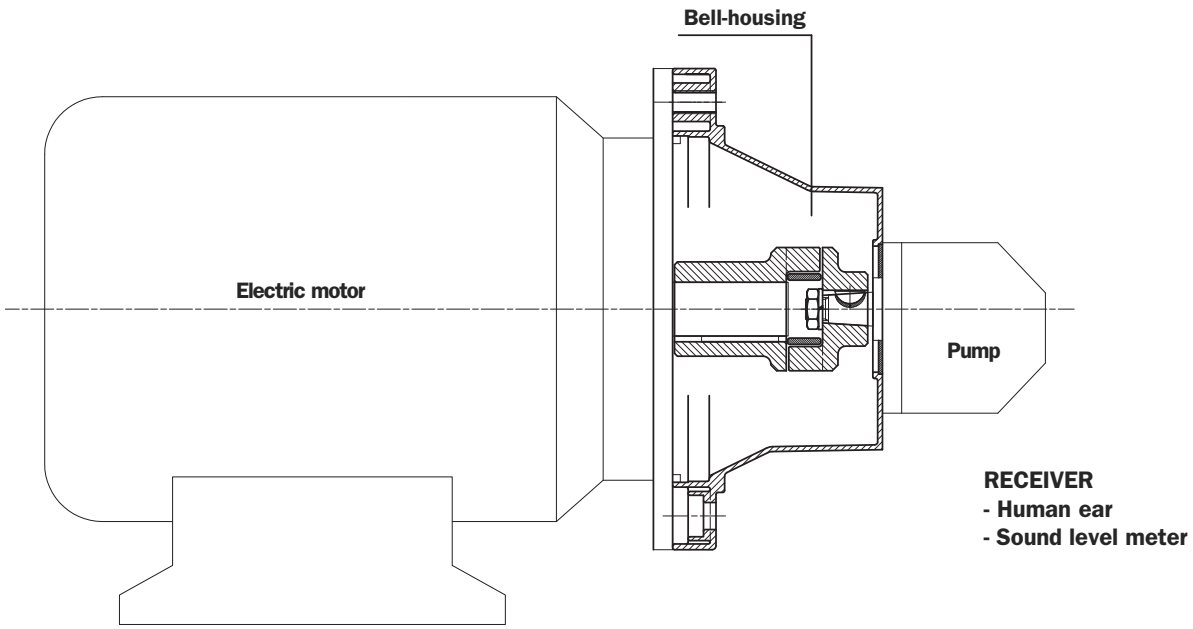
From a health and hygiene standpoint, noise can be defined as an unpleasant and undesirable sound, or an unpleasant and annoying or intolerable auditory sensation (noise being any sound phenomena that may be accompanied by sensations of disturbance and pain). By definition, acoustic phenomena are oscillatory 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
- Receiver

Motor and pump unit



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.

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 hydralic power unit.

• 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.

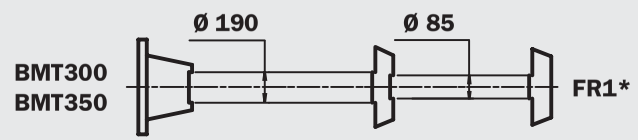
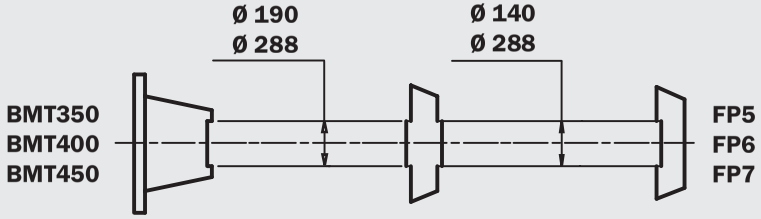
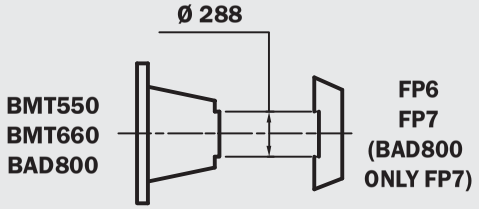
- The pressure pipeline of the pump must be flexible, and long enough to include bends with the minimum radius of curvature recommended by the manufacturer for the specified operating pressure.

- 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.

	5.5 - 7.5 kW	11 - 22	30	37 - 45	55 - 90	110 - 200	250 - 400
	7.5 - 10.2 Hp	15 - 30 Hp	40.80 Hp	50.32 - 61.2 Hp	75 - 125 Hp	150 - 272 Hp	340 - 544 Hp
	Size 225 - D. 450	Size 160/180 D. 350	Size 200 - D. 350	Size 225 - D.450	Size 250/280 D. 550	Size 315 - D. 660	Size 355/400 D. 800
MODUL 3	AR*  Kit of assembly KVG5 (Q.ty 1) + Kit of assembly KVG1 (Q.ty 1)						
	AD*  Kit of assembly KVG5/7 (Q.ty 2)						
MODUL 2						 Kit of assembly KVG6/7 (Q.ty 1)	
	5.5 - 7.5 kW	11 - 22	30	37 - 45	55 - 90	110 - 200	250 - 400
	7.5 - 10.2 Hp	15 - 30 Hp	40.80 Hp	50.32 - 61.2 Hp	75 - 125 Hp	150 - 272 Hp	340 - 544 Hp
	Size 225 - D. 450	Size 160/180 D. 350	Size 200 - D. 350	Size 225 - D. 450	Size 250/280 D. 550	Size 315 - D. 660	Size 355/400 D. 800

Monobloc bell-housing

LMC series

LMC series monobloc bell-housings for gear pumps are used to interconnect **UNEL-MEC frame electric motors with B3 - B5 - B14** flange, and internal gear pumps with standard rectangular flange.
Accordingly, these components can be classified as standard units in terms both of the pump flange fixing holes, and of the shaft design. Available with or without a removable centre ring, they will cover the majority of applications within a range including in electric motors from size **63** rated **0.12 kW**, up to size **280** rated **75 kW**.

Technical specifications

LMC

Materials

- **Monobloc bell-housing**
  Pressure diecast aluminium alloy.
- **Pump flange**
  Pressure diecast aluminium alloy.
- **Foot bracket**
  Pressure diecast aluminium alloy.
- **Damping ring**
  Vulcanized aluminium
- **Gaskets**
  Special paper (Guarnital).

Temperature

- -30°C ÷ +80°C
  For temperatures outside this range,
  contact the MP Filtri Technical and Sales Department.

Compatibility with fluids

- **Monobloc bell-housing compatible for use with:**

  Mineral oils
  Types HH-LL-HM-HR-HV-HC, to ISO 6743/4 standard

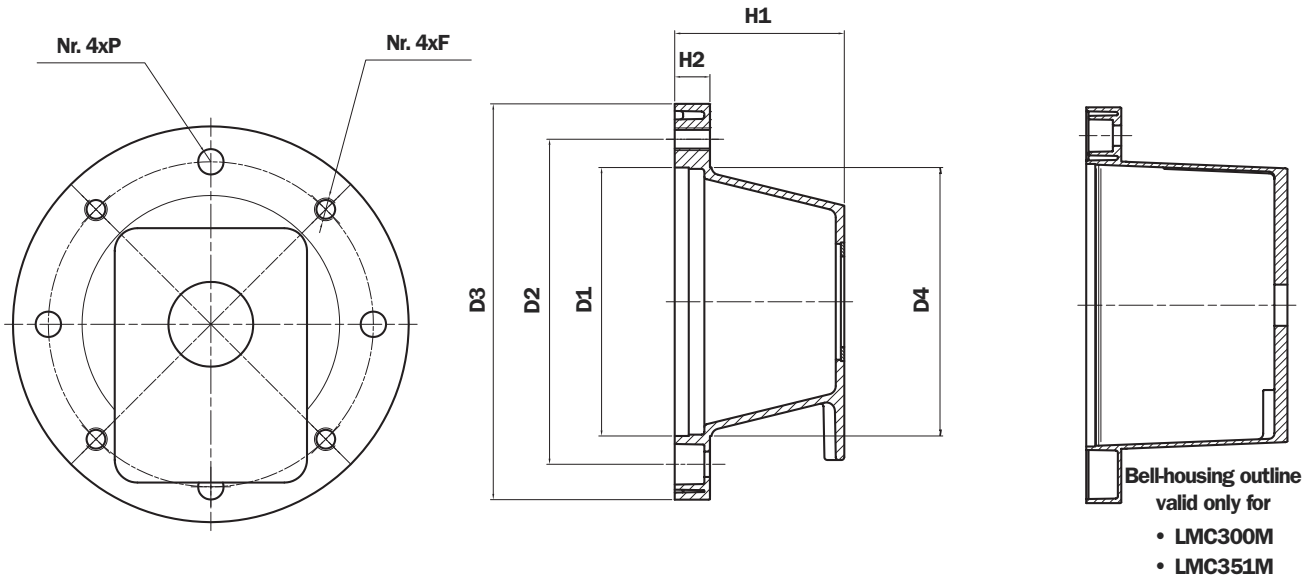
  Water based emulsions
  Types HFAE – HFAS, to ISO 6743/4 standard

  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.**

Monobloc bell-housing for gear pumps



The auxiliary flange, if specified, is supplied already fitted to the bell-housing (MODUL-2).

Note: The hole made in the tank cover should be 2 mm larger than dimension D4

Machining tolerances

D1	**F8**
Spigot hole	**H7**
H1	**± 0,15 mm**

Concentricity of D1/Spigot hole

LMC 090 - LMC 160	**0,15 mm**
LMC 200 - LMC 350	**0,20 mm**
LMC 300 - LMC 450	**0,25 mm**

TABLE 12

Electric motor, 4-pole, 1500 rpm - B3/B5				Dimensions of LMC monobloc bell-housing											
Frame size	kW	Hp	Shaft	Bell-housing code	Foot bracket code	Damping ring code	D1	D2	D3	D4	H1	H2	F	P	Weight (kg)
63	0.12-0.18	0.16-0.24	11x23	**LMC 140**	/	/	95	115	140	100		13	M8	9	0,35
63	0.12-0.18	0.16-0.24	11x23	**LMC 141**	/	/	95	115	140	100		13	M8	9	0,35
71	0.25-0.37	0.34-0.50	14x30	**LMC 160**	**PDM A 160**	/	110	130	160	110		15	M8	9	0,44
71	0.25-0.37	0.34-0.50	14x30	**LMC 161**	**PDM A 160**	/	110	130	160	110		15	M8	9	0,44
80	0.53-0.75	0.75-1	19x40	**LMC 200**	**PDM A 200**	**ANM A 200**	130	165	200	135		18	M10	11	0,68
90	1.1-1.5	1.5-2	24x50	**LMC 201**	**PDM A 200**	**ANM A 200**	130	165	200	135		18	M10	11	0,80
100-112	2.2-4	3-5.5	28x60	**LMC 250**	**PDM A 250**	**ANM A 250**	180	215	250	185		19	M12	14	1,16
132	5.5-7.5	7.5-12.5	38x80	**LMC 300**	**PDM A 300**	**ANM A 300**	230	265	300	235		23	M12	14	2,55
160	11-15	15-20	42x110	**LMC 351**	**PDM A 350**	**ANM A 350**	250	300	350	255		31	M16	18	4,90
180	18-22	25-30	48x110	**LMC 351**	**PDM A 350**	**ANM A 350**	250	300	350	255		31	M16	18	4,90
					Per dimensioni vedi pag. 55	**Per dimensioni vedi pag. 56**					**Vedi Tab. 15-16 17**				

TABLE 13

Electric motor, 4-pole, 1500 rpm - B14				Dimensions of LMC monobloc bell-housing											
Frame size	kW	Hp	Shaft	Bell-housing code	Foot bracket code	Damping ring code	D1	D2	D3	D4	H1	H2	F	P	Weight (kg)
63	0.12-0.18	0.16-0.24	11x23	**LMC 090**	/	/	60	75	90	63		7	7	7	0,30
71	0.25-0.37	0.34-0.50	14x30	**LMC 105**	/	/	70	85	105	74		8	6	6	0,35
80	0.53-0.75	0.75-1	19x40	**LMC 120**	/	/	80	100	120	84		9	7	7	0,35
90	1.1-1.5	1.5-2	24x50	**LMC 141**	/	/	95	115	140	100		13	M8	9	0,51
100-112	2.2-4	3-5.5	28x60	**LMC 161**	**PDM A 160**	/	110	130	160	110		15	M8	9	0,60
					For dimension see page 55	**For dimension see page 56**					**See Tab. 18**				

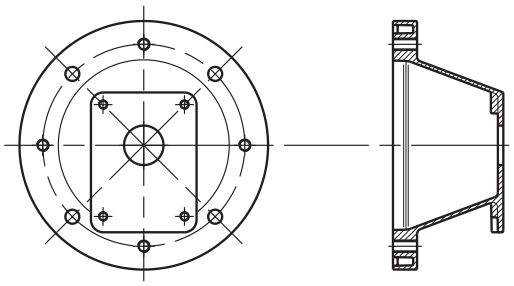
To determine dimension H1 of the bell-housing see pages 22 - 23 - 24 - 25

Note: For larger dimensions, contact the MP Filtri Technical and Sales Department.

Versions

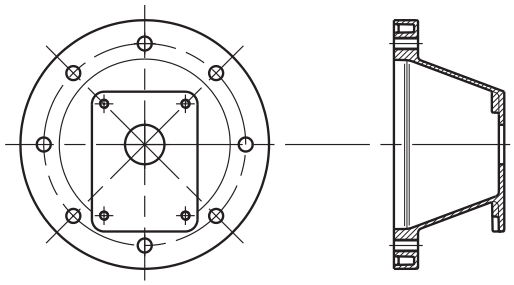
In order to ensure greater adaptability across a wide range of applications, **LMC** monobloc bell-housings for gear pumps can be supplied in 4 different versions:

LMC *** 4S



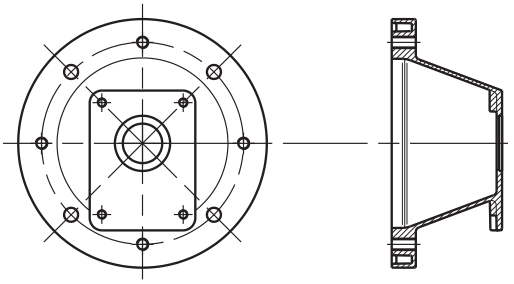
Without centre ring allowing removal of half-coupling (which as a rule is keyed permanently to the pump shaft); motor mounting flange drilled with 4 clearance holes + 4 threaded holes.
Used normally for vertically mounted motor and pump units with pump submerged in the oil tank.

LMC *** 8S



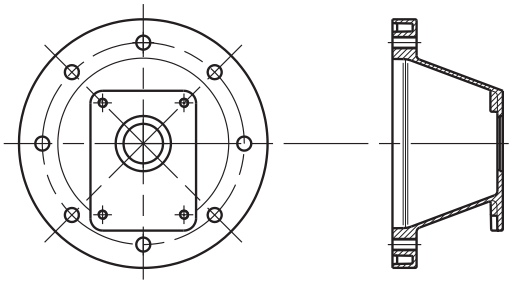
Without centre ring allowing removal of half-coupling (which as a rule is keyed permanently to the pump shaft); motor mounting flange drilled with 8 clearance holes. Used normally for vertically mounted motor and pump units with pump submerged in the oil tank; allows greater flexibility for directional positioning of the hydraulic pump inside the tank, according to constructional requirements.

LMC *** 4E

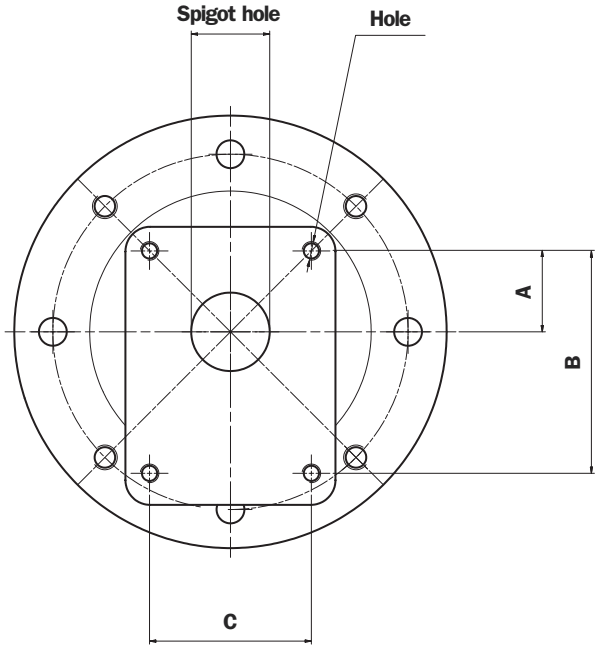


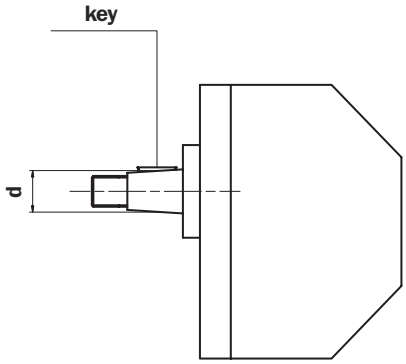
With centre ring allowing removal of half-coupling (which as a rule is keyed permanently to the pump shaft); motor mounting flange drilled with 4 clearance holes + 4 threaded holes.
Normally used for motor and pump units mounted horizontally on the tank lid or on the machine, for maximum ease of maintenance.
With this type of mounting, in effect, the hydraulic pump can be removed without removing the motor.
The half-coupling mounted to the shaft passes through the spigot hole.

LMC *** 8E



With centre ring allowing removal of half-coupling (which as a rule is keyed permanently to the pump shaft); motor mounting flange drilled with 8 clearance holes.
Normally used for motor and pump units mounted horizontally on the tank lid or on the machine; offers maximum ease of maintenance, and enables directional positioning of the pump.
With this type of mounting, in effect, the hydraulic pump can be removed without removing the motor.
The half-coupling mounted to the shaft passes through the spigot hole.





The auxiliary flange, if specified, is supplied already fitted to the bell-housing (MODUL-2).
• For technical information see "DRIVE COUPLINGS".

TABLE 14

Pump group	Spigot hole	A	B	C	Hole	Pump flange code	Shaft type	d	key	Pump half-coupling code
05	22	25.5	66	/	M6	**FS05M**	cilindrico	6	2	**FS05M**
	22	25.5	66	/	M6	**FS05C**	cilindrico	7	2	**FS05C**
1	25.4	26.2	72	52	M6	**FS100**	con. 1:8	9.7	2.4	**FS100**
	30	24.5	73	56	M6	**FS1M0**	cilindrico	12	3	**FS1C0**
	30	24.5	73	56	M6	**FS1M0**	con. 1:8	13.9	3	**FS1M0**
2	36.5	32.5	96	71.5	M8	**FS200**	con. 1:8	17.2	3.2/4	**FS200**
3	50.8	43	128	98.5	M8	**FS25T**	con. 1:8	22.2	4	**FS300**
	50.8	42	128	98.5	M10	**FS300**	con. 1:8	22.2	4	**FS300**
	50.8	43	128	98.5	M10	**FS3M0**	con. 1:8	22.2	4	**FS300**
	50.8	45	137	98.5	M10	**FS3T0**	con. 1:8	22.2	4	**FS300**
3.5	60	48.5	148	127	M12	**FS35M**	con. 1:8	25.6	4.76/5	**FS350**
	60.3	49.5	149.5	114.3	M10	**FS350**	con. 1:8	25.6	4.76/5	**FS350**
4	63.5	65	196	142.8	M12	**FS4M0**	con. 1:8	33.3	6.35/7	**FS400**
	63.5	64.3	188	143	M12	**FS400**	con. 1:8	33.3	6.35/7	**FS400**
Bosch	32	10.3	40	40	M8	**FSZBR**	con. 1:5	9.8	2	**FSZBR**
	80	34.5	100	72	M8	**FSZFR**	con. 1:5	16.9	3	**FSZFR**
	105	48	145	102	M10	**FSZGR**	con. 1:5	25.2	5	**FSZGR**

Note: For any dimensions not indicated in Table 14, see tables 15 - 16 - 17 - 18 showing motor-pump combinations.

Table of combinations

Electric motors with B3 - B5 flange gear pumps

TABLE 15

Electric motor, 4-pole, 1500 rpm				Components of combination						
Motor size	kW	Hp	Motor shaft	Pump code	Bell-housing code	H1	Motor half-coupling code	Spider code	Pump half-coupling code	Centre ring code
63	0.12 0.18	0.16 0.24	11x23	FS05M	LMC140MFS05M4S	60	SGEA01M01021	EGE 0	SGEA01FS05M	/
				FS05C	LMC140MFS05M4S				SGEA01FS05C	/
				FS100	LMC140MFS100**				SGEA01FS100	**ANC01FS100**
				FS1C0	LMC140MFS1M0**				SGEA01FS1C0	**ANC01FS1M0**
				FS1M0	LMC140MFS1M0**				SGEA01FS1M0	**ANC01FS1M0**
				FSZBR	LMC140MFSZBR4S				SGEA01FSZBR	/
71	0.25 0.37	0.34 0.50	14x30	FS05M	LMC160MFS05M4S	70	SGEA01M02028	EGE 0	SGEA01FS05M	/
				FS05C	LMC160MFS05M4S				SGEA01FS05C	/
				FS100	LMC160MFS100**				SGEA01FS100	**ANC01FS100**
				FS1C0	LMC160MFS1M0**				SGEA01FS1C0	**ANC01FS1M0**
				FS1M0	LMC160MFS1M0**				SGEA01FS1M0	**ANC01FS1M0**
				FSZBR	LMC160MFSZBR4S				SGEA01FSZBR	/
80	0.53 0.75	0.75 1	19x40	FS05M	LMC200MFS05M4S	87	SGEA01M03048	EGE 0	SGEA01FS05M	/
				FS05C	LMC200MFS05M4S				SGEA01FS05C	/
				FS100	LMC200MFS100**				SGEA01FS100	**ANC01FS100**
				FS1C0	LMC200MFS1M0**				SGEA01FS1C0	**ANC01FS1M0**
				FS1M0	LMC200MFS1M0**				SGEA01FS1M0	**ANC01FS1M0**
				FSZBR	LMC200MFSZBR4S				SGEA01FSZBR	/
				FS200	LMC201MFS200**	95	SGEA21M03048	EGE 2	SGEA21FS200	**ANC02FS200**
				FSZFR	LMC201MFSZFR4S				SGEA21FSZFR	/
90	1.1 1.5	1.5 2	24x50	FS05M	LMC200MFS05M4S	87	SGEA01M04048	EGE 0	SGEA01FS05M	/
				FS05C	LMC200MFS05M4S				SGEA01FS05C	/
				FS100	LMC200MFS100**				SGEA01FS100	**ANC01FS100**
				FS1C0	LMC200MFS1M0**				SGEA01FS1C0	**ANC01FS1M0**
				FS1M0	LMC200MFS1M0**				SGEA01FS1M0	**ANC01FS1M0**
				FSZBR	LMC200MFSZBR4S				SGEA01FSZBR	/
				FS200	LMC201MFS200**	95	SGEA21M04048	EGE 2	SGEA21FS200	**ANC02FS200**
				FSZFR	LMC201MFSZFR4S				SGEA21FSZFR	/
100 112	2.2 4	3 5.5	28x60	FS100	LMC250MFS1004S	105	SGEA21M05055	EGE 2	SGEA21FS100	/
				FS1C0	LMC250MFS1M04S				SGEA21FS1C0	/
				FS1M0	LMC250MFS1M04S				SGEA21FS1M0	/
				FSZBR	LMC250MFSZBR4S				SGEA21FSZBR	/
				FS200	LMC250MFS200**				SGEA21FS200	**ANC02FS200**
				FSZFR	LMC250MFSZFR4S				SGEA21FSZFR	/
				● FS25T	LMC250MFS25T4E	126			SGEA21FS300	**ANC0005**
				● FS300	LMC250MFS3004E				SGEA21FS300	**ANC0005**
				● FS3M0	LMC250MFS3M04E				SGEA21FS300	**ANC0005**
				● FS3T0	LMC250MFS3T04E				SGEA21FS300	**ANC0005**

● Bell-housing with auxiliary flange + centre ring

Note: The two final asterisks in the bell-housing code indicate the version.
See “Ordering information” page 29.

Electric motors with B3 - B5 flange gear pumps

TABLE 16

Electric motor, 4-pole, 1500 rpm				Components of combination						
Motor size	kW	Hp	Motor shaft	Pump code	Bell-housing code	H1	Motor half-coupling code	Spider code	Pump half-coupling code	Centre ring code
132	5.5 7.5	7.5 10	38x80	FS100	LMC300MFS1004S	**145**	SGEA31M06077	EGE 3	SGEA31FS100	/
				FS1C0	LMC300MFS1M04S				SGEA31FS1C0	/
				FS1M0	LMC300MFS1M04S				SGEA31FS1M0	/
				FSZGR	LMC300MFSZGR4S				SGEA31FSZGR	/
				FS200	LMC300MFS200**				SGEA31FS200	**ANC03FS200**
				FSZFR	LMC300MFSZFR4S				SGEA31FSZFR	/
				FS25T	LMC300MFS25T**				SGEA31FS300	**ANC03FS300**
				FS300	LMC300MFS300**				SGEA31FS300	**ANC03FS300**
				FS3M0	LMC300MFS3M0**				SGEA31FS300	**ANC03FS300**
				FS3T0	LMC300MFS3T0**				SGEA31FS300	**ANC03FS300**
				FS35M	LMC300MFS35M**				SGEA31FS350	**ANC03FS350**
				FS350	LMC300MFS350**				SGEA31FS350	**ANC03FS300**
160	11 15	15 20	42x110	FSZGR	LMC351MFSZGR4S	**179**	SGEA51M07109	EGE 5	SGEA51FSZGR	/
				FS200	LMC351MFS2004S				SGEA51FS200	/
				FSZFR	LMC351MFSZFR4S				SGEA51FSZFR	/
				FS25T	LMC351MFS25T**				SGEA51FS300	**ANC04FS300**
				FS300	LMC351MFS300**				SGEA51FS300	**ANC04FS300**
				FS3M0	LMC351MFS3M0**				SGEA51FS300	**ANC04FS300**
				FS3T0	LMC351MFS3T0**				SGEA51FS300	**ANC04FS300**
				FS35M	LMC351MFS35M**				SGEA51FS350	**ANC04FS350**
				FS350	LMC351MFS350**				SGEA51FS350	**ANC04FS350**
180	18.5 22	25 30	48x110	FSZGR	LMC351MFSZGR4S	**179**	SGEA51M08109	EGE 5	SGEA51FSZGR	/
				FS200	LMC351MFS2004S				SGEA51FS200	/
				FSZFR	LMC351MFSZFR4S				SGEA51FSZFR	/
				FS25T	LMC351MFS25T**				SGEA51FS300	**ANC04FS300**
				FS300	LMC351MFS300**				SGEA51FS300	**ANC04FS300**
				FS3M0	LMC351MFS3M0**				SGEA51FS300	**ANC04FS300**
				FS3T0	LMC351MFS3T0**				SGEA51FS300	**ANC04FS300**
				FS35M	LMC351MFS35M**				SGEA51FS350	**ANC04FS350**
				FS350	LMC351MFS350**				SGEA51FS350	**ANC04FS350**

For dimensions of motor half-coupling see page 25
For dimensions of spiders see page 49
For dimensions of pump half-coupling see page 25

Note: The two final asterisks in the bell-housing code indicate the version.
See “Ordering information” page 29.

Table of combinations

Electric motors with B3 - B5 flange gear pumps

TABLE 17

Electric motor, 4-pole, 1500 rpm				Components of combination						
Motor size	kW	Hp	Motor shaft	Pump code	Bell-housing code	H1	Motor half-coupling code	Spider code	Pump half-coupling code	Centre ring code
200	30	40	55x110	FS200	LMC400MFS2004E	**201**	SGEA51M09109	EGE 5	SGEA51FS200	**ANC04FS200**
				FS300	LMC400MFS3004E				SGEA51FS300	**ANC04FS300**
				FS3M0	LMC400MFS3M04E				SGEA51FS300	**ANC04FS300**
				FS35M	LMC400MFS35M4E				SGEA51FS350	**ANC04FS350**
				FS350	LMC400MFS3504E				SGEA51FS350	**ANC04FS350**
				FSZFR	LMC400MFSZFR4S				SGEA51FSZFR	/
				FSZGR	LMC400MFSZGRAS				SGEA51FSZGR	/
225	37-45	50-60	60x140	FS300	LMC450MFS3004E	**250**	SGEA51M10109	EGE 5	SGEA51FS300	**ANC04FS300**
				FS3M0	LMC450MFS3M04E				SGEA51FS300	**ANC04FS300**
				FS35M	LMC450MFS35M4E				SGEA51FS350	**ANC04FS350**
				FS350	LMC450MFS3504E				SGEA51FS350	**ANC04FS350**
				FSZGR	LMC450MFSZGR4S				SGEA51FSZGR	/
250	55	75	65x140	FS300	LMC550MFS3004E	**265**	SGEG60M11140	EGE 6	SGEG60FS300	**ANC04FS300**
				FS3M0	LMC550MFS3M04E				SGEG60FS300	**ANC04FS300**
				FS35M	LMC550MFS35M4E				SGEG60FS350	**ANC04FS350**
				FS350	LMC550MFS3504E				SGEG60FS350	**ANC04FS350**
				FSZGR	LMC550MFSZGR4S				SGEG60FSZGR	/
280	75-90	102-122	75x140	FS300	LMC550MFS3004E	**265**	SGEG80M12140	EGE 6	SGEG80FS300	**ANC04FS300**
				FS3M0	LMC550MFS3M04E				SGEG80FS300	**ANC04FS300**
				FS35M	LMC550MFS35M4E				SGEG80FS350	**ANC04FS350**
				FS350	LMC550MFS3504E				SGEG80FS350	**ANC04FS350**
				FSZGR	LMC550MFSZGR4S				SGEG80FSZGR	/
315	110-200	150-272	80x170	FS300	LMC660MFS3004E	**295**	SGEG80M13170	EGE 86	SGEG80FS300	**ANC04FS300**
				FS3M0	LMC660MFS3M04E				SGEG80FS300	**ANC04FS300**
				FS35M	LMC660MFS35M4E				SGEG80FS350	**ANC04FS350**
				FS350	LMC660MFS3504E				SGEG80FS350	**ANC04FS350**
				FSZGR	LMC660MFSZGR4S				SGEG80FSZGR	/

For dimensions of motor half-coupling see page 25
For dimensions of spiders see page 49
For dimensions of pump half-coupling see page 25

Electric motors with B14 flange gear pumps

TABLE 18

Electric motor, 4-pole, 1500 rpm				Components of combination						
Motor size	kW	Hp	Motor shaft	Codice pompa	Bell-housing code	H1	Motor half-coupling code	Spider code	Pump half-coupling code	Centre ring code
63	0.12 0.18	0.16 0.25	11x23	FS05M	LMC090MFS05M4E	60	SGEA01M01021	EGE 0	SGEA00FS05M	**ANCA001**
				FS05C	LMC090MFS05M4E				SGEA01FS05C	**ANCA001**
				FS100	LMC090MFS1004E				SGEA01FS100	**ANC01FS100**
				FS1C0	LMC090MFS1M04E				SGEA01FS1C0	**ANC01FS1M0**
				FS1M0	LMC090MFS1M04E				SGEA01FS1M0	**ANC01FS1M0**
				FSZBR	LMC090MFSZBR4E				SGEA01FSZBR	/
71	0.25 0.37	0.35 0.55	14x30	FS05M	LMC105MFS05M4E	67	SGEA01M02028	EGE 0	SGEA01FS05M	**ANCA001**
				FS05C	LMC105MFS05M4E				SGEA01FS05C	**ANCA001**
				FS100	LMC105MFS1004E				SGEA01FS100	**ANC01FS100**
				FS1C0	LMC105MFS1C04E				SGEA01FS1C0	**ANC01FS1M0**
				FS1M0	LMC105MFS1M04E				SGEA01FS1M0	**ANC01FS1M0**
				FSZBR	LMC105MFSZBR4E				SGEA01FSZBR	/
80	0.55 0.75	0.75 1	19x40	FS05M	LMC120MFS05M4E	87	SGEA01M03048	EGE 0	SGEA01FS05M	**ANCA001**
				FS05C	LMC120MFS05M4E				SGEA01FS05C	**ANCA001**
				FS100	LMC120MFS1004E				SGEA01FS100	**ANC01FS100**
				FS1C0	LMC120MFS1M04E				SGEA01FS1C0	**ANC01FS1M0**
				FS1M0	LMC120MFS1M04E				SGEA01FS1M0	**ANC01FS1M0**
				FSZBR	LMC120MFSZFR4S				SGEA01FSZBR	/
				FS200	LMC121MFS2004E	95	SGEA21M03048	EGE 2	SGEA21FS200	**ANC02FS200**
				FSZFR	LMC121MFSZFR4S				SGEA21FSZFR	/
90	1.1 1.5	1.5 2	24x50	FS05M	LMC141MFS05M4S	95	SGEA01M04048	EGE 0	SGEA01FS05M	**ANCA001**
				FS05C	LMC141MFS05M4S				SGEA01FS05C	**ANCA001**
				FS100	LMC141MFS100**				SGEA01FS100	**ANC01FS100**
				FS1C0	LMC141MFS1M0**				SGEA01FS1C0	**ANC01FS1M0**
				FS1M0	LMC141MFS1M0**				SGEA01FS1M0	**ANC01FS1M0**
				FSZBR	LMC141MFSZBR4S				SGEA01FSZBR	/
				FS200	LMC141MFS200**	95	SGEA21M04048	EGE 2	SGEA21FS200	**ANC02FS200**
				FSZFR	LMC141MFSZFR4S				SGEA21FSZFR	/
100 112	2.2 4	3 5.5	28x60	FS05M	LMC161MFS05M4S	105	SGEA21M05055	EGE 2	SGEA21FS05M	/
				FS05C	LMC161MFS05M4S				SGEA21FS05C	/
				FS100	LMC161MFS1004S				SGEA21FS100	/
				FS1C0	LMC161MFS1M04S				SGEA21FS1C0	/
				FS1M0	LMC161MFS1M04S				SGEA21FS1M0	/
				FSZBR	LMC161MFSZBR4S				SGEA21FSZBR	/
				FS200	LMC161MFS200**				SGEA21FS200	**ANC02FS200**
				FSZFR	LMC161MFSZFR4S				SGEA21FSZFR	/

For dimensions of motor half-coupling see page 25
For dimensions of spiders see page 49
For dimensions of pump half-coupling see page 25

Note: The two final asterisks in the bell-housing code indicate the version.
See “Ordering information” page 29.

Dimensions of SGEA series motor half-coupling aluminium

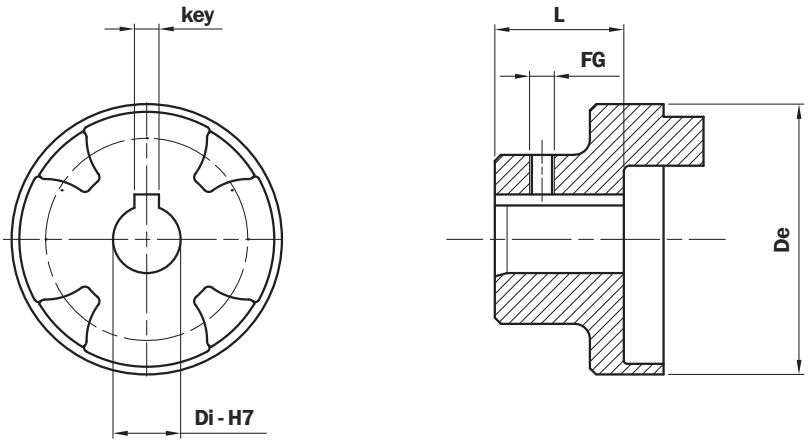


TABLE 19

Half-coupling code	De	L	Di	key	FG
SGEA01M01021	44	21	11	4	M5
SGEA01M02028	44	28	14	5	M5
SGEA01M03048	44	48	19	6	M5
SGEA01M04048	44	48	24	8	M5

Half-coupling code	De	L	Di	key	FG
SGEA21M05055	65	55	28	8	M6
SGEA31M06077	85	77	32	10	M8
SGEA51M07109	105	109	42	12	M8
SGEA51M08109	105	109	48	14	M8

Note: Screw not included

Dimensions of SGEA series pump half-coupling aluminium

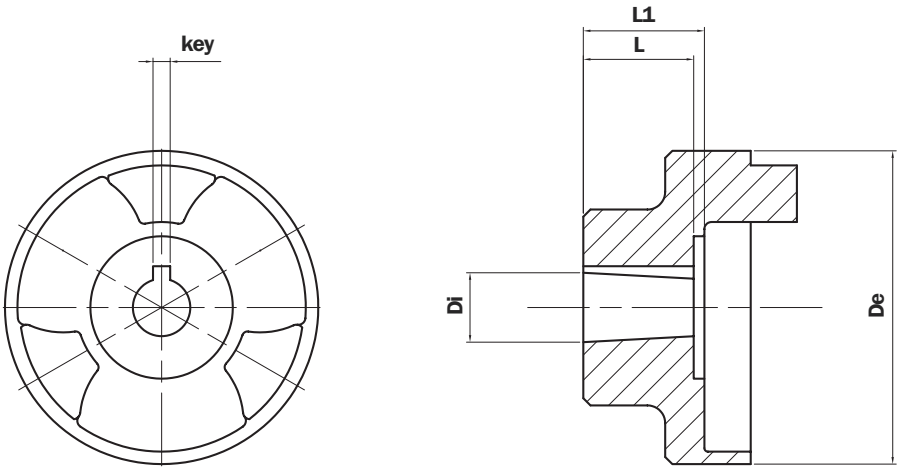


TABLE 20

Half-coupling code	De	L	L1	Di	key
SGEA01FS05M	44	10	16	06	2
SGEA01FS05C	44	10	16	07	2
SGEA01FS100	44	14,5	16	9,7	2,4
SGEA01FS1M0	44	16	16	13,9	3
SGEA01FS1C0	44	16	16	12	3
SGEA01FSZBR	44	16	16	9,8	2
SGEA21FS100	65	14,5	21,5	9,7	2,4
SGEA21FS1C0	65	16	21,5	12	3
SGEA21FS1M0	65	16	21,5	13,9	3
SGEA21FS200	65	21,5	21,5	17,2	3,2-4
SGEA21FSZFR	65	20	21,5	16,9	3
SGEA21FS300	65	27	41	21,6	4

Half-coupling code	De	L	L1	Di	key
SGEA31FS100	85	14,5	37	9,7	2
SGEA31FS1C0	85	16	37	12	2
SGEA31FS1M0	85	16	37	13,9	2,4
SGEA31FS200	85	23	37	17,2	3,2-4
SGEA31FS300	85	27	37	21,6	4
SGEA31FS350	85	35	37	25,6	4,76-5
SGEA31FSZFR	85	20	37	16,9	3
SGEA31FSZGR	85	27	34	25,2	5
SGEA51FS200	105	21,5	32	17,2	3,2-4
SGEA51FS300	105	27	32	21,6	4
SGEA51FS350	105	35	32	25,6	5
SGEA51FSZFR	105	20	32	16,9	3
SGEA51FSZGR	105	27	32	25,2	5

Comparative table - Bell-housing

MP Filtri		OMT	Hydrapp	Raja	KTR
New code	Old code	Code	Code	Code	Code
LMC140MFS05M**	LMB140A060A001	LS140	/	/	/
LMC140MFS05C**	LMB140A060A001	LS140	/	/	/
LMC140MFS100**	LMB140A060A002	LS141	/	L45	/
LMC140MFS1C0**	LMB140A060A003	LS142	/	/	/
LMC140MFS1M0**	LMB140A060A003	LS142	/	B45	/
LMC140MFSZBR**	LMB140A060S013	LBS18	/	Bo45	/
LMC160MFS05M**	LMB160A067A001	LS160	HL1	H9	PL160/1/...
LMC160MFS05C**	LMB160A067A001	LS160	HL2	H9	PL160/1/...
LMC160MFS100**	LMB160A067A002	LS161	HL2	L9	PL160/1/...
LMC160MFS1C0**	LMB160A067A003*	LS162	HL3	L9	PL160/1/...
LMC160MFS1M0**	LMB160A067A003	LS162	HL4	B9	PL160/1/...
LMC160MFSZBR**	LMB160A067S013	LBS19	HLB1	Bo9	PL160/1/...
LMC200MFS05M**	LMB200A087A001	LS210	HL4L	H2	PL200/1/...
LMC200MFS05C**	LMB200A087A001*	LS210	HL4L	H2	PL200/1/...
LMC200MFS100**	LMB200A087A002	LS211	HL5L	L2	PL200/1/...
LMC200MFS1C0**	LMB200A087A003	LS212	HL6L	B2	PL200/1/...
LMC200MFS1M0**	LMB200A087A003	LS212	HL6L	B2	PL200/1/...
LMC200MFSZBR**	LMB200A087S013	LBS28	HLB3L	Bo2	PL200/1/...
LMC201MFS200**	LMB200A095C004	LS203	HL7SL	L7/4	PL200/2/...
LMC201MFSZBR**	LMB200A098S014	LS203	HLB12SL	Bo7	PL200/2/...
LMC250MFS100**	LMB250A109C002	LS250	HL8/1L	L6/3	PL250/1/...
LMC250MFS1C0**	LMB250A109C003	LS251	HL8L	B5	PL250/1/...
LMC250MFS1M0**	LMB250A109C003	LS251	HL8L	B5	PL250/1/...
LMC250MFSZBR**	LMB250A109S013	LBS22	HLB13L	Bo5	PL250/1/...
LMC250MFS200**	LMB250A109C004	LS252	HL9L	L6/3	PL250/1/...
LMC250MFSZFR**	LMB250A109S014	LBS23	HLB17L	Bo6	PL250/1/...
LMC250MFS25T**	LMB250A126D005	LS254	HL11	L4/3	PL250/7/...
LMC250MFS300**	LMB250A126D006	LBS25	HL11	L4/3	PL250/7/...
LMC250MFS3M0**	LMB250A126D007	LS256	HL11	L4/3	PL250/7/...
LMC250MFS3T0**	LMB250A126D006	LS257	HL11T	L34	PL250/7/...
LMC300MFS100**	/	LS210	/	/	PL300/2/...
LMC300MFS1C0**	/	LS211	/	/	PL300/2/...
LMC300MFS1M0**	/	LS311	/	/	PL300/2/...
LMC300MFSZBR**	/	/	/	/	PL300/2/...
LMC300MFS200**	LMB300A130D004	LS300	HL12	L13	PL300/2/...
LMC300MFFSZR**	LMB300A130S014	LBS26	HLB22	Bo13	PL300/2/...
LMC300MFS25T**	LMB300A147D005	LS301	HL13	L12	PL300/2/...
LMC300MFS300**	LMB300A147D005	LS302	HL13	L12	PL300/2/...
LMC300MFS3M0**	LMB300A147D005	LS303	HL13	L12	PL300/2/...
LMC300MFS3T0**	LMB300A147D006	LS304	HL13T	L14	PL300/2/...
LMC300MFS35M**	/	LS305	/	L16	PL300/2/...
LMC300MFS350**	/	LS306	HLB28	L15	PL300/2/...
LMC351MFSZGR**	/	LBS27	HL15	Bo14	PL350/2/...
LMC351MFS200**	LMB350A160D004	LS350	HLB27	L17	PL350/2/...
LMC351MFFSZR**	LMB350A160S014	LBS31	/	Bo18	PL350/2/...
LMC351MFS25T**	LMB350A179F005	LS351	/	L18	PL350/2/...
LMC351MFS300**	LMB350A179F005	LS352	/	L18	PL350/2/...
LMC351MFS3M0**	LMB350A179F005	LS353	/	L18	PL350/2/...
LMC351MFS3T0**	LMB350A179F006	LS354	/	L19	PL350/2/...
LMC351MFS35M**	/	LSE355	/	L21	PL350/2/...
LMC351MFS350**	/	LSE356	/	L20	PL350/2/...
LMC351MFSZGR**	/	LBS32	/	Bo19	PL350/2/...
LMC351MFS200**	LMB350A160D004	LS350	HL15	L17	PL350/2/...
LMC351MFFSZR**	LMB350A160S014	LBS31	HLB27	Bo18	PL350/2/...
LMC351MFS25T**	LMB350A179F005	LS351	/	L18	PL350/2/...
LMC351MFS300**	LMB350A179F005	LS352	/	L18	PL350/2/...
LMC351MFS3M0**	LMB350A179F005	LS353	/	L18	PL350/2/...
LMC351MFS3T0**	LMB350A179F006	LS354	/	L19	PL350/2/...
LMC351MFS35M**	/	LSE355	/	L21	PL350/2/...

Note: The above table is guideline only.
All bell-housings of the MP Filtri range can be considered equivalent to the counterpart brands listed.
For further information, contact the MP Filtri Technical and Sales Department.

Comparative table - Half-coupling

MP Filtri		OMT
New code	Old code	Code
SGEA01FS05M	**SGEA00B01018**	ND48P05M
SGEA01FS05C	**SGEA00B02018**	ND48P05GT
SGEA01FS100	**SGEA00B07018**	ND48PU1P
SGEA01FS1C0	**SGEA00B03014**	ND48P1C
SGEA01FS1M0	**SGEA00B06016**	ND48PIM
SGEA01FSZBR	**SGEA00B08014**	ND48PZB
SGEA21FS100	**SGEA20B07018**	ND65PU1P
SGEA21FS1C0	**SGEA20B03024**	ND65P1C
SGEA21FS1M0	**SGEA20B06024**	ND65P1M
SGEA21FSZBR	**SGEA20B08024**	ND65PZB
SGEA21FS200	**SGEA20B100242A**	ND65P2
SGEA21FSZFR	**SGEA20B13024**	ND65PZF
SGEA21FS25T	**SGEA20B16041**	ND65Q3U
SGEA31FS100	**SGEA30B07022**	ND86PU1P
SGEA31FS1C0	/	ND86P1C
SGEA31FS1M0	**SGEA30B06021**	ND86P1M
SGEA31FSZBR	/	/
SGEA31FS200	**SGEA30B100222A**	ND86P2
SGEA31FSZFR	**SGEA30B13020**	ND86PZF
SGEA31FS300	**SGEA30B16038**	ND86P3U
SGEA31FS350	**SGEA30B180382B**	/
SGEA51FSZGR	**SGEA50B17034**	/
SGEA51FS200	/	/
SGEA51FSZFR	**SGEA50B13032**	ND108PZF
SGEA51FS300	**SGEA50B16032**	ND108P3U
SGEA51FS350	**SGEA50B180342B**	ND108Q35
SGEA51FS400	**SGEA50B210462C**	/

Note: The above table is guideline only.
Not all half-couplings are fully interchangeable.
For further information, contact the MP Filtri Technical and Sales Department.

Ordering information AKA

Complete coupling kit

AKA

	1	2	3	4
Example: AKA	**02**	**FS100**	**Z**	**4E**

1 - Sizes

02	Gr. 63 B3-B5	**43**	Gr. 63 B14
03	Gr. 71 B3-B5	**44**	Gr. 71 B14
04	Gr. 80 B3-B5	**45**	Gr. 80 B14
05	Gr. 90 B3-B5	**46**	Gr. 90 B14
07	Gr. 100/112 B3-B5	**48**	Gr. 100/112 B14
11	Gr. 132 B3-B5		
12	Gr. 160 B3-B5		
13	Gr. 180 B3-B5		

2 - Pump identitification code

FS200 See table 14 page 21

3 - Product revision code

Z

4 - Versions

4S **8S**
4E **8E**

See page 20

Ordering information AKG

Coupling kit

AKG

	1	2	3
Example: AKG	**02**	**FS100**	**Z**

1 - Sizes

02	Gr. 63 B3-B5	**43**	Gr. 63 B14
03	Gr. 71 B3-B5	**44**	Gr. 71 B14
04	Gr. 80 B3-B5	**45**	Gr. 80 B14
05	Gr. 90 B3-B5	**46**	Gr. 90 B14
07	Gr. 100/112 B3-B5	**48**	Gr. 100/112 B14
11	Gr. 132 B3-B5		
12	Gr. 160 B3-B5		
13	Gr. 180 B3-B5		

2 - Pump identitification code

FS200 See table 14 page 21

3 - Product revision code

Z

Ordering information LMC

Monobloc bell-housing

LMC

	1	2	3	4	5
Example: LMC	**140**	**M**	**FS200**	**4E**	**DI**

1 - Sizes

140	**300**
141	**350**
160	**400**
161	**450**
200	**550**
201	**660**
250	

2 - Product revision code

M

3 - Pump flange identification code

FS200 See table 14 page 21

4 - Option

4S	4 through holes + 4 threaded holes, motor interface without coupling removal ring
4E	4 through holes + 4 threaded holes, motor interface with coupling removal ring
8S	8 through holes, motor interface without coupling removal ring
8E	8 through holes, motor interface with coupling removal ring

5 - Option

DI	Drain hole + inspection hole
AN	Black anodized finish
SA	Motor interface with clearance holes
Pxx	Customer specification

N.B. Bell-housings with DI options are supplied complete with threaded closure plug

Note: For customization features other than those indicated on this page, contact the Technical and Sales Department

A guide to select the correct bell-housing and drive coupling components

DATA REQUIRED

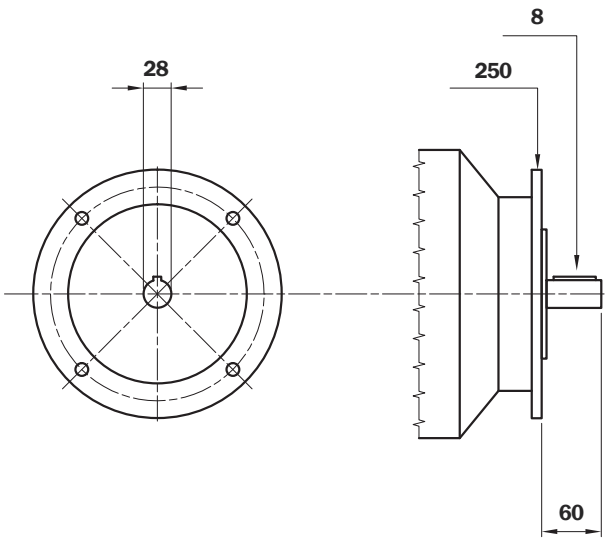
Electric motor power/motor size
Manufacturer and pump type

TO VERIFY:

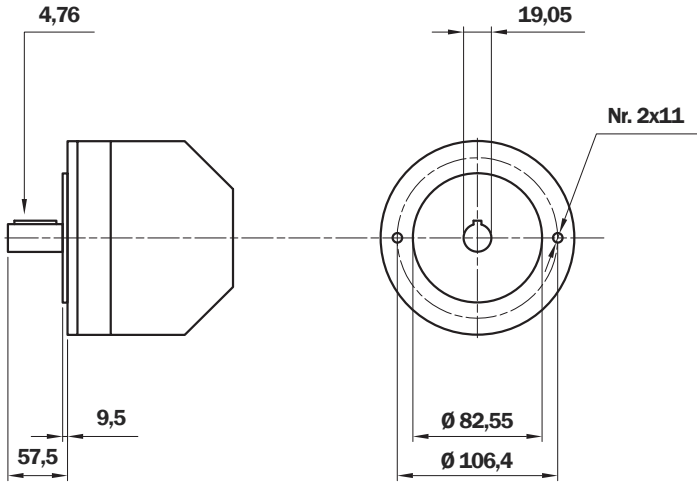
1 - Pump and motor shaft dimensions (see page 67)
2 - Shaft and flange pump (see pump data sheet)

Example:
- Electric motor 2 kW - 4 poles - Motor size 110/112
- Atos pump code PFE31 - Shaft 1

Electric motor's dimension



Pump's dimensions



Bell-Housing's length calculation

- H= 60 + 18 + 57,5 = 135,5 mm (18= Sp spider - see page 49)
- Choose type of bell-housing (LMC - LMS)
  - For LMC see tab. 3 at page 11
  - For LMS see tab. 22 at page 32
  - For MODUL 2/3 see at page 36

Note: The length of bell-housing must be ≥ than the length calculated (135,5 mm)

Case A - solution with LMC bell-housing

Tab. 3 at page 11 - for electric motor 2 kW LMC 250
LMC 250 bell-housing with height ≥ 135,5 - LMC250AFSQ

- The bell-housing code must be completed with drilling pump code (see tab. 35 at page 47)
  For the specific case C= 82,5 - Nr. 2 holes M10: Code drilling 060
- Definitive bell-housing code **LMC250AFSQ060**

Case B - solution with LMS bell-housing

Tab. 22 at page 32 - for electric motor 2 kW LMS 250
LMS 250 bell-housing with heigh ≥ 135,5 - LMS250AFSQ

- The bell-housing code must be completed with drilling pump code (see tab. 35 at page 47)
  For the specific case C= 82,5 - Nr. 2 holes M10: Code for. 060
- Definitive bell-housing code **LMS250AFSQ060**

Choose coupling

- **Motor half-coupling** (see tab. 38 at page 50)

  - For electric motor Gr. 100/112, the half-coupling is **SGEA21M05060**

- **Spider** (see tab. 36 - 37 at page 49)

  - For SGEA21, EGE2 - EGE2RR
    (choose spider material on the base of the application, oil, temperature and cycle machine, etc.)

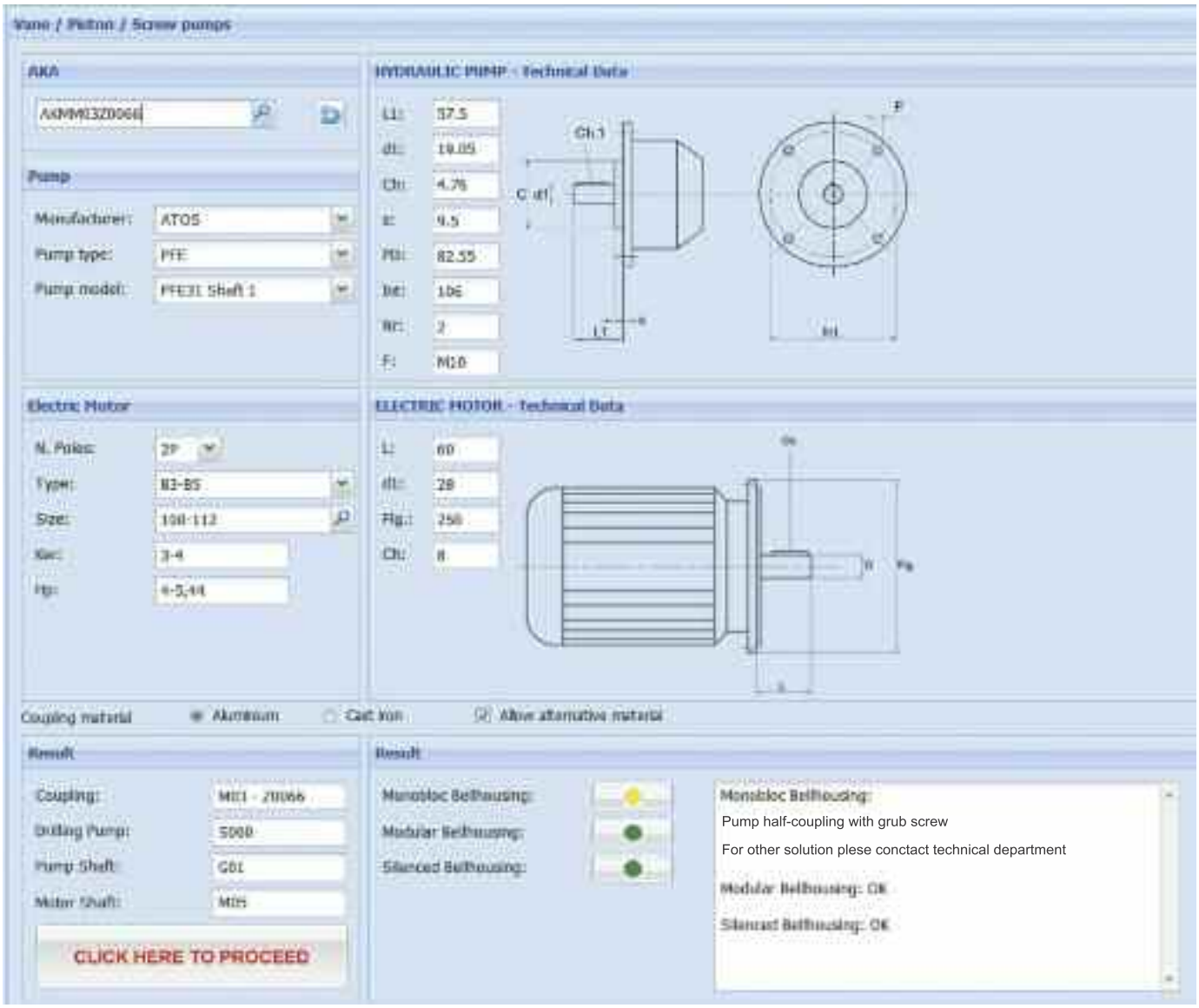
- **Pump half-coupling**

  - Choose the drilling code tab. 44 - 45 at page 53 for shaft 19,05 - Ch. 4,76 - code: **G01**

  - Half-coupling length = L BH lenght – THK Spider – THK Spigot
    LMC= 138 mm - 60 - 18 - 9,5= 50,5 mm
    LMS= 148 mm - 60 - 18 - 9,5= 60,5 mm

  - LMC - Choose the half-coupling's length on tab. 39 at page 50 ≤ 50,5 mm.
  - LMS - Choose the half-coupling's length on tab. 39 at page 50 ≤ 60,5 mm.
  - LMC - Availabe length for SGEA21= 50 mm
  - LMS - Availabe length for SGEA21= 60 mm
  - LMC=LMS - Code half-coupling code: **SGEA21G01050**

Software for automatic calculation available on the web site
www.mpfiltri.com - tools - software



Note: For multi pumps we recommend to use a specific support on the base of the pump's dimensions and weight.

Half-coupling SGE*** series

The half-couplings series SGE*** allow secure transmission between the electric motor and the driven side; they are able to absorb shocks and vibration, in addition to compensating radial misalignment, angular and axial.
The assembly of the couplings can be horizontal/vertical, withstanding vibration and load reversals.

The complete range of couplings are extrapolated from the on-line software, with a length equal than the shaft on which must be mounted and they are completed with grub screw for fixing located on the key.
Available for cilindrical shaft with metric and imperial dimensions as well for splined shafts as per specification DIN, ISO and SAE.

Admissible misalignment radial, angular and axial

Max admissible radial misalignment

Half coupling	R (mm)
SGE * 01	0,5
SGE * 21	1,0
SGE * 31	1,0
SGE * 40	1,0
SGE * 51	1,5
SGE * 60	1,5
SGE * 80	2,0
SGE * 90	2,0

Max admissible angular misalignment

Half coupling	β (°)
SGE * 01	1,5°
SGE * 21	
SGE * 31	
SGE * 40	
SGE * 51	
SGE * 60	
SGE * 80	
SGE * 90	

Max admissible angular misalignment

Half coupling	A (mm)
SGE * 01	2,0
SGE * 21	2,5
SGE * 31	3,0
SGE * 40	3,5
SGE * 51	3,5
SGE * 60	3,5
SGE * 80	4,0
SGE * 90	5,0

Normative ATEX 94/9/CE

Half-couplings SGE*** series are available to use in hazardous area.
The couplings are certified according to ATEX 94/9/CE (ATEX 95).
Category certified 2G - area 1 and 2.
Other information available on our web site “www.mpfiltri.com”.

MP Filtri couplings are developed with:

CAD 3D

FEM (calculation)

Drawings 3D available on website www.mpfiltri.com at section TOOLS/2D-3D COMPONENTS

The half-couplings SGE*** series are in conformity to normative **DIN 740/2**.
The max torque to transmit is always less than the max torque that the coupling can transmit.

Examples verification of the coupling

Torque transmitted by electric motor:

Mt: 9560 x kW / rpm = Nm

Me > Mt x S = Nm

Where:

Mt: Torque transmitted by electric motor

Me: Torque transmitted by coupling (see table 14)

kW: Power of electric motor

Rpm: Revolutions per minute of electric motor

S: Service factor (see table 14)

TABLE 1

Small pumps, uniform load, low operating pressures e.g. rotary action machine tools - 5/8 work cycles per hour	**1.3**
Small pumps, uniform load, high working pressures e.g. lifting equipment - 120-150 work cycles per hour	**1.5**
Pumps, non-uniform load e.g. lifting equipment - 280-300 work cycles per hour	**1.7**

Example
Electric motor, 4 pole - 4 kW
hydraulic pump, uniform load, low operating pressure

Mt: 9560 x 4 / 1500 = 25.45 Nm

Me > 25.49 x 1.3 = 33 Nm

Half-coupling SGEA21 meets the above requirement.

Select the half-coupling of the calculated size from the motor half-couplings table.

Note: When selecting the coupling, remember that for pumps with splined shaft, only cast iron couplings of the SGEG series can be used.

Determine the size of the coupling according to the type of installation and application envisaged, on the basis of the following formulas and tables:

TABLE 2

	Half-coupling type	External diameter mm	Nominal torque Me - Nm	Maximum transmissible torque Me - Nm
ALUMINIUM	SGEA01	43	15	20
	SGEA21	68	160	190
	SGEA31	85	340	380
	SGEA51	109,5	550	620
CAST IRON	SGEG01	40	20	30
	SGEG30	80	400	450
	SGEG40	95	550	620
	SGEG60	120	760	850
	SGEG80	160	2200	2500
	SGEG90	200	5500	6100
STEEL	SGES40	95	550	620
	SGES60	120	760	850
	SGES80	160	2200	2500

Nominal and maximum torque values are referred to couplings assembled with standard flexible spiders of the **EGE**** series (see page 49).
Where higher torques are to be transmitted, use flexible spiders of the **EGE**RR** series (see page 49).

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

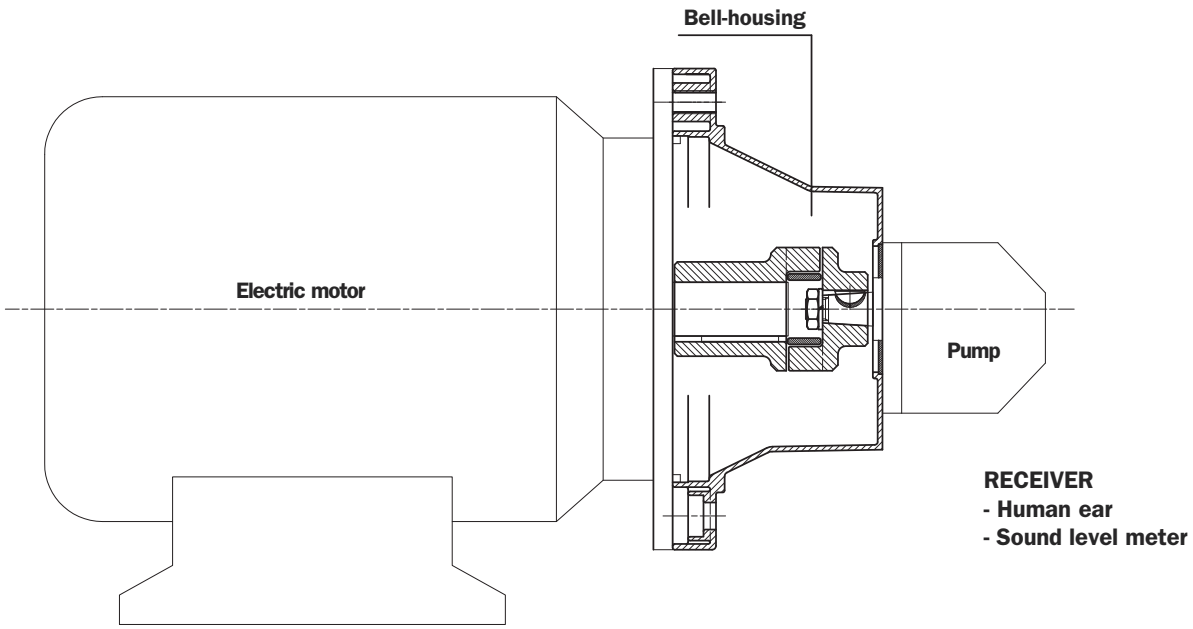
From a health and hygiene standpoint, noise can be defined as an unpleasant and undesirable sound, or an unpleasant and annoying or intolerable auditory sensation (noise being any sound phenomena that may be accompanied by sensations of disturbance and pain). By definition, acoustic phenomena are oscillatory 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
- Receiver

Motor and pump unit



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.

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 hydralic power unit.

• 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.

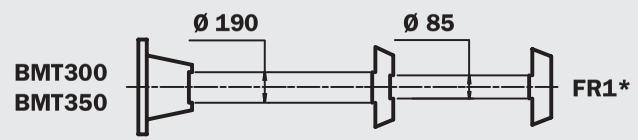
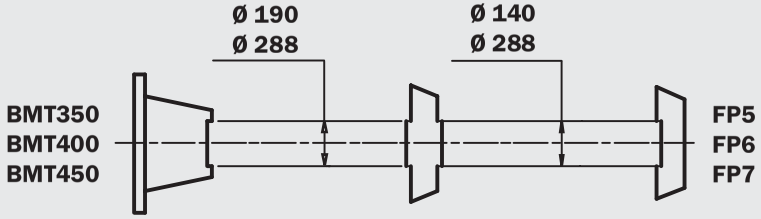
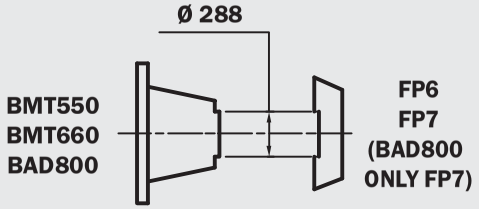
- The pressure pipeline of the pump must be flexible, and long enough to include bends with the minimum radius of curvature recommended by the manufacturer for the specified operating pressure.

- 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.

	5.5 - 7.5 kW	11 - 22	30	37 - 45	55 - 90	110 - 200	250 - 400
	7.5 - 10.2 Hp	15 - 30 Hp	40.80 Hp	50.32 - 61.2 Hp	75 - 125 Hp	150 - 272 Hp	340 - 544 Hp
	Size 225 - D. 450	Size 160/180 D. 350	Size 200 - D. 350	Size 225 - D.450	Size 250/280 D. 550	Size 315 - D. 660	Size 355/400 D. 800
MODUL 3	AR*  Kit of assembly KVG5 (Q.ty 1) + Kit of assembly KVG1 (Q.ty 1)						
	AD*  Kit of assembly KVG5/7 (Q.ty 2)						
MODUL 2						 Kit of assembly KVG6/7 (Q.ty 1)	
	5.5 - 7.5 kW	11 - 22	30	37 - 45	55 - 90	110 - 200	250 - 400
	7.5 - 10.2 Hp	15 - 30 Hp	40.80 Hp	50.32 - 61.2 Hp	75 - 125 Hp	150 - 272 Hp	340 - 544 Hp
	Size 225 - D. 450	Size 160/180 D. 350	Size 200 - D. 350	Size 225 - D. 450	Size 250/280 D. 550	Size 315 - D. 660	Size 355/400 D. 800

Low noise bell-housings

LMS series

Bell-housings of this type, appropriately installed in hydraulic systems, are able to help bring about a significant reduction in the level of noise generated by the system.
This is achieved through the adoption of a damping element located between the base of the bell-housing and the pump mounting flange.
Thanks to their notable versatility and to the broad selection of bases and flanges available, **LMS** low noise bell-housings will cover the majority of applications within a range including electric motors from size **100**, rated **2.2 kW,** up to size **280**, rated **90 kW**

Technical specifications

LMS

Materials

- **Base module**
  Pressure diecast aluminium alloy.
- **Damping ring**
  Oil-resistant rubber, shore A hardness 87.
- **Pump flange**
  Pressure diecast aluminium alloy.
- **Foot bracket**
  Pressure diecast aluminium alloy.

Temperature

- -30°C ÷ +80°C
  For temperatures outside this range,
  contact the MP Filtri Technical and Sales Department

Compatibility with fluids

- **Base modules compatible for use with:**

  Mineral oils
  Types HH-HL-HM-HR-HV-HG, 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

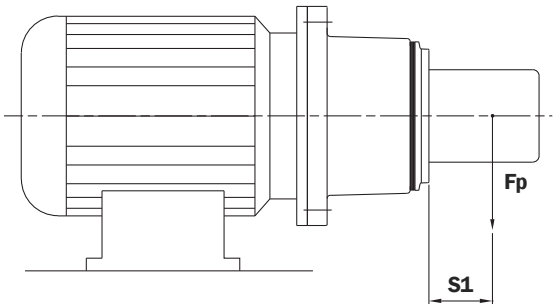
Special Applications

- **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.**

Maximum admissible load for LMS low noise bell-housings

TABLE 21

Bell-housing	Max permissible load "F" (N)	Load application distance "S" (mm)
LMS 250	600	200
LMS 300	1000	200
LMS 350	1500	200
LMS 400	2200	200
LMS 450	4000	200
LMS 550	4000	200



Maximum permissible load values have been calculated assuming the assembly of a pump with its centre of gravity located at a distance **S**= 200 mm from the mounting face.
If the distance "**S**" is greater than this assumed value, then calculate the new permissible load value "**F1**" using this formula:

$$F_1 = F \times S_1 / S \ (N)$$

Examples

Low noise bell-housing: LMS250
Fp pump 600 N
S1 220 mm

F1= 600x220/200=660N > 600N (value not acceptable)

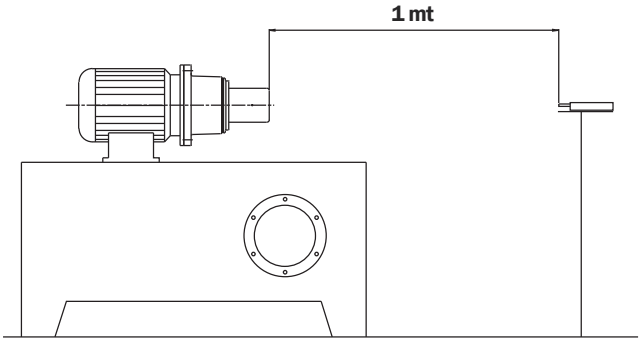
Low noise bell-housing: LMS250
Fp pump 600 N
S1 190 mm

F1= 600x190/200=570N < 600N (value acceptable)

Reduction of noise level

The level of nose emitted by a motor-pump unit depends on several factors, namely:

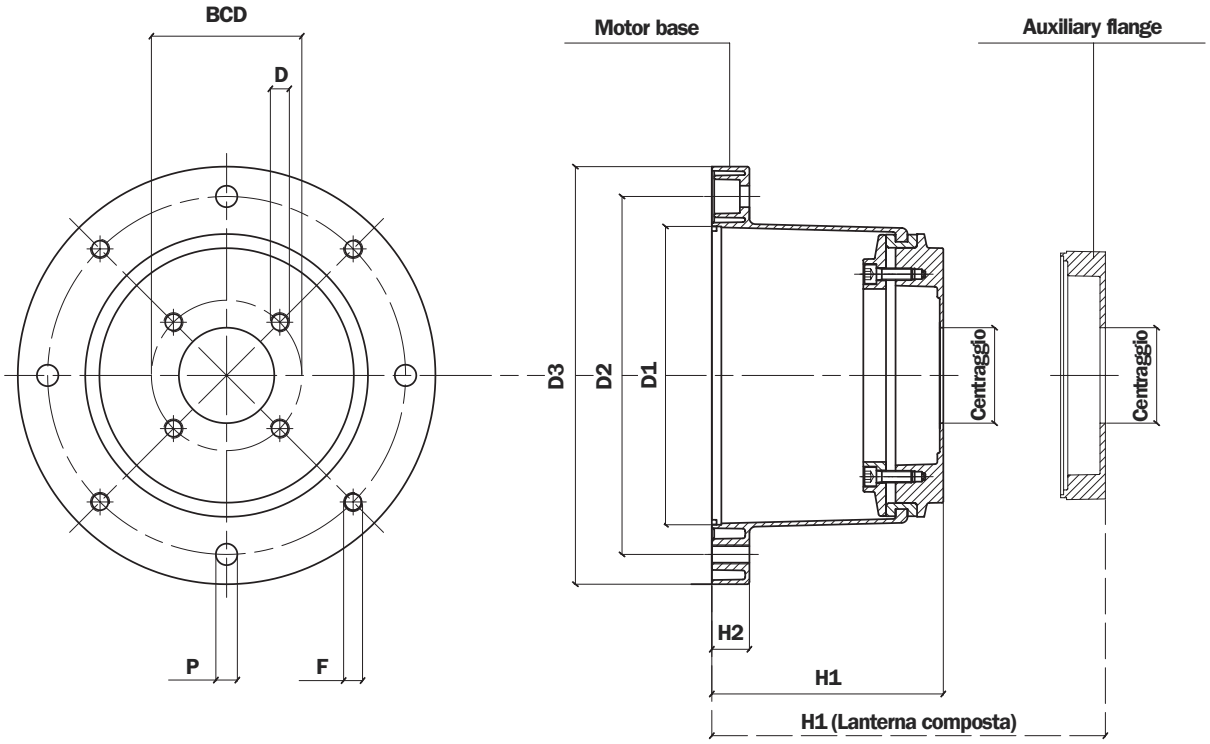
- Type of pump
- Nature of application
- Operating pressure
- Fittings used for connections
- Type of assembly



All tests were conducted in an anechoic-chamber, using certified sound level meters.
All LMS series bell-housings were tested adopting the arrangement illustrated above, comparing the noise level with that emitted by conventional monobloc bell-housings of the same size, under the same pressure and flow rate conditions.

- **The results of the tests show that with LMS series low noise bell-housings, the noise level of the motor-pump unit is reduced by 5 Db (A).**

Low noise bell-housing



- **The auxiliary flange, if specified, is supplied already fitted to the bell-housing.**

Note: In order to ensure coaxial alignment between the motor and pump spigot centres, the bell-housing cannot be disassembled and reassembled.

Machining tolerances

D1	**F8**
Spigot hole	**H7**
H1	**± 0,15 mm**

Concentricity of D1/Spigot hole

LMS 250	**0,20 mm**
LMS 300 - LMS 660	**0,25 mm**

TABLE 22

Electric motor, 4-pole, 1500 rpm				Dimensions of LMS low noise bell-housing											
Motor size	kW	Hp	Motor shaft	Bell-housing code	Foot bracket code	D1	D2	D3	H1	H2	F.	Nr.	P	Nr.
100-112	2.2-4	3-5.5	28x60	**LMS 250**	**PDM A 250**	180	215	250		19	M12	4	14	4
132	5.5-7.5	7.5-12.5	38x80	**LMS 300**	**PDM A 300**	230	265	300		23	M12	4	14	4
160	11-15	15-20	42x110	**LMS 350**	**PDM A 350**	250	300	350		31	M16	4	18	4
180	18.5-22	25-30	48x110	**LMS 350**	**PDM A 350**	250	300	350		31	M16	4	18	4
200	30	40	55x110	**LMS 400**	/	300	350	400		31	M16	4	18	4
225	37-45	50-60	60x140	**LMS 450**	/	350	400	450		31	M16	8	-	-
250	55	75	65x140	**LMS 550**	/	450	500	550		31	M16	8	-	-
280	75-90	100-125	75x140	**LMS 550**	/	450	500	550		31	M16	8	-	-
315	110-200	150-272	80x170	**LMS 660**	/	550	600	660		42	M20	16	-	-
					For dimension see page 55				**See tab. 22**					

To determine dimension H1 of the bell-housing — see table 33
For dimensions of the foot bracket — see page 55
For all other dimensions — see pump manufacturer's technical literature

TABLE 23

Pump flange Code	H1	Weight (kg)
LMS 250AFSA***	128	3,72
LMS 250AFSB***	148	4,10
LMS 300AFSC***	155	4,20
LMS 300AFSD***	168	4,45
LMS 300AFSE***	194	6,51
LMS 350AFSF***	204	6,80
LMS 350AFSG***	228	7,10
LMS 350AFSH***	204	8,51
LMS 400AFSL***	228	8,80
LMS 400AFSM***	256	9,10
LMS 400FSN***	240	11,61
LMS 450FSO***	255	12,10
LMS 550FSP***	255	15,20
LMS 550FSR***	270	15,90
LMS 550FSS***	290	19,20
LMS 660FST***	305	20,20

Pump flange Code	H1	Weight (kg)
LMS 250AFRA***	158	3,97
LMS 250AFRB***	165	4,10
LMS 250AFRC***	168	4,30
LMS 250AFRD***	171	4,60
LMS 250AFRE***	173	4,70
LMS 250AFRG***	181	5,10
LMS 250AFRH***	183	5,70
LMS300AFRA***	178	4,50
LMS300AFRB***	185	4,75
LMS300AFRC***	188	4,85
LMS300AFRD***	191	4,90
LMS300AFRE***	193	5,10
LMS300AFRG***	201	5,50
LMS300AFRH***	203	5,80
LMS300AF5A***	194	5,20
LMS300AF5B***	198	5,50
LMS300AF5C***	200	5,70
LMS300AF5D***	203	5,90
LMS300AF5E***	213	6,20
LMS300AF5G***	232	6,70
LMS300AF5H***	259	7,80
LMS350AF5A***	254	8,10
LMS350AF5B***	258	8,30
LMS350AF5C***	260	8,50
LMS350AF5D***	263	8,70
LMS350AF5E***	273	9,00
LMS350AF5G***	292	10,10
LMS350AF5H***	319	11,30

Pump flange Code	H1	Weight (kg)
LMS400AF6A***	288	10,00
LMS400AF6B***	289	10,10
LMS400AF6C***	301	10,25
LMS400AF6D***	314	11,10
LMS400AF6E***	326	11,70
LMS400AF6G***	338	11,90
LMS400AF6H***	342	12,10
LMS400AF6L***	357	13,00
LMS400AF6M***	396	15,70
LMS450AF6A***	287	14,10
LMS450AF6B***	288	14,20
LMS450AF6C***	300	15,10
LMS450AF6D***	313	16,00
LMS450AF6E***	325	16,50
LMS450AF6G***	337	17,20
LMS450AF6H***	341	17,50
LMS450AF6L***	356	17,90
LMS450AF6M***	395	19,00
LMS550AF6A***	302	17,20
LMS550AF6B***	303	17,20
LMS550AF6C***	315	18,30
LMS550AF6D***	328	19,00
LMS550AF6E***	340	19,50
LMS550AF6G***	352	19,90
LMS550AF6H***	356	20,20
LMS550AF6L***	361	20,45
LMS550AF6M***	400	22,50
LMS660AF6A***	337	23,00
LMS660AF6B***	338	23,40
LMS660AF6C***	350	24,50
LMS660AF6D***	363	25,30

Specified tightening torques for auxiliary flange

- FR* 15 Nm
- F5* 100 Nm
- F6* 180 Nm

Recommended tightening torques for motor/pump assembly bolts

• M6	10 Nm	• M16	205 Nm
• M8	15 Nm	• M18	280 Nm
• M10	50 Nm	• M20	400 Nm
• M12	84 Nm	• M22	530 Nm
• M14	135 Nm	• M24	690 Nm

These values are calculated to exploit the performance of the bolt at 70% of its elastic limit.
This means in practice that the shank of the bolt will be stressed typically to 60-70% of its limit of elasticity in the course of being tightened.
The values indicated are valid for hexagon head bolts to UNI 5737 and hexagon socket screws to UNI 5931, property class 8.8, tightened by degrees using a torque wrench.
If bolts or screws are tightened using impact or hammer action drivers, the applied torque should be reduced by 10%.

Comparative table

MP Filtri	OMT	Raja	KTR
Code	Code	Code	Code
LMS250A* **	BS251***	R250***DF	PK+D150/190
LMS300A* **	BS301***	R300***DF	PK+D150/190
LMS350A* **	BS351***	R350***DF	PK+D150/190/D230/260
LMS400A* **	BS400***	R400***DF	PK+D190/D230/260
LMS450A* **	BS451***	R450***DF	PK+D190/230/D260/330
LMS550A* **	BS551***	R450***DF	PK+D190/230/D260/330
LMS660A* **	BS661***	R450***DF	PK+D190/230/D260/330

Note: The above table is guideline only.
Not all bell-housings are fully interchangeable.
For further information, contact the MP Filtri Technical and Sales Department.

Low noise bell-housing

LMS

	1	2	3	4	5
Example: LMS	**250**	**A**	**FSA**	**070**	**FG**

1 - Sizes

- **250**
- **300**
- **350**
- **400**
- **450**
- **550**
- **660**

2 - Product revision code

- **A**

3 - Bell-housing

- **FSA** See table 23 page 33
- **FRA** See table 23 page 33

4 - Pump interface codes

- **070** See table page 47

5 - Opzioni

- **FG** Holes rotated through 45° in relation to standard position (page 47)
- **DI** Drain hole + inspection hole
- **DP** Double set of hole
- **AN** Black anodized finish
- **SA** Clearance holes at motor interface
- **Pxx** Customer specification

N.B. Bell-housings with DI options are supplied complete with threaded closure plug

Note: For customization features other than those indicated on this page, contact the Technical and Sales Department

A guide to select the correct bell-housing and drive coupling components

DATA REQUIRED

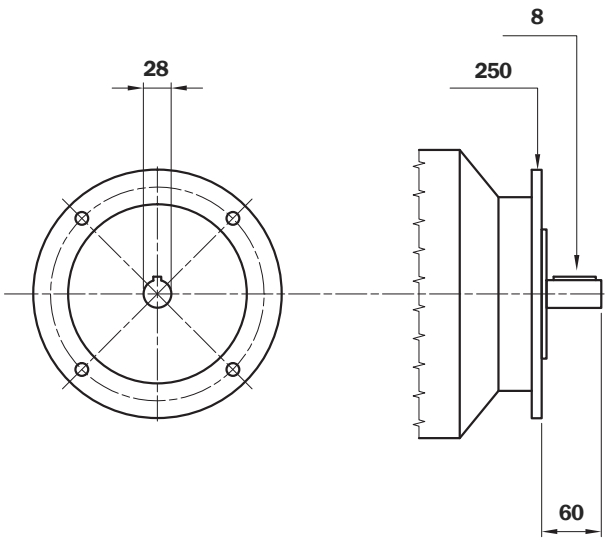
Electric motor power/motor size
Manufacturer and pump type

TO VERIFY:

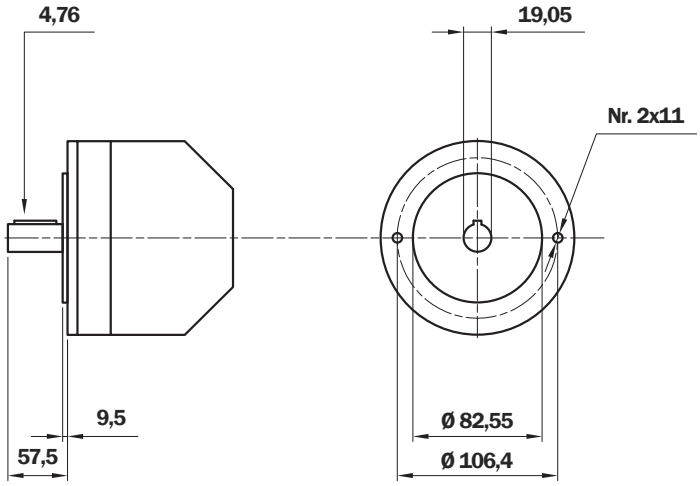
1 - Pump and motor shaft dimensions (see page 67)
2 - Shaft and flange pump (see pump data sheet)

Example:
- Electric motor 2 kW - 4 poles - Motor size 110/112
- Atos pump code PFE31 - Shaft 1

Electric motor's dimension



Pump's dimensions



Bell-Housing's length calculation

- H= 60 + 18 + 57,5 = 135,5 mm (18= Sp spider - see page 49)
- Choose type of bell-housing (LMC - LMS)
  - For LMC see tab. 3 at page 11
  - For LMS see tab. 22 at page 32
  - For MODUL 2/3 see at page 36

Note: The length of bell-housing must be ≥ than the length calculated (135,5 mm)

Case A - solution with LMC bell-housing

Tab. 3 at page 11 - for electric motor 2 kW LMC 250
LMC 250 bell-housing with height ≥ 135,5 - LMC250AFSQ

- The bell-housing code must be completed with drilling pump code (see tab. 35 at page 47)
  For the specific case C= 82,5 - Nr. 2 holes M10: Code drilling 060
- Definitive bell-housing code **LMC250AFSQ060**

Case B - solution with LMS bell-housing

Tab. 22 at page 32 - for electric motor 2 kW LMS 250
LMS 250 bell-housing with heigh ≥ 135,5 - LMS250AFSQ

- The bell-housing code must be completed with drilling pump code (see tab. 35 at page 47)
  For the specific case C= 82,5 - Nr. 2 holes M10: Code for. 060
- Definitive bell-housing code **LMS250AFSQ060**

Choose coupling

- **Motor half-coupling** (see tab. 38 at page 50)

  - For electric motor Gr. 100/112, the half-coupling is **SGEA21M05060**

- **Spider** (see tab. 36 - 37 at page 49)

  - For SGEA21, EGE2 - EGE2RR
    (choose spider material on the base of the application, oil, temperature and cycle machine, etc.)

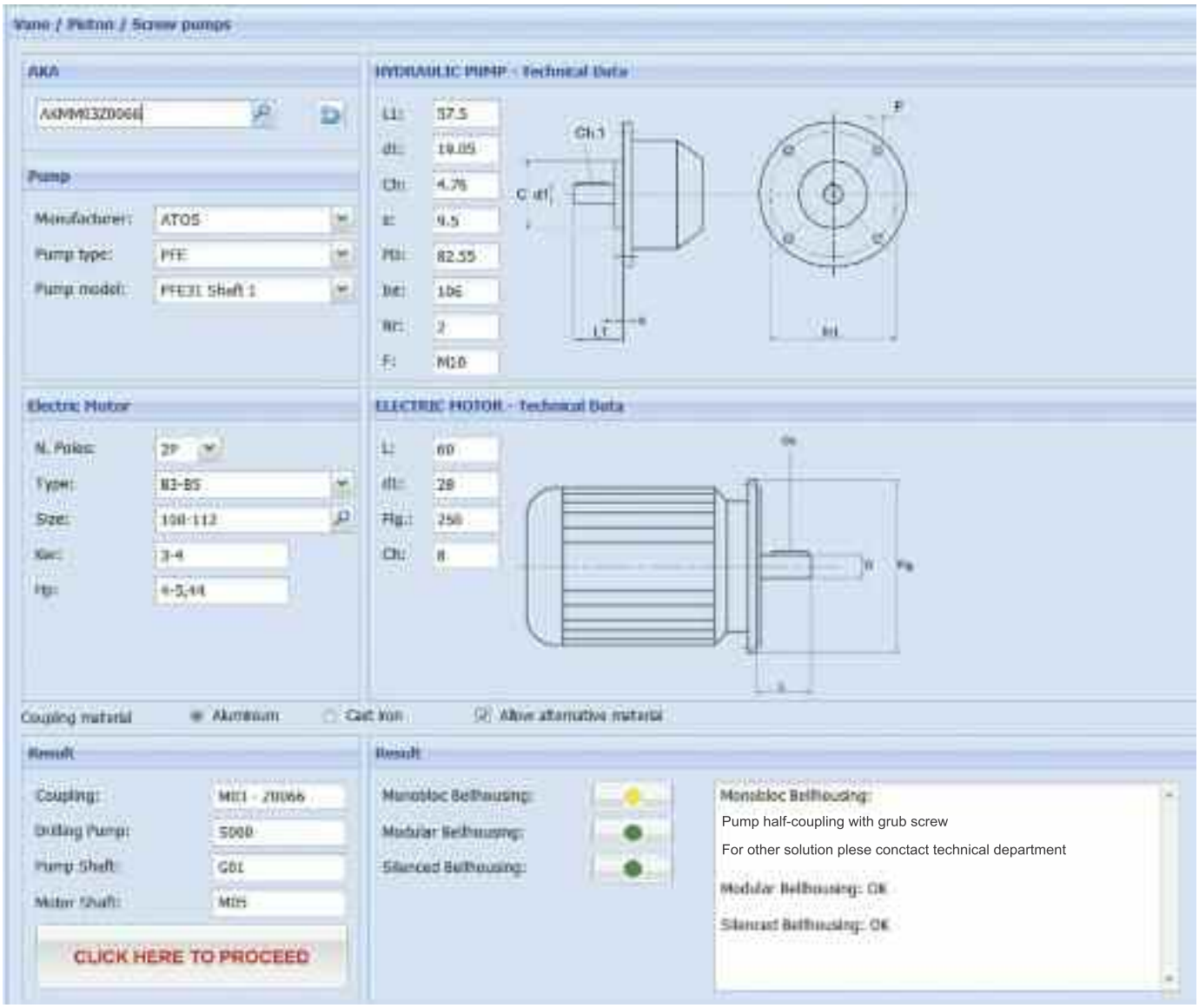
- **Pump half-coupling**

  - Choose the drilling code tab. 44 - 45 at page 53 for shaft 19,05 - Ch. 4,76 - code: **G01**

  - Half-coupling length = L BH lenght – THK Spider – THK Spigot
    LMC= 138 mm - 60 - 18 - 9,5= 50,5 mm
    LMS= 148 mm - 60 - 18 - 9,5= 60,5 mm

  - LMC - Choose the half-coupling's length on tab. 39 at page 50 ≤ 50,5 mm.
  - LMS - Choose the half-coupling's length on tab. 39 at page 50 ≤ 60,5 mm.
  - LMC - Availabe length for SGEA21= 50 mm
  - LMS - Availabe length for SGEA21= 60 mm
  - LMC=LMS - Code half-coupling code: **SGEA21G01050**

Software for automatic calculation available on the web site
www.mpfiltri.com - tools - software



Note: For multi pumps we recommend to use a specific support on the base of the pump's dimensions and weight.

Half-coupling SGE*** series

The half-couplings series SGE*** allow secure transmission between the electric motor and the driven side; they are able to absorb shocks and vibration, in addition to compensating radial misalignment, angular and axial.
The assembly of the couplings can be horizontal/vertical, withstanding vibration and load reversals.

The complete range of couplings are extrapolated from the on-line software, with a length equal than the shaft on which must be mounted and they are completed with grub screw for fixing located on the key.
Available for cilindrical shaft with metric and imperial dimensions as well for splined shafts as per specification DIN, ISO and SAE.

Admissible misalignment radial, angular and axial

Max admissible radial misalignment

Half coupling	R (mm)
SGE * 01	0,5
SGE * 21	1,0
SGE * 31	1,0
SGE * 40	1,0
SGE * 51	1,5
SGE * 60	1,5
SGE * 80	2,0
SGE * 90	2,0

Max admissible angular misalignment

Half coupling	β (°)
SGE * 01	1,5°
SGE * 21	
SGE * 31	
SGE * 40	
SGE * 51	
SGE * 60	
SGE * 80	
SGE * 90	

Max admissible angular misalignment

Half coupling	A (mm)
SGE * 01	2,0
SGE * 21	2,5
SGE * 31	3,0
SGE * 40	3,5
SGE * 51	3,5
SGE * 60	3,5
SGE * 80	4,0
SGE * 90	5,0

Normative ATEX 94/9/CE

Half-couplings SGE*** series are available to use in hazardous area.
The couplings are certified according to ATEX 94/9/CE (ATEX 95).
Category certified 2G - area 1 and 2.
Other information available on our web site “www.mpfiltri.com”.

MP Filtri couplings are developed with:

CAD 3D

FEM (calculation)

Drawings 3D available on website www.mpfiltri.com at section TOOLS/2D-3D COMPONENTS

The half-couplings SGE*** series are in conformity to normative **DIN 740/2**.
The max torque to transmit is always less than the max torque that the coupling can transmit.

Examples verification of the coupling

Torque transmitted by electric motor:

Mt: 9560 x kW / rpm = Nm

Me > Mt x S = Nm

Where:

Mt: Torque transmitted by electric motor

Me: Torque transmitted by coupling (see table 14)

kW: Power of electric motor

Rpm: Revolutions per minute of electric motor

S: Service factor (see table 14)

TABLE 1

Small pumps, uniform load, low operating pressures e.g. rotary action machine tools - 5/8 work cycles per hour	**1.3**
Small pumps, uniform load, high working pressures e.g. lifting equipment - 120-150 work cycles per hour	**1.5**
Pumps, non-uniform load e.g. lifting equipment - 280-300 work cycles per hour	**1.7**

Example
Electric motor, 4 pole - 4 kW
hydraulic pump, uniform load, low operating pressure

Mt: 9560 x 4 / 1500 = 25.45 Nm

Me > 25.49 x 1.3 = 33 Nm

Half-coupling SGEA21 meets the above requirement.

Select the half-coupling of the calculated size from the motor half-couplings table.

Note: When selecting the coupling, remember that for pumps with splined shaft, only cast iron couplings of the SGEG series can be used.

Determine the size of the coupling according to the type of installation and application envisaged, on the basis of the following formulas and tables:

TABLE 2

	Half-coupling type	External diameter mm	Nominal torque Me - Nm	Maximum transmissible torque Me - Nm
ALUMINIUM	SGEA01	43	15	20
	SGEA21	68	160	190
	SGEA31	85	340	380
	SGEA51	109,5	550	620
CAST IRON	SGEG01	40	20	30
	SGEG30	80	400	450
	SGEG40	95	550	620
	SGEG60	120	760	850
	SGEG80	160	2200	2500
	SGEG90	200	5500	6100
STEEL	SGES40	95	550	620
	SGES60	120	760	850
	SGES80	160	2200	2500

Nominal and maximum torque values are referred to couplings assembled with standard flexible spiders of the **EGE**** series (see page 49).
Where higher torques are to be transmitted, use flexible spiders of the **EGE**RR** series (see page 49).

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

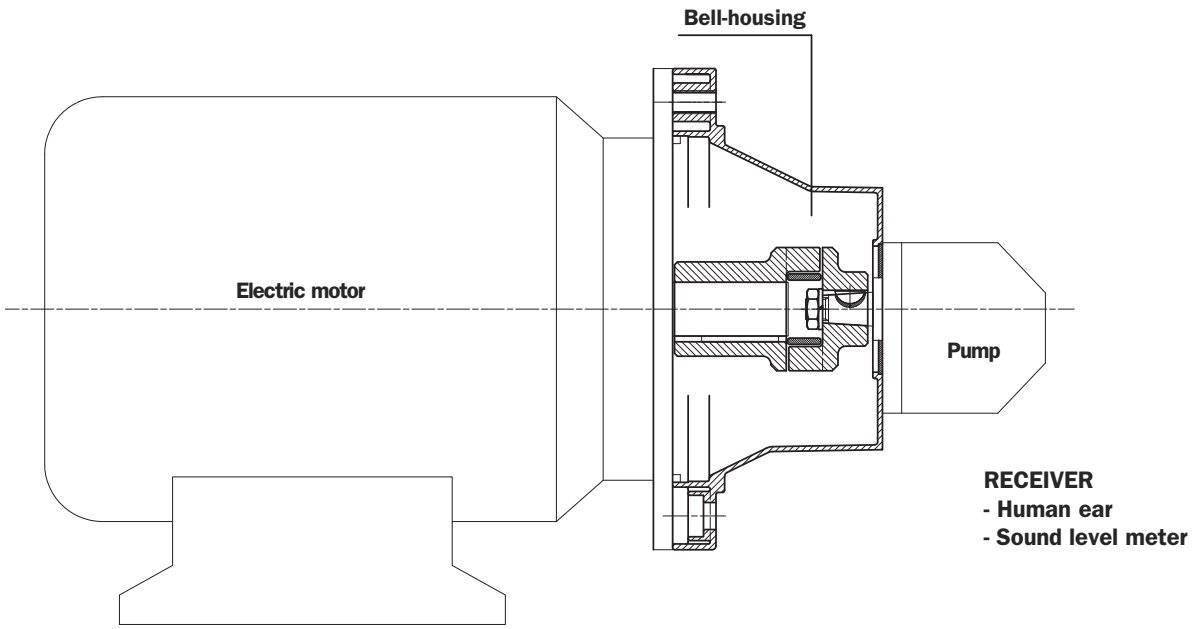
From a health and hygiene standpoint, noise can be defined as an unpleasant and undesirable sound, or an unpleasant and annoying or intolerable auditory sensation (noise being any sound phenomena that may be accompanied by sensations of disturbance and pain). By definition, acoustic phenomena are oscillatory 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
- Receiver

Motor and pump unit



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.

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 hydralic power unit.

• 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.

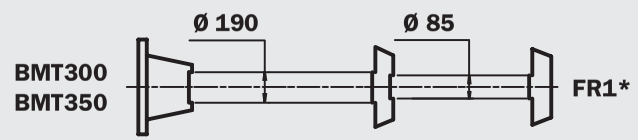
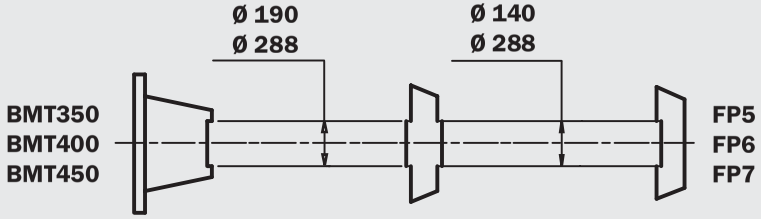
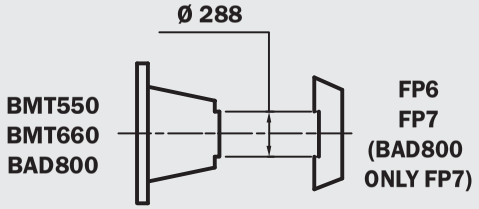
- The pressure pipeline of the pump must be flexible, and long enough to include bends with the minimum radius of curvature recommended by the manufacturer for the specified operating pressure.

- 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.

	5.5 - 7.5 kW	11 - 22	30	37 - 45	55 - 90	110 - 200	250 - 400
	7.5 - 10.2 Hp	15 - 30 Hp	40.80 Hp	50.32 - 61.2 Hp	75 - 125 Hp	150 - 272 Hp	340 - 544 Hp
	Size 225 - D. 450	Size 160/180 D. 350	Size 200 - D. 350	Size 225 - D.450	Size 250/280 D. 550	Size 315 - D. 660	Size 355/400 D. 800
MODUL 3	AR*  Kit of assembly KVG5 (Q.ty 1) + Kit of assembly KVG1 (Q.ty 1)						
	AD*  Kit of assembly KVG5/7 (Q.ty 2)						
MODUL 2						 Kit of assembly KVG6/7 (Q.ty 1)	
	5.5 - 7.5 kW	11 - 22	30	37 - 45	55 - 90	110 - 200	250 - 400
	7.5 - 10.2 Hp	15 - 30 Hp	40.80 Hp	50.32 - 61.2 Hp	75 - 125 Hp	150 - 272 Hp	340 - 544 Hp
	Size 225 - D. 450	Size 160/180 D. 350	Size 200 - D. 350	Size 225 - D. 450	Size 250/280 D. 550	Size 315 - D. 660	Size 355/400 D. 800

Motors base

BMC series

The motors base of the **BMC** series are derived from standard LMC monobloc bell-housings, and used as bases to which flanges of the **FR/FP5/FP6** series can be fitted either to increase the height of the bell-housing or to allow machining of the pump interface, not possible with a standard monobloc housing.

Motor base for installation of auxiliary flange FR1

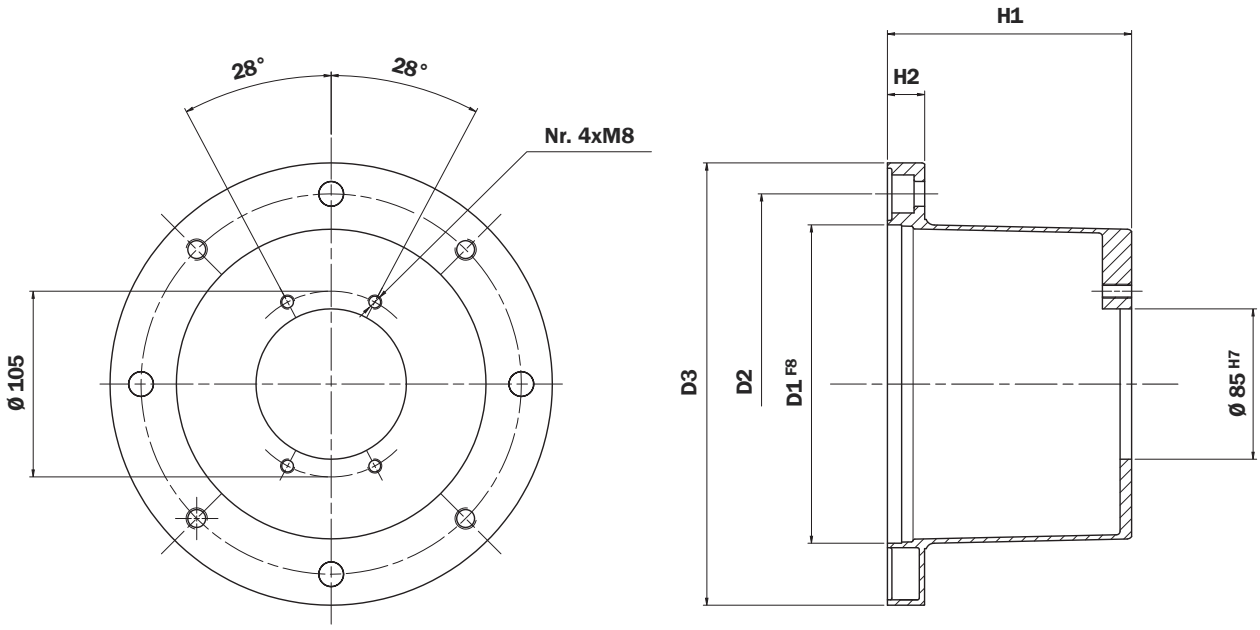


TABLE 6

Electric motor, 4-pole, 1500 rpm				Dimensions of BMC motor base							
Frame size	kW	Hp	Shaft	Motor base code	Foot bracket code	D1	D2	D3	H1	H2	Weight (kg)
80	0.53-0.75	0.75-1	19x40	**BMC200A1001**	**PDM A 200**	130	165	200	100	18	0,75
90	1.1-1.5	1.5-2	24x50	**BMC200A1251**	**PDM A 200**	130	165	200	125	18	0,95
100-112	2.2-4	3-12.5	28x60	**BMC250A1141**	**PDM A 250**	180	215	250	114	19	1,60
				BMC250A1361	**PDM A 250**	180	215	250	136	19	1,60
132	5.5-7.5	7.5-12.5	38x80	**BMC300A1551**	**PDM A 300**	230	265	300	155	23	3,30
					For dimension see page 55						

Assembly kit code (motor base + flange): **KVG1**

• **For pump flange codes, see page 17**

Motor base for installation of auxiliary flange FP5

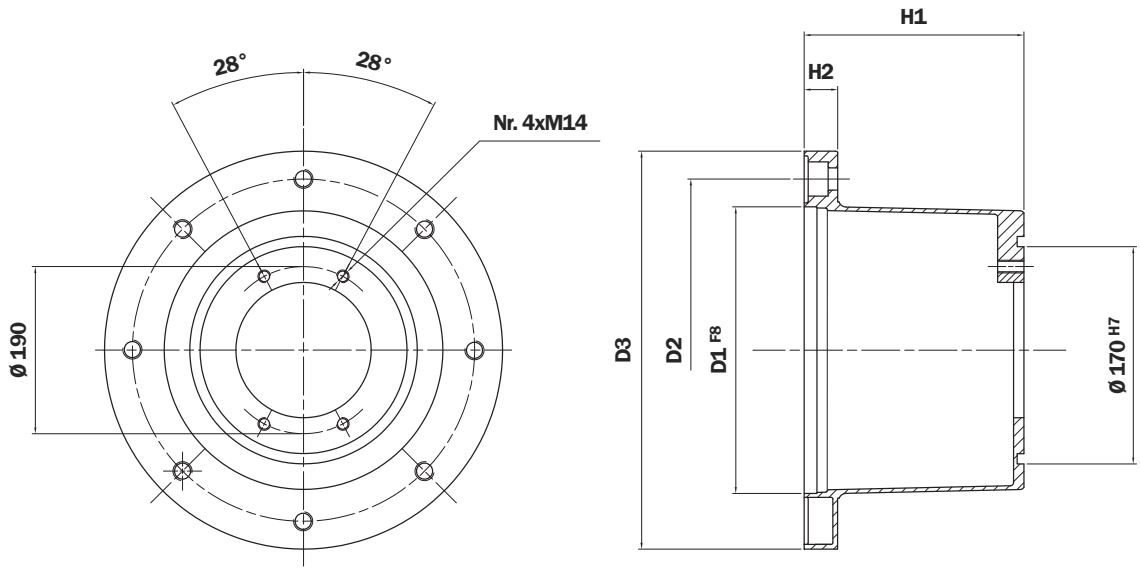


TABLE 7

Electric motor, 4-pole, 1500 rpm				Dimensions of BMC motor base							
Frame size	kW	Hp	Shaft	Motor base code	Foot bracket code	D1	D2	D3	H1	H2	Weight (kg)
132	5.5-7.5	7.5-12.5	38x80	BMC300A1555	PDM A 300	230	265	300	155	23	3,30
				BMC300A1705	PDM A 300	230	265	300	170	23	
160	11-15	15-20	42x110	BMC350A1945	PDM A 350	250	300	350	194	31	4,90
180	18.5-22	25-30	48x110								
					For dimension see page 55						

Assembly kit code (motor base + flange): **KVG5**

- **For pump flange codes, see page 17**

Motor base for installation of auxiliary flange FP6

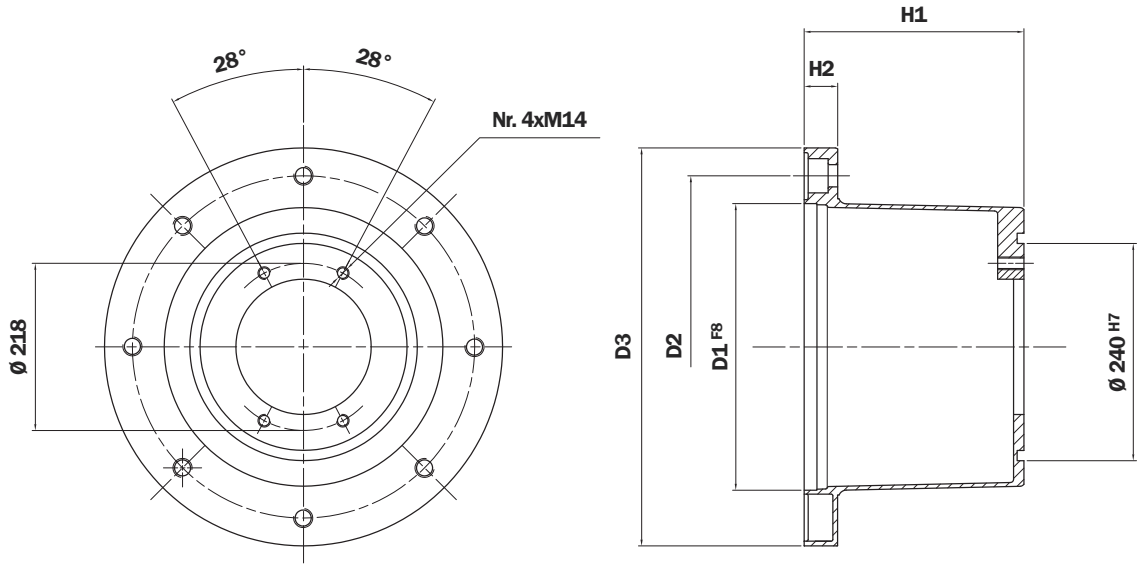


TABLE 8

Electric motor, 4-pole, 1500 rpm				Dimensions of BMC motor base							
Frame size	kW	Hp	Shaft	Motor base code	Foot bracket code	D1	D2	D3	H1	H2	Weight (kg)
160	11-15	15-20	42x110	BMC350A1946	PDM A 350	250	300	350	194	31	4,90
180	18.5-22	25-30	48x110								
200	30	40	55x140	BMC400A2016	/	300	350	400	201	31	6,90
					For dimension see page 55						

Assembly kit code (motor base + flange): **KVG6**

- **For pump flange codes, see page 17**

Motor base for installation of auxiliary flange FP7

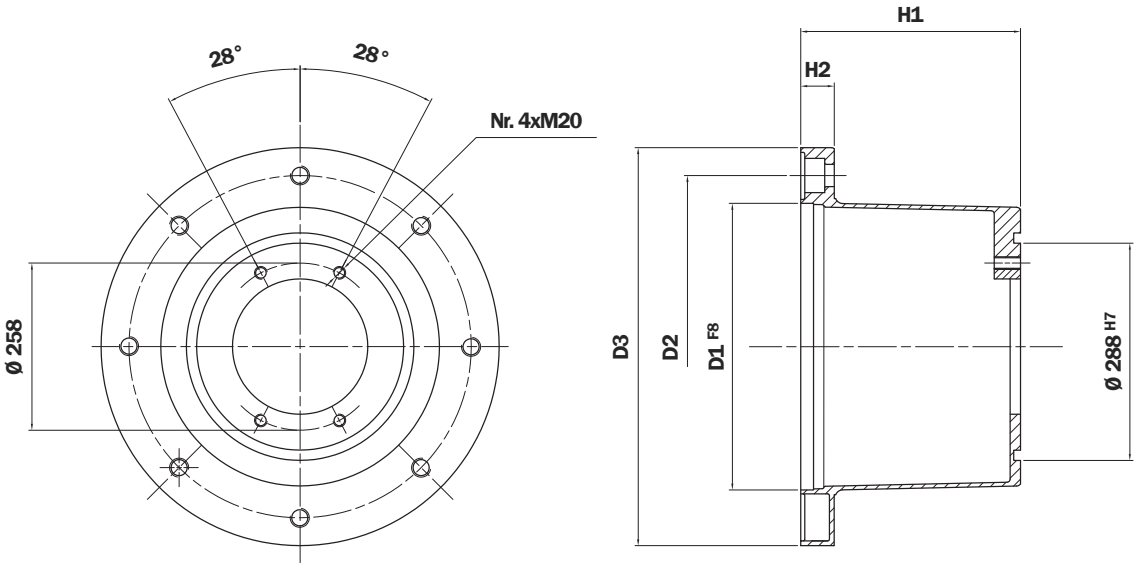


TABLE 9

Electric motor, 4-pole, 1500 rpm				Dimensioni lanterna base motore BMC						
Frame size	kW	Hp	Shaft	Motor base code	D1	D2	D3	H1	H2	Weight (kg)
225	37-45	50-60	60x140	**BMC450A2507**	350	400	450	250	31	9,00

Assembly kit code (base module + flange): **KVG7**

• **For pump flange codes, see page 17**

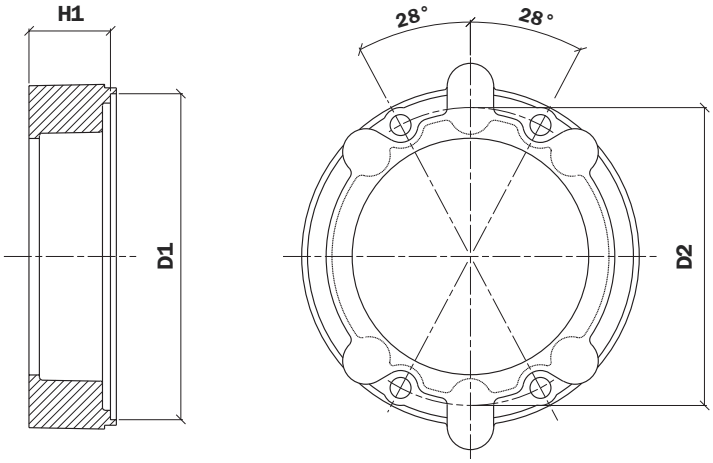


TABLE 10

Code	Flange H1	D1	D2	Assembly kit	Possible pump interfaces	Weight (kg)
FR1023***	23	85	105	KVG1	S024 S025 D042 S061 S063 S083 S023 S070 S071 S072 S075 S125 S154	0,25
FR1025***	25				S021 S026 S068 S069 S080 S082 S115 S237	0,30
FR1033***	33				S021 S023 S026 S027 S070 S071 S072 S074 S080 S082 F260	0,80
FR1035***	35				S060 S063 S065	0,90
FR1040***	40				S098 S227	1,10
FR1079***	79				S031 S116	1,30

Completare il codice d'ordinazione con il codice di foratura: Es. **FP5026S023**

TABLE 11

Code	Flange H1	D1	D2	Assembly kit	Possible pump interfaces	Weight (kg)
FP5026***	26	190	170	KVG5	S023-S024-S025-S033-D042-S063-S070-S072-S075-S154-S254	1,00
FP5032***	32				S024-S031-S158-S096-S125	1,10
FP5035***	35				S021-S023-S024-S025-S026-S031-S059-S060-S068-S072-S074-S075-S083-S097-S106-S125-S131-S138	0,90
FP5045***	45				S021-S024-S025-S026-S060-S068-S070-S071-S072-S074-S075-S106-S125-S141	0,90
FP5056***	56				S021-S026-S072	1,61
FP5063***	63				S021-S025-S068-S070-S079-S138-S141	1,70
FP5064***	64				S024-S025-S059-S093-S099-S100-S104	1,70
FP5091***	91				S025-S031-S033-S100-S113-S115-S116-S267	2,20
FP6032***	32	240	218	KVG6	S021-S035-S081-S082	1,80
FP6045***	45				S021-S025-S026-S027-S069-S070-S075-S077-S080-S081-S082-S125-S198-S207-S215-S253	2,10
FP6058***	58				S024-S025-S026-S027-S038-S077-S078-S079-S080-S081-S082-S207-S215-S237	2,40
FP6070***	70				S080-S270	3,00
FP6082***	82				S038-S080-S081-S116-S141-S198-S215	3,30
FP6086***	86				S021-S026-S027-S077-S078-S090-S092-S166-S091-S114-S132-S198-S200	3,40
FP6101***	101				S027-S035-S113-S115-S132-S148-S176-S228	4,20
FP6110***	110				S080-S111	5,50
FP7052***	52	288	258	KVG7	S028-S092-S108-S112-S133-S192	4,10
FP7066***	66				S090-S092-S166	4,75
FP7069***	69				S108-S143-S148-S158-S192-S19-S201-S204-S281-S282-S288	4,90
FP7086***	86				S022-S027-S028-S091-S092-S108-S112-S117-S166-S184-S192-S201-S228-S300	5,20
FP7111***	111				S028-S091-S112-S117-S144-S145-S184	6,30
FP7124***	124				S190-S211	7,50

A guide to select the correct bell-housing and drive coupling components

DATA REQUIRED

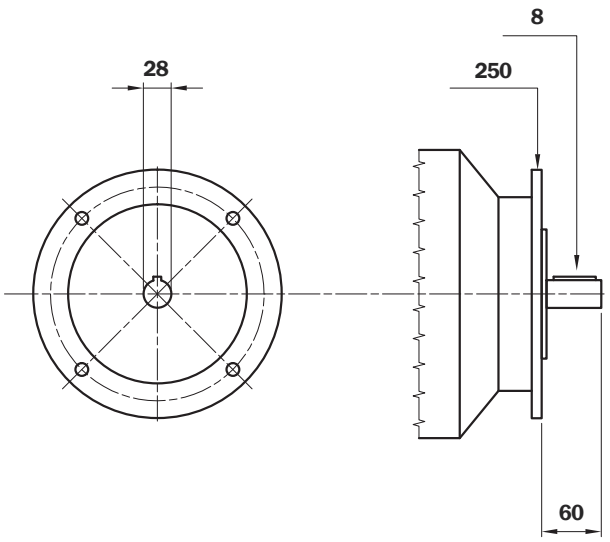
Electric motor power/motor size
Manufacturer and pump type

TO VERIFY:

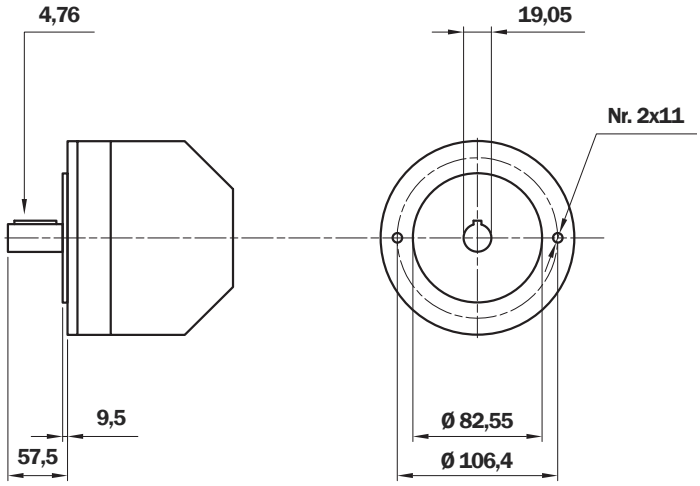
1 - Pump and motor shaft dimensions (see page 67)
2 - Shaft and flange pump (see pump data sheet)

Example:
- Electric motor 2 kW - 4 poles - Motor size 110/112
- Atos pump code PFE31 - Shaft 1

Electric motor's dimension



Pump's dimensions



Bell-Housing's length calculation

- H= 60 + 18 + 57,5 = 135,5 mm (18= Sp spider - see page 49)
- Choose type of bell-housing (LMC - LMS)
  - For LMC see tab. 3 at page 11
  - For LMS see tab. 22 at page 32
  - For MODUL 2/3 see at page 36

Note: The length of bell-housing must be ≥ than the length calculated (135,5 mm)

Case A - solution with LMC bell-housing

Tab. 3 at page 11 - for electric motor 2 kW LMC 250
LMC 250 bell-housing with height ≥ 135,5 - LMC250AFSQ

- The bell-housing code must be completed with drilling pump code (see tab. 35 at page 47)
  For the specific case C= 82,5 - Nr. 2 holes M10: Code drilling 060
- Definitive bell-housing code **LMC250AFSQ060**

Case B - solution with LMS bell-housing

Tab. 22 at page 32 - for electric motor 2 kW LMS 250
LMS 250 bell-housing with heigh ≥ 135,5 - LMS250AFSQ

- The bell-housing code must be completed with drilling pump code (see tab. 35 at page 47)
  For the specific case C= 82,5 - Nr. 2 holes M10: Code for. 060
- Definitive bell-housing code **LMS250AFSQ060**

Choose coupling

- **Motor half-coupling** (see tab. 38 at page 50)

  - For electric motor Gr. 100/112, the half-coupling is **SGEA21M05060**

- **Spider** (see tab. 36 - 37 at page 49)

  - For SGEA21, EGE2 - EGE2RR
    (choose spider material on the base of the application, oil, temperature and cycle machine, etc.)

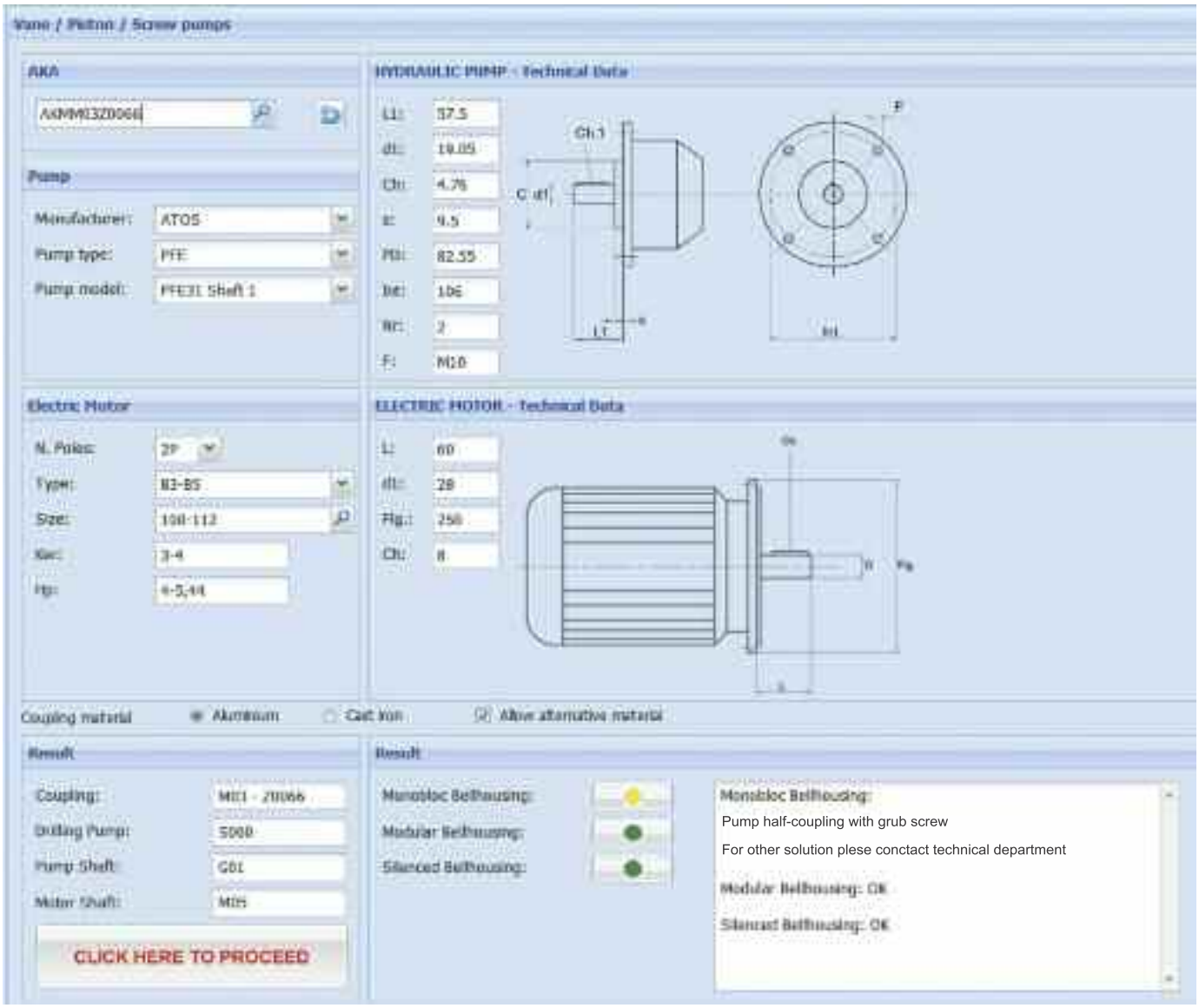
- **Pump half-coupling**

  - Choose the drilling code tab. 44 - 45 at page 53 for shaft 19,05 - Ch. 4,76 - code: **G01**

  - Half-coupling length = L BH lenght – THK Spider – THK Spigot
    LMC= 138 mm - 60 - 18 - 9,5= 50,5 mm
    LMS= 148 mm - 60 - 18 - 9,5= 60,5 mm

  - LMC - Choose the half-coupling's length on tab. 39 at page 50 ≤ 50,5 mm.
  - LMS - Choose the half-coupling's length on tab. 39 at page 50 ≤ 60,5 mm.
  - LMC - Availabe length for SGEA21= 50 mm
  - LMS - Availabe length for SGEA21= 60 mm
  - LMC=LMS - Code half-coupling code: **SGEA21G01050**

Software for automatic calculation available on the web site
www.mpfiltri.com - tools - software



Note: For multi pumps we recommend to use a specific support on the base of the pump's dimensions and weight.

Half-coupling SGE*** series

The half-couplings series SGE*** allow secure transmission between the electric motor and the driven side; they are able to absorb shocks and vibration, in addition to compensating radial misalignment, angular and axial.
The assembly of the couplings can be horizontal/vertical, withstanding vibration and load reversals.

The complete range of couplings are extrapolated from the on-line software, with a length equal than the shaft on which must be mounted and they are completed with grub screw for fixing located on the key.
Available for cilindrical shaft with metric and imperial dimensions as well for splined shafts as per specification DIN, ISO and SAE.

Admissible misalignment radial, angular and axial

Max admissible radial misalignment

Half coupling	R (mm)
SGE * 01	0,5
SGE * 21	1,0
SGE * 31	1,0
SGE * 40	1,0
SGE * 51	1,5
SGE * 60	1,5
SGE * 80	2,0
SGE * 90	2,0

Max admissible angular misalignment

Half coupling	β (°)
SGE * 01	1,5°
SGE * 21	
SGE * 31	
SGE * 40	
SGE * 51	
SGE * 60	
SGE * 80	
SGE * 90	

Max admissible angular misalignment

Half coupling	A (mm)
SGE * 01	2,0
SGE * 21	2,5
SGE * 31	3,0
SGE * 40	3,5
SGE * 51	3,5
SGE * 60	3,5
SGE * 80	4,0
SGE * 90	5,0

Normative ATEX 94/9/CE

Half-couplings SGE*** series are available to use in hazardous area.
The couplings are certified according to ATEX 94/9/CE (ATEX 95).
Category certified 2G - area 1 and 2.
Other information available on our web site “www.mpfiltri.com”.

MP Filtri couplings are developed with:

CAD 3D

FEM (calculation)

Drawings 3D available on website www.mpfiltri.com at section TOOLS/2D-3D COMPONENTS

The half-couplings SGE*** series are in conformity to normative **DIN 740/2**.
The max torque to transmit is always less than the max torque that the coupling can transmit.

Examples verification of the coupling

Torque transmitted by electric motor:

Mt: 9560 x kW / rpm = Nm

Me > Mt x S = Nm

Where:

Mt: Torque transmitted by electric motor

Me: Torque transmitted by coupling (see table 14)

kW: Power of electric motor

Rpm: Revolutions per minute of electric motor

S: Service factor (see table 14)

TABLE 1

Small pumps, uniform load, low operating pressures e.g. rotary action machine tools - 5/8 work cycles per hour	**1.3**
Small pumps, uniform load, high working pressures e.g. lifting equipment - 120-150 work cycles per hour	**1.5**
Pumps, non-uniform load e.g. lifting equipment - 280-300 work cycles per hour	**1.7**

Example
Electric motor, 4 pole - 4 kW
hydraulic pump, uniform load, low operating pressure

Mt: 9560 x 4 / 1500 = 25.45 Nm

Me > 25.49 x 1.3 = 33 Nm

Half-coupling SGEA21 meets the above requirement.

Select the half-coupling of the calculated size from the motor half-couplings table.

Note: When selecting the coupling, remember that for pumps with splined shaft, only cast iron couplings of the SGEG series can be used.

Determine the size of the coupling according to the type of installation and application envisaged, on the basis of the following formulas and tables:

TABLE 2

	Half-coupling type	External diameter mm	Nominal torque Me - Nm	Maximum transmissible torque Me - Nm
ALUMINIUM	SGEA01	43	15	20
	SGEA21	68	160	190
	SGEA31	85	340	380
	SGEA51	109,5	550	620
CAST IRON	SGEG01	40	20	30
	SGEG30	80	400	450
	SGEG40	95	550	620
	SGEG60	120	760	850
	SGEG80	160	2200	2500
	SGEG90	200	5500	6100
STEEL	SGES40	95	550	620
	SGES60	120	760	850
	SGES80	160	2200	2500

Nominal and maximum torque values are referred to couplings assembled with standard flexible spiders of the **EGE**** series (see page 49).
Where higher torques are to be transmitted, use flexible spiders of the **EGE**RR** series (see page 49).

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

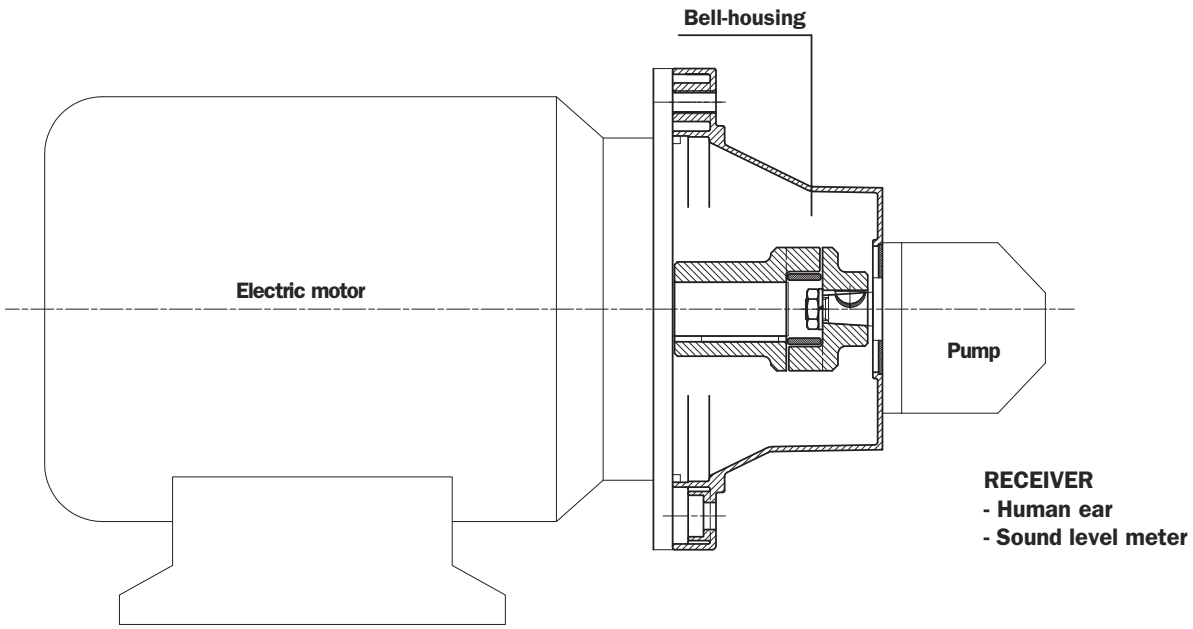
From a health and hygiene standpoint, noise can be defined as an unpleasant and undesirable sound, or an unpleasant and annoying or intolerable auditory sensation (noise being any sound phenomena that may be accompanied by sensations of disturbance and pain). By definition, acoustic phenomena are oscillatory 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
- Receiver

Motor and pump unit



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.

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 hydralic power unit.

• 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.

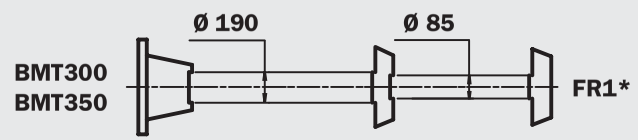
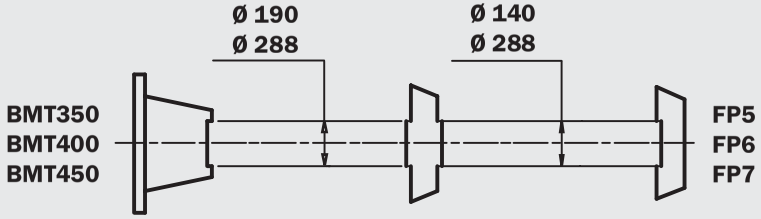
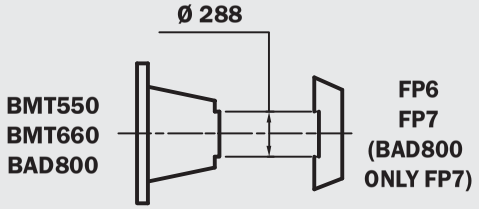
- The pressure pipeline of the pump must be flexible, and long enough to include bends with the minimum radius of curvature recommended by the manufacturer for the specified operating pressure.

- 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.

	5.5 - 7.5 kW	11 - 22	30	37 - 45	55 - 90	110 - 200	250 - 400
	7.5 - 10.2 Hp	15 - 30 Hp	40.80 Hp	50.32 - 61.2 Hp	75 - 125 Hp	150 - 272 Hp	340 - 544 Hp
	Size 225 - D. 450	Size 160/180 D. 350	Size 200 - D. 350	Size 225 - D.450	Size 250/280 D. 550	Size 315 - D. 660	Size 355/400 D. 800
MODUL 3	AR*  Kit of assembly KVG5 (Q.ty 1) + Kit of assembly KVG1 (Q.ty 1)						
	AD*  Kit of assembly KVG5/7 (Q.ty 2)						
MODUL 2						 Kit of assembly KVG6/7 (Q.ty 1)	
	5.5 - 7.5 kW	11 - 22	30	37 - 45	55 - 90	110 - 200	250 - 400
	7.5 - 10.2 Hp	15 - 30 Hp	40.80 Hp	50.32 - 61.2 Hp	75 - 125 Hp	150 - 272 Hp	340 - 544 Hp
	Size 225 - D. 450	Size 160/180 D. 350	Size 200 - D. 350	Size 225 - D. 450	Size 250/280 D. 550	Size 315 - D. 660	Size 355/400 D. 800

Modular bell-housing components

MODUL 2/3

Modular bell-housing components are used to connect **UNEL-MEC electric motors with B3 - B5** flanges to piston, vane and screw type hydraulic pumps.
The advantage of modular design is that a wide range of motor and pump combinations can be covered with relatively few components.
This means that dealers can simplify their inventory while still being able to service the majority of applications envisaged.
The strength of these components will also guarantee top reliability, even in the toughest of applications.
Suitable for electric motors from **size 132, rated 5.5 kW**, up to **size 400, rated 400 kW**.

Technical specifications

MODUL 2/3

Materials

- **Base module**
  Pressure diecast aluminium alloy.
- **Pump flange**
  Alluminium alloy.
- **Intermediate adapter**
  Alluminium alloy.
- **Foot bracket**
  Pressure diecast aluminium alloy.
- **Gaskets**
  Special paper (Guarnital).

Temperature

- -30°C ÷ +80°C
  For temperatures outside this range,
  contact the MP Filtri Technical and Sales Department.

Compatibility with fluids

- **Modular bell-housing components compatible for use with:**

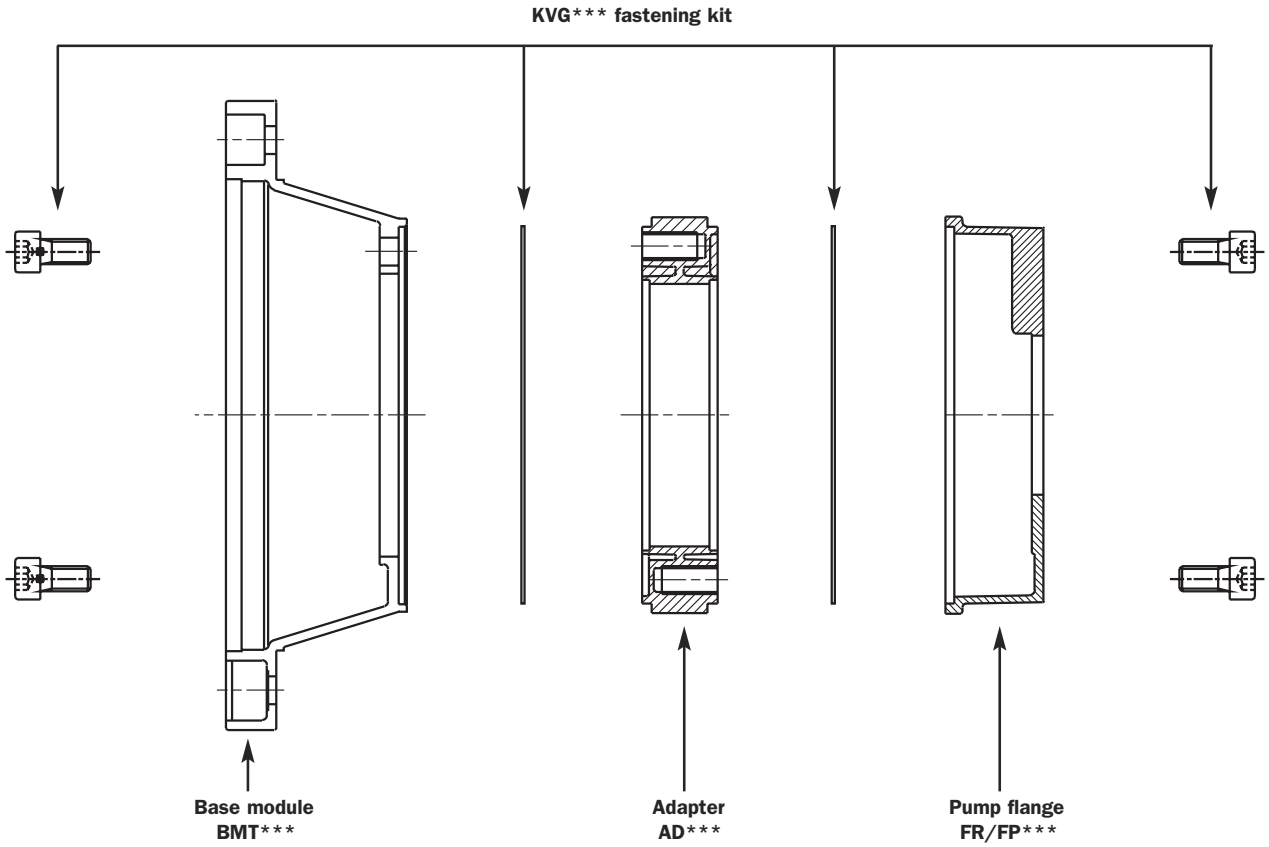
  Mineral oils
  Types HH-LL-HM-HR-HV-HC, to ISO 6743/4 standard

  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.**



1 Clean the gasket seating surfaces
2 Locate the base module gasket in the relative recess and position the adapter
3 Secure with the bolts of the kit
4 Locate the pump flange gasket in the relative recess, then offer the flange to the adapter
5 Secure with the bolts of the kit

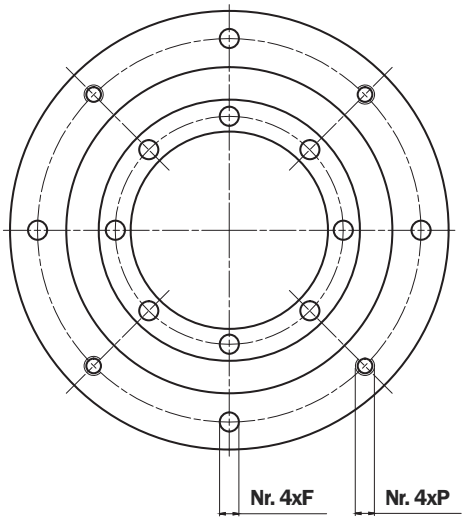
Note: Secure the screws of the fastening kit as indicated in the following table

Recommended tightening torques for assembly of components.

KVG 1	KVG 5	KVG 6	KVG 7
M8	M14	M16	M20
15 Nm	135 Nm	205 Nm	400 Nm

These values are calculated to exploit the performance of the bolt at 70% of its elastic limit.
This means in practice that the shank of the bolt will be stressed typically to 60-70% of its limit of elasticity in the course of being tightened.
The values indicated are valid for hexagon head bolts to UNI 5737 and hexagon socket screws to UNI 5931, property class 8.8, tightened by degrees using a torque wrench.
If bolts or screws are tightened using impact or hammer action drivers, the figure indicated should be reduced by 10%.

Motor base



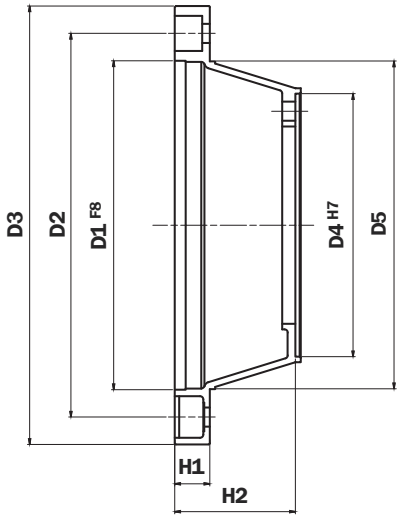
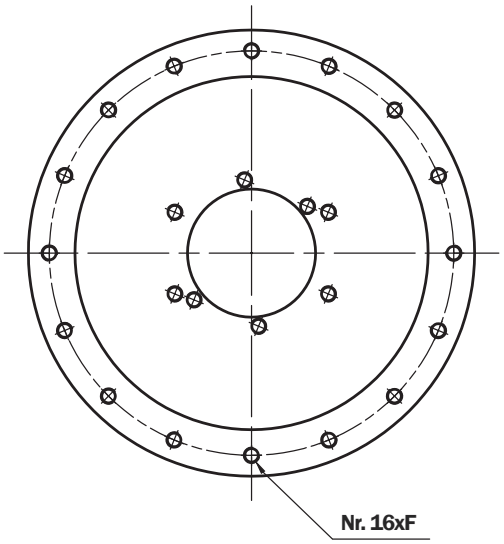


TABLE 24 - MODUL 3

Motor 4-pole 1500 rpm				Dimensions of motor base													
Frame size	kW	Hp	Shaft	Code	Foot bracket code	D1	D2	D3	D4	D5	H1	H2	F.	Nr.	P	Nr.	Weight (kg)
132	5.5-7.5	7.5-12.5	38x80	**BMT300A0805**	**PDM A 300**	230	265	300	190	234	24	80	M12	4	14	4	1,95
160	11-15	15-20	42x110	**BMT350A1105**	**PDM A 350**	250	300	350	190	260	32	110	M16	4	18	4	3,10
180	18.5-22	25-30	48x110	**BMT350A1105**	**PDM A 350**	250	300	350	190	260	32	110	M16	4	18	4	4,90
200	30	40	55x110	**BMT400A1106**	/	300	350	400	240	300	32	110	M16	4	18	4	4,90
225	37-45	50-60	60x140	**BMT450A1406**	/	350	400	450	240	350	32	140	M16	8	/	/	5,00
					For dimension see page 55												



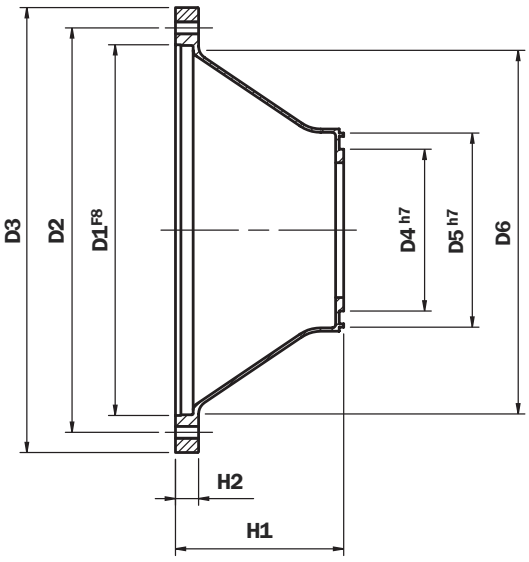


TABLE 25 - MODUL 2

Motor 4-pole 1500 rpm				Dimensions of motor base														
Frame size	kW	Hp	Shaft	Code	Foot bracket code	D1	D2	D3	D4	D5	D6	H1	H2	F.	Nr.	P	Nr.	Weight (kg)
250	55	75	65x140	**BMT550A21567**	/	450	500	550	240	288	450	215	32	M16	16	/	/	8,40
280	75-90	100-125	75x140	**BMT550A21567**	/	450	500	550	240	288	450	215	32	M16	16	/	/	8,40
315	110-200	100-125	80x170	**BMT660A25067**	/	550	600	660	240	288	550	250	35	M20	16	/	/	12,00
355	250-315	340-428	95x170	**BAD800A2707**	/	680	740	800	288	/	680	270	40	M20	8	/	/	31,00
400	355-400	483-544	100x210	**BAD800A2707**	/	680	740	800	288	/	680	270	40	M20	8	/	/	31,00
					Not available													

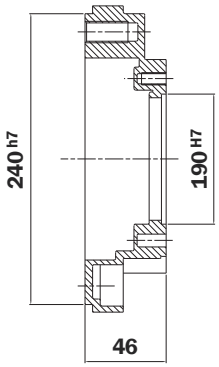


TABLE 26

Application with Motor base	Application with Pump Flange	Code Adapter	Fastening kit Motor base	Fastening kit Pump Flange	Weight (kg)
BMT400A1106 BMT450A1406	FP6 *** ***	**AD60465**	**KVG6**	**KVG5**	1,30

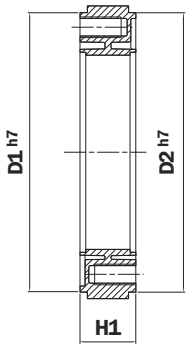


TABLE 27

Application with Motor base	Application with Pump Flange	Code Adapter	Fastening kit Motor base	Fastening kit Pump Flange	D1	D2	H1	Weight (kg)
BMT300A0805 BMT350A1105	FP5 *** ***	**AD50385**	**KVG5**	**KVG5**	190	240	38	1,00
BMT400A1106 BMT450A1406	FP6 *** ***	**AD60466**	**KVG6**	**KVG6**	240	288	46	1,60

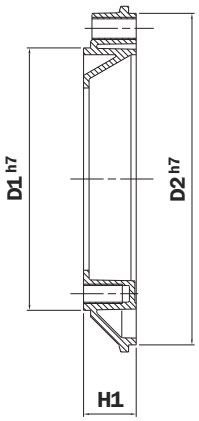


TABLE 28

Application with Motor base	Application with Pump Flange	Code Adapter	Fastening kit Motor base	Fastening kit Pump Flange	D1	D2	H1	Weight (kg)
BMT300A0805 BMT350A1105	FP5 *** ***	**AD50386**	**KVG5**	**KVG6**	190	240	38	1,25
BMT300A0805 BMT350A1105	FP5 *** ***	**AD50467**	**KVG5**	**KVG7**	190	288	46	1,90
BMT400A1106 BMT450A1406	FP6 *** ***	**AD60467**	**KVG6**	**KVG7**	240	288	46	2,50

Pump flange

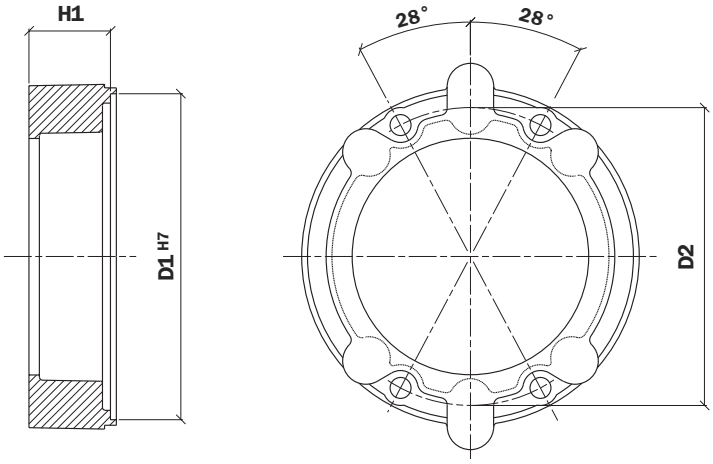


TABLE 29

Code	Flange H1	D1	D2	Assembly kit	Possible pump interfaces	Weight (kg)
FR1023***	23	85	105	KVG1	S024 S025 D042 S061 S063 S083 S023 S070 S071 S072 S075 S125 S154	0,25
FR1025***	25				S021 S026 S068 S069 S080 S082 S115 S237	0,30
FR1033***	33				S021 S023 S026 S027 S070 S071 S072 S074 S080 S082 F260	0,80
FR1035***	35				S060 S063 S065	0,90
FR1040***	40				S098 S227	1,10
FR1079***	79				S031 S116	1,30

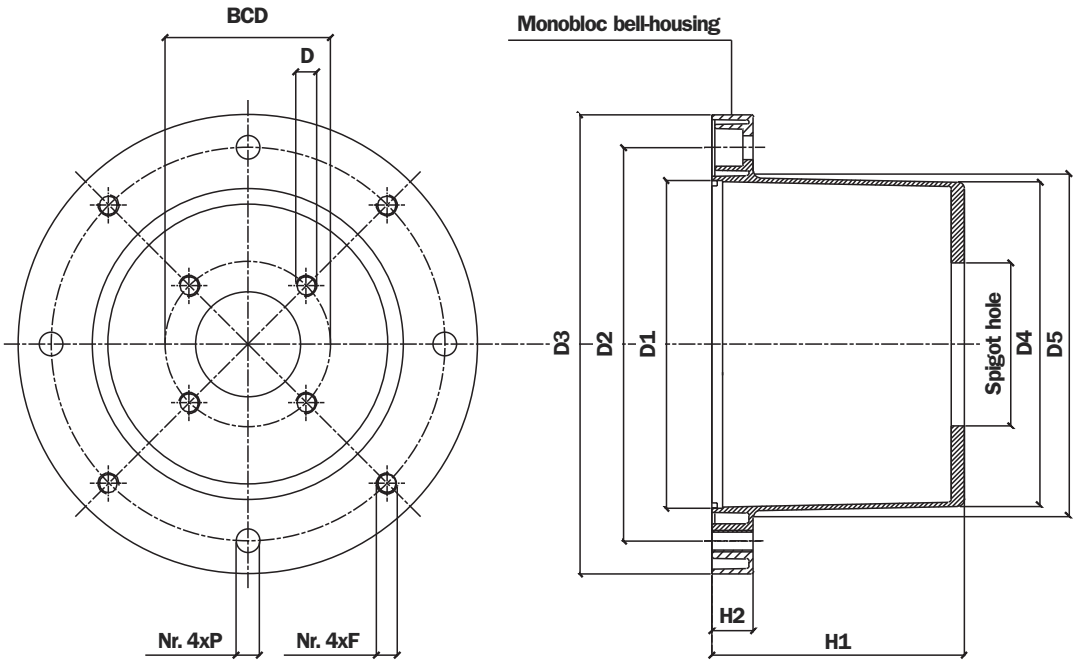
TABLE 30

Code	Flange H1	D1	D2	Assembly kit	Possible pump interfaces	Weight (kg)
FP5026***	26	190	170	KVG5	S023-S024-S025-S033-D042-S063-S070-S072-S075-S154-S254	1,00
FP5032***	32				S024-S031-S158-S096-S125	1,10
FP5035***	35				S021-S023-S024-S025-S026-S031-S059-S060-S068-S072-S074-S075-S083-S097-S106-S125-S131-S138	0,90
FP5045***	45				S021-S024-S025-S026-S060-S068-S070-S071-S072-S074-S075-S106-S125-S141	0,90
FP5056***	56				S021-S026-S072	1,61
FP5063***	63				S021-S025-S068-S070-S079-S138-S141	1,70
FP5064***	64				S024-S025-S059-S093-S099-S100-S104	1,70
FP5091***	91				S025-S031-S033-S100-S113-S115-S116-S267	2,20
FP6032***	32	240	218	KVG6	S021-S035-S081-S082	1,80
FP6045***	45				S021-S025-S026-S027-S069-S070-S075-S077-S080-S081-S082-S125-S198-S207-S215-S253	2,10
FP6058***	58				S024-S025-S026-S027-S038-S077-S078-S079-S080-S081-S082-S207-S215-S237	2,40
FP6070***	70				S080-S270	3,00
FP6082***	82				S038-S080-S081-S116-S141-S198-S215	3,30
FP6086***	86				S021-S026-S027-S077-S078-S090-S092-S166-S091-S114-S132-S198-S200	3,40
FP6101***	101				S027-S035-S113-S115-S132-S148-S176-S228	4,20
FP6110***	110				S080-S111	5,50
FP7052***	52	288	258	KVG7	S028-S092-S108-S112-S133-S192	4,10
FP7066***	66				S090-S092-S166	4,75
FP7069***	69				S108-S143-S148-S158-S192-S19-S201-S204-S281-S282-S288	4,90
FP7086***	86				S022-S027-S028-S091-S092-S108-S112-S117-S166-S184-S192-S201-S228-S300	5,20
FP7111***	111				S028-S091-S112-S117-S144-S145-S184	6,30

Complete the order designation with the pump interface code: Ex. **FP5026S023**

Monobloc bell-housing for NEMA motors

Monobloc bell-housings for NEMA motors are standard products of the LMC series used normally for electric motors manufactured to European standards.
These bell-housings must be used in combination with specific **ADNEMA 143 TD** and **ADNEMA 254 TD** adapters.
For dimensions and clearances of adapter rings see page 45



The auxiliary flange, if specified, is supplied already fitted to the bell-housing (MODUL-2).

- **Check that the pump interface dimensions are compatible with those of the bell-housing**

Note: The hole made in the tank cover should be 2 mm larger than dimension D5

Machining tolerances

D1	**F8**
Centraggio	**H7**
H1	**± 0,15 mm**

Concentricità D1/Spigot hole

LMC 300	**0,20 mm**

TABLE31

Dimensions of LMC monobloc bell-housing

Bell-housing code	Foot bracket code	D1	D2	D3	D4	D5	H1	H2	F	P
LMC 300AFST***	**PDM A 300**	230	265	300	230	235	155	23	M12	14
LMC 300AFSX***	**PDM A 300**	230	265	300	230	235	170	23	M12	14
	For dimension see page 55									

Base module for NEMA motors

BMC series motors base are derived from standard LMC monobloc bell-housings and used as base elements to which **FR/FP5/FP6** series auxiliary flanges can be fixed so as to increase the height of the bell housing or allow the attachment of a pump, which would not be possible using a monobloc bell housing.
Motors base can be used for the installation of NEMA motors in conjunction with specific **ADNEMA 143 TD** and **ADNEMA 254 TD adapters.**
For dimensions and clearances of adapter rings, see page 45.

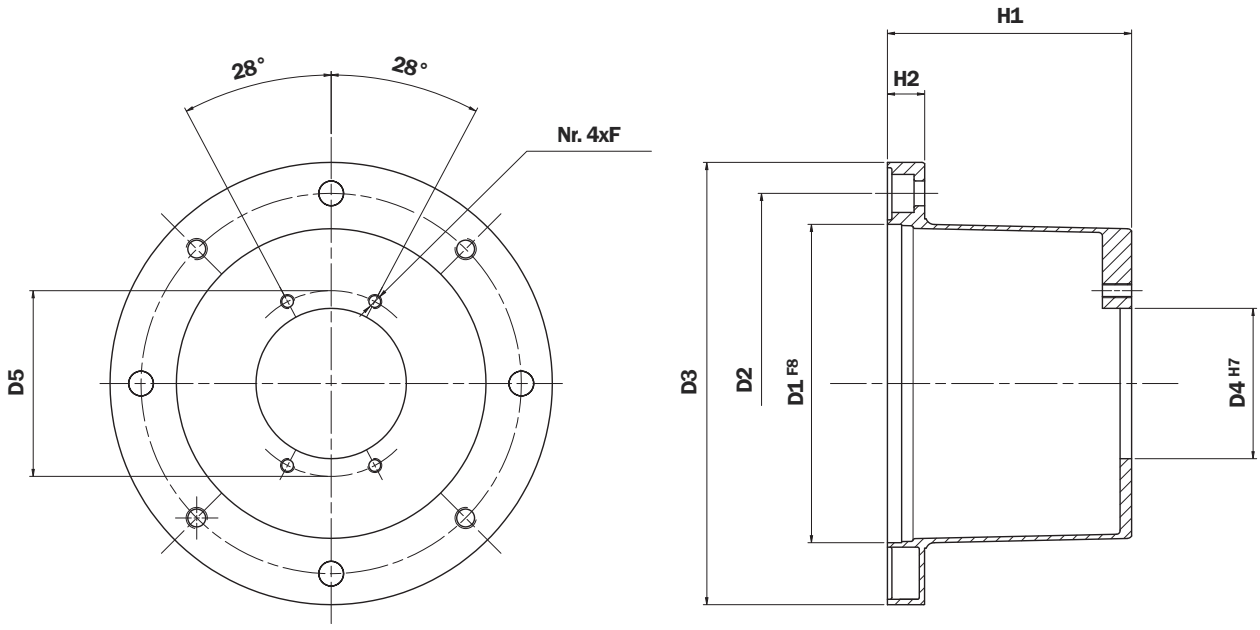


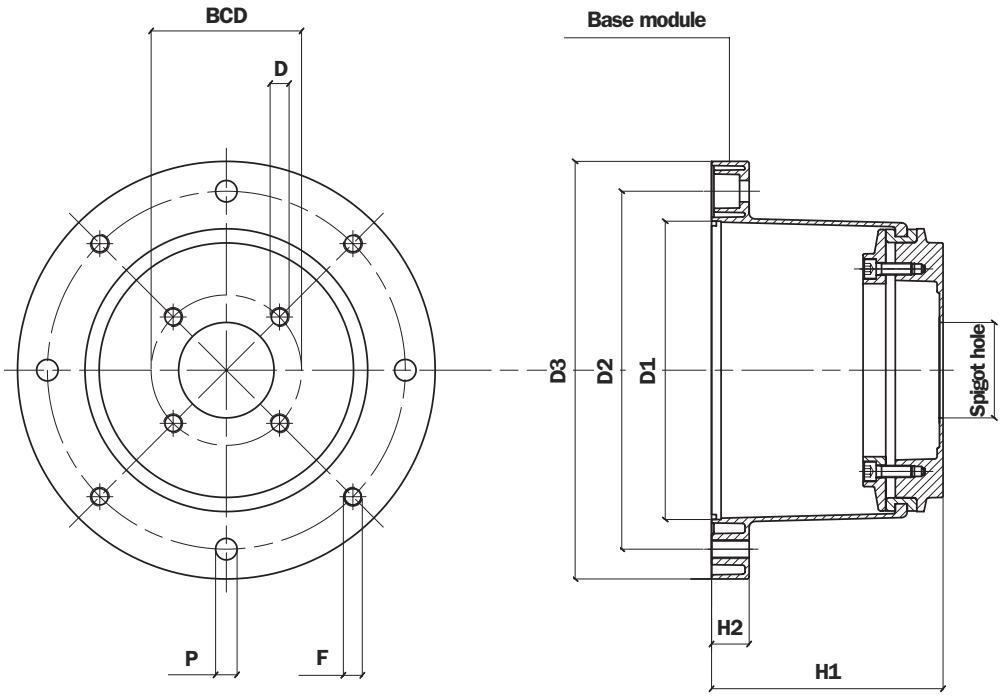
TABLE 32

Dimensions of BMC motor base										
Motor base code	Foot bracket code	D1	D2	D3	D4	D5	H1	H2	F	Weight (kg)
BMC300A1551	**PDM A 300**	230	265	300	85	105	155	23	M8	3,30
BMC300A1701	**PDM A 300**	230	265	300	85	105	170	23	M8	3,30
BMC300A1555	**PDM A 300**	230	265	300	170	218	155	23	M14	3,30
BMC300A1705	**PDM A 300**	230	265	300	170	218	170	23	M14	3,30
	For dimension see page 55									

- **For pump flange codes, see page 17**

Low noise bell-housing for NEMA motors

Low noise bell-housings for NEMA motors are standard products of the LMS series used normally for electric motors manufactured to European standards.
These bell-housings must be used in combination with specific **ADNEMA 143 TD** and **ADNEMA 254 TD** adapters.
For dimensions and clearances of adapter rings, see page 45.



- **The auxiliary flange, if specified, is supplied already fitted to the bell-housing.**

N.B. In order to ensure coaxial alignment between the motor and pump spigot centres, the bell-housing cannot be disassembled and reassembled.

Machining tolerances

D1	**F8**
Spigot hole	**H7**
H1	**± 0,15 mm**

Concentricity of D1/Spigot hole

LMS 300	**0,20 mm**

TABLE 33

Dimensions of LMS low noise bell-housing

Bell-housing code	Foot bracket code	D1	D2	D3	H1	H2	F	P
LMS 300AFSC* **	**PDM A 300**	230	265	300	155	23	M12	14
LMS 300AFSD* **	**PDM A 300**	230	265	300	168	23	M12	14
	For dimension see page 55							

Motor base for NEMA motors - Flange TD

Motors base for NEMA motors are standard products of the BMT series used normally for electric motors manufactured to European standards, which are machined in such a way as to provide the necessary interface for the NEMA motor.
Motors base are utilized in conjunction with standard pump flanges of the FP series.
For the dimensions of flanges, see page 17.

Motor base for NEMA motors:
404TD - 405TD - 444TD - 445TD - 447TD - 449TD

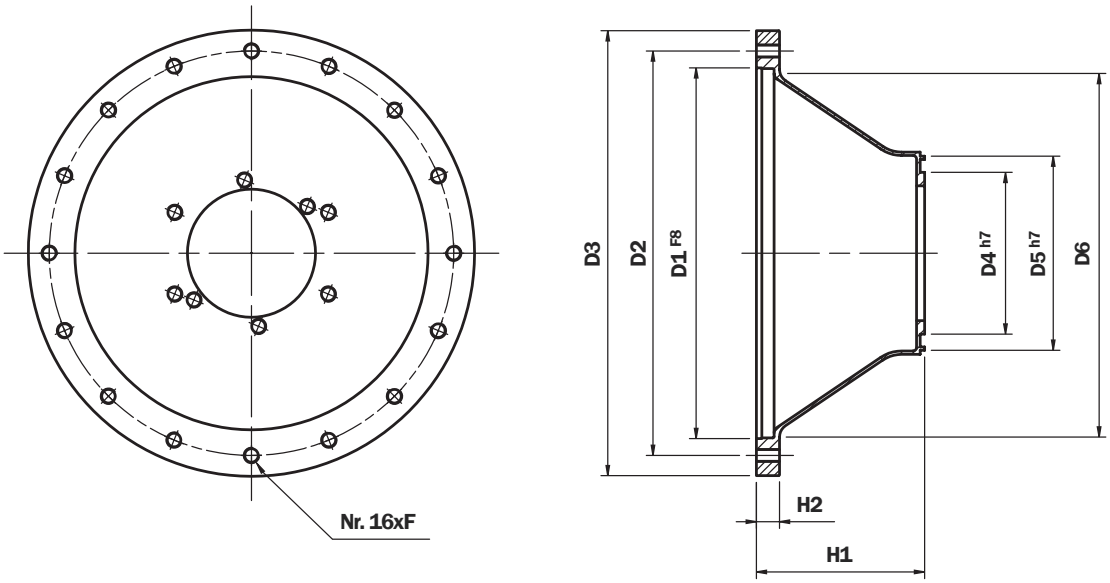
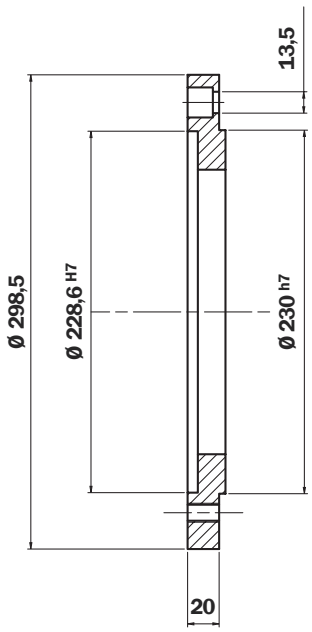
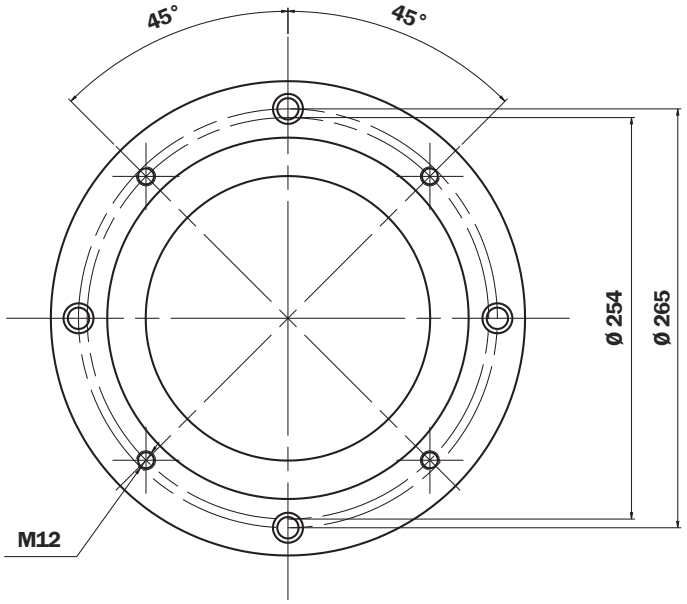


TABLE 34 - MODUL 2

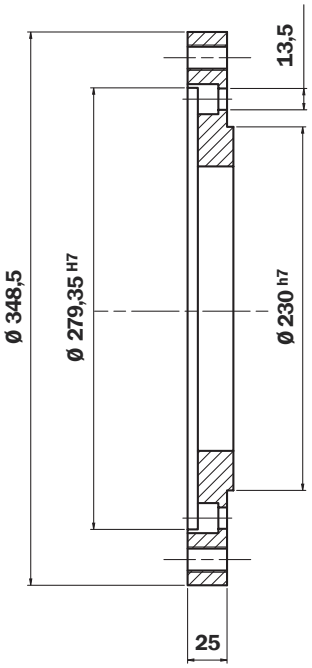
Dimensions of Motor base										
Code	D1	D2	D3	D4	D5	H1	H2	F.	Nr.	Weight (kg)
BMT450NEMA324TD	355,6	406,4	450	240	350	140	32	18	8	5,00
BMT550NAMA404TD	457,2	508	550	240	450	215	32	18	16	8,40

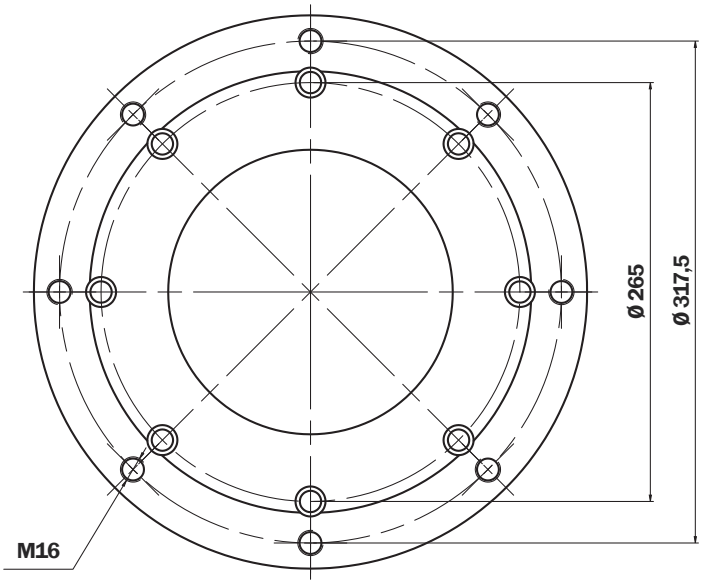
Adapter for NEMA motors NEMA: Cod. ADNEMA143TD
143TD - 145TD - 180TD - 182TD - 184TD - 210TD - 213TD - 215TD
Da montare su lanterne LMC - BMC - LMS - BMT 300





Adapter for NEMA motors NEMA: Cod. ADNEMA254TD
256TD - 284TD - 286TD



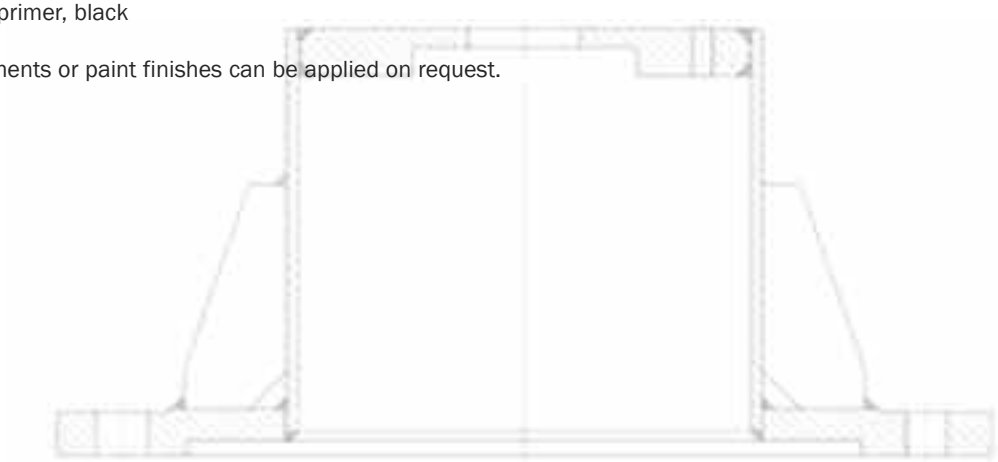


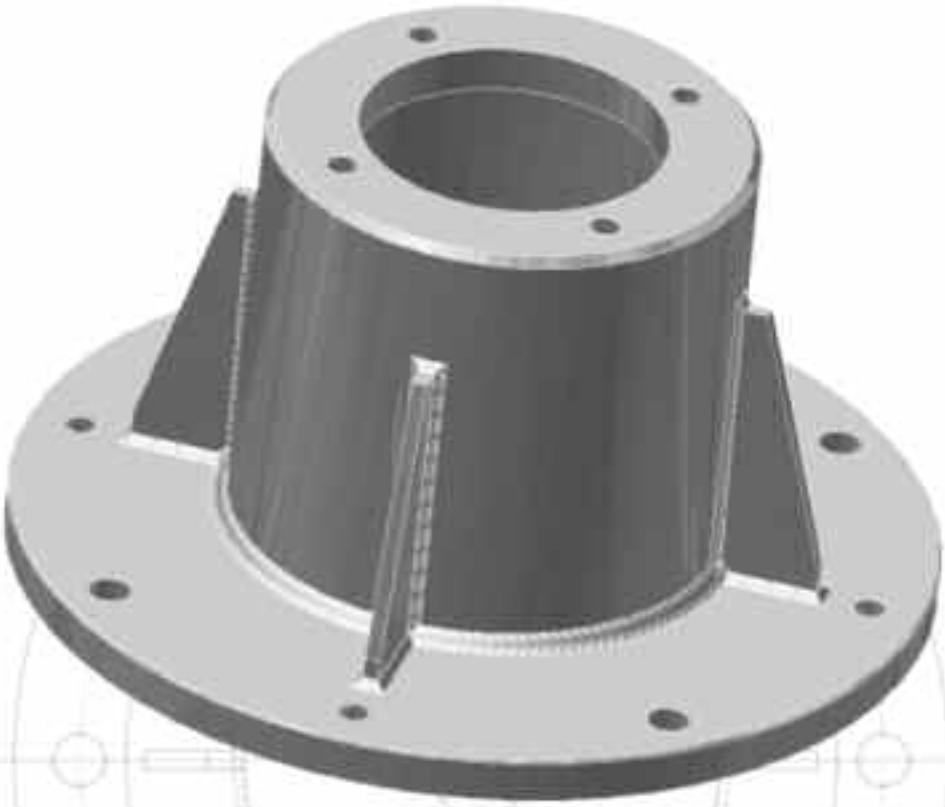
LMC series steel bell-housings

These bell-housings made of welded steel are available for electric motors rated from **0.5** up to **1000 kW**, responding to UNEL-MEC (European) and to NEMA (US) standards.
The dimensions can be customized to suit the type of motor-pump combination, or to meet particular customer specifications.

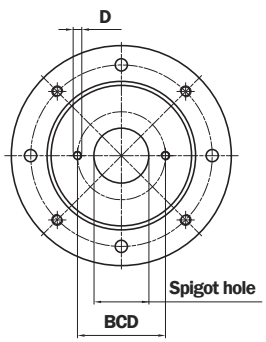
Standard finishes:
- Zinc-treated, white
- Oil-resistant primer, black

Custom treatments or paint finishes can be applied on request.

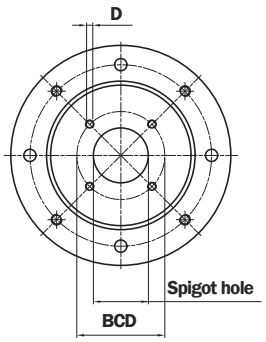




Valid configuration for bell-housing up to Ø 400

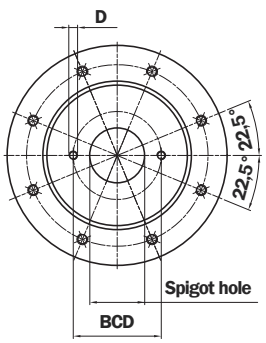


Bell-housing with nr. 2 holes at pump interface, aligned with through holes at motor interface

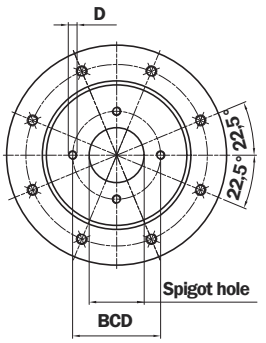


Bell-housing with nr. 4 holes at pump interface, aligned with thread holes at motor interface

Valid configuration for bell-housing from Ø 450 to Ø 660



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

TABLE 35 - Drilling pump code to be insert in the box nr. 4 of page 13 (LMC*A) and page 35 (LMS*A)

Spigot hole mm	BCD	D	N° holes	Code
40	72	M8	2	**191**
45,2	88,9	M8	4	**096**
	71,8	M8	4	**120**
50	80	M8	2	**052**
	93	M10	2	**053**
	60	M5	4	**280**
	63	Ø7	4	**057**
	93	M8	2	**287**
50,8	82,50	M8	2	**050**
52	/	/	/	/
	/	/	/	/
56	76	M6	4	**234**
57,15	106,4	Ø11	2	**212**
60	74	M10	4	**098**
	98,5	M6	4	**147**
	75	M6	4	**227**
62,7	157,2	M12	4	**231**
63	100	M8	2	**042**
	125	M6	4	**043**
	160	M8	4	**044**
	80	M8	2	**051**
	80	Ø8,5	4	**058**
	100	M10	2	**062**
	85	M8	4	**168**
	90	M8	4	**271**
65	90	M8	4	**073**
70	84	Ø7	4	**289**
71,8	88,9	M10	4	**047**
75	102	M10	4	**139**
80	100	M8	4	**024**
	103,2	M8	2	**045**
	100	Ø11	4	**059**
	100	M10	2	**061**
	110	M10	2	**063**
	140	M10	2	**064**
	115	M10	2	**065**
	100	M10	4	**067**
	106,4	M10	2	**083**
	130	M8	4	**087**
	100	Ø8,5	4	**093**
	113	M12	4	**104**
	95	M8	4	**169**
	103	M8	4	**242**
	110	M10	4	**272**
82,55	106,4	M10	2	**060**
	105	M10	4	**097**
	106,4	M8	2	**254**
	146	M12	2	**260**
	110	M10	2	**284**
85	106,4	M10	2	**066**
90	112	M8	2	**134**
	105	M8	4	**156**
	118	Ø9	2	**163**
	112	Ø9	2	**164**

Spigot hole mm	BCD	D	N° holes	Code
92	140	M8	4	**088**
	145	M10	4	**089**
95	115	M8	4	**137**
95,2	127	M10	4	**131**
98,4	125	Ø11	4	**128**
100	125	M10	2	**023**
	125	M10	4	**025**
	125	Ø11	4	**031**
	125	Ø11	4	**032**
	190	Ø15	4	**038**
	125	Ø13	4	**041**
	125	M12	2	**071**
	140	M12	2	**072**
	146	M12	2	**075**
	126	M10	2	**106**
	120	M8	4	**122**
	160	M10	4	**141**
	150	M10	4	**150**
101,6	161,5	M12	4	**029**
	146	M12	2	**070**
	127	M12	4	**125**
	146	M10	2	**159**
	127	M10	4	**224**
105	146	M12	2	**076**
110	175	M10	4	**110**
	130	M8	4	**154**
	200	M10	4	**202**
	135	M10	4	**219**
	145	M12	4	**273**
112	140	M12	2	**074**
	140	M10	2	**138**
	130	M10	4	**264**
115	180	M12	4	**198**
116	160	M14	2	084
120	210	M16	2	**094**
	145	M10	4	**155**
	150	Ø13	4	**267**
125	160	M12	4	**026**
	160	Ø13	4	**033**
	160	M12	2	**079**
	180	M16	2	**082**
	155	M10	4	**102**
	160	Ø17	4	**113**
	200	M12	4	**114**
	181,2	M16	2	**136**
	200	M16	4	**200**
	180	Ø20	4	**215**
	170	Ø18	4	**237**
127	161,5	M12	4	**021**
	181,2	M16	2	**080**
	161,5	M14	4	**140**
130	165	Ø11	4	**054**
	150	M12	4	**068**
	181,2	M16	2	**085**
	165	M12	4	**124**
	165	M14	4	**135**

Spigot hole mm	BCD	D	N° holes	Code
130	165	M10	4	**253**
135	160	M10	4	**151**
	175,4	M12	4	**220**
140	180	M140	4	**077**
	180	M12	2	**281**
	165	M10	4	**157**
	200	M16	4	**176**
	165	M10	4	**223**
	180	M16	2	**232**
150	185	M16	4	**069**
152,4	228,6	M16	4	**022**
	228,6	M18	2	**090**
	228,6	M18	41	**108**
	217,5	Ø17	4	**118**
	228,6	M20	2	**166**
	228,6	M20	4	**192**
	190,5	M8	4	**207**
160	200	M16	4	**027**
	200	Ø17	4	**035**
	200	M16	2	**091**
	224	M20	2	**092**
	200	M12	2	**107**
	230	M22	4	**111**
	185	M12	4	**152**
	224	M16	4	**184**
	230	22	4	**228**
162	188	M12	4	**263**
165,1	317,35	M20	4	**143**
	317,35	M24	2	**145**
	229	M20	4	**201**
	317,35	M18	4	**204**
175	200	M12	4	**153**
	230	M18	2	**185**
177,8	350	M24	4	**146**
	216	M12	4	**222**
	350	M24	4	**203**
180	216	13	4	**055**
	216	M16	4	**078**
	224	M16	4	**112**
	216	M12	4	**132**
	215	M22	4	**148**
	230	22	4	**226**
200	250	M20	4	**028**
	250	Ø22	4	**095**
	280	M24	2	**117**
	230,5	M12	4	**214**
203,2	254	M14	4	**210**
205	240	M16	4	**133**
224	280	M20	4	**144**
	280	Ø22	4	**205**
250	310	M24	4	**238**
	315	M20	4	**282**
275	355	M16	4	**233**
	355	Ø18	4	**281**
-	-	-	-	-
-	-	-	-	-

A guide to select the correct bell-housing and drive coupling components

DATA REQUIRED

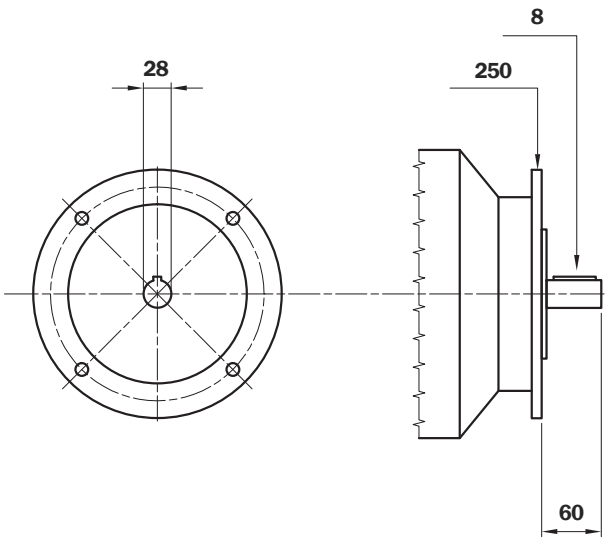
Electric motor power/motor size
Manufacturer and pump type

TO VERIFY:

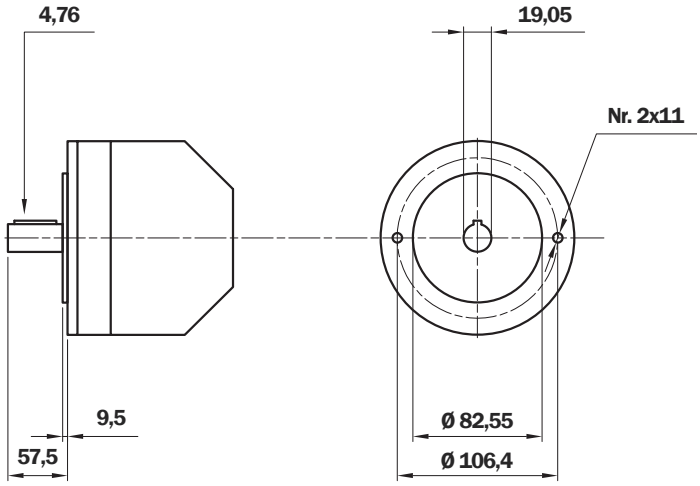
1 - Pump and motor shaft dimensions (see page 67)
2 - Shaft and flange pump (see pump data sheet)

Example:
- Electric motor 2 kW - 4 poles - Motor size 110/112
- Atos pump code PFE31 - Shaft 1

Electric motor's dimension



Pump's dimensions



Bell-Housing's length calculation

- H= 60 + 18 + 57,5 = 135,5 mm (18= Sp spider - see page 49)
- Choose type of bell-housing (LMC - LMS)
  - For LMC see tab. 3 at page 11
  - For LMS see tab. 22 at page 32
  - For MODUL 2/3 see at page 36

Note: The length of bell-housing must be ≥ than the length calculated (135,5 mm)

Case A - solution with LMC bell-housing

Tab. 3 at page 11 - for electric motor 2 kW LMC 250
LMC 250 bell-housing with height ≥ 135,5 - LMC250AFSQ

- The bell-housing code must be completed with drilling pump code (see tab. 35 at page 47)
  For the specific case C= 82,5 - Nr. 2 holes M10: Code drilling 060
- Definitive bell-housing code **LMC250AFSQ060**

Case B - solution with LMS bell-housing

Tab. 22 at page 32 - for electric motor 2 kW LMS 250
LMS 250 bell-housing with heigh ≥ 135,5 - LMS250AFSQ

- The bell-housing code must be completed with drilling pump code (see tab. 35 at page 47)
  For the specific case C= 82,5 - Nr. 2 holes M10: Code for. 060
- Definitive bell-housing code **LMS250AFSQ060**

Choose coupling

- **Motor half-coupling** (see tab. 38 at page 50)

  - For electric motor Gr. 100/112, the half-coupling is **SGEA21M05060**

- **Spider** (see tab. 36 - 37 at page 49)

  - For SGEA21, EGE2 - EGE2RR
    (choose spider material on the base of the application, oil, temperature and cycle machine, etc.)

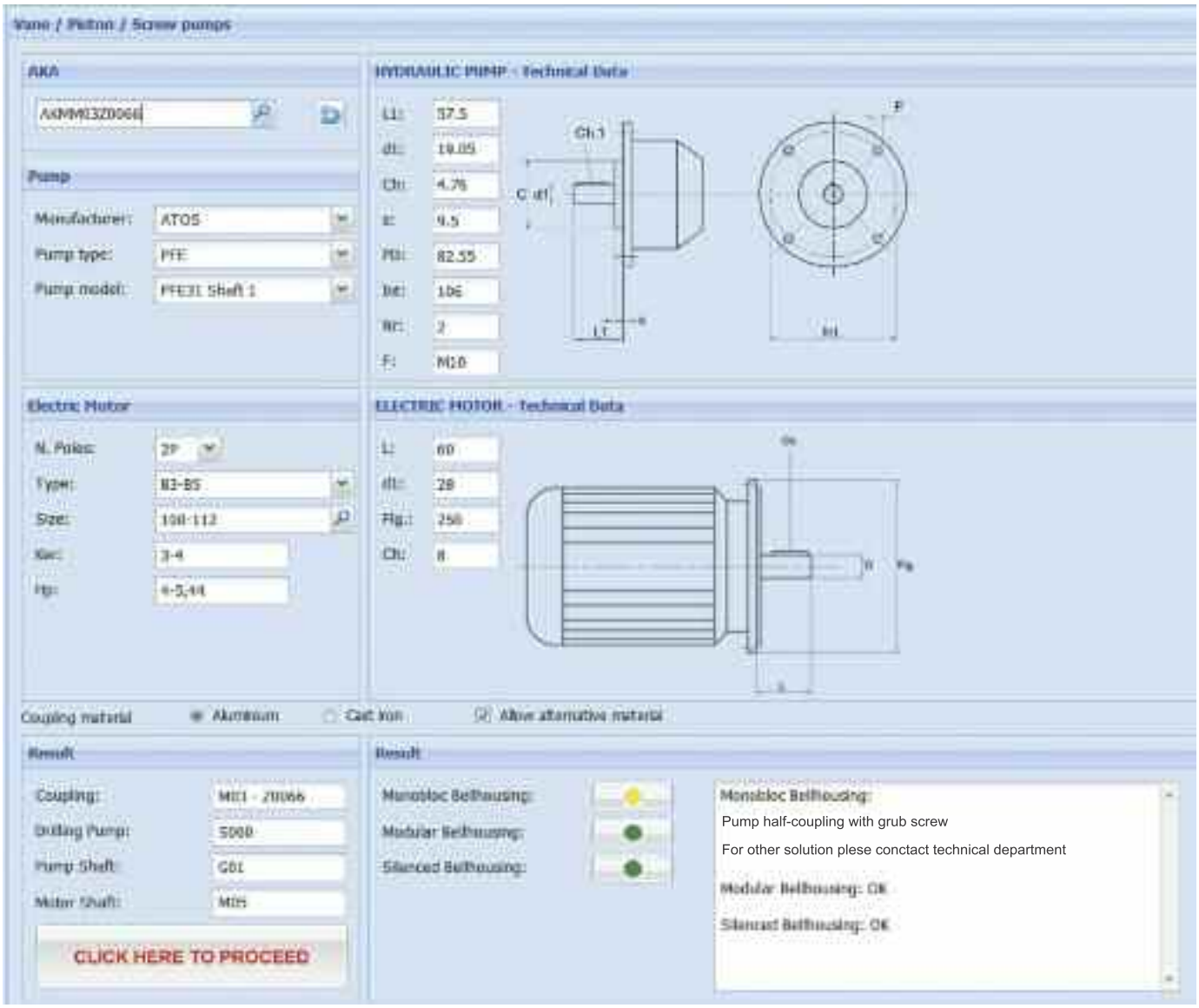
- **Pump half-coupling**

  - Choose the drilling code tab. 44 - 45 at page 53 for shaft 19,05 - Ch. 4,76 - code: **G01**

  - Half-coupling length = L BH lenght – THK Spider – THK Spigot
    LMC= 138 mm - 60 - 18 - 9,5= 50,5 mm
    LMS= 148 mm - 60 - 18 - 9,5= 60,5 mm

  - LMC - Choose the half-coupling's length on tab. 39 at page 50 ≤ 50,5 mm.
  - LMS - Choose the half-coupling's length on tab. 39 at page 50 ≤ 60,5 mm.
  - LMC - Availabe length for SGEA21= 50 mm
  - LMS - Availabe length for SGEA21= 60 mm
  - LMC=LMS - Code half-coupling code: **SGEA21G01050**

Software for automatic calculation available on the web site
www.mpfiltri.com - tools - software



Note: For multi pumps we recommend to use a specific support on the base of the pump's dimensions and weight.

Half-coupling SGE*** series

The half-couplings series SGE*** allow secure transmission between the electric motor and the driven side; they are able to absorb shocks and vibration, in addition to compensating radial misalignment, angular and axial.
The assembly of the couplings can be horizontal/vertical, withstanding vibration and load reversals.

The complete range of couplings are extrapolated from the on-line software, with a length equal than the shaft on which must be mounted and they are completed with grub screw for fixing located on the key.
Available for cilindrical shaft with metric and imperial dimensions as well for splined shafts as per specification DIN, ISO and SAE.

Admissible misalignment radial, angular and axial

Max admissible radial misalignment

Half coupling	R (mm)
SGE * 01	0,5
SGE * 21	1,0
SGE * 31	1,0
SGE * 40	1,0
SGE * 51	1,5
SGE * 60	1,5
SGE * 80	2,0
SGE * 90	2,0

Max admissible angular misalignment

Half coupling	β (°)
SGE * 01	1,5°
SGE * 21	
SGE * 31	
SGE * 40	
SGE * 51	
SGE * 60	
SGE * 80	
SGE * 90	

Max admissible angular misalignment

Half coupling	A (mm)
SGE * 01	2,0
SGE * 21	2,5
SGE * 31	3,0
SGE * 40	3,5
SGE * 51	3,5
SGE * 60	3,5
SGE * 80	4,0
SGE * 90	5,0

Normative ATEX 94/9/CE

Half-couplings SGE*** series are available to use in hazardous area.
The couplings are certified according to ATEX 94/9/CE (ATEX 95).
Category certified 2G - area 1 and 2.
Other information available on our web site “www.mpfiltri.com”.

MP Filtri couplings are developed with:

CAD 3D

FEM (calculation)

Drawings 3D available on website www.mpfiltri.com at section TOOLS/2D-3D COMPONENTS

The half-couplings SGE*** series are in conformity to normative **DIN 740/2**.
The max torque to transmit is always less than the max torque that the coupling can transmit.

Examples verification of the coupling

Torque transmitted by electric motor:

Mt: 9560 x kW / rpm = Nm

Me > Mt x S = Nm

Where:

Mt: Torque transmitted by electric motor

Me: Torque transmitted by coupling (see table 14)

kW: Power of electric motor

Rpm: Revolutions per minute of electric motor

S: Service factor (see table 14)

TABLE 1

Small pumps, uniform load, low operating pressures e.g. rotary action machine tools - 5/8 work cycles per hour	**1.3**
Small pumps, uniform load, high working pressures e.g. lifting equipment - 120-150 work cycles per hour	**1.5**
Pumps, non-uniform load e.g. lifting equipment - 280-300 work cycles per hour	**1.7**

Example
Electric motor, 4 pole - 4 kW
hydraulic pump, uniform load, low operating pressure

Mt: 9560 x 4 / 1500 = 25.45 Nm

Me > 25.49 x 1.3 = 33 Nm

Half-coupling SGEA21 meets the above requirement.

Select the half-coupling of the calculated size from the motor half-couplings table.

Note: When selecting the coupling, remember that for pumps with splined shaft, only cast iron couplings of the SGEG series can be used.

Determine the size of the coupling according to the type of installation and application envisaged, on the basis of the following formulas and tables:

TABLE 2

	Half-coupling type	External diameter mm	Nominal torque Me - Nm	Maximum transmissible torque Me - Nm
ALUMINIUM	SGEA01	43	15	20
	SGEA21	68	160	190
	SGEA31	85	340	380
	SGEA51	109,5	550	620
CAST IRON	SGEG01	40	20	30
	SGEG30	80	400	450
	SGEG40	95	550	620
	SGEG60	120	760	850
	SGEG80	160	2200	2500
	SGEG90	200	5500	6100
STEEL	SGES40	95	550	620
	SGES60	120	760	850
	SGES80	160	2200	2500

Nominal and maximum torque values are referred to couplings assembled with standard flexible spiders of the **EGE**** series (see page 49).
Where higher torques are to be transmitted, use flexible spiders of the **EGE**RR** series (see page 49).

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

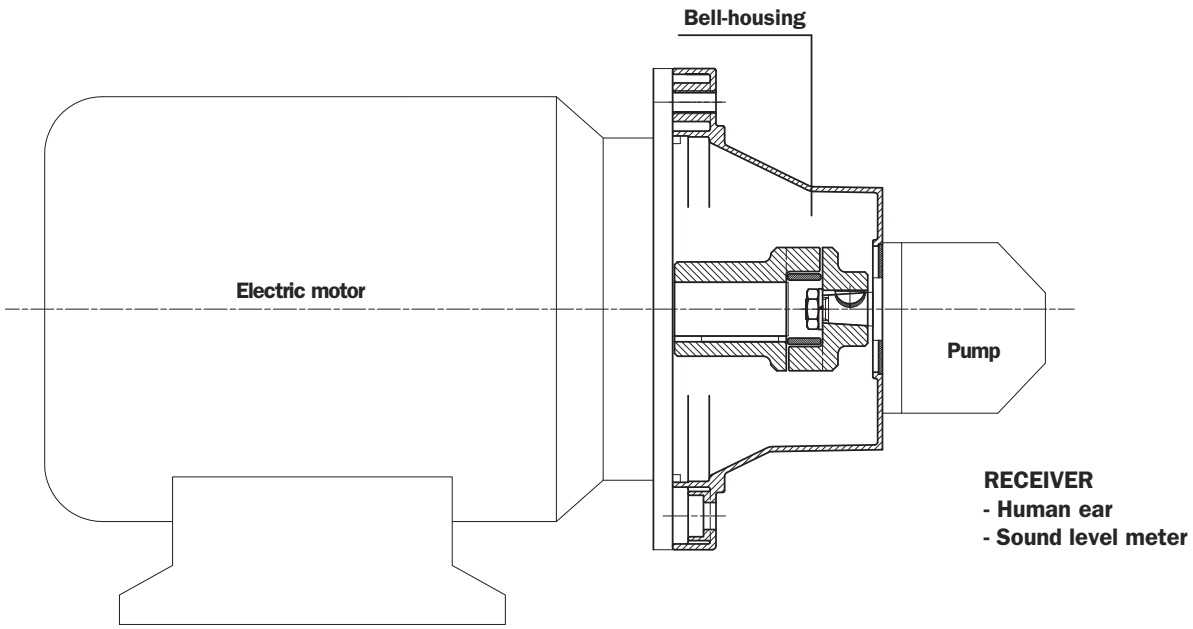
From a health and hygiene standpoint, noise can be defined as an unpleasant and undesirable sound, or an unpleasant and annoying or intolerable auditory sensation (noise being any sound phenomena that may be accompanied by sensations of disturbance and pain). By definition, acoustic phenomena are oscillatory 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
- Receiver

Motor and pump unit



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.

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 hydralic power unit.

• 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.

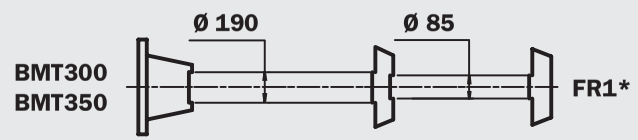
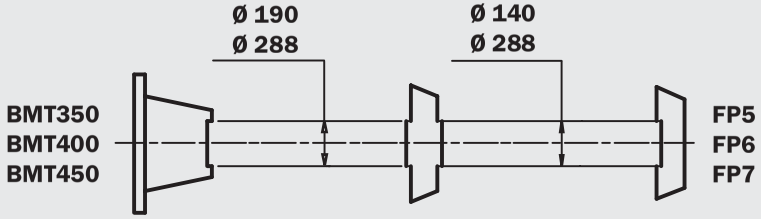
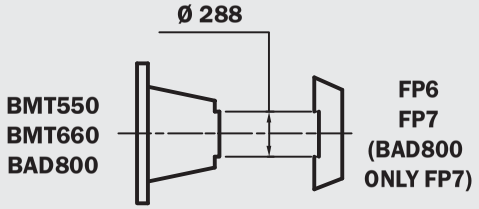
- The pressure pipeline of the pump must be flexible, and long enough to include bends with the minimum radius of curvature recommended by the manufacturer for the specified operating pressure.

- 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.

	5.5 - 7.5 kW	11 - 22	30	37 - 45	55 - 90	110 - 200	250 - 400
	7.5 - 10.2 Hp	15 - 30 Hp	40.80 Hp	50.32 - 61.2 Hp	75 - 125 Hp	150 - 272 Hp	340 - 544 Hp
	Size 225 - D. 450	Size 160/180 D. 350	Size 200 - D. 350	Size 225 - D.450	Size 250/280 D. 550	Size 315 - D. 660	Size 355/400 D. 800
MODUL 3	AR*  Kit of assembly KVG5 (Q.ty 1) + Kit of assembly KVG1 (Q.ty 1)						
	AD*  Kit of assembly KVG5/7 (Q.ty 2)						
MODUL 2						 Kit of assembly KVG6/7 (Q.ty 1)	
	5.5 - 7.5 kW	11 - 22	30	37 - 45	55 - 90	110 - 200	250 - 400
	7.5 - 10.2 Hp	15 - 30 Hp	40.80 Hp	50.32 - 61.2 Hp	75 - 125 Hp	150 - 272 Hp	340 - 544 Hp
	Size 225 - D. 450	Size 160/180 D. 350	Size 200 - D. 350	Size 225 - D. 450	Size 250/280 D. 550	Size 315 - D. 660	Size 355/400 D. 800

Drive couplings

SGEA-SGEG-SGES series

Drive couplings provide the means by which power is transmitted from the electric motor to the hydraulic pump.
By virtue of their flexible structure, they are able to compensate angular and radial misalignments between motor and pump, and appreciably attenuate the noise generated through the drive line.
The couplings illustrated are available in aluminium and cast iron versions, with a variety of spider options, and will cover a range of applications using electric motors from **size 63**, rated **0.15 kW,** up to **size 400** rated **400 kW**.
Grub screw on all half couplings.
Cast iron half coupling SGEG available with screw mounted.

Technical specifications

SGEA - SGEG - SGES

Materials

- **Motor half-coupling**
  Pressure diecast aluminium/cast iron/steel.
- **Pump half-coupling**
  Pressure diecast aluminium/cast iron/steel.
- **Spiders**
  Oil-resistant rubber, black, Sh.A hardness 87
  Polyurethane resin, red, Sh.A hardness 95

Temperature

- **Oil-resistant rubber:**
  -20°C ÷ +90°C
- **Polyurethane resin:**
  -30°C ÷ +120°C

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.**

EGE** series

Made of black oil-resistant rubber, these components serve to interconnect the two halves (motor - pump) of a flexible coupling.
They are suitable for all industrial applications and will withstand temperatures from -20°C to +90°C.
Shore A hardness 87

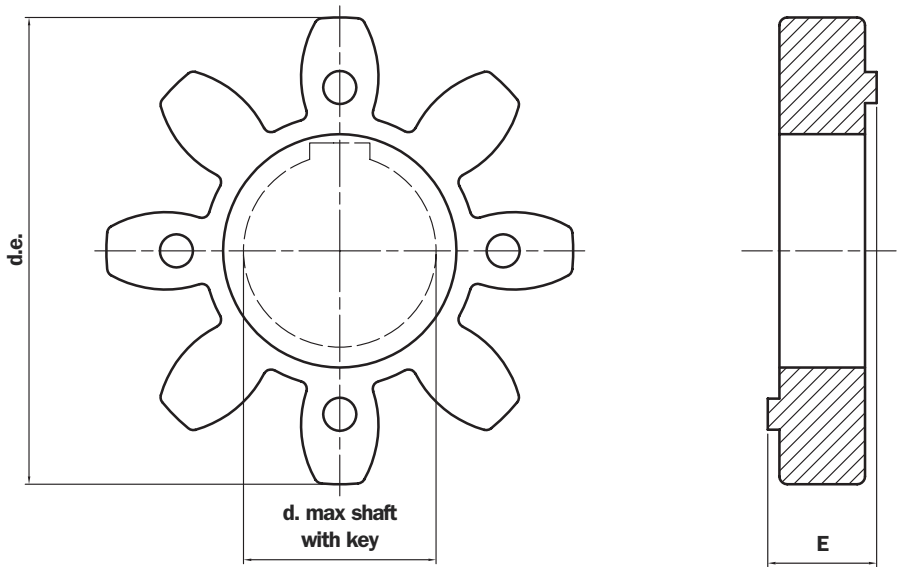


TABLE 36

Half-coupling type	Code	E	d.e.	d.max	Nominal torque Nm	Max torque Nm	Weight (kg)
SGEA01/SGEG01	EGE0	15	40	16	10	20	0,006
SGEA21	EGE2	18	65	25	95	190	0,02
SGEA31/SGEG31	EGE3	22	80	35	190	380	0,04
SGEA51	EGE5	26	105	45	310	620	0,06
SGEG40/SGES40	EGE4	24	95	40	310	620	0,09
SGEG60/SGES60	EGE6	28	120	55	430	860	0,13
SGEG80/SGES80	EGE8	38	160	75	1250	2500	0,36

EGE**RR series

Made in polyurethane Laripur - LPR202-95A, red colour, are suitable for applications where high levels of torque are transmitted.
They will withstand temperatures from -30°C to +120°C.
Shore A hardness 95

TABLE 37

Half-coupling type	Code	E	d.e.	d.max	Nominal torque Nm	Max torque Nm	Weight (kg)
SGEA01/SGEG01	EGE0RR	15	40	16	15	30	0,006
SGEA21	EGE2RR	18	65	25	115	230	0,02
SGEA31/SGEG31	EGE3RR	22	80	35	250	500	0,04
SGEA51	EGE5RR	26	105	45	400	800	0,06
SGEG40/SGES40	EGE4RR	24	95	40	380	760	0,09
SGEG60/SGES60	EGE6RR	28	120	55	550	1100	0,13
SGEG80/SGES80	EGE8RR	38	160	75	1400	2900	0,36
SGEG90	EGE9RP	42	200	95	8900	9900	0,59

Version for extreme temperatures available on request.
For further information, contact the MP Filtri Technical and Sales Department.

SGEA motor half-coupling aluminum

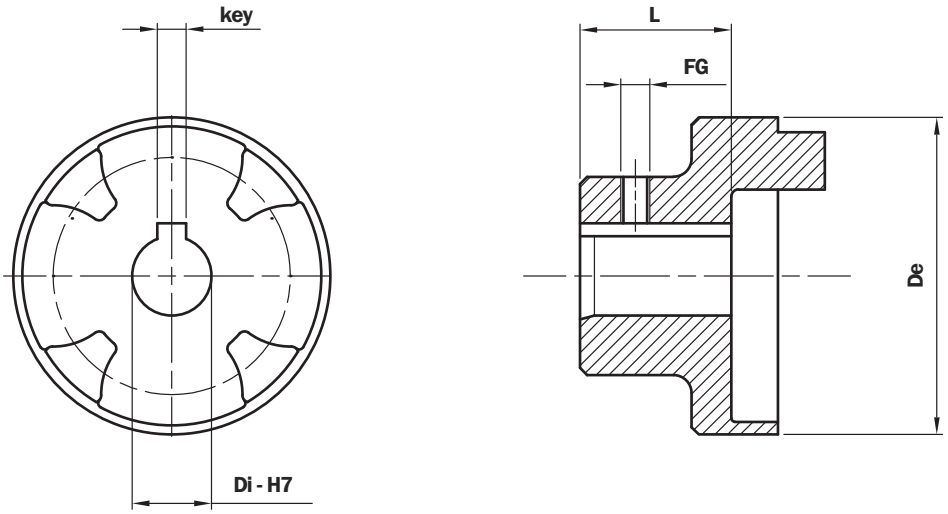


TABLE 38 - Motor half-coupling

Motor 4-pole 1500 rpm				Dimensions of motor half-coupling								
Frame size	**kW**	**Hp**	**Shaft**	**Half-coupling code**	**De**	**L**	**d**	**Tol**	**key**	**Tol**	**FG**	**Weight (kg)**
63	0.12 - 0.16	0.18 - 0.24	11x23	**SGEA01M01021**	43	21	11		4		M5	0,07
71	0.25 - 0.34	0.37 - 0.50	14x30	**SGEA01M02028**	43	28	14		5		M5	0,08
80	0.53 - 0.75	0.75 - 1	19x40	**SGEA01M03040**	43	40	19		6		M5	0,12
				SGEA21M03040	68	40	19		6		M6	0,30
90	1.1 - 1.5	1.5-2	24x50	**SGEA01M04048**	43	48	24		8		M5	0,13
				SGEA21M04048	68	48	24		8		M6	0,28
100 - 112	2.2-4	3-5.5	28x60	**SGEA21M05060**	68	60	28	H7	8	D10	M6	0,33
				SGEA31M05060	85	60	28		8		M8	0,48
132	5.5-7.5	7.5-12.5	38x80	**SGEA31M06077**	85	77	38		10		M8	0,78
				SGEA51M06077	109,5	77	38		10		M8	1,60
160	11-15	15-20	42x110	**SGEA51M07109**	109,5	109	42		12		M8	1,60
180	18-22	25-30	48x110	**SGEA51M08109**	109,5	109	48		14		M8	1,60
200	30	40	55x110	**SGEA51M09109**	109,5	109	55		16		M8	1,90
225	37-45	50-61	60x140	**SGEA51M10109**	109,5	109	60		18		M8	1,90

TABLE 39 - Pump drive half-couplings

Half-coupling code	d min	d max	D	Tol	L min	L max	Standard lengths										**FG**
SGEA01 * *****	11	19	43	H7	17	50	17	23	30	40	44	48	-	-	-	-	M5
SGEA21 * *****	15	24	70	H7	23	50	35	40	42	44	48	50	-	-	-	-	M6
SGEA21 * *****	25	28	70	H7	40	60	40	42	44	48	50	55	58	60	-	-	M6
SGEA31 * *****	18	32	85	H7	40	60	42	45	48	50	52	55	58	60	-	-	M8
SGEA31 * *****	38	42	85	H7	60	80	60	65	70	77	80	-	-	-	-	-	M8
SGEA51 * *****	18	40	109,5	H7	40	70	42	45	48	50	52	55	58	60	65	70	M8
SGEA51 * *****	38	55	109,5	H7	70	109	70	75	80	85	90	95	100	105	109	-	M8

Complete the half-coupling designation with the pump interface code and the length.
Ex. **SGEA51D02040** **D02** See **Table 44** **040** Half-coupling length (see **Table 39**).

Note: Screw not included

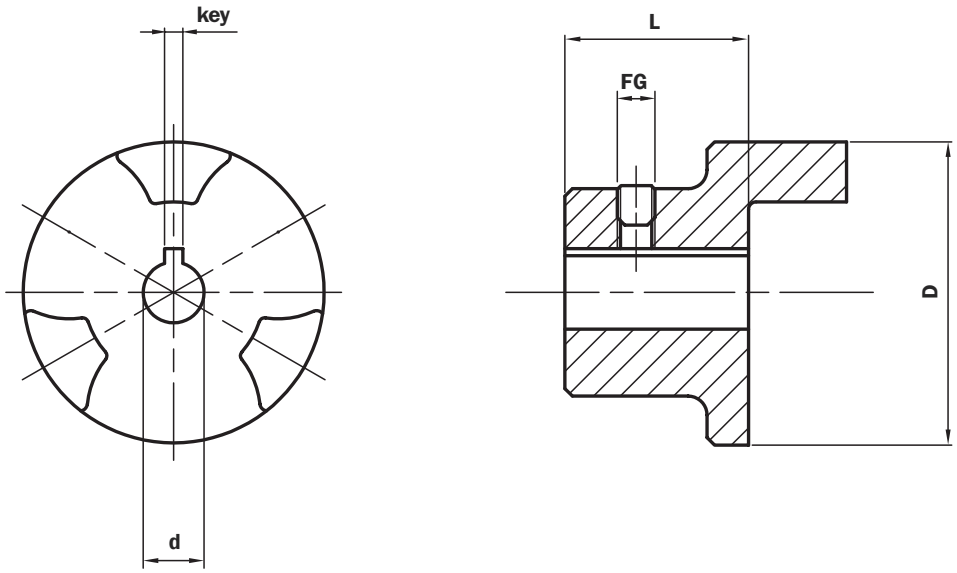


TABLE 40 - Motor half-coupling

Motor 4-pole 1500 rpm				Dimensioni semigiunti lato motore								
Frame size	kW	Hp	Shaft	Half-coupling code	D	L	d	Tol	key	Tol	FG	Weight (kg)
63	0.12 - 0.16	0.18 - 0.24	11x23	**SGEG01M01021**	43	21	11		4		M6	0,32
71	0.25 - 0.34	0.37 - 0.50	14x30	**SGEG01M02028**	43	28	14		5		M6	0,42
80	0.53 - 0.75	0.75 - 1	19x40	**SGEG01M03040**	43	40	19		6		M6	0,61
90	1.1 - 1.5	1.5-2	24x50	**SGEG01M04050**	43	50	24		8		M6	0,77
100 - 112	2.2-4	3-5.5	28x60	**SGEG31M05060**	80	60	28		8		M6	2,35
				SGEG40M05060	95	60	28	H7	8		M8	2,65
132	5.5-7.5	7.5-12.5	38x80	**SGEG31M06080**	80	80	38		10		M6	3,15
				SGEG40M06080	95	80	38		10		M8	3,55
160	11-15	15-20	42x110	**SGEG40M07110**	95	110	42		12		M8	4,70
180	18-22	25-30	48x110	**SGEG40M08110**	95	110	48		14		M8	4,55
200	30	40	55x110	**SGEG40M09110**	95	110	55		16	JS9	M8	4,35
				SGEG60M09110	120	110	55		16		M8	9,00
225	37-45	50-60	60x140	**SGEG60M10140**	120	140	60		18		M8	12,30
250	55	75	65x140	**SGEG60M11140**	120	140	65		18		M8	12,00
				SGEG80M11140	160	140	65		18		M8	18,30
280	75-90	102-122	75x140	**SGEG80M12140**	160	140	75		20		M10	17,70
				SGEG90M12100	200	100	75	F6	20		M10	21,00
315	110-200	150-272	80x170	**SGEG80M13170**	160	170	80		22		M10	20,60
				SGEG90M13100	200	100	80		22		M10	20,00
355	250-315	340-428	95x140	**SGEG90M15100**	200	100	95		25		M10	19,00
400	355-400	482-544	100x210	**SGEG90M16100**	200	100	100		80		M10	18,00

TABLE 41 - Pump drive half-couplings

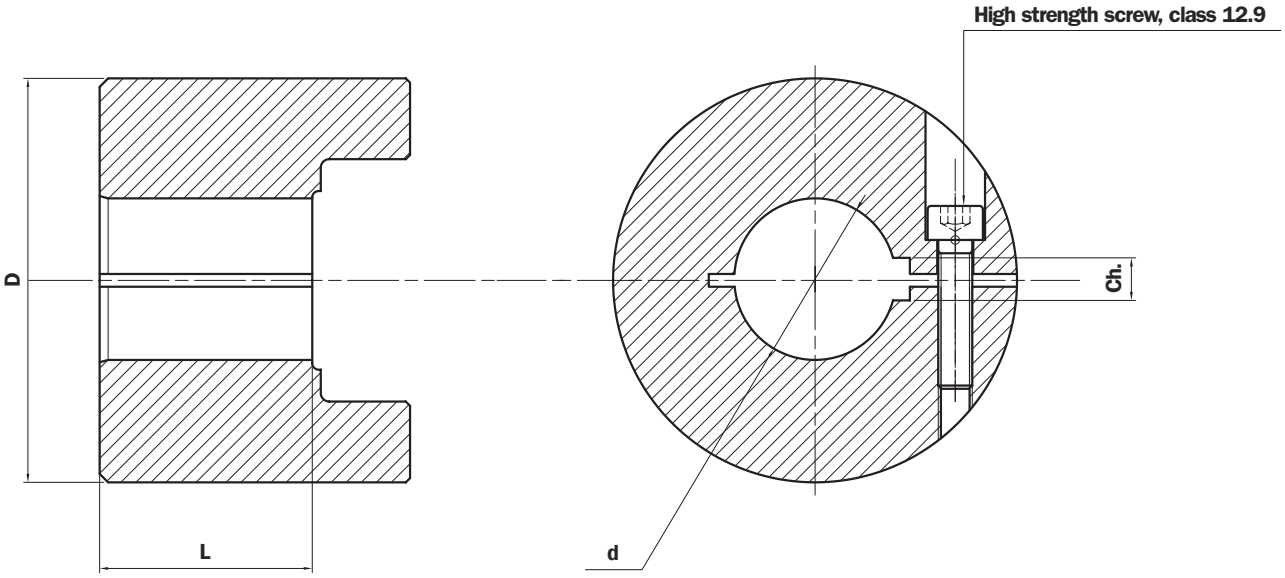
Half-coupling code	d min	d max	Tol	D	L min	L max	Standard lengths
SGEG01 * *****	/	24	H7	40	20	50	every 5 mm
SGEG30 * *****	/	42	H7	80	30	80	
SGEG40 * *****	/	55	H7	95	30	110	
SGEG60 * *****	/	75	H7	120	40	140	
SGEG80 * *****	/	85	H7	160	50	170	
SGEG90 * *****	/	100	H7	200	40	100	

All SGEG series cast iron half-couplings are supplied with a grub screw hole as standard, and with a grub screw UNI 5929 DIN 916 fitted to the hub.

Note: For lengths other than those indicated in table 41, contact the MP Filtri Technical and Sales Department.

SGES*G0 series pump drive half-couplings

SGES series half-couplings, made of hardened and tempered C40 steel, are designed to eliminate any clearance between the hub and the shaft on which they are mounted.
All SGES couplings are balanced and supplied compete with property class 12.9 fixing screws.



SGES series motor half-couplings - steel

TABLE 42

Motor 4-pole 1500 rpm				Dimensions of motor half-coupling								
Frame size	**kW**	**HP**	**Shaft**	**Half-coupling code**	**D**	**L**	**d**	**Tol**	**key**	**Tol**	**Screw**	**Weight (kg)**
132	5.5-7.5	7.5-12.5	38x80	**SGES40M06050G0**	95	50	38		10		M8	4,00
160	11-15	15-20	42x110	**SGES40M07065G0**	95	65	42		12		M8	5,00
180	18-22	25-30	48x110	**SGES40M08065G0**	95	65	48		14		M8	5,00
200	30	40	55x110	**SGES60M09085G0**	120	85	55	H7	16	JS9	M10	8,00
225	37-45	50-61	60x140	**SGES60M10085G0**	120	85	60		18		M10	8,00
250	55	75	65x140	**SGES60M11085G0**	120	85	65		18		M10	8,00
280	75-90	102-122	75x140	**SGES60M12085G0**	120	85	75		20		M10	8,00
315	110-200	150-272	80x170	**SGES80M13085G0**	160	85	80		22		M10	13,00

SGES series pump half-couplings - steel

TABLE 43

Half-coupling code	d min	d max	Tol	D	L
SGES40 * *** **	/	55	H7	95	35
SGES60 * *** **	/	65	H7	120	65
SGES80 * *** **	/	75	H7	160	85

Complete the half-coupling designation with the pump interface code and the length.
Ex. **SGES40PD02050** **PD02** See **Table 44 - 45**

TABLE 44

Bore size code - cylindrical shafts (SGEA - SGEG - SGES series)

Diameter	key	Code	Diameter	key	Code	Diameter	key	Code	Diameter	key	Code	Diameter	key	Code
12	4	**C00**	35	10	**D05**	14	5	**M02**	19,05	4,76	**G01**	13,45	3,18	**H07**
15	5	**C01**	40	12	**D06**	19	6	**M03**	22,22	4,76	**G02**	17,46	4,76	**H08**
16	4	**C02**	45	14	**D07**	24	8	**M04**	22,22	6,35	**G03**	12,7	3,18	**H09**
16	5	**C03**	50	14	**D08**	28	8	**M05**	25,4	4,76	**G04**	15,87	3,97	**L00**
17	5	**C04**	70	20	**D09**	38	10	**M06**	25,4	6,35	**G05**	22,22	4	**L01**
18	6	**C05**	22	8	**D10**	42	12	**M07**	31,75	6,35	**G06**	28,58	6,35	**L02**
20	5	**C06**	8	3	**E00**	48	14	**M08**	31,75	7,94	**G07**	19,05	6,35	**L03**
19	5	**C07**	10	3	**E01**	55	16	**M09**	34,94	7,94	**G08**	47,63	12,7	**L04**
30	10	**C08**	22	5	**E02**	60	18	**M10**	38,1	9,52	**G09**	85,73	22,23	**L05**
20	6	**C09**	32	8	**E03**	65	18	**M11**	41,27	9,52	**H00**	60,33	15,88	**L06**
16	5	**C10**	35	8	**E04**	75	20	**M12**	44,45	11,11	**H01**	60,33	12,7	**L07**
22	6	**D00**	82	22	**E05**	80	22	**M13**	50,8	12,7	**H02**	73,03	19,05	**L08**
24	6	**D01**	25	7	**E06**	90	25	**M14**	53,94	12,7	**H03**	92,07	22,22	**L09**
25	8	**D02**	63	18	**E07**	95	25	**M15**	19,02	3,17	**H04**	41,6	12	**L10**
30	8	**D03**	9	3	**M00**	100	28	**M16**	25,4	4,76	**H05**			
32	10	**D04**	11	4	**M01**	11,11	3,18	**G00**	15,87	4,76	**H06**			

Combinations with double key:

G02+G03	**2E**	G06+G07	**2G**	C07+M03	**2L**	D01+M04	**2N**
G04+G05	**2F**	C02+C03	**2H**	C06+C09	**2M**	D03+C08	**2P**

Ex. Code SGEA21G020050**2E**

TABLE 45

Bore size code - splined shafts (SGEG - SGES half-couplings only)

Profile	Standard	Code	Profile	Standard	Code	Profile	Standard	Code	Profile	Standard	Code
17th 8/16	Diametral Pitch	**PD01**	30th 32/64	Diametral Pitch	**PD24**	W55x2x26	DIN 5480	**PA16**	A55x50	DIN 5482	**PB18**
14th 12/24	Diametral Pitch	**PD02**	33th 32/64	Diametral Pitch	**PD25**	W60x2x28	DIN 5480	**PA17**	A58x53	DIN 5482	**PB19**
16th 12/24	Diametral Pitch	**PD03**	23th 40/80	Diametral Pitch	**PD26**	W70x2x34	DIN 5480	**PA18**	A60x55	DIN 5482	**PB20**
17th 12/24	Diametral Pitch	**PD04**	36th 48/96	Diametral Pitch	**PD27**	W80x2x38	DIN 5480	**PA19**	A62x57	DIN 5482	**PB21**
9th 16/32	Diametral Pitch	**PD05**	41th 48/96	Diametral Pitch	**PD28**	W60x3x18	DIN 5480	**PA20**	A65x60	DIN 5482	**PB22**
11th 16/32	Diametral Pitch	**PD06**	47th 48/96	Diametral Pitch	**PD29**	W70x3x22	DIN 5480	**PA21**	A68x62	DIN 5482	**PB23**
12th 16/32	Diametral Pitch	**PD07**	13th 8/16	Diametral Pitch	**PD30**	A15x12	DIN 5482	**PB01**	A70x64	DIN 5482	**PB24**
13th 16/32	Diametral Pitch	**PD08**	15th 8/16	Diametral Pitch	**PD31**	A17x14	DIN 5482	**PB02**	A72x66	DIN 5482	**PB25**
15th 16/32	Diametral Pitch	**PD09**	W18x1,25x13	DIN 5480	**PA01**	A18x15	DIN 5482	**PB03**	A75x69	DIN 5482	**PB26**
21th 16/32	Diametral Pitch	**PD10**	W20x1,25x14	DIN 5480	**PA02**	A20x17	DIN 5482	**PB04**	A78x72	DIN 5482	**PB27**
23th 16/32	Diametral Pitch	**PD11**	W25x1,25x18	DIN 5480	**PA03**	A22x19	DIN 5482	**PB05**	A80x74	DIN 5482	**PB28**
27th 16/32	Diametral Pitch	**PD12**	W28x1,25x21	DIN 5480	**PA04**	A25x22	DIN 5482	**PB06**	A82x76	DIN 5482	**PB29**
40th 16/32	Diametral Pitch	**PD13**	W32x1,25x24	DIN 5480	**PA05**	A28x25	DIN 5482	**PB07**	A85x79	DIN 5482	**PB30**
20th 24/48	Diametral Pitch	**PD14**	W38x1,25x29	DIN 5480	**PA06**	A30x27	DIN 5482	**PB08**	A88x82	DIN 5482	**PB31**
21th 24/48	Diametral Pitch	**PD15**	W30x2x14	DIN 5480	**PA07**	A32x28	DIN 5482	**PB09**	8x10	DIN 5481	**PC01**
23th 24/48	Diametral Pitch	**PD16**	W32x2x14	DIN 5480	**PA08**	A35x31	DIN 5482	**PB10**	10x12	DIN 5481	**PC02**
25th 24/48	Diametral Pitch	**PD17**	W35x2x16	DIN 5480	**PA09**	A38x34	DIN 5482	**PB11**	12x14	DIN 5481	**PC03**
26th 24/48	Diametral Pitch	**PD18**	W37x2x17	DIN 5480	**PA10**	A40x36	DIN 5482	**PB12**	15x17	DIN 5481	**PC04**
27th 12/48	Diametral Pitch	**PD19**	W38x2x18	DIN 5480	**PA11**	A42x38	DIN 5482	**PB13**	17x20	DIN 5481	**PC05**
28th 24/48	Diametral Pitch	**PD20**	W40x2x18	DIN 5480	**PA12**	A45x41	DIN 5482	**PB14**	21x24	DIN 5481	**PC06**
29th 24/48	Diametral Pitch	**PD21**	W42x2x18	DIN 5480	**PA13**	A48x44	DIN 5482	**PB15**	26x30	DIN 5481	**PC07**
32th 24/48	Diametral Pitch	**PD22**	W45x2x21	DIN 5480	**PA14**	A50x45	DIN 5482	**PB16**	30x34	DIN 5481	**PC08**
21th 32/64	Diametral Pitch	**PD23**	W50x2x24	DIN 5480	**PA15**	A52x47	DIN 5482	**PB17**	60x65	DIN 5481	**PC09**

For splined profiles other than those indicated in the table, contact the MP FIltri S.p.A. Technical and Sales Department.

A guide to select the correct bell-housing and drive coupling components

DATA REQUIRED

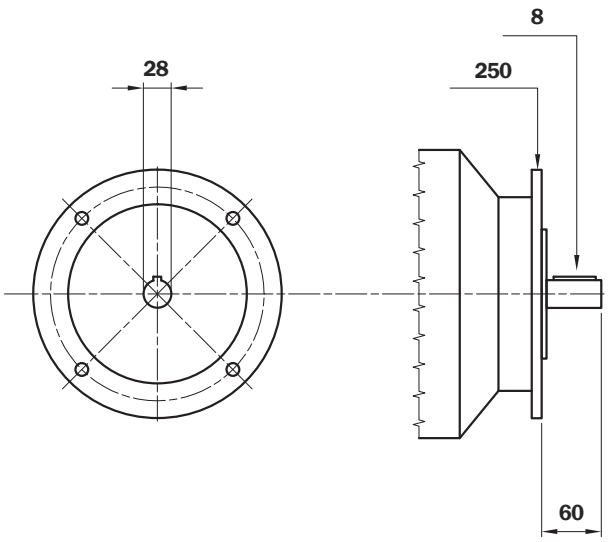
Electric motor power/motor size
Manufacturer and pump type

TO VERIFY:

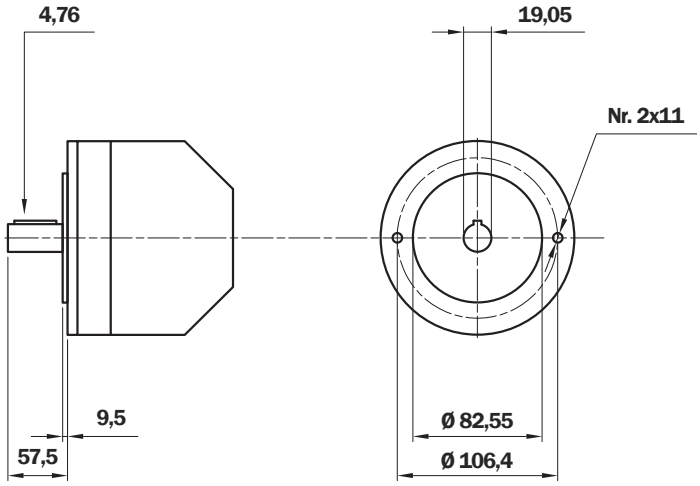
1 - Pump and motor shaft dimensions (see page 67)
2 - Shaft and flange pump (see pump data sheet)

Example:
- Electric motor 2 kW - 4 poles - Motor size 110/112
- Atos pump code PFE31 - Shaft 1

Electric motor's dimension



Pump's dimensions



Bell-Housing's length calculation

- H= 60 + 18 + 57,5 = 135,5 mm (18= Sp spider - see page 49)
- Choose type of bell-housing (LMC - LMS)
  - For LMC see tab. 3 at page 11
  - For LMS see tab. 22 at page 32
  - For MODUL 2/3 see at page 36

Note: The length of bell-housing must be ≥ than the length calculated (135,5 mm)

Case A - solution with LMC bell-housing

Tab. 3 at page 11 - for electric motor 2 kW LMC 250
LMC 250 bell-housing with height ≥ 135,5 - LMC250AFSQ

- The bell-housing code must be completed with drilling pump code (see tab. 35 at page 47)
  For the specific case C= 82,5 - Nr. 2 holes M10: Code drilling 060
- Definitive bell-housing code **LMC250AFSQ060**

Case B - solution with LMS bell-housing

Tab. 22 at page 32 - for electric motor 2 kW LMS 250
LMS 250 bell-housing with heigh ≥ 135,5 - LMS250AFSQ

- The bell-housing code must be completed with drilling pump code (see tab. 35 at page 47)
  For the specific case C= 82,5 - Nr. 2 holes M10: Code for. 060
- Definitive bell-housing code **LMS250AFSQ060**

Choose coupling

- **Motor half-coupling** (see tab. 38 at page 50)

  - For electric motor Gr. 100/112, the half-coupling is **SGEA21M05060**

- **Spider** (see tab. 36 - 37 at page 49)

  - For SGEA21, EGE2 - EGE2RR
    (choose spider material on the base of the application, oil, temperature and cycle machine, etc.)

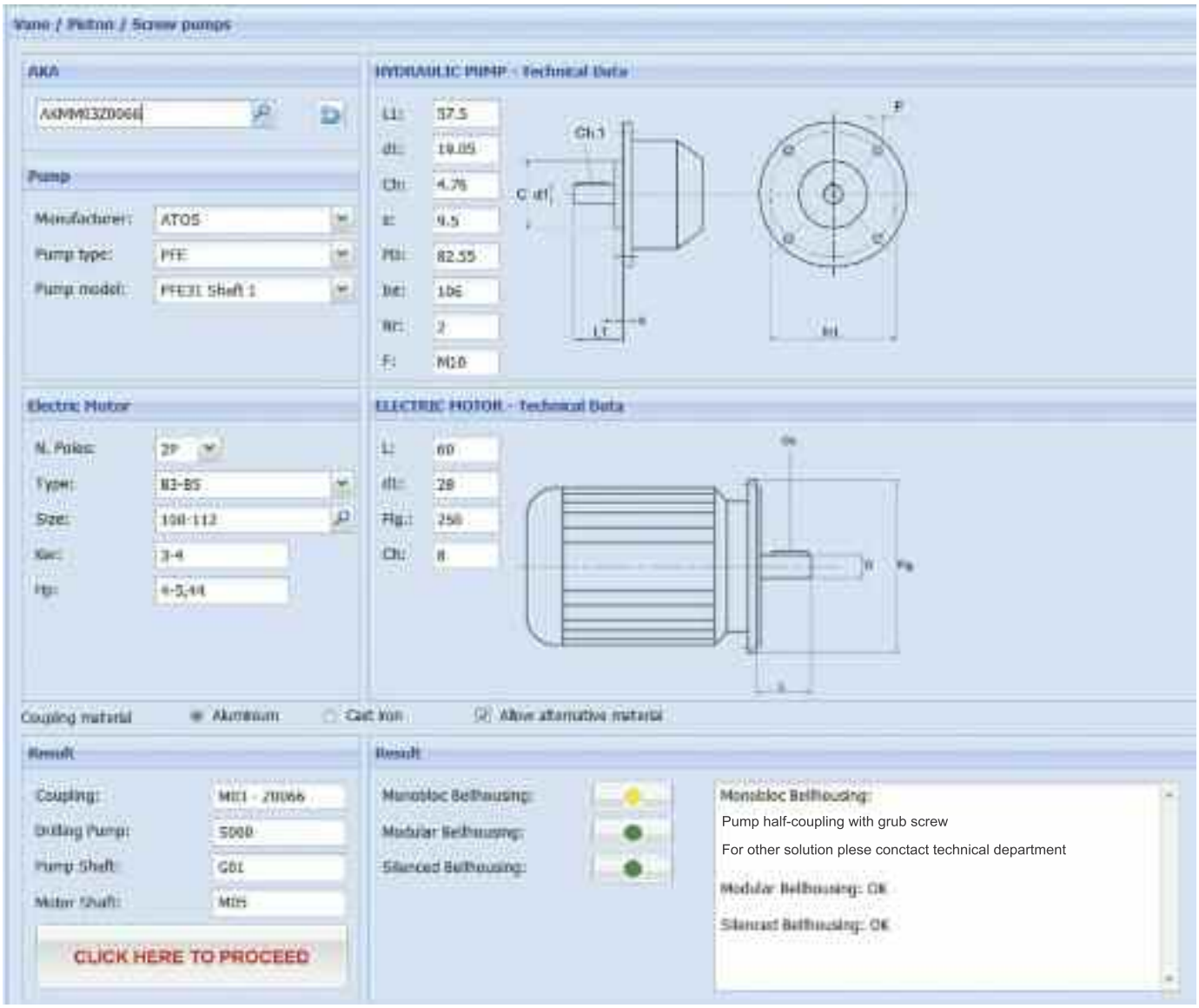
- **Pump half-coupling**

  - Choose the drilling code tab. 44 - 45 at page 53 for shaft 19,05 - Ch. 4,76 - code: **G01**

  - Half-coupling length = L BH lenght – THK Spider – THK Spigot
    LMC= 138 mm - 60 - 18 - 9,5= 50,5 mm
    LMS= 148 mm - 60 - 18 - 9,5= 60,5 mm

  - LMC - Choose the half-coupling's length on tab. 39 at page 50 ≤ 50,5 mm.
  - LMS - Choose the half-coupling's length on tab. 39 at page 50 ≤ 60,5 mm.
  - LMC - Availabe length for SGEA21= 50 mm
  - LMS - Availabe length for SGEA21= 60 mm
  - LMC=LMS - Code half-coupling code: **SGEA21G01050**

Software for automatic calculation available on the web site
www.mpfiltri.com - tools - software



Note: For multi pumps we recommend to use a specific support on the base of the pump's dimensions and weight.

Half-coupling SGE*** series

The half-couplings series SGE*** allow secure transmission between the electric motor and the driven side; they are able to absorb shocks and vibration, in addition to compensating radial misalignment, angular and axial.
The assembly of the couplings can be horizontal/vertical, withstanding vibration and load reversals.

The complete range of couplings are extrapolated from the on-line software, with a length equal than the shaft on which must be mounted and they are completed with grub screw for fixing located on the key.
Available for cilindrical shaft with metric and imperial dimensions as well for splined shafts as per specification DIN, ISO and SAE.

Admissible misalignment radial, angular and axial

Max admissible radial misalignment

Half coupling	R (mm)
SGE * 01	0,5
SGE * 21	1,0
SGE * 31	1,0
SGE * 40	1,0
SGE * 51	1,5
SGE * 60	1,5
SGE * 80	2,0
SGE * 90	2,0

Max admissible angular misalignment

Half coupling	β (°)
SGE * 01	1,5°
SGE * 21	
SGE * 31	
SGE * 40	
SGE * 51	
SGE * 60	
SGE * 80	
SGE * 90	

Max admissible angular misalignment

Half coupling	A (mm)
SGE * 01	2,0
SGE * 21	2,5
SGE * 31	3,0
SGE * 40	3,5
SGE * 51	3,5
SGE * 60	3,5
SGE * 80	4,0
SGE * 90	5,0

Normative ATEX 94/9/CE

Half-couplings SGE*** series are available to use in hazardous area.
The couplings are certified according to ATEX 94/9/CE (ATEX 95).
Category certified 2G - area 1 and 2.
Other information available on our web site “www.mpfiltri.com”.

MP Filtri couplings are developed with:

CAD 3D

FEM (calculation)

Drawings 3D available on website www.mpfiltri.com at section TOOLS/2D-3D COMPONENTS

The half-couplings SGE*** series are in conformity to normative **DIN 740/2**.
The max torque to transmit is always less than the max torque that the coupling can transmit.

Examples verification of the coupling

Torque transmitted by electric motor:

Mt: 9560 x kW / rpm = Nm

Me > Mt x S = Nm

Where:

Mt: Torque transmitted by electric motor

Me: Torque transmitted by coupling (see table 14)

kW: Power of electric motor

Rpm: Revolutions per minute of electric motor

S: Service factor (see table 14)

TABLE 1

Small pumps, uniform load, low operating pressures e.g. rotary action machine tools - 5/8 work cycles per hour	**1.3**
Small pumps, uniform load, high working pressures e.g. lifting equipment - 120-150 work cycles per hour	**1.5**
Pumps, non-uniform load e.g. lifting equipment - 280-300 work cycles per hour	**1.7**

Example
Electric motor, 4 pole - 4 kW
hydraulic pump, uniform load, low operating pressure

Mt: 9560 x 4 / 1500 = 25.45 Nm

Me > 25.49 x 1.3 = 33 Nm

Half-coupling SGEA21 meets the above requirement.

Select the half-coupling of the calculated size from the motor half-couplings table.

Note: When selecting the coupling, remember that for pumps with splined shaft, only cast iron couplings of the SGEG series can be used.

Determine the size of the coupling according to the type of installation and application envisaged, on the basis of the following formulas and tables:

TABLE 2

	Half-coupling type	External diameter mm	Nominal torque Me - Nm	Maximum transmissible torque Me - Nm
ALUMINIUM	SGEA01	43	15	20
	SGEA21	68	160	190
	SGEA31	85	340	380
	SGEA51	109,5	550	620
CAST IRON	SGEG01	40	20	30
	SGEG30	80	400	450
	SGEG40	95	550	620
	SGEG60	120	760	850
	SGEG80	160	2200	2500
	SGEG90	200	5500	6100
STEEL	SGES40	95	550	620
	SGES60	120	760	850
	SGES80	160	2200	2500

Nominal and maximum torque values are referred to couplings assembled with standard flexible spiders of the **EGE**** series (see page 49).
Where higher torques are to be transmitted, use flexible spiders of the **EGE**RR** series (see page 49).

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

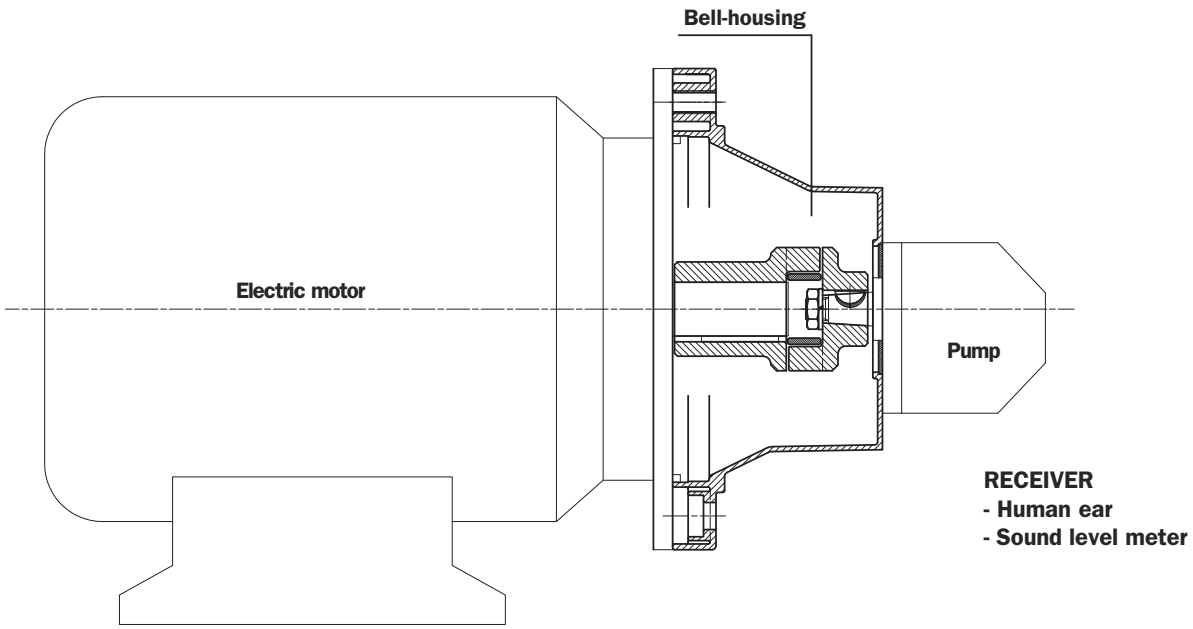
From a health and hygiene standpoint, noise can be defined as an unpleasant and undesirable sound, or an unpleasant and annoying or intolerable auditory sensation (noise being any sound phenomena that may be accompanied by sensations of disturbance and pain). By definition, acoustic phenomena are oscillatory 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
- Receiver

Motor and pump unit



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.

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 hydralic power unit.

• 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.

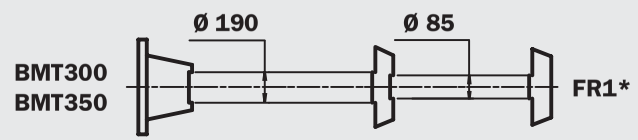
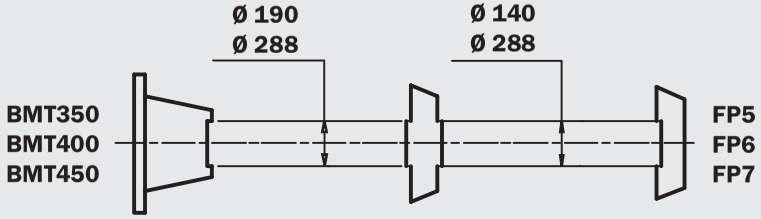
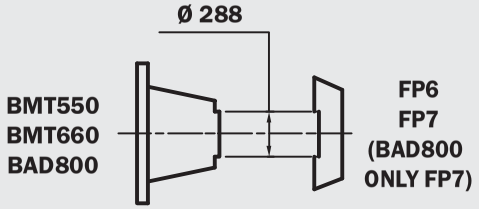
- The pressure pipeline of the pump must be flexible, and long enough to include bends with the minimum radius of curvature recommended by the manufacturer for the specified operating pressure.

- 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.

	5.5 - 7.5 kW	11 - 22	30	37 - 45	55 - 90	110 - 200	250 - 400
	7.5 - 10.2 Hp	15 - 30 Hp	40.80 Hp	50.32 - 61.2 Hp	75 - 125 Hp	150 - 272 Hp	340 - 544 Hp
	Size 225 - D. 450	Size 160/180 D. 350	Size 200 - D. 350	Size 225 - D.450	Size 250/280 D. 550	Size 315 - D. 660	Size 355/400 D. 800
MODUL 3	AR*  Kit of assembly KVG5 (Q.ty 1) + Kit of assembly KVG1 (Q.ty 1)						
	AD*  Kit of assembly KVG5/7 (Q.ty 2)						
MODUL 2						 Kit of assembly KVG6/7 (Q.ty 1)	
	5.5 - 7.5 kW	11 - 22	30	37 - 45	55 - 90	110 - 200	250 - 400
	7.5 - 10.2 Hp	15 - 30 Hp	40.80 Hp	50.32 - 61.2 Hp	75 - 125 Hp	150 - 272 Hp	340 - 544 Hp
	Size 225 - D. 450	Size 160/180 D. 350	Size 200 - D. 350	Size 225 - D. 450	Size 250/280 D. 550	Size 315 - D. 660	Size 355/400 D. 800

ACCESSORIES

The range of products is completed by a number of accessories, including:

Foot brackets, which serve to support the motor-and-pump unit in the event that the selected electric motor does not have mounting feet.

Damping rings, intended mainly for use with motor-pump units positioned vertically and with the pump submerged in the oil tank.

Damping rods, to be mounted under the electric motor feet or under the foot brackets (see page 55).

Inspection covers, facilitating the maintenance of oil tanks in hydraulic power units, without necessarily having to dismantle the unit.

Aluminium tanks of 10 litres capacity, allowing the assembly of a compact hydraulic power unit

Technical specifications

ACCESSORIES

Materials

- **Foot bracket**
  Pressure diecast aluminium alloy.
- **Damping ring**
  Vulcanized aluminium.
- **Damping rod**
  Vulcanized aluminium.
- **Inspection covers**
  Pressure diecast aluminium alloy.
- **Tanks**
  Pressure diecast aluminium alloy.

Temperature

- -30°C ÷ +80°C
  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-HL-HM-HR-HV-HG, to ISO 6743/4 standard

  Water based emulsions
  Types HFAE – HFAS, to ISO 6743/4 standard

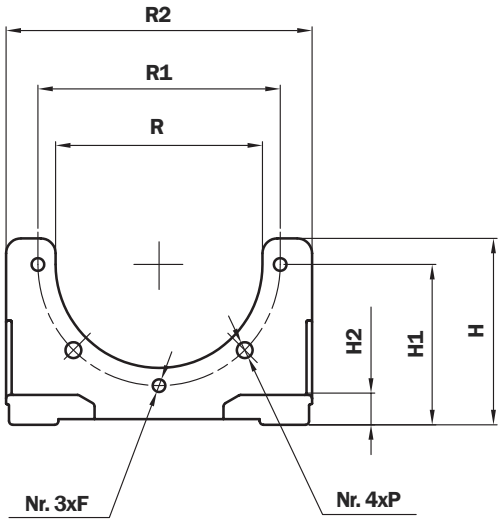
  Water glycol
  Type HFC, to ISO 6743/4 standard
  Ask for anodized version

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.**

Made of pressure die-cast aluminium and featuring superior mechanical strength, these brackets are proportioned to support **UNEL - MEC** frame electric motors with **B5** mounting flange and no feet.
There are brackets available for a range of motors from **size 71, rated 0.37 kW,** up to **size 180 rated 22 kW**.
(For sizes other than those indicated in the table, contact the MP Filtri Technical and Sales Department).

As already indicated under the heading "**ASSEMBLY OF MOTOR AND PUMP UNIT**", foot brackets of the **PDM** series should be fitted preferably in conjunction with anti-vibration mounts.



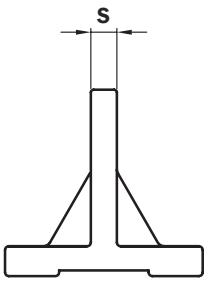


Fig. A

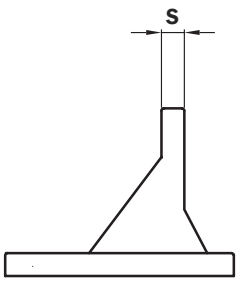
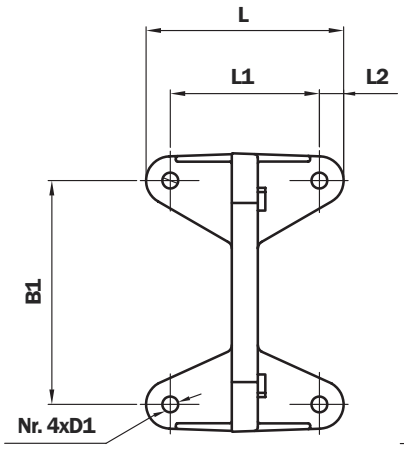


Fig. B



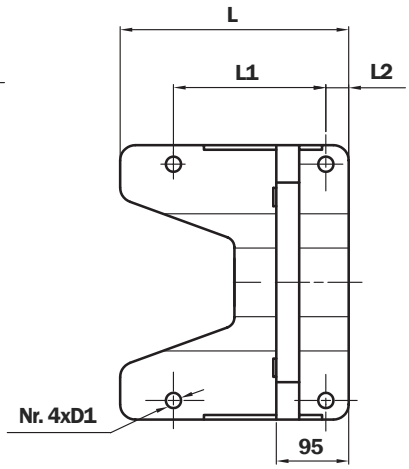


TABLE 46

Foot bracket	Fig.	B	B1	R2	L	L1	L2	H	H1	H2	R	R1	S	P	D1	F	Weight (kg)
PDM A 160	A	160	135	180	106	80	13	100	86	16	111	130	14	8,5	8,5	M8	0,45
PDM A 200	A	200	175	207	128	98	21	128	115	14	146	165	14	11	11,5	M10	0,60
PDM A 250	A	250	220	262	172	130	21	157	145	18	191	215	16	13	13,5	M12	1,20
PDM A 300	A	300	270	320	210	160	25	188	170	18	235	265	20	13	13,5	M12	1,80
PDM A 350	B	350	310	360	300	200	30	220	200	30	261	300	30	18	13	M16	4,80

Damping rings

These vulcanized components consist of two aluminium rings embedded in oil-resistant rubber, which guarantee superior mechanical strength and are particularly suitable for vertically mounted motor-and-pump units.
Positioned between the bell-housing motor flange and the lid of the tank lid, they help to reduce the transmission of vibrations and the emission of noise generated by the system.
Damping rings provide a perfect hydraulic sealing actions by virtue of their special profile, which resembles an O-ring surrounded by a flange with fixing holes.
Rings are available for a range of motors frm **size 80, rated 0.5 kW,** up to **size 180 rated 22 kW.**
The noise level of the motor-pump unit can be reduced by as much as 5 Db (A).

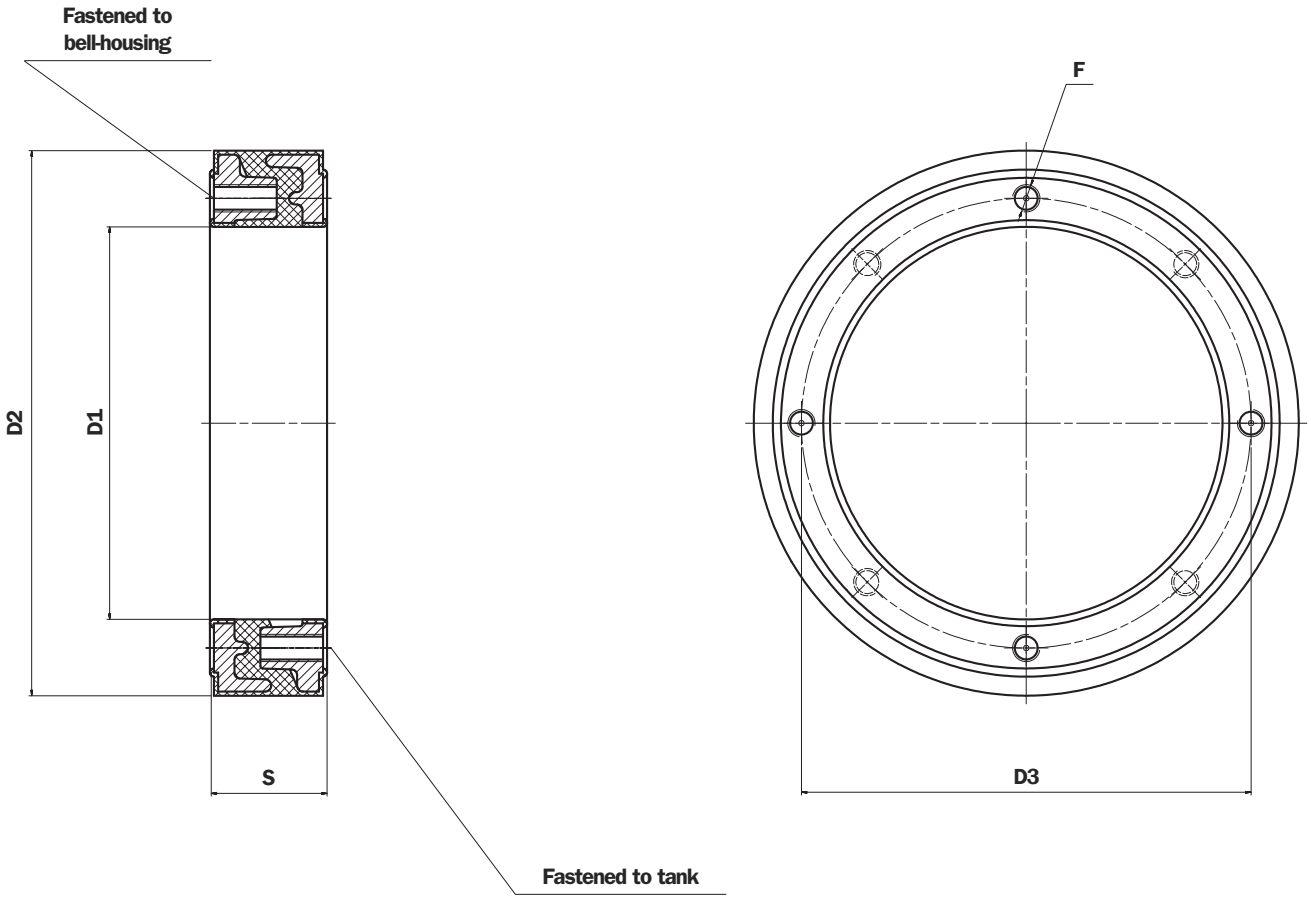


TABLE 47

Foot bracket	D1	D2	D3	S	F	Weight (kg)
ANM A 200	146	200	165	43	M10 (profondità: 16 mm)	1,70
ANM A 250	190	250	215	48	M12 (profondità: 16 mm)	2,53
ANM A 300	239	300	265	53	M12 (profondità: 16 mm)	2,15
ANM A 350	260	350	300	62	M16 (profondità: 20 mm)	3,95

Note: For dimensions other than those indicated in the table, contact the MP Filtri Technical and Sales Department.

Series MPDR and MPDR - PDMA damping rods are elements that are used to reduce the vibrations generated by the motor pump unit; realized with two steel plates and an intermediate element made of vulcanized rubber, they are available for mounting of electric motors according to normative UNEL-MEC, and for the mounting of the series of foot brackets PDMA series.
Available for electric motors **from 0,37 kW Gr. 71** to motors **200 kW Gr. 315**, they are able to reduce the noise level of about **3÷5 Db (A).**

Technical specifications

Materials

- Steel plates, painted black.
- Element in NBR 60 Sh.A
- Element polyurethane on request.

Temperature

- -20°C ÷ +80°C

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**

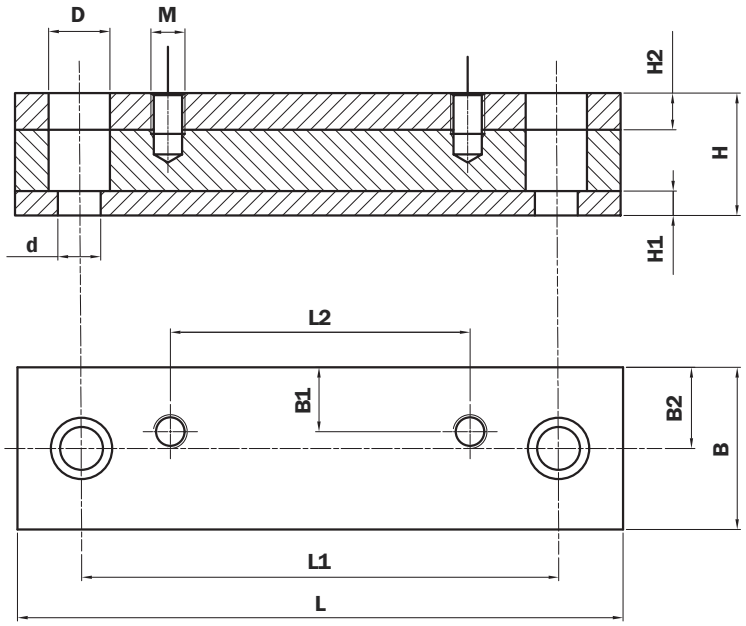


TABLE 48 - Damping rods for foot brackets PDMA series*

Code	L	L1	L2	B	B1	B2	H	H1	H2	D	d	M	Weight (kg)
MPDR PDMA160	196	156	80	50	21	25	40	8	12	20	14	M8	1,5
MPDR PDMA200	196	156	98	50	21	25	40	8	12	20	14	M10	1,5
MPDR PDMA250	240	205	130	50	24	25	40	8	12	20	14	M12	2,0
MPDR PDMA300	280	245	160	50	20	25	45	8	12	20	14	M12	2,5
MPDR PDMA350	446	400	279	70	35	35	60	15	15	26	14	M12	8,0

*For foot brackets see page 55 - table 46

TABLE 49 - Damping rods for electrical motors UNEL-MEC

Code	L	L1	L2	B	B1	B2	H	H1	H2	D	d	M	Weight (kg)
MPDR 71			90		21							M6	1,5
MPDR 80	196	156	100		22								1,7
MPDR 90S					24,5		40					M8	1,7
MPDR 90L	240	205	125	50	24	25		8	12	20	14		2,0
MPDR 100L			140		22								2,0
MPDR 132S	280	245			20		45					M10	2,5
MPDR 132M			178										2,5
MPDR 160M	340	300	210		28								6,0
MPDR 160L	416	370	254							26	18	M12	7,5
MPDR 180M			241										7,5
MPDR 180L	446	400	279	70		35							8,0
MPDR 200L		430	305		35								8,9
MPDR 225S	492		286				60	15	15			M16	8,9
MPDR 225M		445	311										8,9
MPDR 250M			349							33	22		12,5
MPDR 280S			368	100	50	50						M20	15,1
MPDR 280M	614	570	419										15,1
MPDR 315S			406										26,5
MPDR 315M			457	120	60	60						M24	26,5
MPDR 315L	704	660	508										29,2

Aluminium tanks

Made of pressure diecast aluminium alloy, these tanks feature superior strength and optimum design and are ideal for compact hydraulic power units.

Generously proportioned fins ensure efficient cooling.

The tank is supplied with:
- M6 threaded fixing holes for lid
- feet with M8 threaded fixing holes
- G 3/8" threaded drain hole

The lid is sealed by a gasket made of special paper, which must be ordered separately indicating code "GUS 10,0".

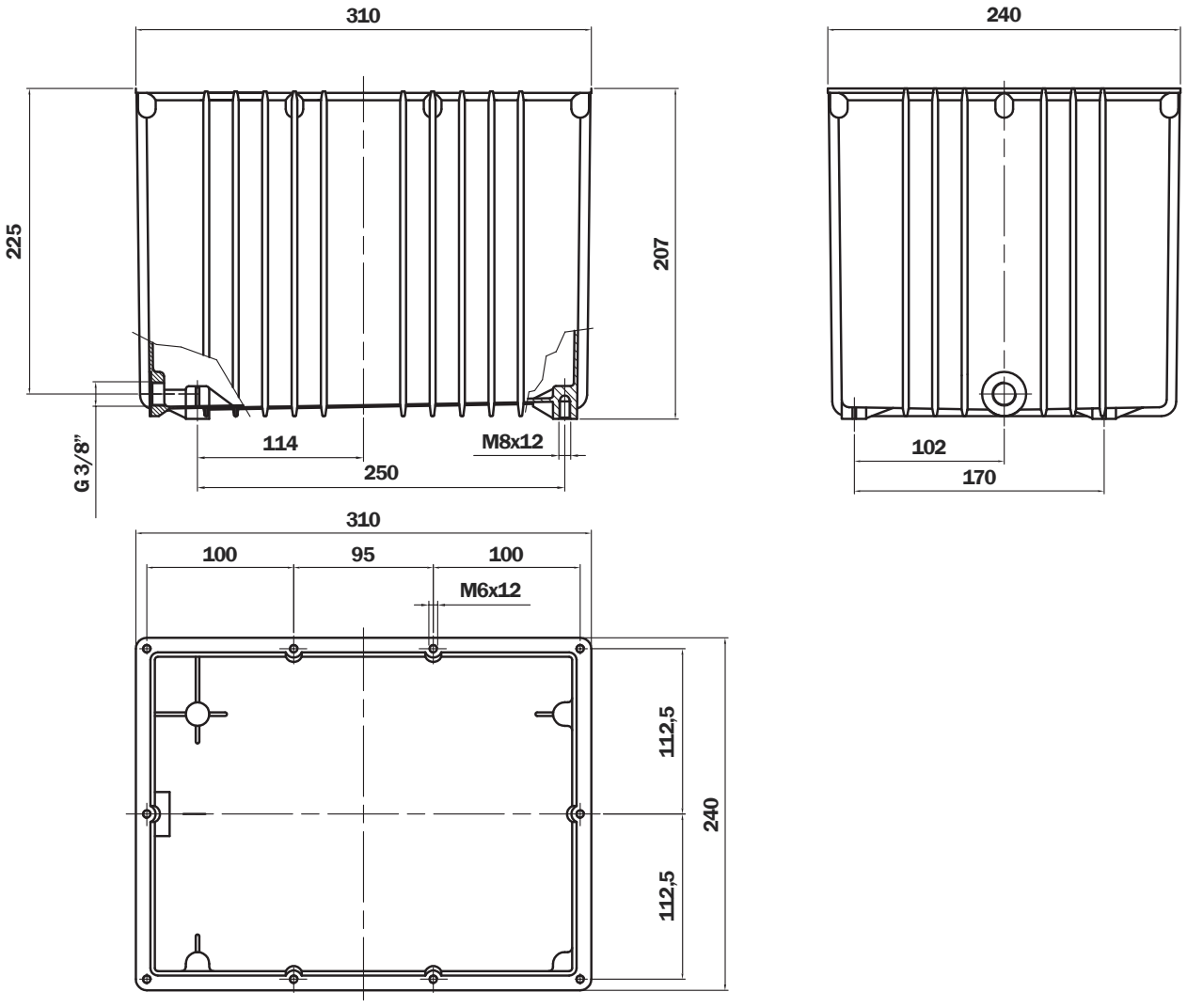


TABLE 50

Code	Weight (kg)
SE10LT	3,95

Seals made of special paper provide the sealing action between the lid of the oil tank and the bell-housing (motor interface) and between the bell-housing and the pump flange.

They are available for motors from size **63** rated **0.12 kW,** up to **size 180 rated 22 kW**, and for all gear pumps listed in this catalogue.

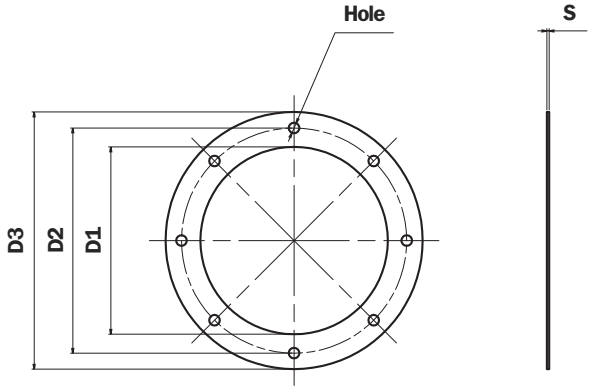


TABLE 51

Bell-housing code	Seals code	D1	D2	D3	S	Hole
LMC 120	**GUM P 120**	84	100	120	1	7
LMC 140	**GUM P 140**	96	115	140		9
LMC 160	**GUM P 160**	110	130	160		9
LMC 200	**GUM P 200**	145	165	200		11
LMC 250	**GUM P 250**	190	215	250		14
LMC 300	**GUM P 300**	234	265	300		14
LMC 350	**GUM P 350**	260	300	350		18

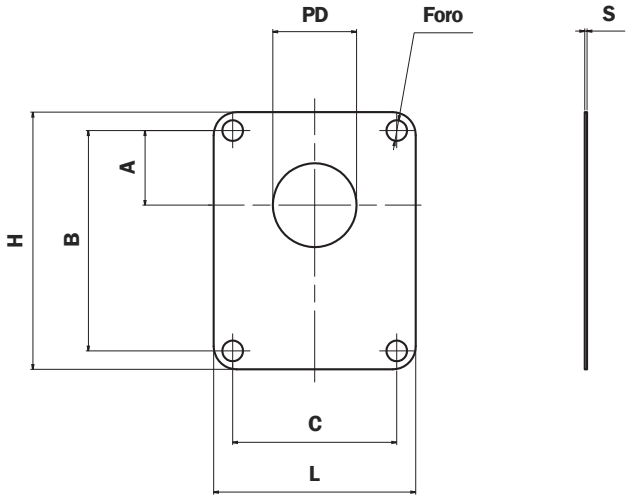


TABELLA 52

Pump code	Seals code	PD	A	B	C	H	L	S	Hole
FS05M	**GUP P001**	22	25.6	66	-	80	48	1	6.5
FS100	**GUP P002**	25.4	26.6	72	52.4	87	67		6.5
FS1M0	**GUP P003**	30	24.5	73	56	85	68		6.5
FS200	**GUP P004**	36.5	32.5	96	71.5	112	88		8.5
FS300	**GUP P005**	50.8	43	128	98.5	148	118		10.5
FSZBR	**GUP P013**	32	10.35	40	40	75	62		8.5
FSZFR	**GUP P014**	80	34.5	100	72	118	90		9

Note: Motor seals and pump seals must be ordered separately,
For seals with dimensions different to those indicated in tables 51 - 52, contact the MP Filtri Technical and Sales Department.

Inspection doors

These pressure diecast aluminium alloy doors offer superior mechanical strength and are manufactured to DIN 24339 standard. They provide easy access to the inside of the oil tank for inspection and cleaning purposes.

On request and for small quantities, to be agreed with MP Filtri Technical and Sales Department, inspection doors can be supplied with:

- Customer logo.
- Hole cut for visual level indicator.
- Hole cut for visual and electrical level indicator.
- Oil sample plug

Technical specifications

INSPECTION DOORS

Materials

- **Inspection cover**
  Pressure diecast aluminium alloy/cast iron
- **Seal**
  Oil-resistant rubber, Sh.A hardenss 70.

Temperature

- -30°C ÷ +80°C
  For temperatures outside this range,
  contact the MP Filtri Technical and Sales Department.

Compatibility with fluids

- **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

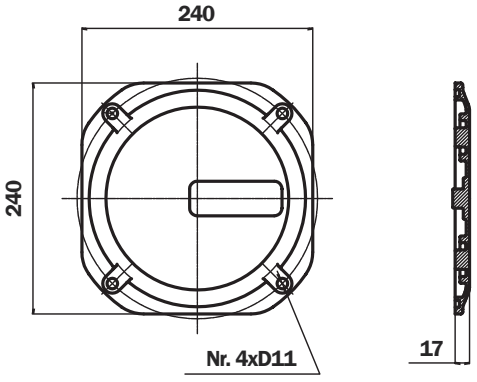
Special Applications

- **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.**

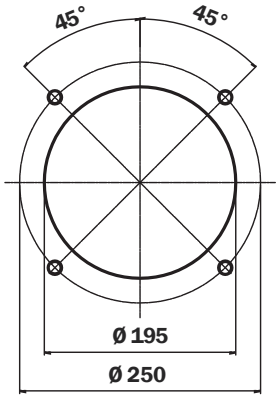
Reminders for correct fitting of inspection covers

- **The thickness of the tank wall must be at least 4 mm or greater**
- **Observe the specified hole dimensions when drilling tank wall (see next page)**
- **Make certain that after welding stud screws or bolts, the tank wall does not present any noticeable deformation**
- **Thoroughly clean the surface of the wall on which the seal will be seated.**
- **Wet the seal with hydraulic oil to prevent the rubber from cracking**
- **Fit the seal carefully to the inspection cover**
- **Tighten the retaining nuts, torquing to 15 Nm**

0B275



Tank wall fixing holes



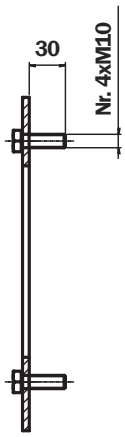


TABLE 53

Code	Weight (kg)
Door with MP Filtri 0B275P01	1,76
Blank door 0B275P02	
Seal GU0275NBR	
Seal FPM GU2750VTN	

0B350

Tank wall fixing holes

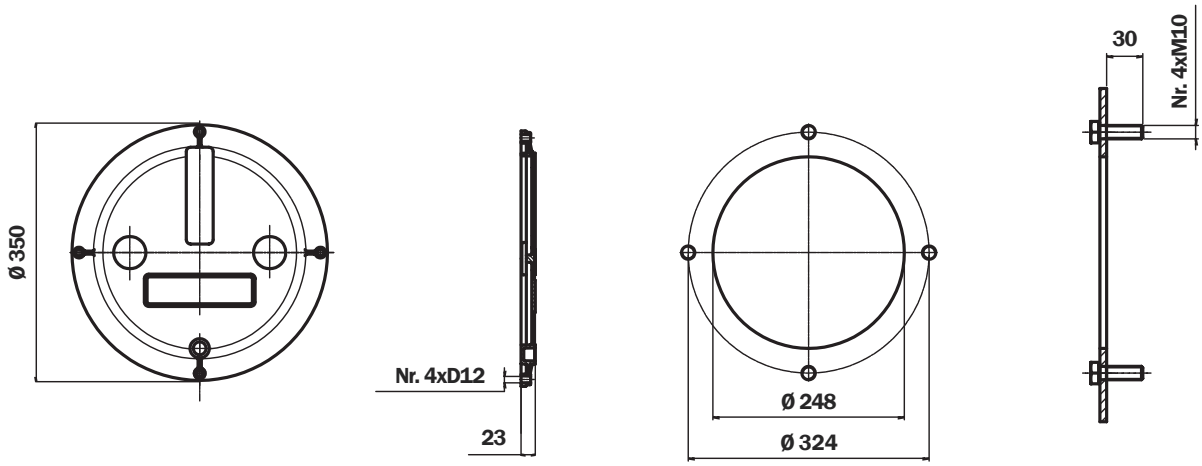


TABLE 54

Code	Weight (kg)
Door 0B350DIN000	
Seal GU0350DINNBR	1,80
Seal FPM GU0350DINVTN	

0B356

Tank wall fixing holes

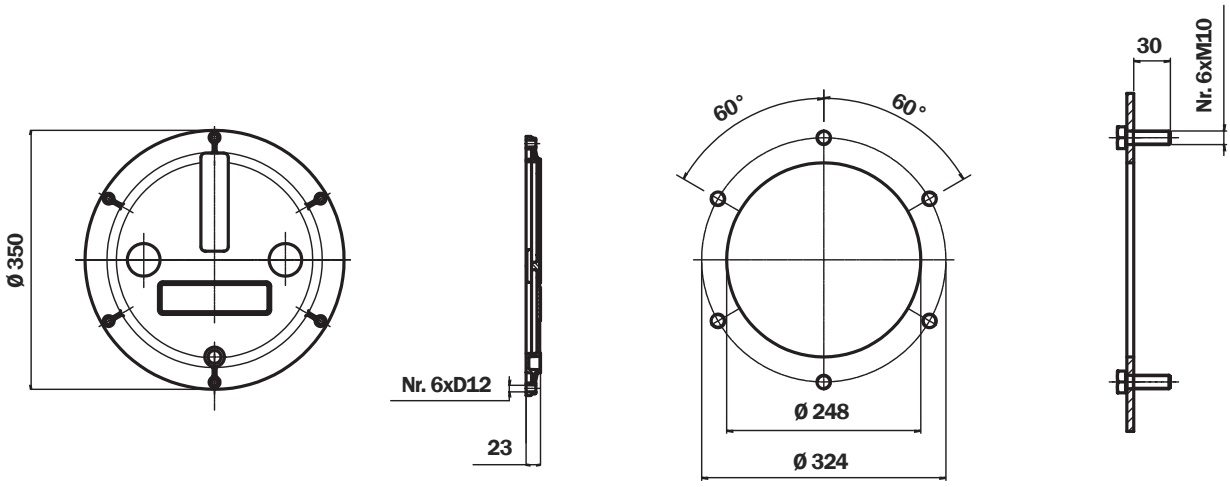


TABLE 55

Code	Weight (kg)
Door 0B356DIN000	
Seal GU0350DINNBR	1,80
Seal FPM GU0350DINVTN	

0B400

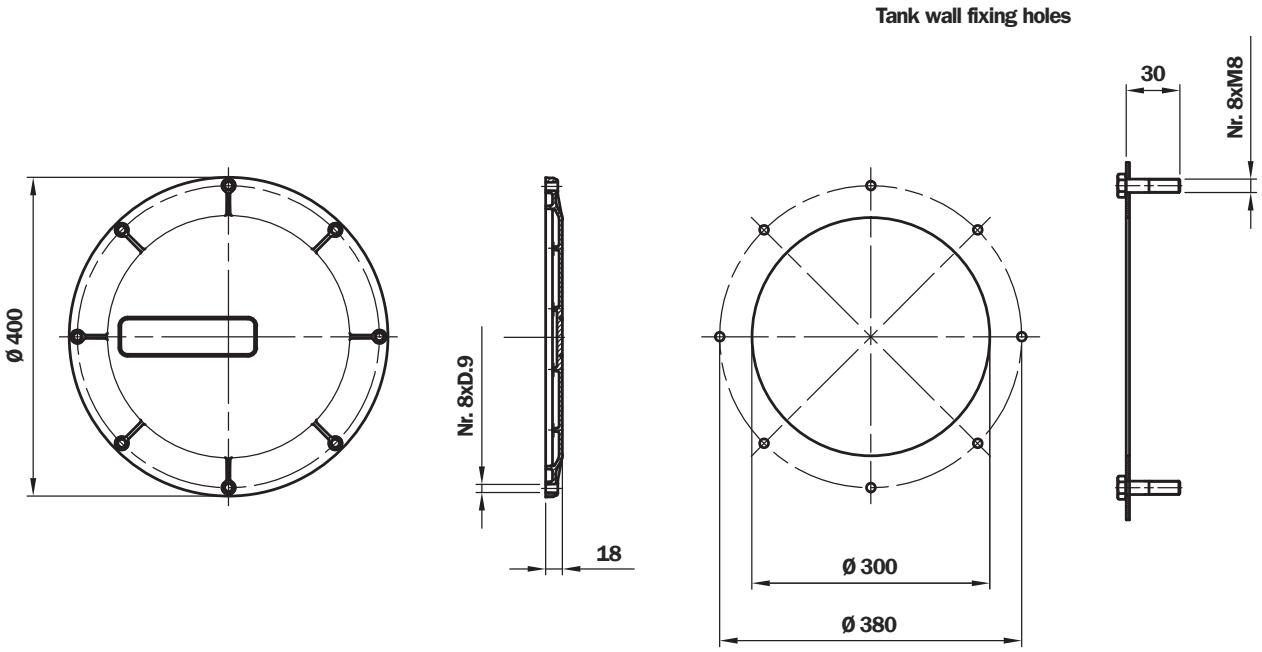


TABLE 56

Code	Weight (kg)
Door with MP Filtri 0B400P01	2,90
Blank door 0B400P02	
Seal GU0400DINNBR	
Seal FPM GU0400DINVTN	

0B475

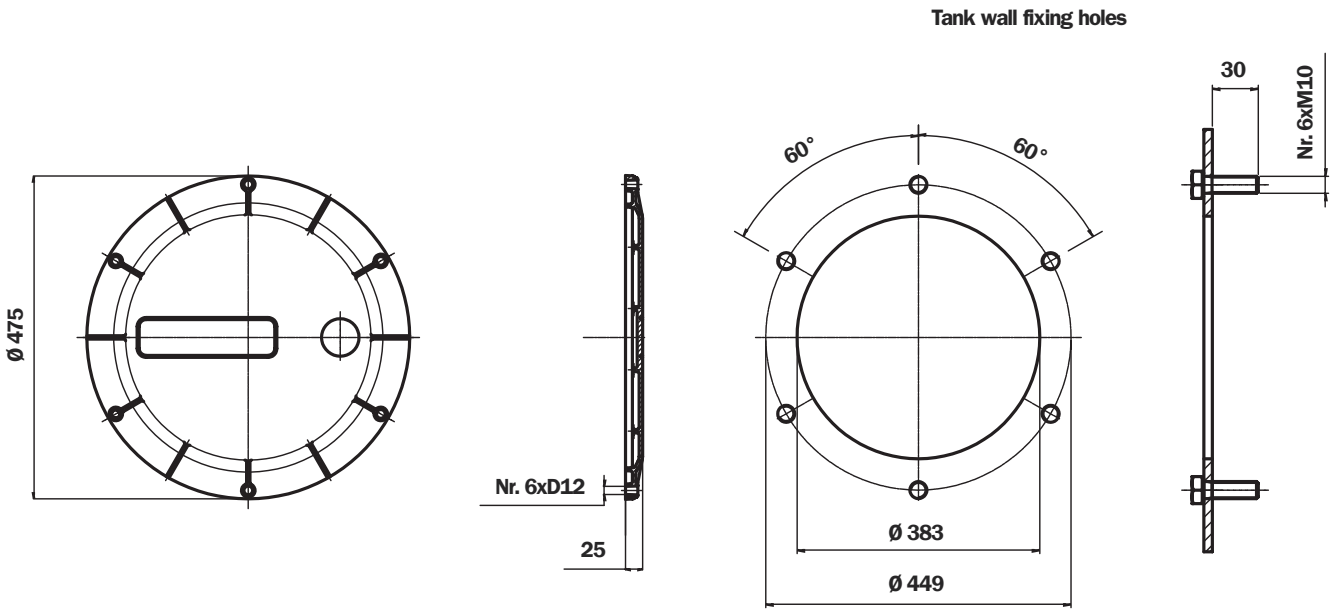
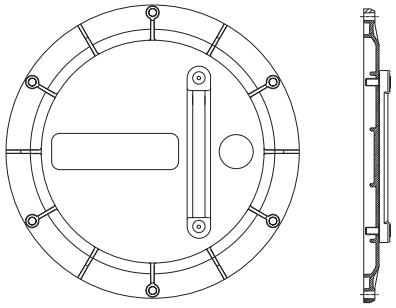


TABLE 57

Code	Weight (kg)
Door with MP Filtri 0B475P01	3,40
Blank door 0B475P02	
Seal GU0475DINNBR	
Seal FPM GU0475DINVTN	

Visual level indicators LVA series



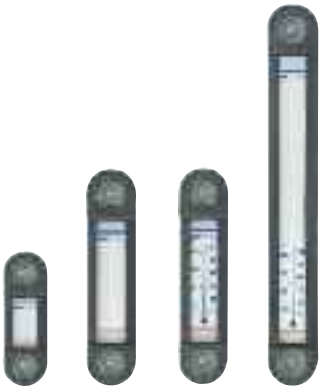
Materials:
Trasparent amorphous polyamide lens
Nylon guard
Seal: Series A-NBR - Series V-FPM

Operating pressure: Max 1 bar at +80°C

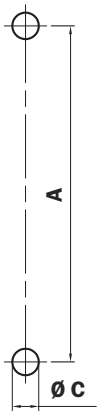
Operating temperature: From -25°C to +80°C

Tightening torque: 10 Nm max.

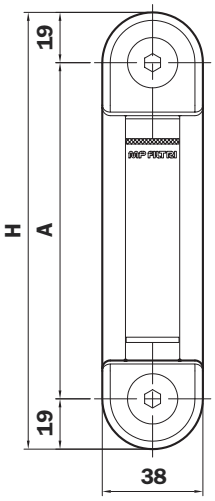
Mineral oils - Synthetic oils - Water base emulsions - Phosphoric esters



Fixing holes



LVA...S



LVA...T

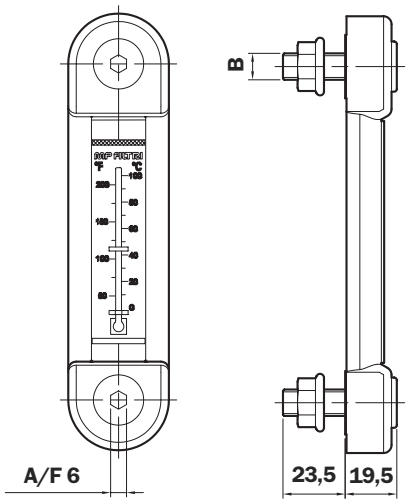


TABLE 58

Size	A mm	H mm
LVA 10	76	114
LVA 20	127	165
LVA 30	254	292

Type	B mm	C mm
LVA...M10	M10	10,5
LVA...M12	M12	12,5
LVA...U38	3/8" UNC	10
LVA...U12	1/2"UNC	13,5

Preparing for to fit the level on request

Code door	Code level
0B275**	LVA 10**
0B350**	LVA 10**
0B356**	LVA 20**
0B400**	LVA 10**
0B475**	LVA 20**
	LVA 30**

Packaging

Type	Nr. pieces per pack
LVA	10

Ordering information LVA

LVA

1	2	3	4	5	6
☐	☐	☐	☐	☐	☐

Example: LVA 20 T A P M10 S01

1 - Style

- 10
- 20
- 30

2 - Accessories

- S — Without thermometer
- T — With thermometer

3 - Seal

- A — NBR
- V — FPM

4 - Cover

- P — Cover Polyamide

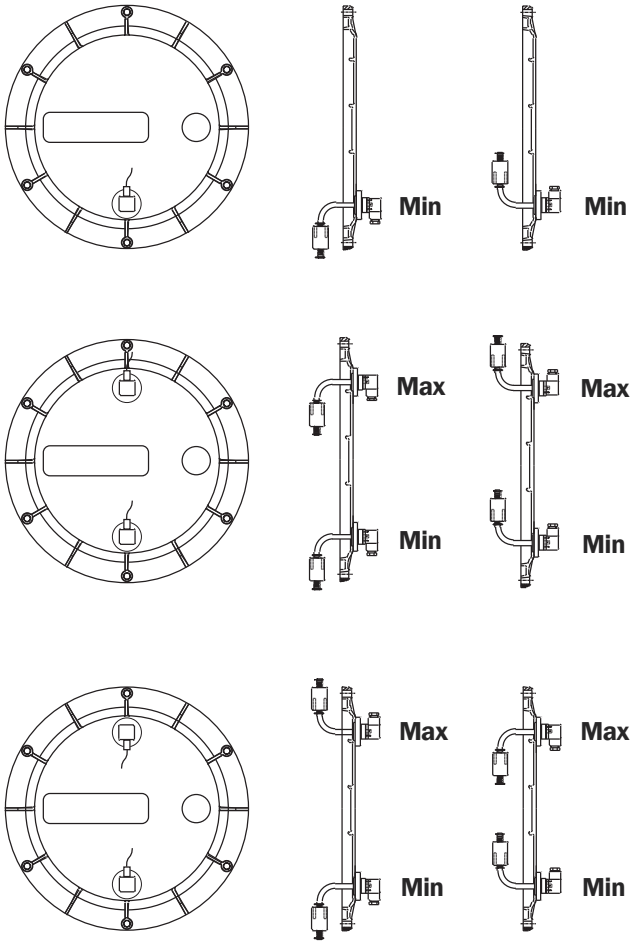
5 - Connections

- M10 — Screws M10
- M12 — Screws M12
- U38 — Screws 3/8" UNC
- U12 — Screws 1/2" UNC

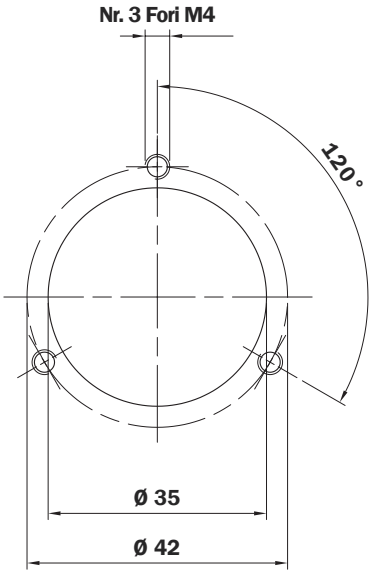
6 - Option

- S01 — With nuts - Logo MP Filtri
- S02 — Without nuts - Logo MP Filtri

Electrical float level indicators LEG series



Layout of fixing holes for LEG level indicator



Note: Arrange the holes according to the position of the level indicator

Prepared for visual indicator - on request

Technical specifications

LEG series electrical level indicators are supplied with a 3-hole fixing flange and a reed switch having NC-NO contacts.
Designed typically for installation on the vertical walls of oil tanks, these instruments can also be mounted to inspection doors of the OB475 series as indicators of minimum and maximum oil levels in the tank.

DIN 43650 CONNECTOR

Materials

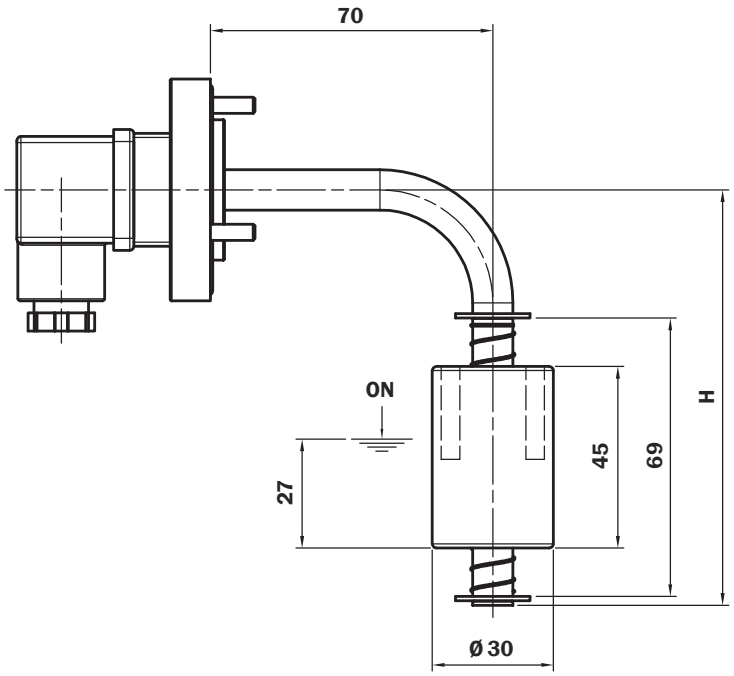
- **Flange**
  Aluminum
- **Rod**
  Brass
- **Float**
  Nylon foam
- **Seals**
  A= NBR
  V= FPM

Temperature

- -15 °C ÷ +80 °C
  For temperatures outside this range,
  contact the MP Filtri Technical and Sales Department.

Warning

To operate correctly, the float must be positioned vertically and at a minimum distance of 35 mm from walls made of ferrous metal.
To change the contact from NC to NO, simply turn the float upside down.
The electrical properties indicated are referred to resistive loads; for capacitive and inductive loads and incandescent lamps, use protection circuits.



LEG 1 Float

To invert the contact status from NO to NC and vice versa, simply invert the float.

Size	H mm
LEG 102	103
LEG 200	200
LEG 300	300
LEG 350	350

Ordering information LEG

Electtrical float level indicators

LEG

	1	2	3	4	5	6	7	8	9
Example: LEG	**A**	**102**	**2**	**A**	**1**	**A**	**F**	**S**	**P01**

1 - Tube material

- **A** Brass

2 - Length

- **102**
- **200**
- **300**
- **350**

3 - Number of floats

- **1** Nr. 1 float

4 - Float material

- **A** Nylon foam

5 - Changeover contacts

- **1** NC

6 - Seals

- **A** NBR
- **V** FPM

7 - Type of fixing

- **F** 3 hole flange

8 - Electrical connection

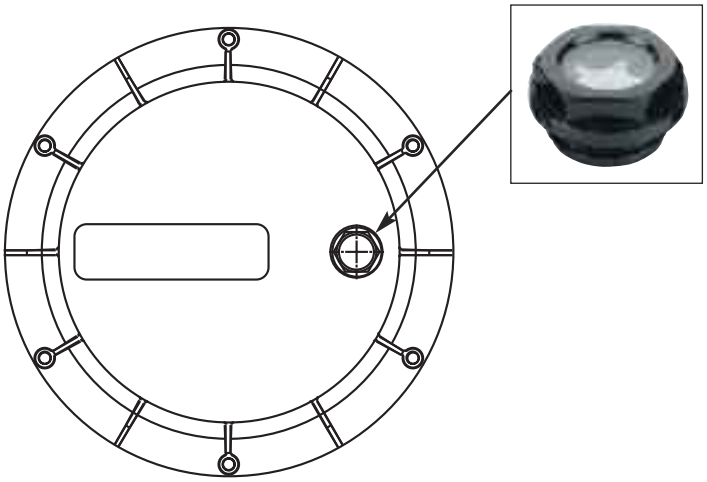
- **S** DIN 43650 connector

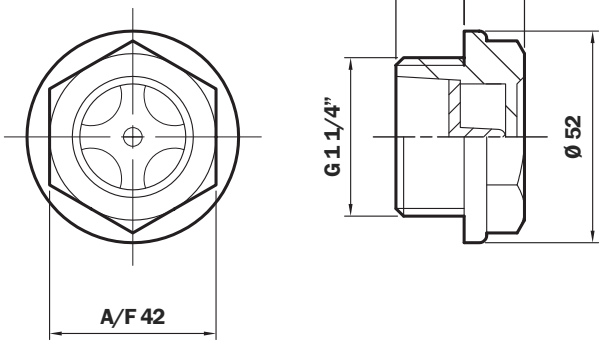
9 - Option

- **P01** MP Filtri standard

Note: For customization features other than those indicated on this page, contact the MP Filtri Technical and Sales Department.

Visual level indicators code: LCP42N...S

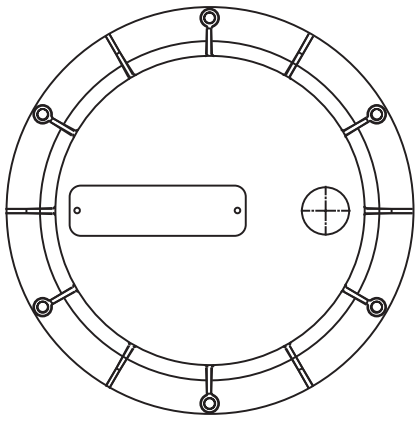




Prepared for electrical indicator on request

Customer customization

Nameplate with customer logo
Ordering information: **OB475LOGOP05**



The nameplates applied to the new inspection door are identical to those applied to the old door.
The difference with the new door is that nameplates are fixed with rivets.

For ordering information codes, minimum order quantities, fixing hole positions and other details not indicated in this publication, contact the MP Filtri Technical and Sales Department.

TABLE 59

Power								Frame	Dimension	Code	Flange dimensions	
8 pole 50 Hz 750 RPM		6 pole 50 Hz 1000 RPM		4 pole 50 Hz 1500 RPM		2 pole 50 Hz 3000 RPM					B5/V1	B1/V18
kW	Hp	kW	Hp	kW	Hp	kW	Hp					
-	-	0.06	0,08	0,12	0,16	0,18	0,24	**63**	11x23	M01	140	-
-	-	0.09	0.12	0.18	0.24	0.25	0.34				-	90
0,09	0,12	0.18	0,24	0,25	0,34	0,37	0,50	**71**	14x30	M02	160	-
0,12	0,16	0.25	0.34	0.37	0.50	0.55	0.75				-	105
0,18	0,24	0.37	0,50	0,53	0,75	0,75	1,02	**80**	19x40	M03	200	-
0,25	0,34	0.55	0.75	0.75	1.02	1.10	1.50				-	120
0,37	0,50	0.75	1,02	1,10	1,50	1,50	2,04	**90**	24x50	M04	200	-
0,55	0,75	1.10	1.50	1.50	2.04	2.20	3.00				-	140
0,75	1,02	1,50	2,04	2,20	3,00	3,00	4,05	**100**	28x60	M05	250	-
1,50	2,04	2,20	3,00	4,00	5,44	4,00	5,44	**112**			-	160
2,20	3,00	3,00	4,08	5,50	7,50	5,50	7,50	**132**	38x80	M06	300	-
3,00	4,08	5,50	7,50	7,50	10,20	7,50	10,20					
4,00	5,44	7,50	10,20	11,00	15,00	11,00	15,00	**160**	42x110	M07	350	-
7,50	10,20	11,00	15,00	15,00	20,40	18,00	25,16					
11,00	15,00	15	20,40	18,50 22,00	25,16 30,00	22,00	30,00	**180**	48x110	M08	350	-
15,00	20,40	18,5 22,00	25,16 30,00	30,00	40,80	30,00 37,00	40,80 50,32	**200**	55x110	M09	400	-
-	-	-	-	-	-	45,00	61,20	**225**	55x110	M09	450	-
18,50 22,00	24,18 30,00	30,00	40,80	37,00 45,00	50,32 61,20	- -	- -	**225**	60x140	M10	450	
-	-	-	-	-	-	55,00	74,80	**250**	60x140	M10	550	-
30,00	40,80	37,00	50,32	55,00	74,80			**250**	65x140	M11	550	-
-	-	-	-	-	-	75,00	102,00	**280**	65x140	M11	550	-
-	-	-	-	-	-	90,00	122,40					
37,00 45,00	50,32 61,20	45,00 55,00	61,20 74,80	75,00 90,00	102,00 122,40	- -	- -	**280**	75x140	M12	550	-
-	-	-	-	-	-	110,00	148,60	**315**	65x140	M11	660	-
-	-	-	-	-	-	200,00	272,00					
55,00 110,00	74,80 149,60	75,00 132,00	102,00 179,50	110,00 200,00	149,60 272,00	- -	- -	**315**	80x170	M13	660	-
-	-	-	-	-	-	250,00	340,00	**355**	75x140	M12	800	-
-	-	-	-	-	-	315,00	428,40					
132,00 20,00	178,52 272,00	160,00 250,00	217,80 340,00	250,00 315,00	340,00 428,40	- -	- -	**355**	95x170	M15	800	-
-	-	-	-	-	-	355,00	482,80	**400**	80x170	M13	800	-
-	-	-	-	-	-	400,00	544,00					
250,00	340	315,00	428,40	355,00 400,00	482,80 544,00	- -	- -	**400**	100x210	M16	800	-