

**Integrated Motor-Pump Units**

## GMP-Type



### Key Features:

**Direct coupling between motor and pump**

**Rotation:** Right (viewed from shaft end)

**Electric motor mounting type:** special B3-B14 (IEC 34-7)

**Rated Voltage:** 230/400V +/-10% at 50 Hz - 266/460V +/-10% at 60 Hz

**Efficiency Class:** IE2

**Available power:** from 0.75kW (1HP) to 9.3kW (12.5 HP)

Series/Name	Rated Displacement (cm <sup>3</sup> /r [in <sup>3</sup> /r])	Maximum Flow Capacity at 1450 rpm (L/min) [US gpm]	Maximum Pressure (bar) [psi]
GMP-16	from 4 [0.24] to 16 [0.98]	from 6 [1.59] to 23 [6.08]	250 [3626]
GMP-20	20 [1.22]	29 [7.66]	160 [2321]
GMP-25	25 [1.53]	36 [9.51]	160 [2321]
GMP-32	32 [1.95]	46 [12.15]	250 [3626]

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**WARNING**

All Berarma pumps have been carefully checked during manufacture and subjected to stringent testing cycles before shipment. To achieve optimum performance, avoid problems and maintain the warranty, the installation instructions enclosed with each pump must be strictly observed.

**NOTES**

Before selection or use of any Berarma product, it is important that the purchaser analyses all aspects of its application and reviews the information in the current Berarma Technical-Sales catalogues. Due to the many different operating conditions and applications for Berarma products, the purchaser, through their own analysis and testing, is solely responsible for making the final selection of the products and assuring that all performance and safety requirements are met.

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## GENERAL DESCRIPTION

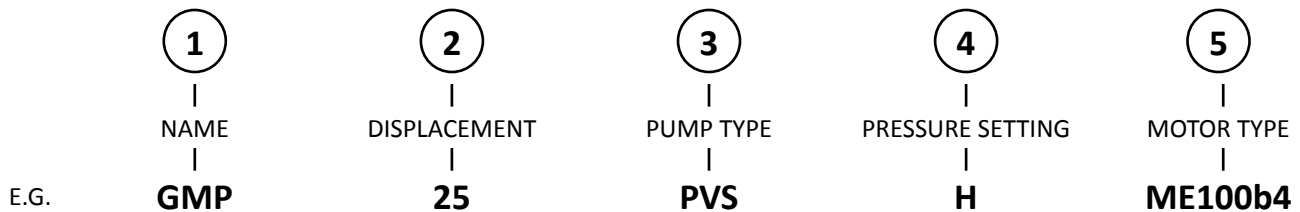
In its constant search for solutions that cut costs, dimensions and simplify the application of its products, Berarma has developed Integrated Motor Pump Units, known as GMP, with direct drive.

The direct coupling system allows all parts between the pump and motor to be eliminated (couplings, bell-housing, supports etc...) and ensures perfect concentricity between the two shafts, avoiding dangerous not-alignment which can cause abnormal wear.

GMPs are produced using Berarma SIZE 05 and SIZE 1 pumps (displacement up to 32 cm<sup>3</sup>/r [1.953 in<sup>3</sup>/r], a maximum working pressure up to 250 bar [3626 psi]) and with asynchronous three-phase electric motors with special mounting flange (rated power 0.75 - 9.3 kW [1.0 - 12.5 HP]).

The GMP is easy and quick to install and can be mounted directly on the powerpack (anti-vibration mounts are recommended).

## ORDERING CODE



- 1** NAME = GMP
- 2** DISPLACEMENT CM<sup>3</sup>/R = 16-20-25-32
- 3** PUMP TYPE = PVS - PSP - PLP - PHV
- 4** PRESSURE SETTING = L - H (see page 4)
- 5** MOTOR TYPE = see page 5

**NOTE:** For further information and/or different operating conditions for pumps and electric motors, please consult the relevant Berarma catalogues or contact Berarma Technical Service.

**PUMP TECHNICAL DATA**

Pump type - Nominal size	PLP 05	PHV 05	PVS 1	PSP 1	PHV 1
Geometric displacement according to UNI-ISO 3662 (cm <sup>3</sup> /r) [in <sup>3</sup> /r]	16 [0.976]	16 [0.976]	20 - 25 [1.220; 1.526]	20 - 25 [1.220; 1.526]	32 [1.953]
Actual displacement (cm <sup>3</sup> /r) [in <sup>3</sup> /r]	17.9 [1.092]	17.9 [1.092]	22.1- 26.9 [1.349; 1.642]	22.1- 26.9 [1.349; 1.642]	34.5 [2.105]
Due to manufacturing tolerances, the value can vary by approx. ± 3%					
Maximum working pressure (bar) [psi]	120 [1.740]	250 [3.625]	100 [1.450]	160 [2.320]	250 [3.625]
Pressure peaks exceeding 30% of the maximum operating pressure must be eliminated by adopting the appropriate measures					
Pressure setting range (bar) [psi]	H - 20/120 [290/1740]	H - 20/250 [290/3625]	L - 15/50 [218/725] H - 30/100 [435/1450]	H - 30/160 [435/2320]	H - 20/250 [290/3625]
Mounting flange and port connections	4 bolt flange (UNI-ISO 3019/2) - GAS-BSP threads (UNI-ISO 228/1)				
Permitted maximum drain port pressure (bar) [psi]	1 [14.5]				
Inlet pressure (bar) [psi]	0.8 - 1.5 absolute [11.6 - 21.8 absolute]				
Speed range (rpm)	800 - 1600				
Rotation direction (viewed from shaft end)	R - Right				
Loads on drive shaft	NO RADIAL OR AXIAL LOADS ALLOWED				
Maximum torque on primary shaft (Nm) [lb in]	110 [974]	130 [1.151]	197 [1.744]	197 [1.744]	250 [2.213]
Hydraulic fluid	HM hydraulic oil according to ISO 6743/4; HLP hydraulic oil according to DIN 51524/2 for other fluids contact Berarma Technical-Sales Service				
Viscosity range (cSt, mm <sup>2</sup> /s)	22 - 68 at operating temperature				
Starting viscosity under full flow conditions (cSt, mm <sup>2</sup> /s)	400 max				
Viscosity index according to ISO 2909	100 min				
Inlet fluid temperature range (°C) [°F]	+15 / +60 [59 / 140]- pay attention to viscosity range				
Maximum acceptable fluid contamination level	20/18/15 according to ISO 4406/99, CLASS 9 according to NAS 1638				
Recommended fluid contamination level for a longer pump working life	18/16/113 according to ISO 4406/99, CLASS 7 according to NAS 1638				
Pump weight (kg) [lb]	7.4 [16.3]	16.5 [36.4]	12 [26.5]	13 [28.7]	27 [59.5]

## ELECTRIC MOTOR TECHNICAL DATA

The motors described in this catalogue are built according to international standards. Each dimension is calculated with reference to the tables in standard IEC 72-1. The power output for each size at 1500 - 1000 r/min has been established by UNE/IEC documents, which define the values.

Asynchronous three-phase motors are closed, externally ventilated, with cage rotor and dynamically balanced.

<b>Mounting type</b>	special B3 - B14 (IEC 34-7)
<b>Rated voltage</b>	230/400V ±10% at 50Hz 266/460V ±10% at 60Hz
<b>Efficiency class</b>	IE2
<b>Insulation class</b>	F (IEC 34-1)
<b>Degree of protection</b>	IP 55 (EN 60529)
<b>CE mark</b>	Community directives 73123/EEC & 891336/EEC
<b>Duty service</b>	S1 (IEC 34-1)
<b>Ventilation</b>	Bidirectional fan with radial blades made of plastic to resist high temperatures. Fan housing is made of sheet metal.
<b>Frame, flanges and shields</b>	Die-casting aluminium alloy Without coating
<b>Terminal box position</b>	Right (viewed from shaft end) Left or top position on request
<b>Options</b>	Thermal protection against peak loads Protection against peak currents CSA-C/US mark Electric motor with different voltage/frequency ATEX certification

### 4 poles- 1500 r/min - 50Hz

type	power kW (HP)	rpm	$\eta$ %	power factor PHI	current A (400 v)
ME80 a4	0.75 (1.0)	1430	79.6	0.76	1.8
ME80 b4	1.1 (1.5)	1420	81.4	0.80	2.5
ME80 c4	0.9 (1.2)	1430	80.5	0.81	2.0
ME90 Sa4	1.1 (1.5)	1430	82.2	0.76	2.6
ME90 La4	1.5 (2.0)	1410	82.8	0.80	3.4
ME90 Lb4	1.87 (2.5)	1410	83.7	0.82	4.0
ME100 a4	2.2 (3.0)	1420	84.3	0.81	4.7
ME100 b4	3.0 (4.0)	1420	85.5	0.81	6.3
ME112 a4	4.0 (5.5)	1430	86.6	0.76	8.9
ME132 La4	5.5 (7.5)	1460	88.8	0.84	10.6
ME132 Lb4	7.5 (10.0)	1450	89.8	0.82	14.7
ME132 Lc4	9.3 (12.5)	1440	89.3	0.82	18.4

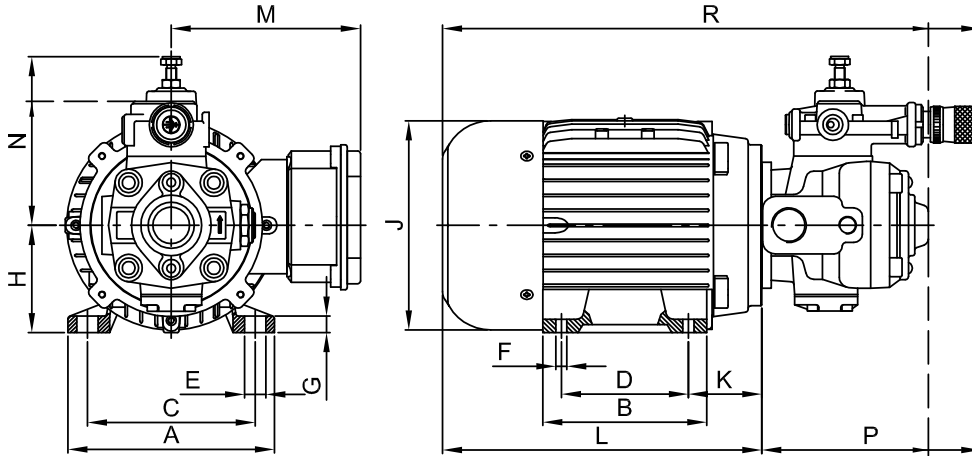
### 6 poles- 1000 r/min - 50Hz

type	power kW (HP)	rpm	$\eta$ %	power factor PHI	current A (400 v)
ME90 Sa6	0.75 (1.0)	920	75.9	0.76	1.9
ME90 La6	1.1 (1.5)	930	78.1	0.70	3.0
ME100 b6	1.5 (2.0)	940	79.8	0.77	3.6
ME112 a6	2.2 (3.0)	960	82.8	0.69	5.5
ME112 b6	3.0 (4.0)	950	83.3	0.77	6.9
ME132 Sa6	3.0 (4.0)	960	83.3	0.76	7.0
ME132 La6	4.0 (5.5)	960	84.6	0.73	9.5
ME132 Lb6	5.5 (7.5)	960	86.0	0.74	12.7

The performances indicated refer to the following ambient conditions:

- altitude below 1000 m [3281 ft] above sea level
- ambient temperature +5°C / +40°C [41°F / 104°F] (Pn <0.6 kW)[Pn <0.82 HP]
- ambient temperature -15° / +40°C [5°F / 104°F] (Pn >0.6 kW) [Pn >0.82 HP]
- relative humidity 30% / 95% (without condensation)

**OVERALL DIMENSIONS**



For complete pump dimensions, please refer to the corresponding technical catalogue.

Pump	Motor	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R
PLP 05	ME80	154	125	125	100	17.5	9.5	11	80	156	52	237	141	164 [6,457]	107 [4,213]	344 [13,543]
PHV 05		[6.063]	[4.921]	[4.921]	[3.937]	[0.689]	[0.374]	[0.433]	[3.150]	[6.142]	[2.047]	[9.331]	[5.551]	131 [5,158]	145 [5,709]	382 [15,039]
PLP 05	ME90 S	174	130	140	100	17.5	9.5	13	90	176	56	250	146	164 [6,457]	107 [4,213]	357 [14,055]
PHV 05														131 [5,158]	145 [5,709]	395 [15,551]
PVS 1														161 [6,339]	159 [6,260]	409 [16,102]
PSP 1														119 [4,685]	210 [8,268]	460 [18,110]
PHV 1														151 [5,945]	175 [6,890]	425 [16,732]
PLP 05	ME90 L	174	155	140	125	17.5	9.5	13	90	176	56	275	146	164 [6,457]	107 [4,213]	382 [15,039]
PHV 05														131 [5,158]	145 [5,709]	420 [18,110]
PVS 1														161 [6,339]	159 [6,260]	434 [17,087]
PSP 1														119 [4,685]	210 [8,268]	485 [19,094]
PHV 1														151 [5,945]	175 [6,890]	450 [17,717]
PLP 05	ME100	192	175	160	140	21.2	11.2	15	100	194	62	304	157	164 [6,457]	107 [4,213]	411 [16,181]
PHV 05														131 [5,158]	145 [5,709]	449 [17,677]
PVS 1														161 [6,339]	159 [6,260]	463 [18,228]
PSP 1														119 [4,685]	210 [8,268]	514 [20,236]
PHV 1														151 [5,945]	175 [6,890]	479 [18,858]
PLP 05	ME112	226	175	190	140	21.2	11.2	15	112	220	70	325	169	164 [6,457]	107 [4,213]	432 [17,008]
PHV 05														131 [5,158]	145 [5,709]	470 [18,504]
PVS 1														161 [6,339]	159 [6,260]	484 [19,055]
PSP 1														119 [4,685]	210 [8,268]	535 [21,063]
PHV 1														151 [5,945]	175 [6,890]	500 [19,685]
PLP 05	ME132 S	260	180	216	140	21.2	11.2	17.5	132	256	88	380	195	164 [6,457]	107 [4,213]	487 [19,173]
PHV 05														131 [5,158]	145 [5,709]	525 [20,669]
PVS 1														161 [6,339]	159 [6,260]	539 [21,220]
PSP 1														119 [4,685]	210 [8,268]	590 [23,228]
PHV 1														151 [5,945]	175 [6,890]	555 [21,850]
PLP 05	ME132 L	260	218	216	178	21.2	11.2	17.5	132	256	88	410	195	164 [6,457]	107 [4,213]	517 [20,354]
PHV 05														131 [5,158]	145 [5,709]	555 [21,850]
PVS 1														161 [6,339]	159 [6,260]	569 [22,402]
PSP 1														119 [4,685]	210 [8,268]	620 [24,409]
PHV 1														151 [5,945]	175 [6,890]	585 [23,031]

Note: dimensions inside [ ] are in inches

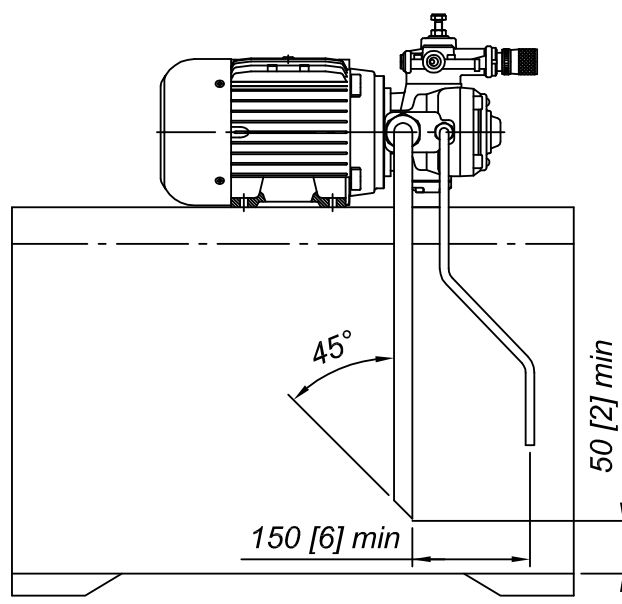
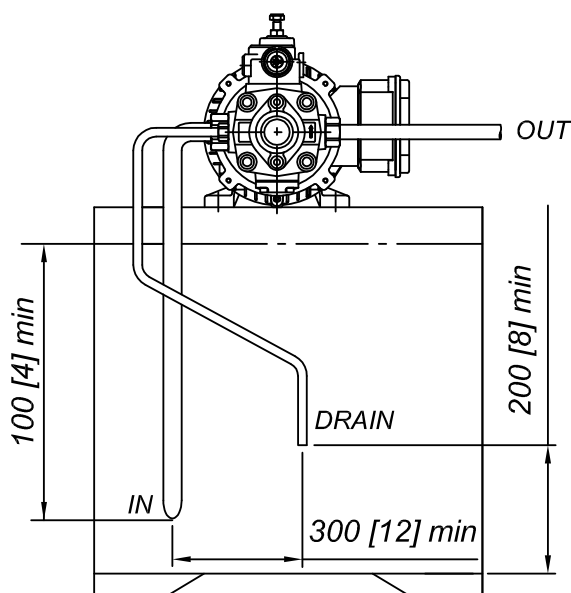


## INSTRUCTIONS FOR INSTALLATION AND USE

- 1) GMP integrated Motor-Pump Units must be mounted on a horizontal axis (see figure).  
When the pump is installed above the tank oil level, pay attention to the inlet pressure (see page 4).  
The minimum section of the inlet pipe must be equal to the section of the thread of the pump inlet port.  
The inlet pipes should be as short as possible, with a small number of bends and without internal section changes.
- 2) All return and drain pipes must be positioned so that the oil cannot be sucked back directly by the pump (see figure).  
The oil tank must be suitably sized in order to exchange the thermal power generated by the various system components and to provide a low recycle rate.  
To ensure the maximum pump working life, the inlet oil temperature must never be above 60°C (140°F).  
In systems where the pump runs for a long time under zero flow setting conditions, the installation of a heat exchanger in the drain line is recommended.  
The pressure on the drain port must never exceed the specified value (page 4).

The drain pipe must always be independent from other return lines, connected directly to the tank and extended sufficiently inside the tank so as to be below the minimum oil level to avoid generating foam. Moreover, the drain pipe must be free of restrictions and as far as possible from the inlet pipe.

- 3) No induced RADIAL or AXIAL LOADS are allowed on the pump shaft.
- 4) During initial installation, the pump must be run under maximum flow conditions (P connected to T), with the oil flowing directly into the tank, in order to induce air bleeding.  
This phase must run for several minutes.  
Pump priming (delivery of oil to the outlet) must occur within a few seconds, otherwise the pump must be turned off and the operation repeated.  
Subsequent start-ups under zero flow setting conditions are admissible only with pressure not exceeding 30 bar (435 psi), and with the system and pump completely filled with oil.  
During the initial and subsequent starting operations, the difference between the oil temperature and the ambient temperature (body pump temperature) must not exceed 20°C (68°F).



Note: dimensions inside [ ] are in inches

**ASSEMBLY**

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