IMMERSION PUMPS

SACEMI

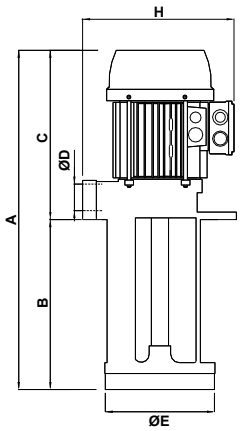
Immersion pumps

Type IMM 80B

Uses

They are suitable for transferring liquids containing impurities up to 3 mm in size.
Their hydraulic components: impeller in brass, feed screw and pump body in aluminium allow them to be used with water, emulsions, with a viscosity not exceeding 21 cSt (3° Engel)..
They are commonly used on:
- machine tools (milling and turning machines)
- glass processing machinery (TRI version)
- surface treatment plants
- filtration systems
- air-conditioning systems

They are normally installed on a tank with a capacity which is proportional to their flow rate, about 4-5 cm from the bottom.
It is important to make sure that the maximum liquid level in the tank is always 3-4 cm lower than the support flange (see figure).
Should the liquid be particularly dirty, it is advisable to build a compartment tank in order to allow the sludge to deposit before it is sucked by the pump.
For different uses, please consult our Technical Office.



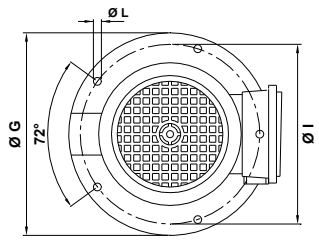
Size and weights table

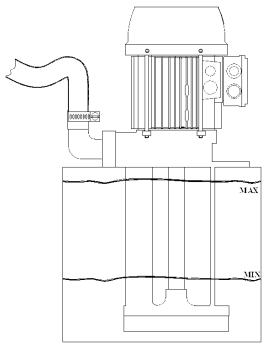
Type of pump	A mm	B mm	C mm	ØD	ØE mm	ØF mm	ØG mm	H mm	ØI mm	ØL mm	Mass kg
IMM 80B	485	200 T	285	1 ¼"	202	220	250	260	235	9 (n.5)	15.4
	535	250 T									15.9
	585	300 T									16.4
	635	350 T									16.9

On demand: T= TRI mode

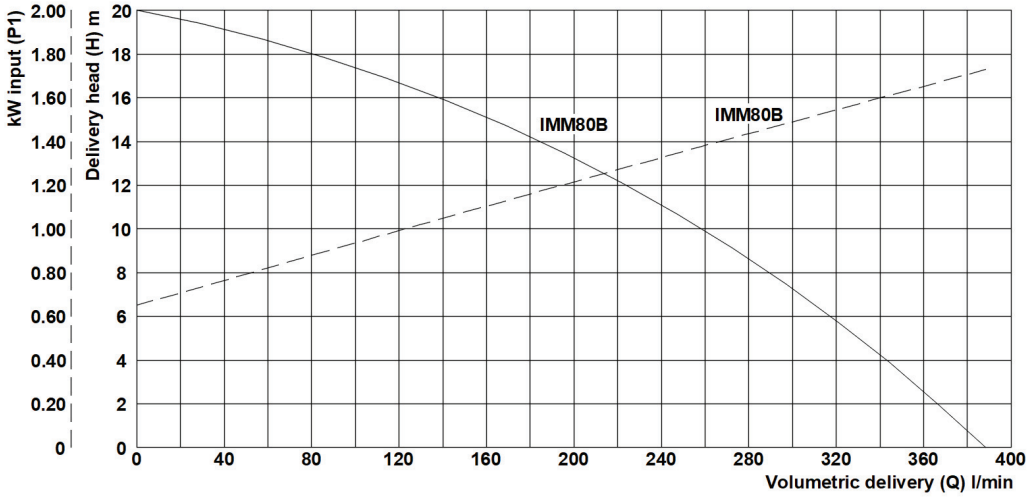
Rating plate data

Type of pump	Input kW (P1)	Output kW (P2)	V (Hz 60)	In Amp	n min^{-1}	cos φ	Q - maxQ litres/min	maxH - H metres
IMM 80B	1,86	1.5	265/460	4.90/2.80	3465	0.82	80 - 388	18 - 0



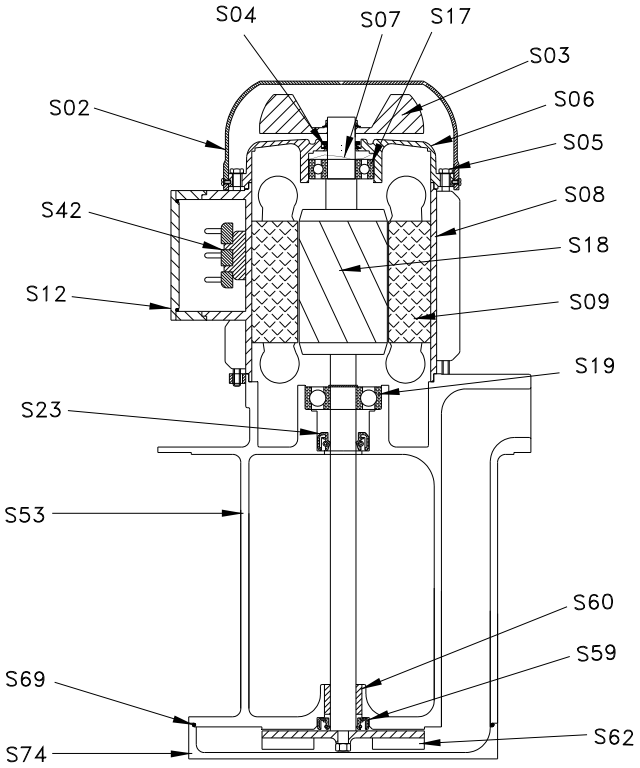


Hydraulic performance curves (open impeller)



Hydraulic performance table (open impeller)

Delivery head (H) m →	0	1	2	3	4	5	6	7	8	9	10	12	14	16	18	20
Type of pump	Volumetric delivery (Q) l/min ↓															
IMM 80B	388	378	366	355	344	332	319	303	289	275	260	224	185	140	80	



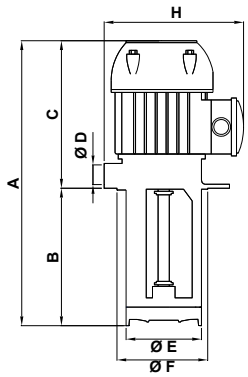
Spare parts nomenclature

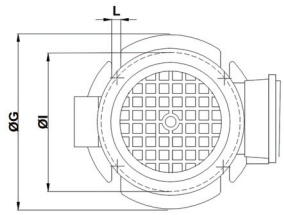
	Component	Materials
S02.	Fan cover	Sheet metal
S03.	Fan	Nylon
S04.	V-ring	NBR
S05.	Stay rod	Steel
S06.	Upper shield	Aluminium
S07.	Spring ring	Steel
S08.	Housing	Aluminium
S09.	Wound stator	-
S12.	Terminal box	Aluminium
S17.	Upper bearing	-
S18.	Axis + rotor	Steel*
S19.	Lower bearing	-
S23.	Motor seal ring	NBR
S42.	Terminal board	-
S53.	Pump body	Aluminium
S59.	Seal ring	NBR
S60.	Bushing	Bronze
S62.	Impeller	Brass 58
S69.	O-ring	NBR
S74.	Impeller-cover	Aluminium

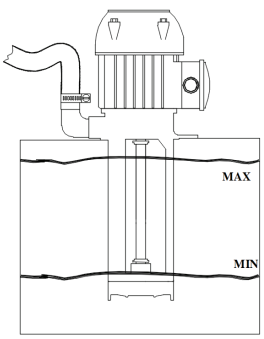
*On demand Ax.AISI 416

Immersion pumps

Type SPV 12-18







Uses

They are suitable for transferring liquids containing impurities up to 3 mm in size.
Their hydraulic components: impeller, feed screw and pump body in PBT allow them to be used with water, emulsions, with a viscosity not exceeding 21 cSt (3° Engel). They are commonly used on:
- machine tools (milling and turning machines-drills)
- glass processing machinery (TRI version)
- printing machines

They are normally installed on a tank with a capacity which is proportional to their flow rate, about 3-4 cm from the bottom.
It is important to make sure that the maximum liquid level in the tank is always 3-4 cm lower than the support flange (see figure).
Should the liquid be particularly dirty, it is advisable to build a compartment tank in order to allow the sludge to deposit before it is sucked by the pump.
For different uses, please consult our Technical Office.

Size and weights table

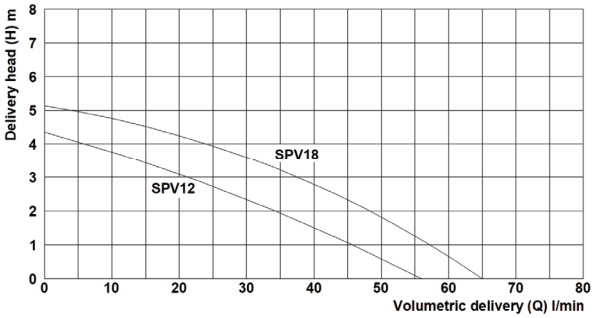
Type of pump	A mm	B mm	C mm	ØD	ØE mm	ØF mm	ØG mm	H mm	ØI mm	L mm	Mass kg
SPV 12	255	90 T	165	3/4"	98	100	130	151	115	7 (n°4)	2.8
	285	120 T									2.9
	335	170 T									2.9
	385	220 T									3.0
	435	270 T									3.1
	515	350									3.3
SPV 18	255	90 T	165	3/4"	98	100	130	151	115	7 (n°4)	2.8
	285	120 T									2.9
	335	170 T									3.0
	385	220 T									3.1
	435	270 T									3.2
	515	350									3.3

On demand: T= TRI mode

Rating plate data

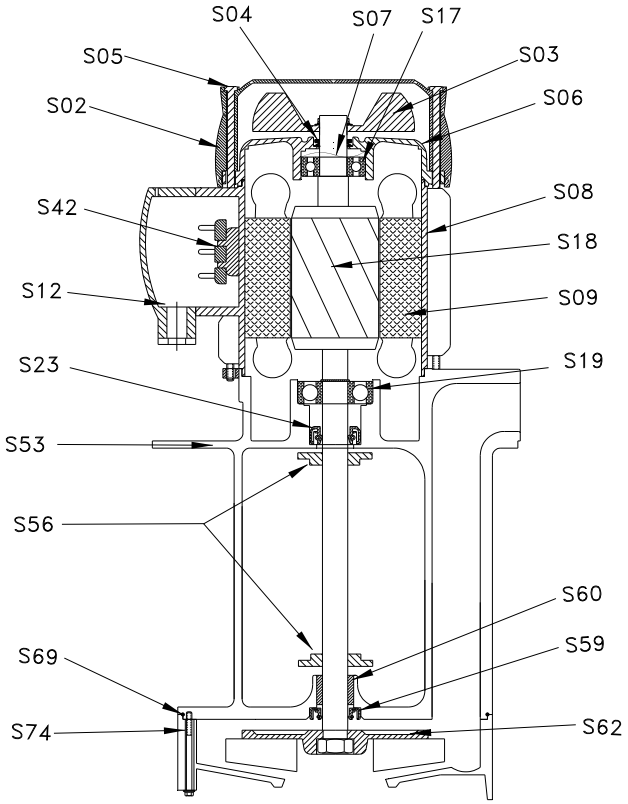
Type of pump	Input kW	V (Hz 60)	In Amp	n min^{-1}	cos φ	Q - maxQ litres/min	maxH - H metres
SPV 12	0.15	230/400	0.56/0.32	3400	0.70	6 - 56	4 - 0
		208-230/440-460	0.57/0.33				
		318-346/550-600	0.56/0.32				
SPV 18	0.16	230/400	0.62/0.36	3400	0.72	4 - 65	5 - 0
		208-230/440-460	0.51/0.34				
	0.18	318-346/550-600	0.53/0.31				

Hydraulic performance curves (open impeller)



Hydraulic performance table (open impeller)

Delivery head H (M) →	0	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6
Type of pump	Volumetric delivery (Q) l/min ↓												
SPV 12	56	51	46	40	34	28	21	14	6				
SPV 18	65	61	57	53	48	43	38	31	24	16	4		



Spare parts nomenclature

	Components	SPV 12 Materials	SPV 18 Materials
S02.	Fan cover	Nylon	Nylon
S03.	Fan	Nylon	Nylon
S04.	V-ring	NBR	NBR
S05.	Stay rod	Steel	Steel
S06.	Upper shield	Aluminium	Aluminium
S07.	Spring ring	Steel	Steel
S08.	Housing	Aluminium	Aluminium
S09.	Wound stator	-	-
S12.	Terminal box	Nylon	Nylon
S17.	Upper bearing	-	-
S18.	Axis + rotor	Steel*	Steel*
S19.	Lower bearing	-	-
S23.	Motor seal ring	NBR	NBR
S42.	Terminal board	-	-
S53.	Pump body	PBT	PBT
S56.	TRI washer	PBT	PBT
S59.	Seal ring	NBR**	NBR**
S60.	Bushing	Bronze**	Bronze**
S62.	Impeller	PBT	PBT
S69.	O-ring	NBR	NBR
S74.	Impeller-cover	PBT	PBT

*On demand. Ax. AISI 316
**Available only on suction pipe 220-270-350

*On demand. Ax. AISI 316
**Available only on suction pipe 220-270-350

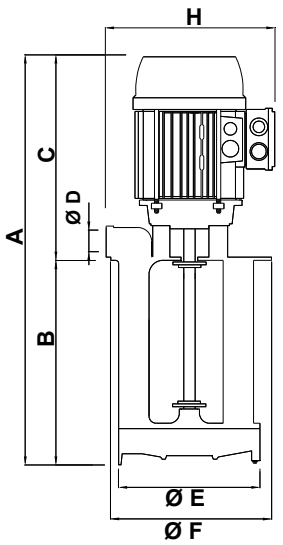
Immersion pumps

Type SPV 25-33

Uses

They are suitable for transferring liquids containing impurities up to 3 mm in size.
Their hydraulic components: impeller, feed screw and pump body in PBT allow them to be used with water, emulsions with a viscosity not exceeding 21 cSt (3° Engel).
They are commonly used on:
- machine tools (milling and turning machines-drills)
- glass processing machinery (TRI version)
- printing machines
- air-conditioning systems
- filtration systems

They are normally installed on a tank with a capacity which is proportional to their flow rate, about 3-4 cm from the bottom.
It is important to make sure that the maximum liquid level in the tank is always 3-4 cm lower than the support flange (see figure).
Should the liquid be particularly dirty, it is advisable to build a compartment tank in order to allow the sludge to deposit before it is sucked by the pump.
For different uses, please consult our Technical Office.



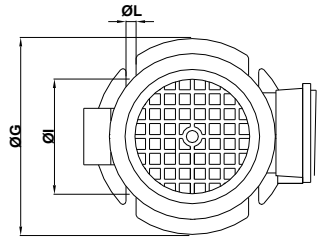
Size and weights table

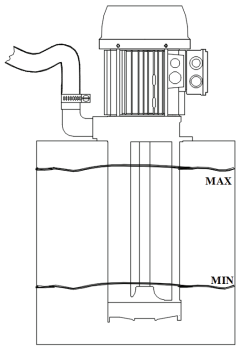
Type of pump	A mm	B mm	C mm	ØD	ØE mm	ØF mm	ØG mm	H mm	ØI mm	L mm	Mass kg
SPV 25	300	90 T	210	3/4"	98	100	130	170	115	7 (n.4)	4.3
	330	120 T									4.4
	380	170 T									4.5
	430	220 T									4.6
	480	270 T									4.7
	560	350									4.8
SPV 33	300	90 T	210	3/4"	98	100	130	170	115	7 (n.4)	4.8
	330	120 T									4.9
	380	170 T									5.0
	430	220 T									5.1
	480	270 T									5.2
	560	350									5.3

On demand: T= TRI mode

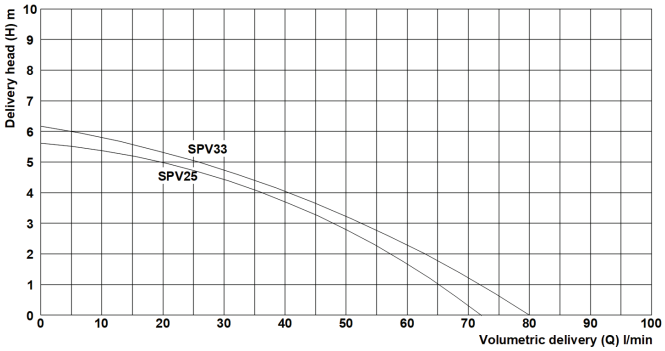
Rating plate data

Type of pump	Input kW	V (Hz 60)	In Amp.	n min^{-1}	cos φ	Q - maxQ litres/min	maxH - H metres
SPV 25	0.16	230/400	0.71/0.41	3400	0.74	20 - 72	5 - 0
	0.19	208-230/440-460	0.77/0.50				
	0.16	318-346/550-600	0.45/0.25				
SPV 33	0.17	230/400	0.81/0.47	3400	0.68	5 - 80	6 - 0
		208-230/440-460	0.77/0.50				
		318-346/550-600	0.56/0.32				



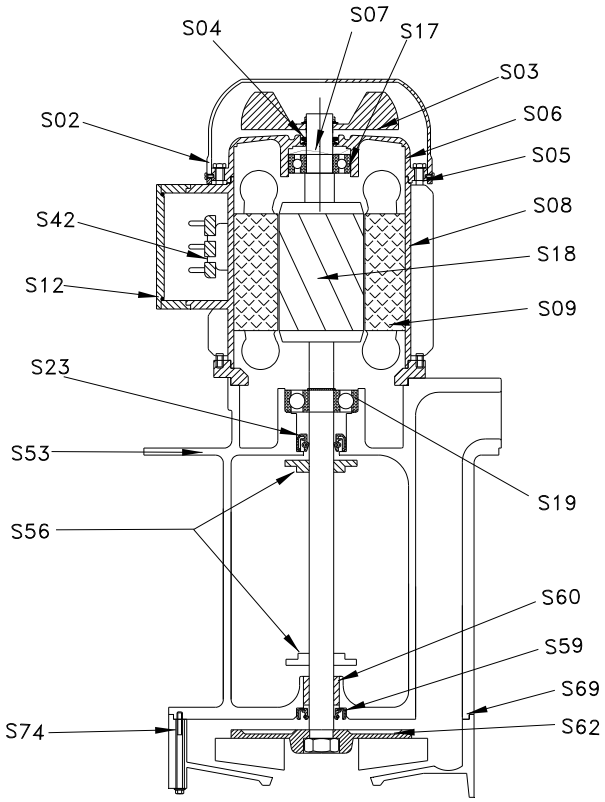


Hydraulic performance curves (open impeller)



Hydraulic performance table (open impeller)

Delivery head (H) m → / Type of pump	0	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7
	Volumetric delivery (Q) l/min ↓														
SPV 25	72	69	65	62	58	53	48	42	36	29	20	6			
SPV 33	80	76	72	68	63	58	53	47	41	34	26	17	5		



Spare parts nomenclature

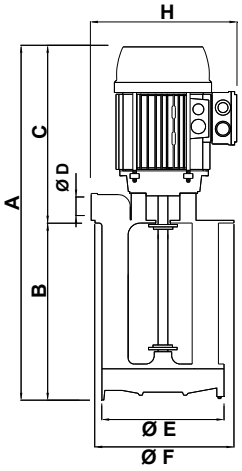
	Component	SPV 25 Materials	SPV 33 Materials
S02.	Fan cover	Sheet metal	Sheet metal
S03.	Fan	Nylon	Nylon
S04.	V-ring	NBR	NBR
S05.	Stay rod	Steel	Steel
S06.	Upper shield	Aluminium	Aluminium
S07.	Spring ring	Steel	Steel
S08.	Housing	Aluminium	Aluminium
S09.	Wound stator	-	-
S12.	Terminal box	Aluminium	Aluminium
S17.	Upper bearing	-	-
S18.	Axis + rotor	Steel*	Steel*
S19.	Lower bearing	-	-
S23.	Motor seal ring	NBR	NBR
S42.	Terminal board	-	-
S53.	Pump body	PBT	PBT
S56.	TRI washer	PBT	PBT
S59.	Seal ring	NBR**	NBR**
S60.	Bushing	Bronze**	Bronze**
S62.	Impeller	PBT	PBT
S69.	O-ring	NBR	NBR
S74.	Impeller-cover	PBT	PBT

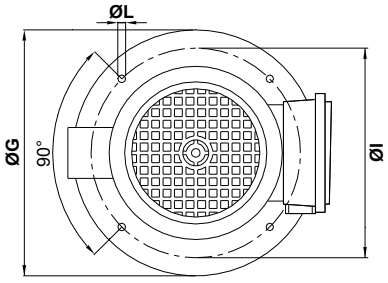
*On demand. Ax. AISI 416
**Available only on suction pipe 350

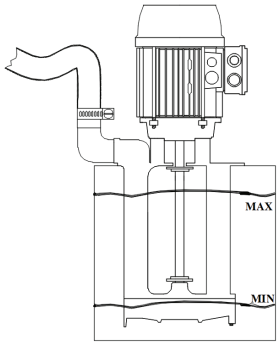
*On demand. Ax. AISI 416
**Available only on suction pipe 350

Immersion pumps

Type SPV 50-75







Uses

They are suitable for transferring liquids containing impurities up to 3 mm in size.
Their hydraulic components: impeller, feed screw and pump body in Nylon allow them to be used with water, emulsions with a viscosity not exceeding 21 cSt (3° Engel).
They are commonly used on:
- machine tools (milling and turning machines)
- glass processing machinery
- printing machines
- air-conditioning systems
- spray booths

They are normally installed on a tank with a capacity which is proportional to their flow rate, about 3-4 cm from the bottom.
It is important to make sure that the maximum liquid level in the tank is always 3-4 cm lower than the support flange (see figure).
Should the liquid be particularly dirty, it is advisable to build a compartment tank in order to allow the sludge to deposit before it is sucked by the pump.
For different uses, please consult our Technical Office.

Size and weights table

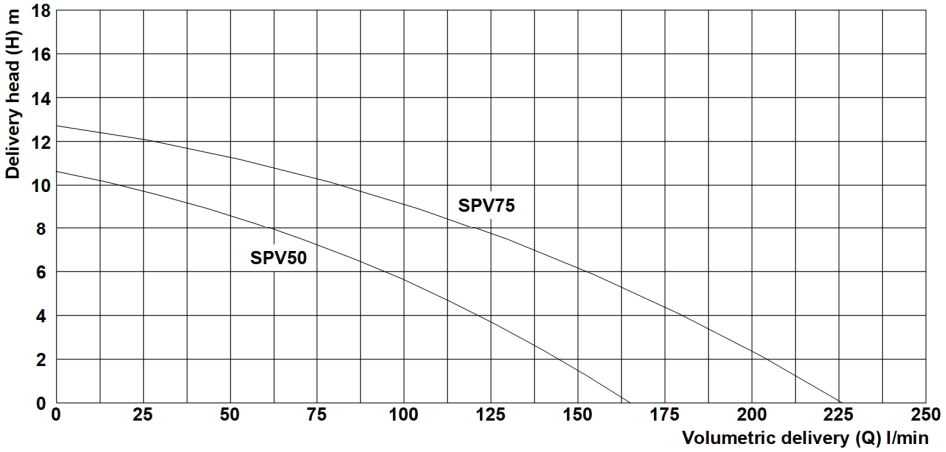
Type of pump	A mm	B mm	C mm	ØD	ØE mm	ØF mm	ØG mm	H mm	ØI mm	ØL mm	Mass kg
SPV 50	460	200 T	260	1 ¼"	138	140	180	215	160	7 (n.4)	7.7
	530	270 T									8.3
	610	350									8.9
SPV 75	460	200 T	260	1 ¼"	138	140	180	215	160	7 (n.4)	8.7
	530	270 T									9.2
	610	350									9.9

On demand: T= TRI mode

Rating plate data

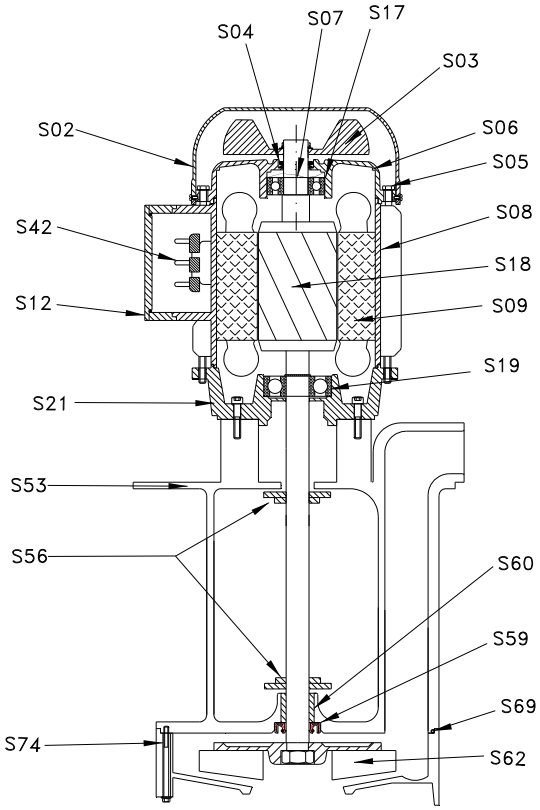
Type of pump	Input kW	V (Hz 60)	In Amp.	n min^{-1}	cos φ	Q - maxQ litres/min	maxH - H metres
SPV 50	1.15	230/400	3.00/1.68	3400	0.75	18 - 165	10 - 0
		208-230/440-460	3.10/1.65				
		318-346/550-600	2.40/1.20				
SPV 75	1.25	230/400	3.50/2.30	3400	0.79	28 - 226	12 - 0
		208-230/440-460	3.60/2.00				
		318-346/550-600	2.40/1.40				

Hydraulic performance curves (open impeller)



Hydraulic performance table (open impeller)

Delivery head (H) m →	0	1	2	3	4	5	6	7	8	9	10	12	14	16
Type of pump	Volumetric delivery (Q) l/min ↓													
SPV 50	165	155	145	134	121	109	95	79	61	42	18			
SPV 75	226	215	204	193	180	167	153	137	121	103	82	28		



Spare parts nomenclature

	Component	SPV 50 Materials	SPV 75 Materials
S02.	Fan cover	Sheet metal	Sheet metal
S03.	Fan	Nylon	Nylon
S04.	V-ring	NBR	NBR
S05.	Stay rod	Steel	Steel
S06.	Upper shield	Aluminium	Aluminium
S07.	Spring ring	Steel	Steel
S08.	Housing	Aluminium	Aluminium
S09.	Wound stator	-	-
S12.	Terminal box	Aluminium	Aluminium
S17.	Upper bearing	-	-
S18.	Axis + rotor	(AX.AISI 416)	(AX.AISI 416)
S19.	Lower bearing	-	-
S21.	Flange	Aluminium	Aluminium
S23.	Motor seal ring	NBR	NBR
S42.	Terminal board	-	-
S53.	Pump body	Nylon	Nylon
S56.	TRI washer	PBT	PBT
S60.	Bushing	Engineering plastic	Engineering plastic
S62.	Impeller	Nylon	Nylon
S69.	O-ring	NBR	NBR
S74.	Impeller-cover	Nylon	Nylon

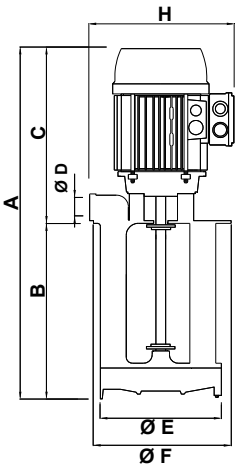
Immersion pumps

Type SPV 100-150

Uses

They are suitable for transferring liquids containing impurities up to 3 mm in size.
Their hydraulic components: impeller, feed screw and pump body in Nylon allow them to be used with water, emulsions with a viscosity not exceeding 21 cSt (3° Engel).
They are commonly used on:
- machine tools (milling and turning machines)
- glass processing machinery (TRI version when possible)
- printing machines
- air-conditioning systems

They are normally installed on a tank with a capacity which is proportional to their flow rate, about 4-5 cm from the bottom.
It is important to make sure that the maximum liquid level in the tank is always 3-4 cm lower than the support flange (see figure).
Should the liquid be particularly dirty, it is advisable to build a compartment tank in order to allow the sludge to deposit before it is sucked by the pump.
For different uses, please consult our Technical Office.



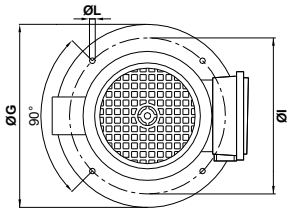
Size and weights table

Type of pump	A mm	B mm	C mm	ØD	ØE mm	ØF mm	ØG mm	H mm	ØI mm	ØL mm	Mass kg
SPV 100	500	200 T	300	1 ¼"	138	140	180	215	160	9 (n.4)	10.5
	570	270 T									11.0
	650	350									11.7
SPV 150	500	200 T	300	1 ¼"	138	140	180	215	160	9 (n.4)	11.8
	570	270 T									12.3
	650	350									13.0

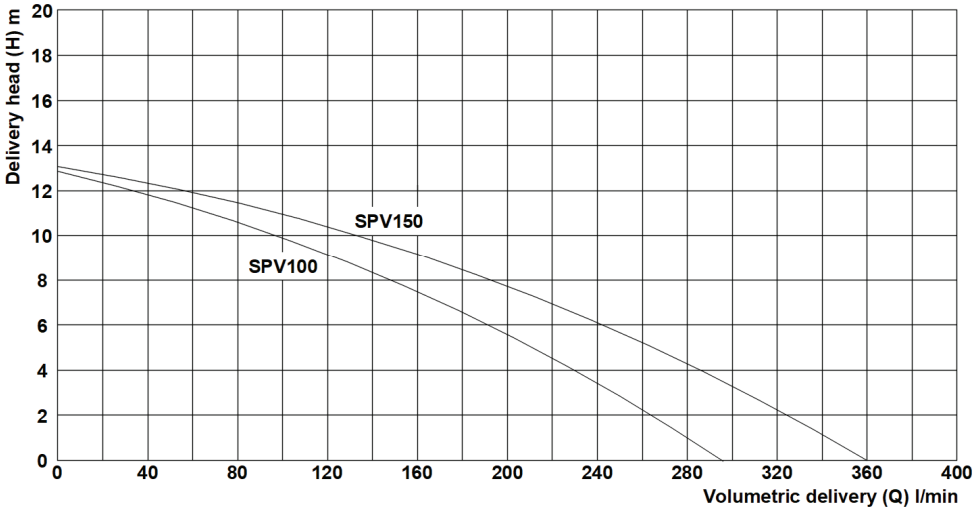
On demand: T= TRI mode

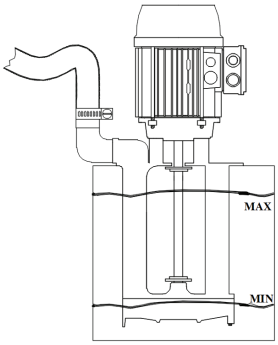
Rating plate data

Type of pump	Input kW	V (Hz 60)	In Amp.	n min^{-1}	cos φ	Q - maxQ litres/min	maxH - H metres
SPV 100	1.21	230/400	3.20/1.90	3400	0.80	35 - 296	12 - 0
		208-230/440-460	3.60/2.10				
		318-346/550-600	2.90/1.67				
SPV 150	1.47	230/400	4.60/2.60	3400	0.84	5 - 360	13 - 0
		208-230/440-460	4.60/2.50				
		318-346/550-600	3.70/2.30				



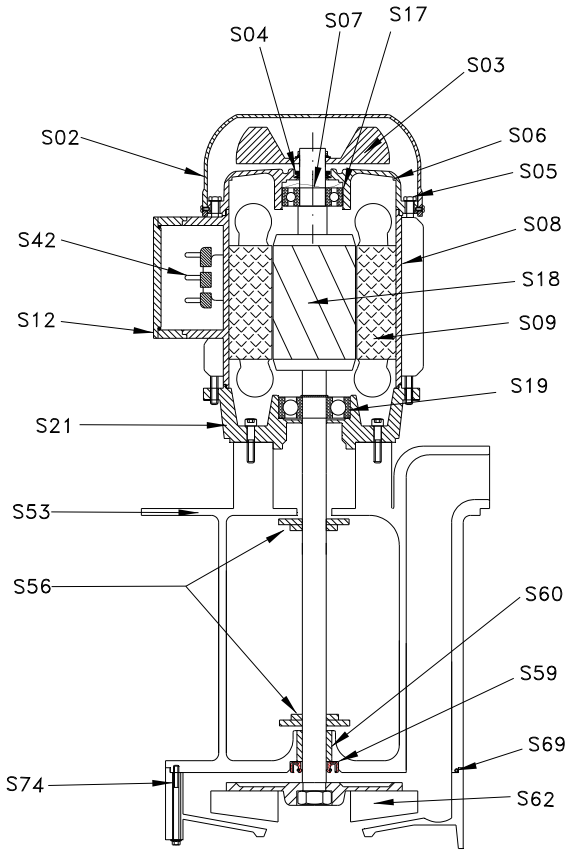
Hydraulic performance curves (open impeller)





Hydraulic performance table (open impeller)

Delivery head (H) m →	0	1	2	3	4	5	6	7	8	9	10	12	14	16
Type of pump	Volumetric delivery (Q) l/min ↓													
SPV 100	298	280	265	248	230	212	192	171	149	124	98	35		
SPV 150	360	343	325	306	286	265	243	219	193	165	134	57		

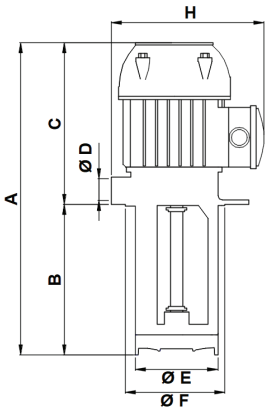


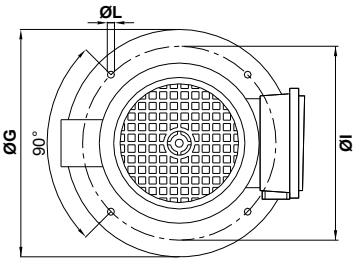
Spare parts nomenclature

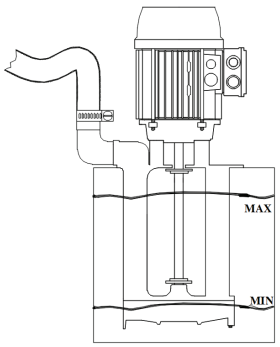
	Component	SPV 100 Materials	SPV 150 Materials
S02.	Fan cover	Sheet metal	Sheet metal
S03.	Fan	Nylon	Nylon
S04.	V-ring	NBR	NBR
S05.	Stay rod	Steel	Steel
S06.	Upper shield	Aluminium	Aluminium
S07.	Spring ring	Steel	Steel
S08.	Housing	Aluminium	Aluminium
S09.	Wound stator	-	-
S12.	Terminal box	Aluminium	Aluminium
S17.	Upper bearing	-	-
S18.	Axis + rotor	(AX.AISI 416)	(AX.AISI 416)
S19.	Lower bearing	-	-
S21.	Flange	Aluminium	Aluminium
S23.	Motor seal ring	NBR	NBR
S42.	Terminal board	-	-
S53.	Pump body	Nylon	Nylon
S56.	TRI washer	PBT	PBT
S59.	Seal ring	NBR	NBR
S60.	Bushing	Engineering plastic	Engineering plastic
S62.	Impeller	Nylon	Nylon
S69.	O-ring	NBR	NBR
S74.	Impeller-cover	Nylon	Nylon

Immersion pumps

Type SP 12-18







Uses

They are suitable for transferring liquids containing impurities up to 3 mm in size.
Their hydraulic components: impeller and feed screw in PBT, pump body in cast iron allow them to be used with water, emulsions with a viscosity not exceeding 21 cSt (3° Engel).
They are commonly used on:
- machine tools (milling and turning machines)
- glass processing machinery (TRI version)
- surface treatment plants
- filtration systems

They are normally installed on a tank with a capacity which is proportional to their flow rate, about 3-4 cm from the bottom.
It is important to make sure that the maximum liquid level in the tank is always 3-4 cm lower than the support flange (see figure).
Should the liquid be particularly dirty, it is advisable to build a compartment tank in order to allow the sludge to deposit before it is sucked by the pump.
For different uses, please consult our Technical Office.

Size and weights table

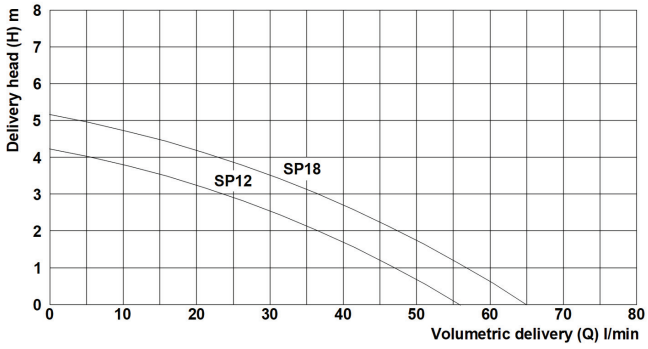
Type of pump	A mm	B mm	C mm	ØD	ØE mm	ØF mm	ØG mm	H mm	ØI mm	ØL mm	Mass kg
SP 12	265	90 T	165	3/4"	98	100	130	151	115	7 (n.4)	5.0
	285	120 T									5.3
	335	170 T									5.5
	385	220 T									5.7
	435	270 T									6.0
	515	350									6.5
SP 18	265	90 T	165	3/4"	98	100	130	151	115	7 (n.4)	5.1
	285	120 T									5.4
	335	170 T									5.6
	385	220 T									5.7
	435	270 T									6.0
	515	350									6.6

On demand: T= TRI mode

Rating plate data

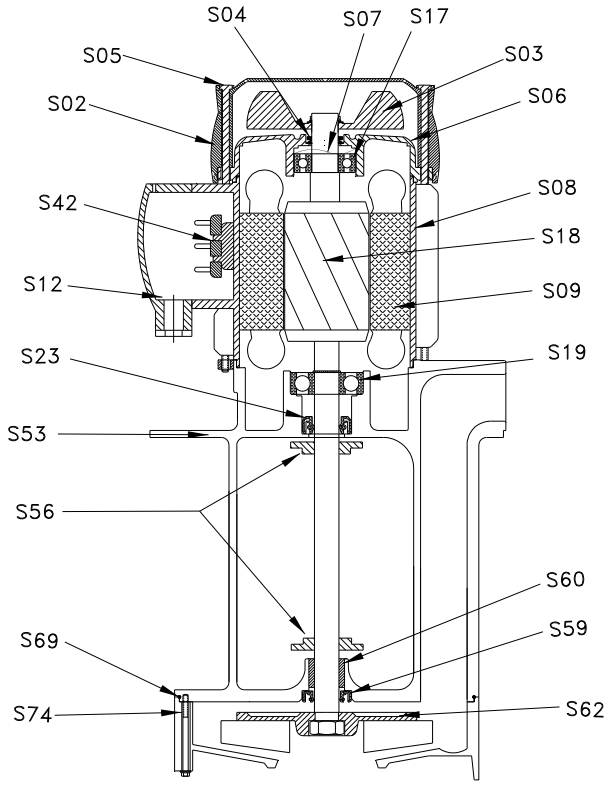
Type of pump	Input kW	V (Hz 60)	In Amp	n min^{-1}	cos φ	Q - maxQ litres/min	maxH-H metres
SP 12	0.15	230/400	0.56/0.32	3400	0.70	6 - 56	4 - 0
		208-230/440-460	0.57/0.33				
		318-346/550-600	0.56/0.32				
SP 18	0.16	230/400	0.62/0.36	3400	0.72	4 - 65	5 - 0
		208-230/440-460	0.51/0.34				
	0.18	318-346/550-600	0.53/0.31				

Hydraulic performance curves (open impeller)



Hydraulic performance table (open impeller)

Delivery head (H) m →	0	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6
Type of pump	Volumetric delivery (Q) l/min ↓												
SP 12	56	52	47	42	37	31	24	16	6				
SP 18	65	61	57	52	48	42	37	30	23	15	4		



Spare parts nomenclature

	Component	SP 12 Materials	SP 18 Materials
S02.	Fan cover	Nylon	Nylon
S03.	Fan	Nylon	Nylon
S04.	V-ring	NBR	NBR
S05.	Stay rod	Steel	Steel
S06.	Upper shield	Aluminium	Aluminium
S07.	Spring ring	Steel	Steel
S08.	Housing	Aluminium	Aluminium
S09.	Wound stator	-	-
S12.	Terminal box	Nylon	Nylon
S17.	Upper bearing	-	-
S18.	Axis + rotor	Steel*	Steel*
S19.	Lower bearing	-	-
S23.	Motor seal ring	NBR	NBR
S42.	Terminal board	-	-
S53.	Pump body	Cast Iron G20	Cast Iron G20
S56.	TRI washer	PBT	PBT
S59.	Seal ring	NBR***	NBR***
S60.	Bushing	Bronze***	Bronze***
S62.	Impeller	PBT**	PBT**
S69.	O-ring	NBR	NBR
S74.	Impeller-cover	PBT**	PBT**

*On demand AX AISI 416
**On demand cast iron G20
***Available only on suction pipe 350

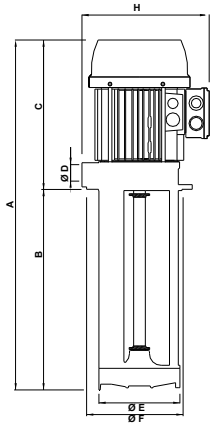
*On demand AX AISI 416
**On demand cast iron G20
***Available only on suction pipe 350

Type SP 25-33

Uses

They are suitable for transferring liquids containing impurities up to 3 mm in size.
Their hydraulic components: impeller and feed screw in PBT, pump body in cast iron allow them to be used with water, emulsions with a viscosity not exceeding 21 cSt (3° Engel).
They are commonly used on:
- machine tools (milling and turning machines)
- glass processing machinery (TRI version)
- surface treatment plants
- filtration systems

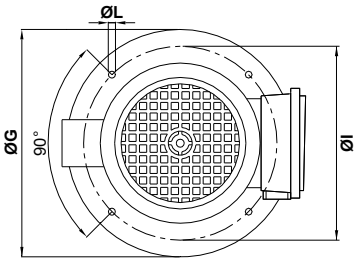
They are normally installed on a tank with a capacity which is proportional to their flow rate, about 3-4 cm from the bottom.
It is important to make sure that the maximum liquid level in the tank is always 3-4 cm lower than the support flange (see figure).
Should the liquid be particularly dirty, it is advisable to build a compartment tank in order to allow the sludge to deposit before it is sucked by the pump.
For different uses, please consult our Technical Office.



Size and weights table

Type of pump	A mm	B mm	C mm	ØD	ØE mm	ØF mm	ØG mm	H mm	ØI mm	ØL mm	Mass kg
SP 25	305	90 T	215	3/4"	98	100	130	170	115	7 (n.4)	6.5
	335	120 T									6.8
	385	170 T									7.1
	435	220 T									7.2
	485	270 T									7.5
	565	350									8.1
SP 33	305	90 T	215	3/4"	98	100	130	170	115	7 (n.4)	7.1
	335	120 T									7.3
	385	170 T									7.6
	435	220 T									7.7
	485	270 T									8.0
	565	350									8.6

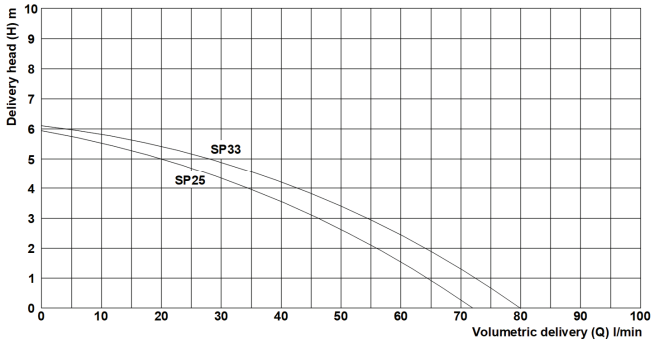
On demand: T= TRI mode



Rating plate data

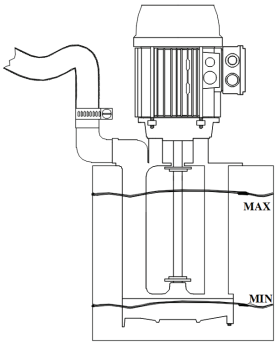
Type of pump	Input kW	V (Hz 60)	In Amp.	n min^{-1}	cos φ	Q - maxQ litres/min	maxH - H metres
SP 25	0.16	230/400	0.71/0.41	3400	0.74	20 - 72	5 - 0
	0.19	208-230/440-460	0.77/0.50				
	0.16	318-346/550-600	0.45/0.25				
SP 33	0.17	230/400	0.81/0.47	3400	0.68	5 - 80	6 - 0
		208-230/440-460	0.77/0.50				
		318-346/550-600	0.56/0.32				

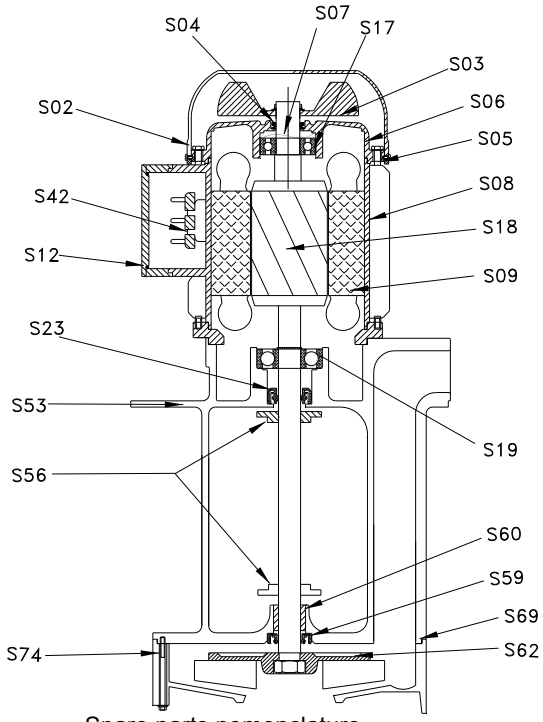
Hydraulic performance curves (open impeller)



Hydraulic performance table (open impeller)

Delivery head (H) m →	0	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7
Type of pump	Volumetric delivery (Q) l/min ↓														
SP 25	72	68	64	60	56	51	46	41	35	28	20				
SP 33	80	76	73	69	64	60	55	49	43	36	28	19	5		





Spare parts nomenclature

	Component	SP 25 Materials	SP 33 Materials
S02.	Fan cover	Sheet metal	Sheet metal
S03.	Fan	Nylon	Nylon
S04.	V-ring	NBR	NBR
S05.	t rod	Steel	Steel
S06.	Upper shield	Aluminium	Aluminium
S07.	Spring ring	Steel	Steel
S08.	Housing	Aluminium	Aluminium
S09.	Wound stator	-	-
S12.	Terminal box	Aluminum	Aluminium
S17.	Upper bearing	-	-
S18.	Axis + Rotor	Steel*	Steel*
S19.	Lower bearing	-	-
S21.	Flange	Aluminium	Aluminium
S23.	Motor seal ring	NBR	NBR
S42.	Terminal board	-	-
S53.	Pump body	Cast Iron G20	Cast Iron G20
S56.	TRI washer	PBT	PBT
S59.	Seal ring	NBR***	NBR***
S60.	Bushing	Bronze***	Bronze***
S62.	Impeller	PBT**	PBT**
S69.	O-ring	NBR	NBR
S74.	Impeller-cover	PBT**	PBT**

*On demand. Ax. AISI 416
**On demand Cast Iron G20
***Available only on suction pipe 350

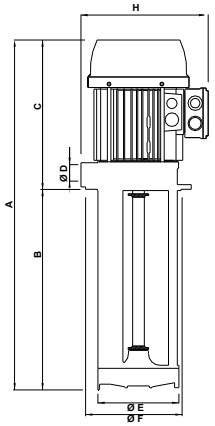
*On demand. Ax. AISI 416
**On demand Cast Iron G20
***Available only on suction pipe 350

Type SP 50-75

Uses

They are suitable for transferring liquids containing impurities up to 3 mm in size.
Their hydraulic components: impeller and feed screw in PTB, pump body in cast iron allow them to be used with water, emulsions with a viscosity not exceeding 21 cSt (3° Engel).
They are commonly used on:
- machine tools (milling and turning machines)
- glass processing machinery (TRI version)
- surface treatment plants
- filtration systems

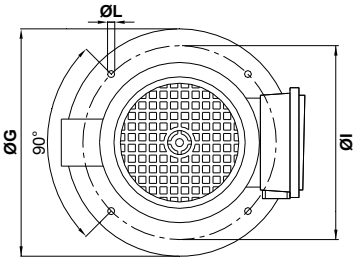
They are normally installed on a tank with a capacity which is proportional to their flow rate, about 4-5 cm from the bottom.
It is important to make sure that the maximum liquid level in the tank is always 3-4 cm lower than the support flange (see figure).
Should the liquid be particularly dirty, it is advisable to build a compartment tank in order to allow the sludge to deposit before it is sucked by the pump.
For different uses, please consult our Technical Office.



Size and weights table

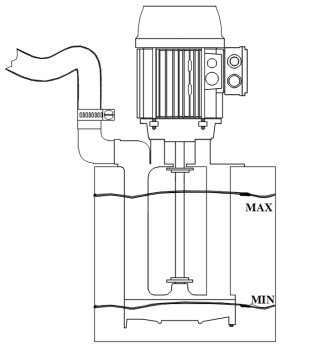
Type of pump	A mm	B mm	C mm	ØD	ØE mm	ØF mm	ØG mm	H mm	ØI mm	ØL mm	Mass kg
SP 50	450	200 T	250	1 ¼"	138	140	180	215	160	9 (n.4)	13.5
	520	270 T									14.2
	600	350									15.0
	690	440									15.9
	800	550									17.0
SP 75	450	200 T	250	1 ¼"	138	140	180	215	160	9 (n.4)	14.5
	520	270 T									15.2
	600	350									16.0
	690	440									16.9
	800	550									18.0

On demand: T= TRI mode

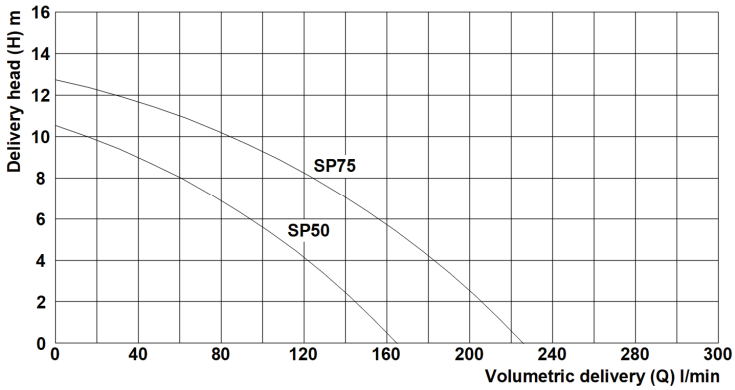


Rating plate data

Type of pump	Input kW	V (Hz 60)	In Amp.	n min^{-1}	cos φ	Q - maxQ litres/min	maxH - H metres
SP 50	1.15	230/400	3.00/1.68	3400	0.75	18 - 165	10 - 0
		208-230/440-460	3.10/1.65				
		318-346/550-600	2.40/1.20				
SP 75	1.25	230/400	3.50/2.30	3400	0.79	28 - 226	12 - 0
		208-230/440-460	3.60/2.00				
		318-346/550-600	2.40/1.40				

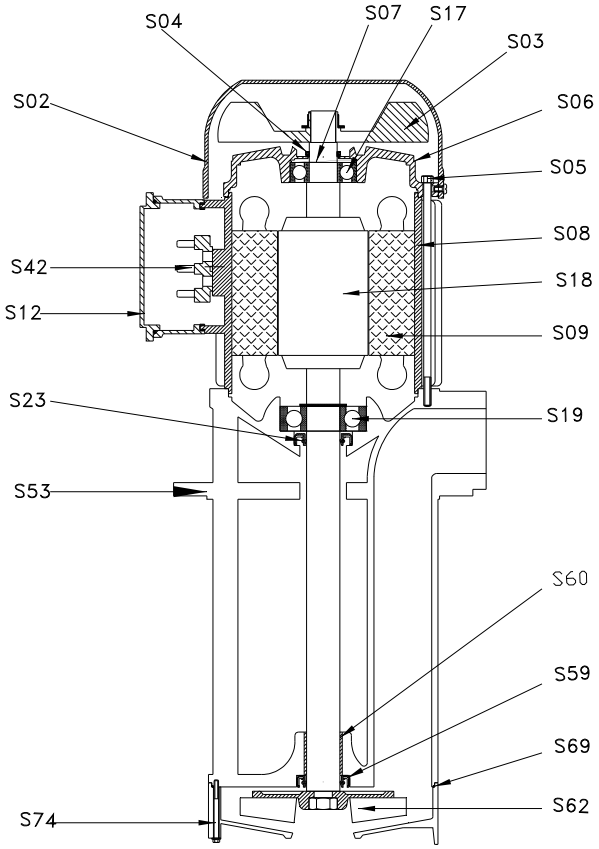


Hydraulic performance curves (open impeller)



Hydraulic performance table (open impeller)

Delivery head (H) m →	0	1	2	3	4	5	6	7	8	9	10	12	14	16
Type of pump	Volumetric delivery (Q) l/min ↓													
SP 50	165	155	145	134	122	109	94	79	61	40	18			
SP 75	226	216	206	195	183	170	156	140	124	106	85	28		



Spare parts nomenclature

	Component	SP 50 Materials	SP 75 Materials
S02.	Fan cover	Sheet metal	Sheet metal
S03.	Fan	Nylon	Nylon
S04.	V-ring	NBR	NBR
S05.	Stay rod	Steel	Steel
S06.	Upper shield	Aluminium	Aluminium
S07.	Spring ring	Steel	Steel
S08.	Housing	Aluminium	Aluminium
S09.	Wound stator	-	-
S12.	Terminal box	Aluminium	Aluminium
S17.	Upper bearing	-	-
S18.	Axis + Rotor	Steel*	Steel*
S19.	Lower bearing	-	-
S23.	Motor seal ring	NBR	NBR
S42.	Terminal board	-	-
S53.	Pump body	Cast Iron G20	Cast Iron G20
S59.	Seal ring	NBR	NBR
S60.	Bushing	Bronze	Bronze
S62.	Impeller	PBT**	PBT**
S69.	O-ring	NBR	NBR
S74.	Impeller-cover	PBT**	PBT**

*On demand. Ax. AISI 416
**On demand Cast Iron G20

*On demand. Ax. AISI 416
**On demand Cast Iron G20

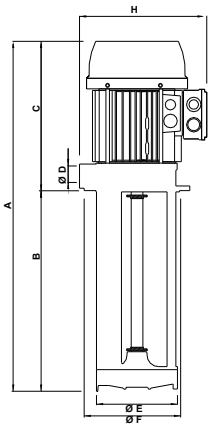
Immersion pumps

Type SP 100-150

Uses

They are suitable for transferring liquids containing impurities up to 3 mm in size.
Their hydraulic components: impeller and feed screw in PTB, pump body in cast iron allow them to be used with water, emulsions with a viscosity not exceeding 21 cSt (3° Engel).
They are commonly used on:
- machine tools (milling and turning machines)
- glass processing machinery (TRI version)
- surface treatment plants
- filtration systems

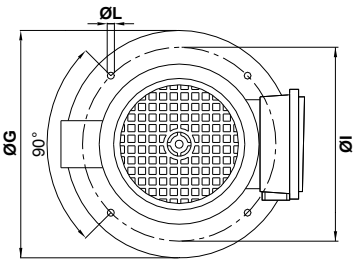
They are normally installed on a tank with a capacity which is proportional to their flow rate, about 4-5 cm from the bottom.
It is important to make sure that the maximum liquid level in the tank is always 3-4 cm lower than the support flange (see figure).
Should the liquid be particularly dirty, it is advisable to build a compartment tank in order to allow the sludge to deposit before it is sucked by the pump.
For different uses, please consult our Technical Office.



Size and weights table

Type of pump	A mm	B mm	C mm	ØD	ØE mm	F mm	ØG mm	H mm	ØI mm	ØL mm	Mass kg
SP 100	500	200 T	300	1 ¼"	138	140	180	230	160	9 (n.4)	16.3
	570	270 T									17.1
	650	350									18.1
	740	440									19.1
	850	550									20.3
SP 150	500	200 T	300	1 ¼"	138	140	180	230	160	9 (n.4)	17.6
	570	270 T									18.4
	650	350									19.3
	740	440									201
	850	550									21.9

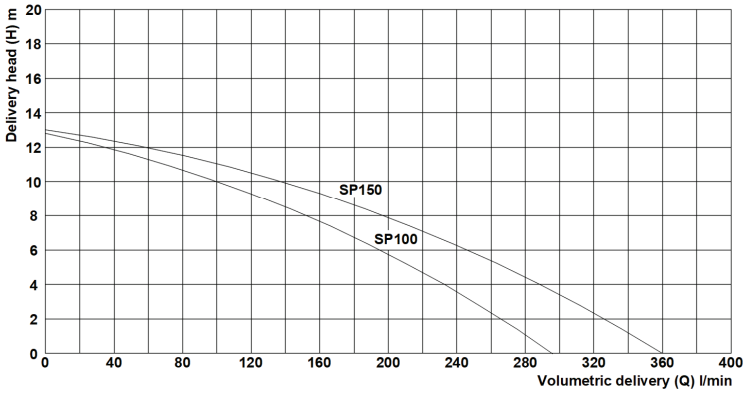
On demand: T= TRI mode

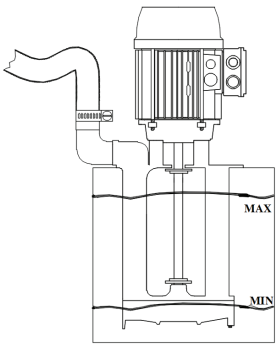


Rating plate data

Type of pump	Input kW	V (Hz 60)	In Amp.	n min^{-1}	cos φ	Q - maxQ litres/min	maxH - H metres
SP 100	1.21	230/400	3.20/1.90	3400	0.80	35 - 296	12 - 0
		208-230/440-460	3.60/2.10				
		318-346/550-600	2.90/1.67				
SP 150	1.47	230/400	4.60/2.60	3400	0.84	5 - 360	13 - 0
		208-230/440-460	4.60/2.50				
		318-346/550-600	3.70/2.30				

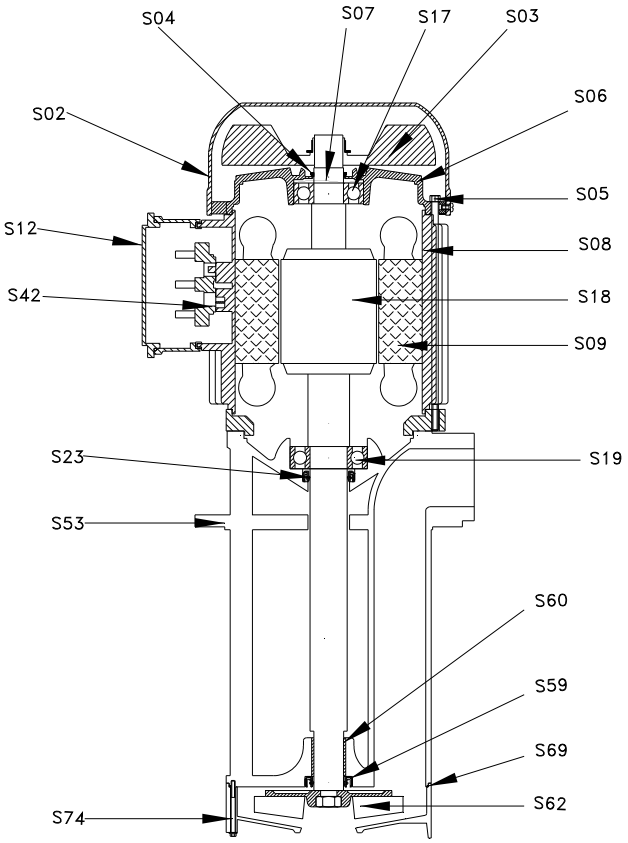
Hydraulic performance curves (open impeller)





Hydraulic performance table (open impeller)

Delivery head (H) m → / Type of pump	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Volumetric delivery (Q) l/min ↓														
SP 100	296	281	266	250	233	215	195	175	152	128	100	70	35		
SP 150	360	343	326	308	288	268	246	223	197	169	138	100	60	5	



Spare parts nomenclature

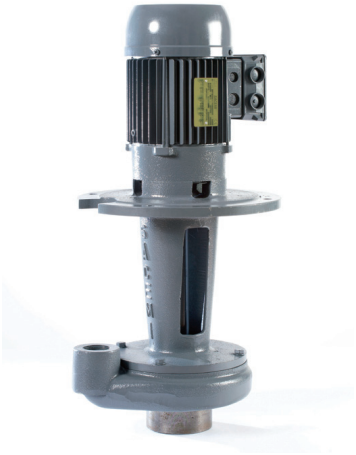
	Component	SP 100 Materials	SP 150 Materials
S02.	Fan cover	Sheet metal	Sheet metal
S03.	Fan	Nylon	Nylon
S04.	V-ring	NBR	NBR
S05.	Stay rod	Steel	Steel
S06.	Upper shield	Aluminium	Aluminium
S07.	Spring ring	Steel	Steel
S08.	Housing	Aluminium	Aluminium
S09.	Wound stator	-	-
S12.	Terminal box	Aluminium	Aluminium
S17.	Upper bearing	-	-
S18.	Axis + Rotor	Steel*	Steel*
S19.	Lower bearing	-	-
S23.	Motor seal ring	NBR	NBR
S42.	Terminal board	-	-
S53.	Pump body	Cast Iron G20	Cast Iron G20
S59.	Seal ring	NBR	NBR
S60.	Bushing	Bronze	Bronze
S62.	Impeller	PBT**	PBT**
S69.	O-ring	NBR	NBR
S74.	Impeller-cover	PBT**	PBT**

*On demand. Ax. AISI 416
**On demand Cast Iron G20

*On demand. Ax. AISI 416
**On demand Cast Iron G20

Immersion pumps

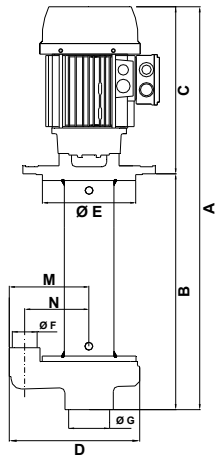
Type AP 90B open impeller



Uses

They are suitable for transferring liquids containing impurities up to 3 mm in size.
Their hydraulic components: impeller and feed screw in cast iron, pump body in cast iron/steel allow them to be used with water, emulsions with a viscosity not exceeding 21 cSt (3° Engel).
They are commonly used on:
- machine tools (milling and turning machines-machining centres)
- glass processing machinery
- surface treatment plants
- filtration systems

They are normally installed on a tank with a capacity which is proportional to their flow rate, about 6-7 cm from the bottom.
It is important to make sure that the maximum liquid level in the tank is always 3-4 cm lower than the support flange (see figure).
Should the liquid be particularly dirty, it is advisable to build a compartment tank in order to allow the sludge to deposit before it is sucked by the pump.
For different uses, please consult our Technical Office.

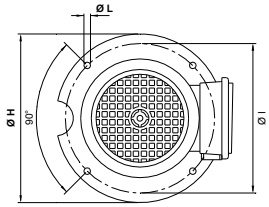


Size and weights table

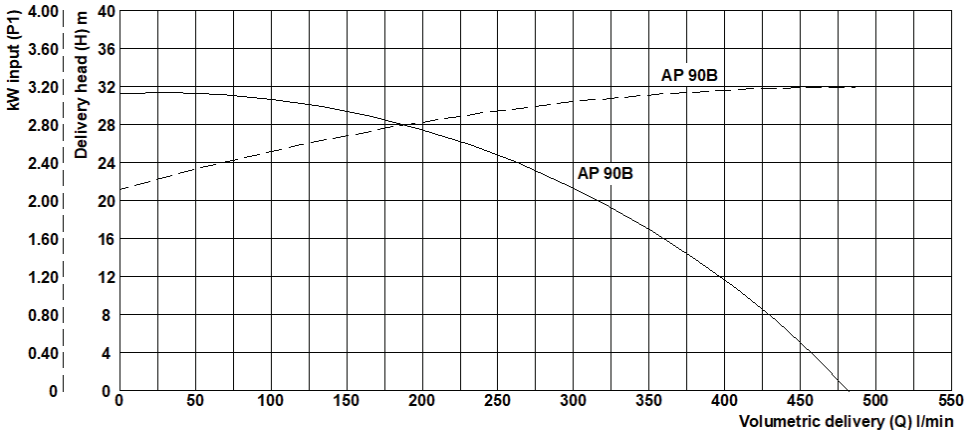
Type of pump	A mm	B mm	C mm	D mm	ØE mm	ØF	ØG	ØH mm	ØI mm	ØL mm	M mm	N mm	Mass kg
AP 90B	675	320	355	280	240	1 1/2"	2 1/2"	300	270	13 (n°4)	170	136	43.0
	805	450											49.0
	965	610											51.0
	1215	860											53.0

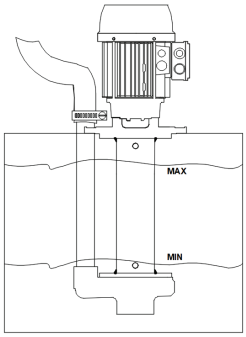
Rating plate data

Type of pump	Input kW (P1)	Output kW (P2)	V (Hz 60)	In Amp	n min^{-1}	cos φ	Q - maxQ litres/min	maxH - H metres
AP 90B	3.58	3	265/460	9.0/5.2	3480	0.85	106 - 483	30 - 0



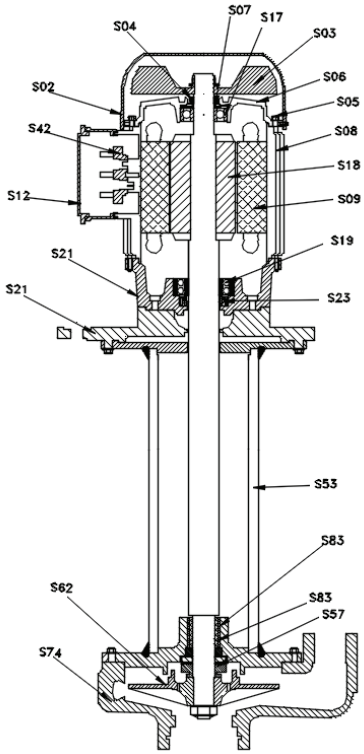
Hydraulic performance curves (open impeller)





Hydraulic performance table (open impeller)

Delivery head (H) m →	0	2	4	6	8	10	14	18	22	26	30	34
Type of pump	Volumetric delivery (Q) l/min ↓											
AP 90B	483	473	463	451	437	424	389	349	292	228	106	



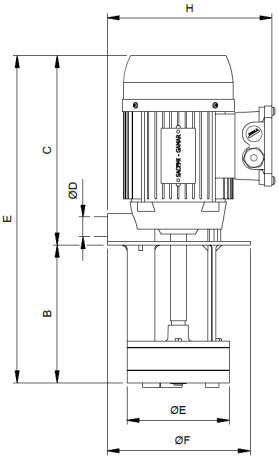
Spare parts nomenclature

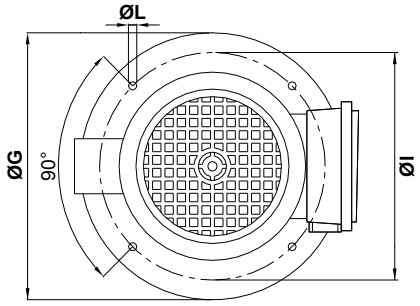
	Component	AP 90B Materials
S02.	Fan cover	Sheet metal
S03.	Fan	Nylon
S04.	V-ring	NBR
S05.	Stay rod	Steel
S06.	Upper shield	Aluminium
S07.	Spring ring	Steel
S08.	Housing	Aluminium
S09.	Wound stator	-
S12.	Terminal box	Aluminium
S17.	Upper bearing	-
S18.	Axis + Rotor	Steel
S19.	Lower bearing	-
S21.	Motor flange	Cast Iron G20
S21.	Support flange	Cast Iron G20
S23.	Motor seal ring	NBR
S42.	Terminal board	-
S53.	Pump body	Cast Iron G20/Steel
S57.	Mechanical seal	-
S62.	Impeller	Cast Iron G20
S74.	Impeller-cover	Cast Iron G20
S83.	IR rings	Steel*
S83.	Bushing	Bronze*

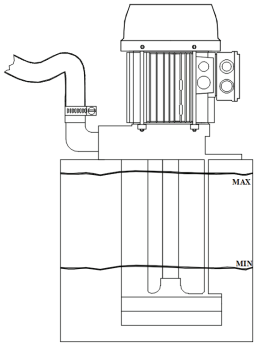
*Available only on suction pipe 860

Immersion pumps

Type MP 71A







Uses

They are suitable for transferring liquids containing impurities up to 3 mm in size.
Their hydraulic components: impeller in brass, feed screw and pump body in aluminium allow them to be used with water, emulsions with a viscosity not exceeding 21 cSt (3° Engel).
They are commonly used on:
- machine tools (milling and turning machines-machining centres)
- glass processing machinery
- filtration systems

They are normally installed on a tank with a capacity which is proportional to their flow rate, about 4-5 cm from the bottom.
It is important to make sure that the maximum liquid level in the tank is always 3-4 cm lower than the support flange (see figure).
Should the liquid be particularly dirty, it is advisable to build a compartment tank in order to allow the sludge to deposit before it is sucked by the pump.
For different uses, please consult our Technical Office.

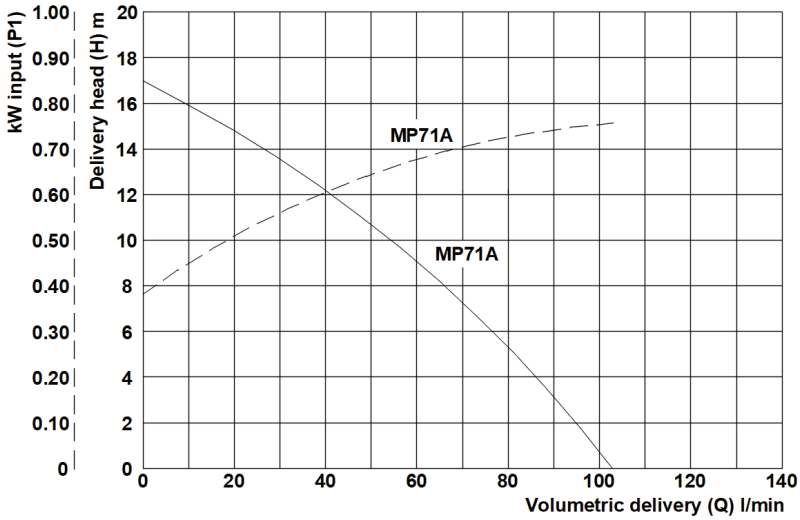
Size and weights table

Type of pump	A mm	B mm	C mm	ØD	ØE mm	ØF mm	ØG mm	H mm	ØI mm	ØL mm	Mass kg
MP 71A	410	180	230	3/4"	128	130	180	190	150	9 (n.4)	8.8
	460	230									9.0
	510	280									9.1
	560	330									9.3

Rating plate data

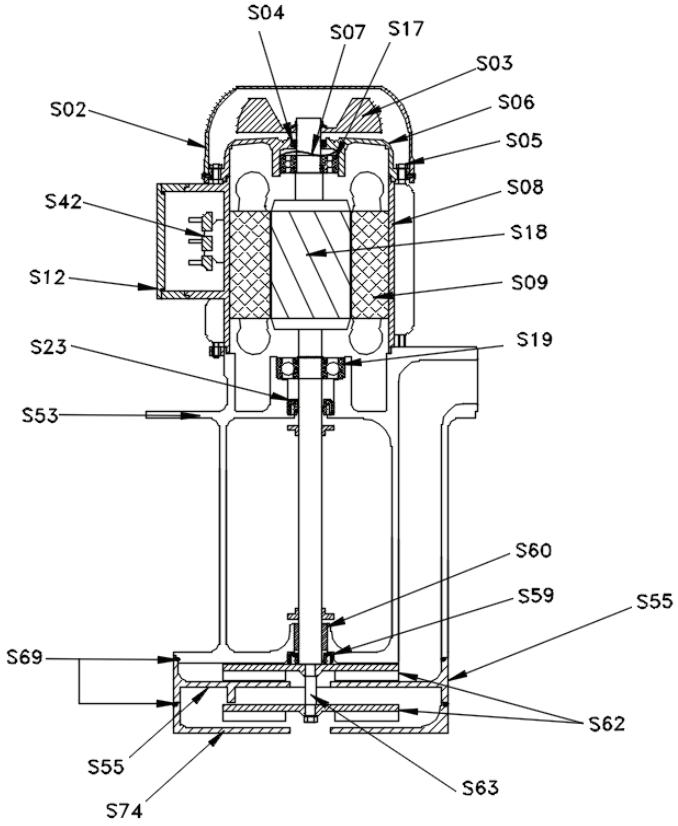
Type of pump	Input kW (P1)	Output kW (P2)	V (Hz 60)	In Amp.	n min^{-1}	cos φ	Q - maxQ litres/min	maxH - H metres
MP 71A	1.0	0.75	230/400	3.30/1.90	3410	0.73	10 - 103	16 - 0
			265/460	2.87/1.66				

Hydraulic performance curves (open impeller)



Hydraulic performance table (open impeller)

Delivery head (H) m →	0	2	4	6	8	10	12	14	16	18	20
Type of pump	Volumetric delivery (Q) l/min ↓										
MP 71A	103	95	86	77	66	54	42	27	10		



Spare parts nomenclature

	Component	Materials
S02.	Fan cover	Sheet metal
S03.	Fan	Nylon
S04.	V-ring	NBR
S05.	Stay rod	Steel
S06.	Upper shield	Aluminium
S07.	Spring ring	Steel
S08.	Housing	Aluminium
S09.	Wound stator	-
S12.	Terminal box	Aluminium
S17.	Upper bearing	-
S18.	Axis + rotor	Steel*
S19.	Lower bearing	-
S23.	Motor seal ring	NBR
S42.	Terminal board	-
S53.	Pump body	Aluminium
S55.	Diffuser	Aluminium
S59.	Seal ring	NBR
S60.	Bushing	Bronze
S62.	Impeller	Brass 58
S63.	Spacer ring	Steel
S69.	O-ring	NBR
S74.	Impeller-cover	Aluminium

*On demand Ax.AISI 416

Use and maintenance

Via A. Pacinotti n. 2 – 30020 NOVENTA DI PIAVE (Ve) Italy- - Phone no.: +39-0421-307389 telefax no.: +39-0421-65428 email:info@sacemi.com

OPERATION AND MAINTENANCE MANUAL (ORIGINAL INSTRUCTIONS) - MOTOR-DRIVEN PUMPS

GENERAL INFORMATION

This manual is designed to provide a general understanding of the machine and the instructions necessary for its proper installation and operation.
The manual is an integral part of the machine and must be read carefully before handling, installing and operating the machine and it must be kept for future reference.
Non-observance of the instructions in this manual, any improper use, any maintenance not carried out by specialised personnel, removal of labels and warnings of any kind, removal or tampering of protective guards and/or safety devices and any other action not expressly envisaged which may modify the solutions adopted by the Manufacturer concerning the safety of the machine or of its parts, can cause serious injury to persons and property and will relieve the Manufacturer of any responsibility. Any intervention on the machine by unauthorised personnel will result in the automatic termination of the product warranty.
The product identification number (Type) and its characteristics and a code for traceability of the date and batch of production are stamped on the nameplate of the motor-driven pump: the model information and warnings contained in this manual refer to the identifiable marks written on the nameplate.
As regards any situations not covered by this manual or any further information, please refer to our general catalogue and to the documentation available on *www.sacemi.com* and if required contact our commercial service

DECLARATION OF CONFORMITY:

The motor-driven pumps SACEMI type AP-AU-EPC-HPP-IMM-MP-MPC-MSPV-PPI-SP-SPV-SQ-TR comply with the requirements of Directives 2006/42/EC (Machinery) - 2006/95/EC (Low Voltage) - and – 2004/108/EC (CEM). They bear the conformity marking on the plate . Some catalogue versions and products meet the requirements laid down in EN 12157 Coolant pump units for machine tools - Nominal flow rate, dimensions (see tables at the end of the manual)

PRODUCT DESCRIPTION:

Motor-driven centrifugal pumps SACEMI designed for the circulation of liquids in general and of cooling mixtures, according to the specific uses indicated in the tables that end this manual. The impellers are fastened directly to the extended crankshaft
The pump is equipped with a 2-pole electric motor, designed for continuous service and power supply, built according to IEC60034, cooled with external ventilation, class F winding and IP 55 protection rating.

WARNING MAINTENANCE / STORAGE OF THE MACHINE:

Temporary storage of the machine must be carried out inside its original packing, carefully placing the package in a stable position, in a clean and weather-protected environment which can protect the pump from foreign bodies accessing and from weathering (rain, snow, etc.) that may cause damage to its electrical parts.
The storage environment temperature must be between -20 ° C and +50 ° C.

HANDLING:

Motor-driven pumps must be handled with the utmost care and with means appropriate to their size and weight (*which can be detected from the plate on the machine or from the table at the end of the manual*). *In particular, packed pumps must be moved in accordance with the instructions on the package*, in particular avoiding standing elongated containers on their smaller side in order to avoid any roll-over of the package. During handling and transport, be careful not to damage the delicate parts. When handling non-packed *pumps* listed in the catalogue *other than AU-TR-SQ,* only harness or pick up the machinery at its gripping points using suitable hooks or ropes. While handling the pumps there is a risk of injury; therefore, it is necessary to use suitable lifting devices appropriate to the weight and size of the pump together with personal protection equipment. The handling of the pump by lifting means must always take place slowly, with no uncontrolled oscillations in order to avoid unbalance and slippage. DO NOT pick up or harness the pump near the shaft: it could be damaged. DO NOT place the pump on the ground by leaning it on the impeller's base as it may overturn. When resting it on the ground temporarily, the pump must be placed horizontally, ensuring that thickening elements are placed under its ends to prevent it from tilting against the flange support or from rolling thereby damaging the housing of the electrical wiring terminal boards. Models *AU-TR-SQ* must be lifted by using a harness around the narrow neck-shaped groove between the motor body and the pump and their temporary resting on the ground must be positioned: AU pumps on their supporting tapered ring, TR-SQ ones with their motor axis horizontal, ensuring thickening elements are placed under the ends to prevent it from tilting against the flange support or from rolling thereby damaging the housing of the electrical wiring terminal boards. DO NOT place the pump temporarily on the ground at its engine crank rear end When handling, every care must be taken to prevent foreign bodies from entering through the engine ventilation grilles, the suction holes and the pump delivery holes.

WARNING LIMITATIONS OF USE:

Motor-driven pumps must NOT be used in explosive and / or potentially explosive environments and must NOT be used with flammable liquids or which produce harmful and/or explosive gases. For possible uses with aggressive liquids (e.g. acids, alkali solutions) please refer to the indications given for each type of pump in our Catalogue or on our website www.sacemi.com

Pumps must NOT be used for heads below the lowest point of the characteristic curve shown in the catalogue as the use of the pump for heads lower than these may overload the motor. Motor-driven pumps must NOT be used in tanks under pressure and the installer is therefore responsible for providing the necessary technical arrangements to prevent the tank from being, even temporarily, pressurized. The pumped liquid must NOT exceed a viscosity of 21 cSt (3°E). CSA / UL certified pumps are approved for liquid at a temperature of 30 °C / 60 ° C for UL and CSA respectively. The maximum permissible sizes of the solid parts allowed in the pumped fluid vary for each type of pump as indicated in the tables at the end of the manual.
The motor-driven pump is built to be installed in an indoor environment or in areas protected from the
weather. The electrical data indicated on the plate must be observed for continuous service work.

WARNING INSTALLATION:

To lift the pump, use equipment and accessories as indicated in the "Handling" section.
To avoid leakage and ensure the maximum flow, please use pipes with diameters equal to the pump delivery
hole. DO NOT use rigid couplings between pump delivery and plant (except for the envisaged types).
Ensure the pump is perfectly primed before turning it on.
Ensure there are no obstructions preventing the normal cooling air flow to the engine fan.
Motor-driven pumps must be secured to avoid vibrations or movements which could damage the piping.
DO NOT insert your fingers in the intake duct for any reason as there is a risk of injury by touching the impeller.
The installer is responsible for making sure that all technical and plant precautions are put into place and maintained in the specific installation in order to ensure that the mechanical and hydraulic requirements listed below for each type are complied with.

AP -IMM-MP-SP-SPV type pumps:
The pump must be installed by fixing the coupling flange to the top of the tank and the pump body immersed in the liquid. Use the appropriate screws to anchor the flange to the tank.
The maximum liquid level in the tank must always be 3-4 cm below the support flange, while the minimum level must always be above the suction chamber. The suction hole is located on the bottom of the pump body. The minimum distance between the intake hole and the bottom of the tank must be calculated in order to avoid cavitation and to prevent impurities from leaking into the fluid flow.

When installing pumps with a plastic body, please:
- Do NOT use rigid fittings and / or conical threaded connections;
- only use liquid or very thin sealants (film);
- be careful when screwing the coupling to the pump delivery, not to force it beyond the stop positioned inside the pipe coupling and, in any case, not to apply a clamping force above 40 kgm (390 Nm)

Failure to observe these warnings can irreparably damage the pump delivery hole.


WIRING:

The motor-driven pump is designed for a permanent electrical connection other than a plug.
The wiring must be carried out by qualified personnel, in accordance with the regulations in force in the country of use and must always provide for the grounding of the machine.
The motor voltage and frequency must comply with those indicated on the rating plate.

The arrangement of the connecting bridges "Y or Δ" must correspond to the wiring diagram inside the terminal board cover.
Check that the direction of rotation of the pump is the one indicated by the arrow on the pump body. Should the rotation direction be incorrect, stop the motor, disconnect the power line and reverse two phases of the power supply. Always check that the current absorbed by the pump during operation is never higher than the rating indicated on the plate.
We recommend the use of cables and plugs with the appropriate section for the currents absorbed by the electric motor that equips the machine; please remember that the absorbed current when turning the pump on can be much higher than those indicated on the plate.

As the standard construction of the motor-driven pump does not include any overload protection, the installer must provide a separate and adequate protection.
Make sure that fuses, circuit breakers and thermal relays are properly dimensioned.

Direction of rotation of the motor:
As regards AP-IMM-MP- SP-SPV pumps, if you look at the motor's fan cover from above, the cooling fan must turn to the right (clockwise). As regards HPP pumps, if you look at the motor's fan cover from above, the cooling fan must turn to the left (anticlockwise).


WARNING INSTRUCTIONS FOR USE:

The machine must always be positioned with the motor axis in a vertical position in order to work correctly. The working environment temperature must be between -20 ° C and +40 ° C.
Although the pumps are designed to tolerate the presence of impurities contained in liquids (with the quantities indicated in *table no 1*), it is still recommended to prepare appropriate decanting zones (e.g. dividing the tank into compartments), in compliance with the installation rules. As regards self-priming pumps, an initial trigger must be provided by filling the suction or delivery pipe.
Should there be a leakage of liquid from the inlet of the axle into the suction / discharge chamber in pumps equipped with a mechanical seal, stop the machine and check the damaged part. In the event of electrical failure on a machine equipped with a single-phase motor, the operator must pay attention to possible electrostatic phenomena due to the capacitor.
The outer casing of the motor can reach 70°C; thus, it is advisable, for prolonged operations on this surface, to use appropriate protections (gloves). For the Lp acoustic pressure level see *table no 1*.

WARNING MAINTENANCE:

The pump does not require any special scheduled maintenance work in addition to the necessary periodic cleaning of the impeller and of the feed screw from the impurities present in the liquid.
To replace bearings, mechanical seals and/or components of the electric motor, refer to the technical data sheets in our general catalogue and to the documentation available on the website *www.sacemi. com* or contact our commercial service.
All maintenance operations must be carried out by qualified personnel, with the machine not running and disconnected from the mains.



DECOMMISSIONING OF THE MACHINE AND WASTE DISPOSAL:

The decommissioning of the motor-driven pump must be carried out by competent personnel who must safely remove the electrical, hydraulic and mechanical connections in that order, making the installation completely inoperative and secure (e.g. protect/close the lights in the empty tank). Finally, dismantling must be carried out in appropriate structures, in full compliance with the applicable laws of the user's country concerning waste disposal and separate collection, bearing in mind the materials forming the pump as detailed in *table no 1*.

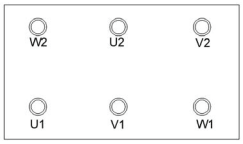
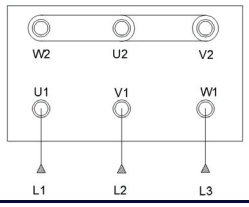
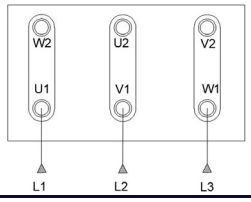
Symbols used / terminology

WARNING	Warning		General danger		Electrical shock hazard
It warns that failure to comply with the prescriptions involves a risk of damage to the machine		It warns that non-observance entails a risk of harming people and/or things		It warns of the presence of high voltage with the risk of electric shock	

Table no 1	Technical features

Type of pump	Main components	Impurities allowed mm	Weight kg		Lp (db)
			Range		
AP 90B	Steel - Aluminium - Cast Iron - Plastics - Copper - Paints	≤2	43	53	75
IMM 80 B	Steel - Aluminium - Plastics - Brass - Copper - Paints	≤ 3	14	19	<70
MP 71	Steel - Aluminium - Plastics - Brass - Copper - Paints	≤ 3	6	11	<70
SP 12-18-25-33	Steel - Aluminium - Cast Iron - Plastics - Copper - Paints	≤ 3	5	9	<70
SP 50-75-100-150	Steel - Aluminium - Cast Iron - Plastics - Copper - Paints	≤ 3	13	22	<70
SPV 12-18-25-33	Steel - Aluminium - Plastics - Copper - Paints	≤ 3	2	6	<70
SPV 50-75-100-150	Steel - Aluminium - Plastics - Copper - Paints	≤ 3	7	15	<70

Table no 2	Motor wiring

Terminals of the terminal board	Connection Y	Connection Δ
		

TROUBLESHOOTING GUIDELINES

Flaw detected	Possible causes	Possible solution
The engine does not start - No noise	- flaw in motor terminal box connections - flaw in the power supply wiring	- Check the motor terminal board connections - Check the power line - Check all switches, fuses and thermal protectors
The engine does not start - Humming perception	- motor failure due to no winding - power line flaw due to phase failure - blocked impeller - blocked bearing - blocked bushing - blocked seal	- Check the motor terminal board connections - Check motor winding - Check the power line - Replace the impeller - Replace bearing - Replace bushing - Replace seal
The motor runs, but there is no liquid flowing	- the liquid level in the tank is below the minimum required - the impeller is damaged and/or occluded - suction hole occluded - delivery pipe is closed	- Top up the minimum level of liquid in the tank - Clean the impeller and replace it if damaged - Clean suction hole - Clean the suction and pumping chamber - Clean the delivery pipe
Insufficient pressure and flow	- wrong motor rotation direction - impeller, suction chamber, delivery pipe clogged with impurities - the impeller is damaged - suction chamber, pumping chamber are damaged	- Restore the correct rotation direction of the motor - Clean the impeller, the suction chamber and delivery pipe - Replace the impeller - Replace the delivery pipe, the suction and pumping chambers
Motor power absorption is too high	- too many impurities - friction between moving parts - liquid density beyond the limits of use	- Remove impurities other than those allowed - Identify and replace defective components - Restore liquid density within the limits of use

CUL/US ADDITIONAL INFORMATION

WARNINGS:

- The installer must provide motor protection against overloads.
- The installer must protect the pump to avoid it being used with no liquid.
- Electric shock hazard – This pump has not been evaluated for use in swimming pools and / or equivalent environments.
- Motors designed for dual voltage operation indicate the electrical data for which they have been factory-set.

CAUTION:

- These pumps have been evaluated only to be used with water.

CERTIFICATE OF COMPLIANCE

Certificate Number	20120308-E319438
Report Reference	E319438-20120306
Issue Date	2012-MARCH-08
Issued to:	SACEMI - GAMAR SRL VIA A PACINOTTI 2 30020 NOVENTA DI PIAVE VI ITALY
This is to certify that representative samples of	PUMPS, ELECTRICALLY OPERATED, LIQUID Nonsubmersible Pumps: SP f/b 12, 18, 25, 33, 50, 75, 100, 150 SPV f/b 12, 18, 25, 33, 50, 75, 100, 150 Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.
Standard(s) for Safety:	"Motor-Operated Water Pumps", UL 778 "Liquid Pumps", CSA 22.2 No. 108-01
Additional Information:	See the UL Online Certifications Directory at www.ul.com/database for additional information

Only those products bearing the UL Listing Mark for the US and Canada should be considered as being covered by UL's Listing and Follow-Up Service meeting the appropriate requirements for US and Canada.
The UL Listing Mark for the US and Canada generally includes: the UL in a circle symbol with "C" and "US" identifiers: c(UL)us the word "LISTED"; a control number (may be alphanumeric) assigned by UL; and the product category name (product identifier) as indicated in the appropriate UL Directory.

Look for the UL Listing Mark on the product.

William R. Carney, Director, North American Certification Programs

UL LLC

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please contact a local UL Customer Service Representative at www.ul.com/contactus

CERTIFICATE OF COMPLIANCE

Certificate Number	20170907-E319438
Report Reference	E319438-20170901
Issue Date	2017-SEPTEMBER-07
Issued to:	SACEMI - GAMAR SRL VIA A PACINOTTI 2 30020 NOVENTA DI PIAVE VE ITALY
This is to certify that representative samples of	PUMPS, ELECTRICALLY OPERATED, LIQUID Nonsubmersible Pumps series "MP", prefixed by two digits, prefixed by 71, followed by A, followed by AB or BB, followed by additional letters or numbers. Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.
Standard(s) for Safety:	UL778, Motor-Operated Water Pumps CSA C22.2 No.108, Liquid Pumps
Additional Information:	See the UL Online Certifications Directory at www.ul.com/database for additional information

Only those products bearing the UL Certification Mark should be considered as being covered by UL's Certification and Follow-Up Service.

Look for the UL Certification Mark on the product.

Bruce Mahrenholz, Director North American Certification Program

UL LLC

CERTIFICATE OF COMPLIANCE

Certificate Number	20171212-E319438
Report Reference	E319438-20171212
Issue Date	2017-DECEMBER-12

Issued to: SACEMI - GAMAR SRL
VIA A PACINOTTI 2
30020 NOVENTA DI PIAVE VE ITALY

This is to certify that representative samples of PUMPS, ELECTRICALLY OPERATED, LIQUID
Nonsubmersible Pumps series:
- "AP" prefixed by two digits, prefixed by 90, followed by B, followed by BB, followed by additional letters or numbers
- "IM" prefixed by two digits, prefixed by 80, followed by B, followed by BB, followed by additional letters or numbers.

Models: xx90APBBBxxxyyyy, xx80IMBBBxxxyyyy

Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.

Standard(s) for Safety: UL778, Motor-Operated Water Pumps
CSA C22.2 No.108, Liquid Pumps

Additional Information: See the UL Online Certifications Directory at www.ul.com/database for additional information

Only those products bearing the UL Certification Mark should be considered as being covered by UL's Certification and Follow-Up Service.

Look for the UL Certification Mark on the product.

Bruce Mahrenholz, Director North American Certification Program

UL LLC