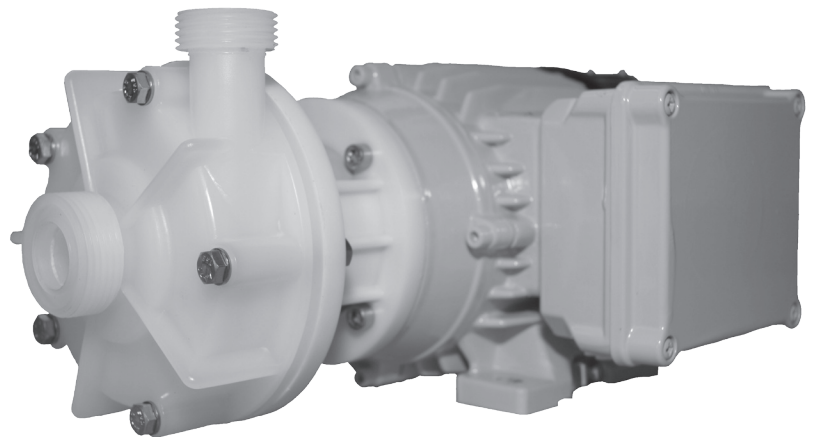


SCHMITT
Kreiselumpen

**chemical resistant pumps
for corrosive and highly pure media**

Operating Maintenance Assembly Instruction



U Pump Series

**normal priming,
centrifugal pumps
with a single mechanical seal**

materials: PVDF

General instructions

The present operating instructions must be complied with when installing, operating and servicing the pumps. This is the reason why these instructions must be read by the operator, the assembling personnel and all the other specialists/operators before installing and commissioning the pump. These instructions must be readily available for consultation at the site of installation.

The personnel in charge of operation, maintenance, inspection and assembly must be qualified to carry out this work. The scope of the personnel's responsibility, competence and supervision must be precisely defined by the management. The management must also ensure that the operating instructions are fully understood and complied with by the personnel.

Non-compliance with the present instructions may not only cause damage to the environment and be dangerous for the personnel but may also result in the total destruction of or damage to the pump or the installation.

The present instructions, current national measures for accident prevention, and all internal works-, operating- and safety instructions specified by the user are to be complied with.

The work is to be carried out on inactive pumps. Pumps which are used with hazardous materials must be decontaminated. Before started such pumps up again, the instructions for initial commissioning are to be complied with.

Installing the pump

The pump is to be installed horizontally at the chosen operating site. Monobloc pumps are installed stress-free in situ (on the ground or the bottom plate) with the help of the feet.

Relocating pipelines

Prior to installing a **SCHMITT centrifugal pump**, please ensure the very best and appropriate arrangement of the connecting tubes. Inappropriate tube cross section and erroneous arrangement can result in lost performance, and even damage.

The pipeline's nominal width and the incorporated armature must be of equal width or wider than the pump's nominal width. Suction lines must be as short as possible. Sharp bends must be avoided, especially before the pump's suction connection pieces. Pipelines are to be connected to the pump in such a manner that no forces act on the pump (e.g. mismatch, weight or dilation when hot liquids are being pumped). Use compensators or flexible connection pieces. This also applies in the event of metal pipelines.

Operation

Avoid pumping solids and mud. If necessary, overflow protection, filters or screen cages are to be incorporated into the suction line. Please be careful that these do not become blocked since the pump will otherwise cavitate. This can result in damage, particularly to the axial face seals.

Pump Series: U 80 - U 210
Materials: PVDF

These pumps are “normal priming”, i.e. the feeding medium has to feed into the pump.

The axial input is located centrally in the housing, with the output leading tangentially right to the top (standard version).

Pumps belonging to this series are fitted with a single-acting, internal axial face seal which is flushed and cooled by the feeding liquid. It is made of various different materials, depending on its use. Due to the contact pressure required by the sealing surfaces, high temperatures are very rapidly reached in the event of dry-running which may result in damage to the sealing parts.

Never allow the pump to run dry - this also applies to rotational direction tests of the motor!

Once the pumps have been installed at the chosen site, and the suction and pressure lines have been properly connected, the pump is filled with liquid. Please make sure that the lines and the pump have been bled. Also ensure that all the connected lines are absolutely watertight.

Before connecting the motor to the power supply, please match the voltage with the indications on the motor.; check explosion-proof motors for their protection class.

The connection must comply with VDE regulations and those of the local electricity board.

Test the pump's rotational direction by giving it a brief current pulse. Switch the pump on by activating the closed slide valve on its pressure side. Subsequently, open the slide valve to reach the desired flowing or working point.

Only operate the pumps very briefly with closed, pressure-side slide valve. The axial face seal and other parts may be damaged due to overheating of the pumping medium.

Suction-side throttling is not permitted. This results in cavitation; performance levels fall off and damage may be caused to pump parts and axial face seals.

Only use the pumps for the pumping mediums and operating conditions specified in the order form. As stated in our General Terms of Sale, we shall not be held liable, for any damage which resulted from non-compliance with the present operating instructions.

Pump Series: U 80 - U 210

Before dismantling the pumps, secure them so as to ensure that they cannot be switched on. The pump housing must have reached ambient temperature, must be unpressurized and empty. Carefully clean the pump when this is used for hazardous and environmentally dangerous feeding media. Pollutants from this operation are to be disposed of in the appropriate manner.

Dismantling of version A + B

Unscrew the housing screws (27-3) and remove the housing (06). Unscrew the cap (04-3) and the locking bolt (04-1). Hold the shaft-extension (02) between the pump and the motor tight with a fork wrench and unscrew the impeller (04/03). All parts have right-hand thread. The impeller is best removed with the use of a ribbon gripper. In version A, the impeller is fitted with a thrust collar (32-1). In version B, the impeller is fitted with a coil-spring (32), a thrust washer (35), a o-ring seal (31) and a rotating seal (30). Remove the cover (05) from the flange (01). A stationary ring (33) and a o-ring seal (34) are to be found in the cover. Push the stationary ring and the o-ring seal out off the cover.

Dismantling of version C

Unscrew the housing screws (27-3) and remove the housing (06). Unscrew the locking nut (04-2). Hold the shaft-extension (02) between the pump and the motor tight with a fork wrench and unscrew the impeller (04). All parts have right-hand thread. The impeller is best removed with the use of a ribbon gripper. All this version`s axial face sealing parts are located on the shaft extension (02) and can easily be removed from this sheath. Remove the cover (05) from the flange (01). A stationary ring (33) and a o-ring seal (34) are to be found in the cover. Push the stationary ring and the o-ring seal out off the cover.

Checking the shaft-extension (02)

The shaft-extension must not present any mechanical or chemical damage. Should the shaft-extension need replacing, remove the cotter pin (29). Then remove the shaft-extension from the motor shaft with a take-off device. When assembling the new shaft-extension, ensure compliance with all measurements and distances (see drawing).

Attention!

When ordering spare parts, please mention the pump`s reference number.

Specification A

Fit the stationary seal (33) onto the o-ring seal (34) and press both down into the cover (05).

Place the assembled cover on the flange (01). Unite the thrust collar (32-1) and the rotating seal (30) and slide over the shaft protector (03) on the rear side of the impeller. The thrust-collar must be pushed right down into the groove on the impeller.

Specification B

Fit the stationary seal (33) onto the o-ring seal (34) and press both down into the cover (05).

Place the assembled cover on the flange (01). Push the coil spring (32) over the shaft protector (03) on the rear side of the impeller. Insert the o-ring seal (31) and the thrust washer (35) into the rotating seal (30). Push all the parts together onto the shaft protector. The spring carrier must come to rest in the groove on the rotating seal ring.

Specification C

Since this version is not equipped with a shaft protector, all the axial face sealing parts are to be mounted on the shaft extension.

Fit the stationary seal (33) onto the o-ring seal (34) and press both down into the cover (05).

Place the assembled cover on the flange (01), insert the o-ring seal (31) and the thrust washer (35) into the rotating seal (30) and push them and the coil spring over the shaft extension (02) until the rotating seal and the stationary seal come into contact.

Please ensure utmost cleanliness during assembly, especially of the slide rings`sealing surfaces.

For all versions, screw the impeller down onto the shaft extension`s bearing surfaces and lock it with the following parts:

specification A + B with locking bolt (04-1) and the cap (04-3); specification C with locking washer (42-4) and a locking nut (04-2).

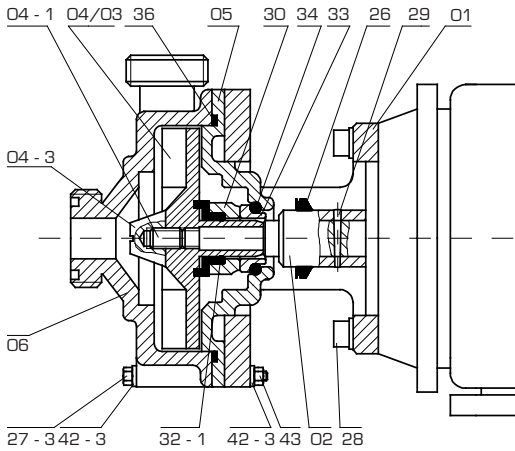
Replace the housing seal (36) if necessary and then put the housing back and tighten with the housing screws.

Release the pump shaft by rotating it and check for smooth and even running.

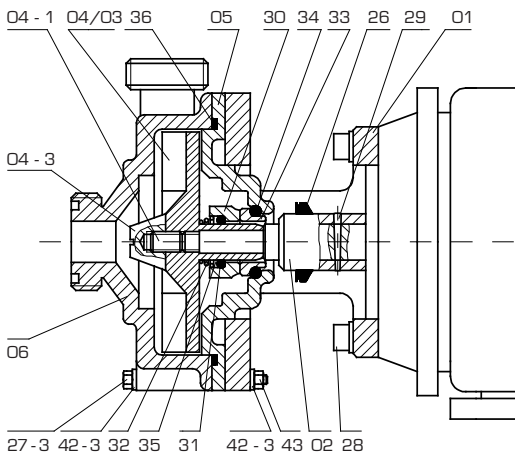
When starting the pump up again, please comply with the instructions for **initial commissioning**.

Parts Description of the U Pump series

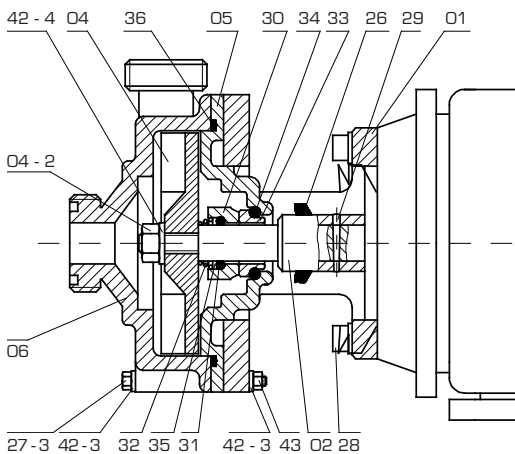
Design A
with rubber spring



Design B
with coil spring instead of rubber spring



Design C
with coil spring instead of rubber spring
without shaft protector



Parts for design: A, B, C

part-no.	part	materials	
		standard	on request
01	mounting flange	AL or PP	stainless steel
05	backplate	PVDF	
06	pump housing	PVDF	
36	pump housing seal	FKM	FEP / EPDM
26	flinging disc	rubber	Hastelloy C
28	bolt + washer	A4	
29	cotter pin	1.4305	Hastelloy C
42 - 3	washer	A4	
27 - 3	hexagon bolt	A4	PVC
43	hexagon nut	A4	

*FKM = e.g. Viton®

Parts for design: A, B (Edelstahl) or
A, B (Hastelloy C)

part-no.	part	materials	
		standard	on request
02	shaft extension	1.4571	Hastelloy C
04 / 03	impeller (PVDF), inset	1.4571-inset	Hastelloy-inset
04 - 1	locking screw	1.4571	Hastelloy C
04 - 3	cap	PVDF	

Parts for design: C (Edelstahl) or
C (Hastelloy C)

part-no.	part	materials	
		standard	on request
02	shaft extension	1.4571	Hastelloy C
04	impeller / PVDF	1.4571-inset	Hastelloy-inset
04 - 2	locking nut	1.4571	Hastelloy C
42 - 4	locking washer	1.4571	Hastelloy C

Parts for axial face seal of design: A

part-no.	part	materials	
		standard	on request
30	rotating seal	Carbon	SiC
32 - 1	rubber spring	FKM	
33	stationary seal	Ceramic	SiC
34	o-ring seal	FKM	

*FKM = e.g. Viton®

Parts for axial face seal of design: B

part-no.	part	materials	
		standard	on request
30	rotating seal	Carbon	SiC
31	o-ring seal	FKM*	FEP / EPDM
32	coil spring	Hastelloy C	
33	stationary seal	Ceramic	SiC
34	o-ring seal	FKM*	FEP / EPDM
35	thrust washer	1.4571	Hastelloy C

*FKM = e.g. Viton®

Dismantling | Assembly of the shaft extension ⁷

U Pump Series: with a single mechanical axial face seal

Remove the cotter pin (29) by punching it out.

Strip the shaft extension (02).

Unscrew the flange (01) from the motor.

Mount a new shaft extension (02).

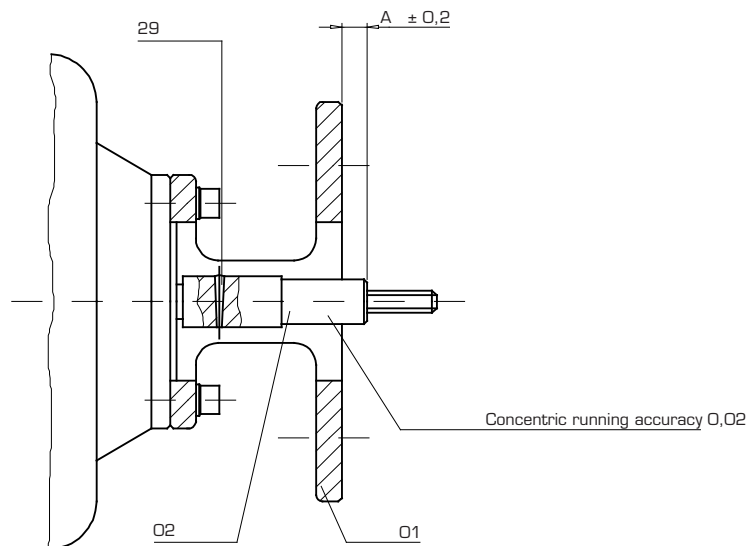
In the event of incorporated flange, adjust assembly dimension "A".

Bore and pin the shaft extension.

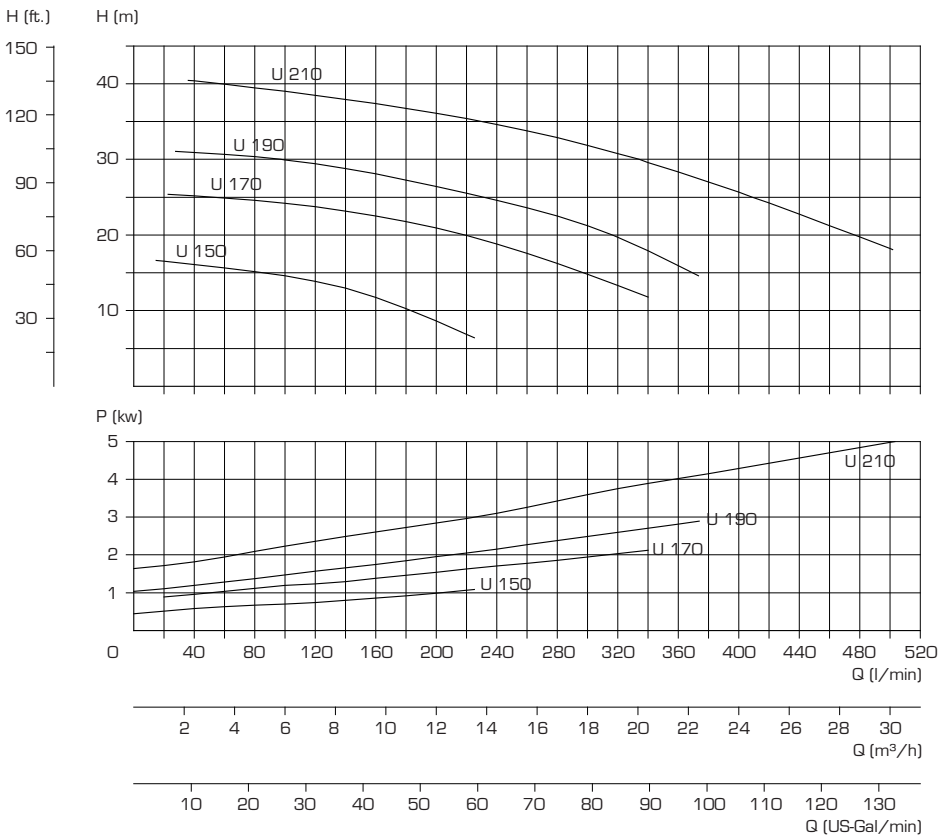
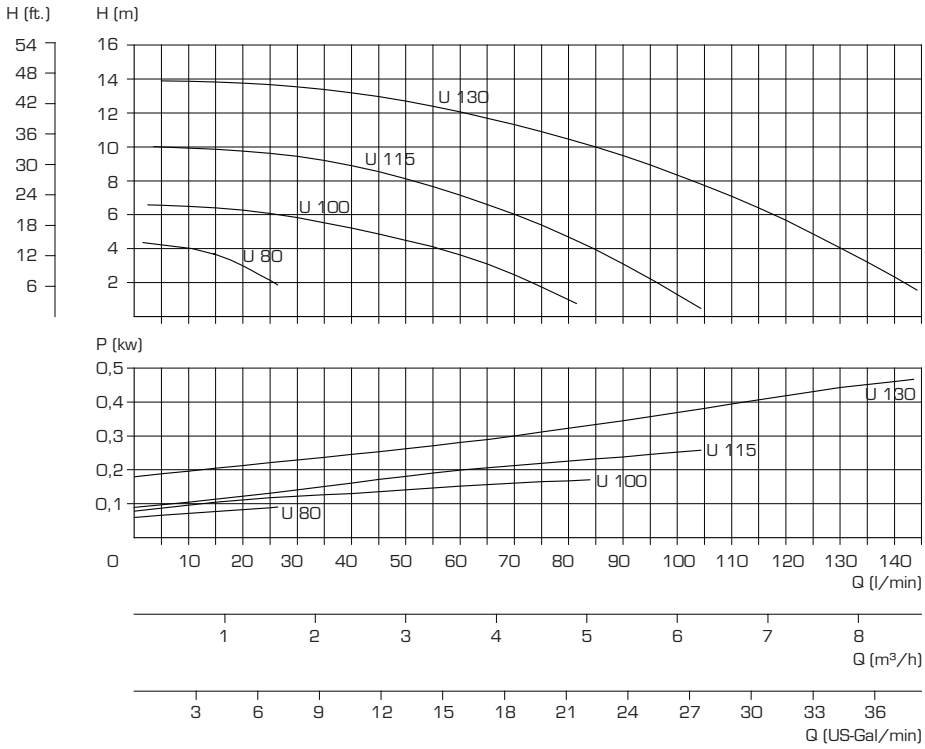
Test for concentric running.

Screw the flange (01) and all other parts and mount in accordance with the repair instructions.

Dimension	A in mm
80 - 100	7,5
115	11,0
130	9,0
150 - 210	11,0

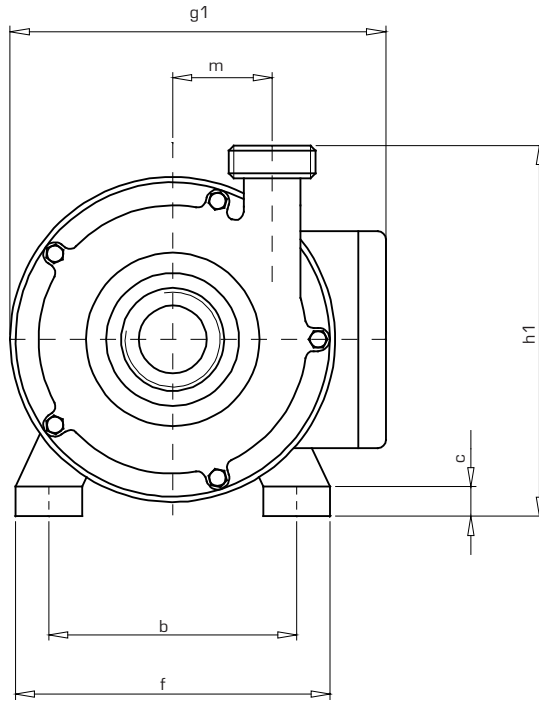


Characteristics of the U Pump Series



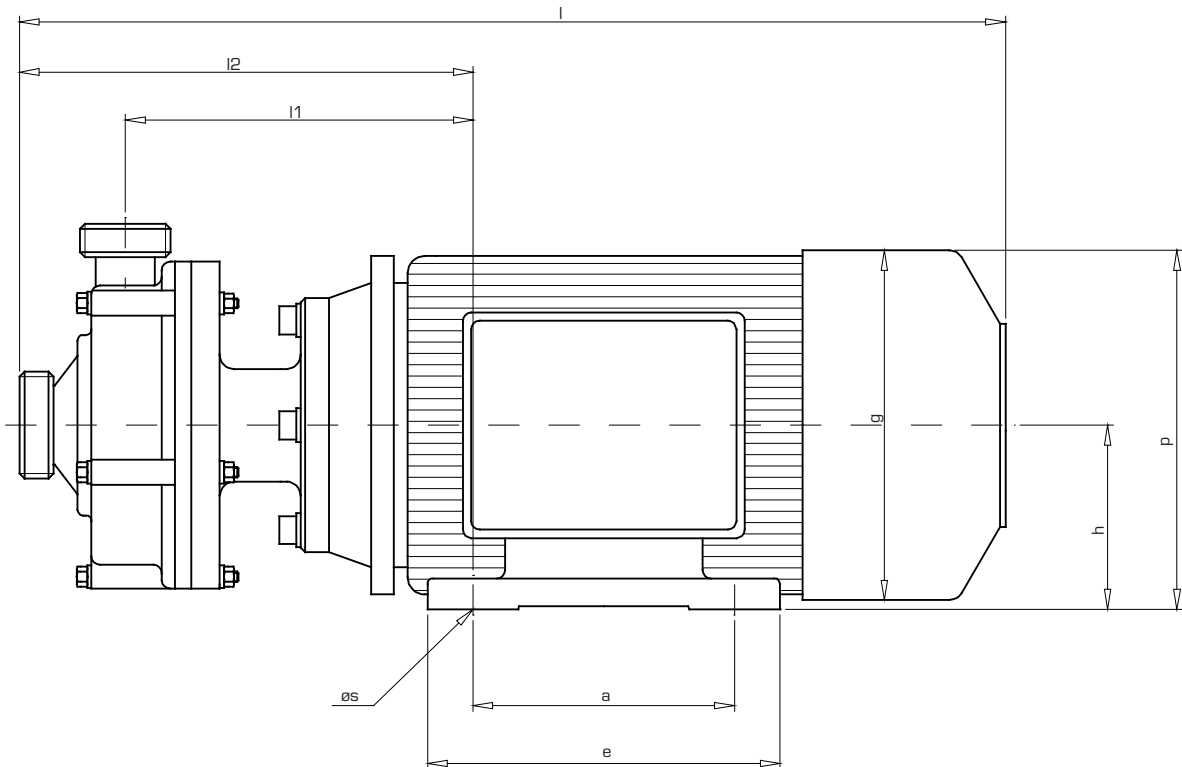
Characteristic lines measured with water, 20° C and 2900 Rpm (50 Hz.)

Specification of the U Pump Series



Type	h	h1	l	l1	l2	g	g1	p	a	b	e	f	c	ø s	m	suction conn.		pressure conn.		weights kg
																nom. bore	male thread	nom. bore	male thread	
U 80	56	107	282	110	145	111	140	112	71	90	90	106	5,5	6	25	10	G ¾"	10	G ¾"	4,1
U 100	56	118	284	111	147	111	140	112	71	90	90	106	5,5	6	31	15	G 1"	15	G 1"	4,2
U 115	63	131	312	125	162	126	150	125	80	100	97	116	6	7	37	15	G 1"	15	G 1"	4,5
U 130	71	149	342	130	172	141	167	141	90	112	109	136	7	7	42	20	G 1¼"	15	G 1"	7,7
U 150	80	171	388	152	203	157	209	159	100	125	125	160	11	10	47	25	G 1½"	20	G 1¼"	13,1
U 170	90	189	448	175	229	177	235	179	125	140	152	180	14	11	58	32	G 2"	25	G 1½"	20,7
U 190	100	213	494	185	244	198	253	199	140	160	170	200	15	12	65	32	G 2"	25	G 1½"	25,6
U 210	112	234	509	192	244	224	288	224	140	190	180	235	16	12	74	40	G 2¼"	32	G 2"	34,6

The dimensions of the motors refer to three-phase standard motors.



General conditions

SCHMITT centrifugal pumps meet very high design and engineering specifications.

Appropriate assembly and operation, as recommended in the present operating instructions, are a prerequisite for troublefree continuous operation.

Thus, in order necessary to comply with the present instructions for assembly and commissioning of the pumps, as well as for maintenance work, it is necessary to read these carefully and to comply with the recommendations. Each and every **SCHMITT centrifugal pump** has been given a reference number which is to be mentioned in all subsequent correspondence and when ordering spare parts.

Warranty

We provide a guarantee in accordance with our General Terms of Sale.

Please advise us immediately of any damage which may have occurred during the guarantee period. Only prompt action will give you a right to claim on the guarantee.

We shall only be liable for all those materials and versions recommended by us, to the extent that the operating instructions and the feeding liquids match the specifications requested at the time of ordering the equipment.

Please contact us should any alterations have to be made concerning the concentrations and the temperature of the feeding medium or the hydraulic data. We shall then check to see whether the pump supplied by us can be used in such operating conditions. As mentioned in our General Terms of Delivery, we shall not be liable for any damage resulting from non-compliance with the operating instructions.

Please inform us writing prior to any modifications or maintenance work carried out during the period of guarantee. Omission to do so will cancel the present guarantee. Such modifications or maintenance work are only to be carried out by specialised personnel or else you may send us the pump for an expert opinion or repairs.

We shall not to be held liable for any pump parts which show signs of premature wear and tear due to their material properties or the way in which they were used, such as axial face seals, seals and similar.

We only guarantee spare parts not made by us within the limits of the guarantee awarded to us by the sub-contractor.