

Applications

Suitable for handling clean or slightly contaminated water in applications such as:

- domestic water supply
- general water supply
- irrigation and spray irrigation systems
- artificial lowering of the ground water level as well as
- heat transfer plants

In addition, the pump sets are used in pressure boosting systems, air-conditioning systems, fountains, etc.

Permissible sand content in the fluid handled: 50 g/m³.

Operating Data

Capacity	Q	up to 79 m ³ /h
Head	H	up to 570 m
Temperature of fluid handled .	t	up to 50 °C
Speed	n	2900 rpm

Design

Multistage centrifugal pump with components made of stainless steel and additional bearing for each stage. The stage casings are connected by means of tie bolts.

Motor

Canned or wet submersible squirrel-cage motor, 2 poles; NEMA shaft end; 50 Hz; type of enclosure: IP 68

Designation (Example)

	UPA	150	C	-	16	/	9
Type series	_____	_____	_____	_____	_____	_____	_____
Minimum well diameter (mm)	_____	_____	_____	_____	_____	_____	_____
Design status	_____	_____	_____	_____	_____	_____	_____
Capacity (m ³ /h)	_____	_____	_____	_____	_____	_____	_____
Number of stages	_____	_____	_____	_____	_____	_____	_____

Certification

Quality management certified to ISO 9001

Submersible Borehole Pumps for Well Diameters of 150 mm (6 inches)

50 Hz

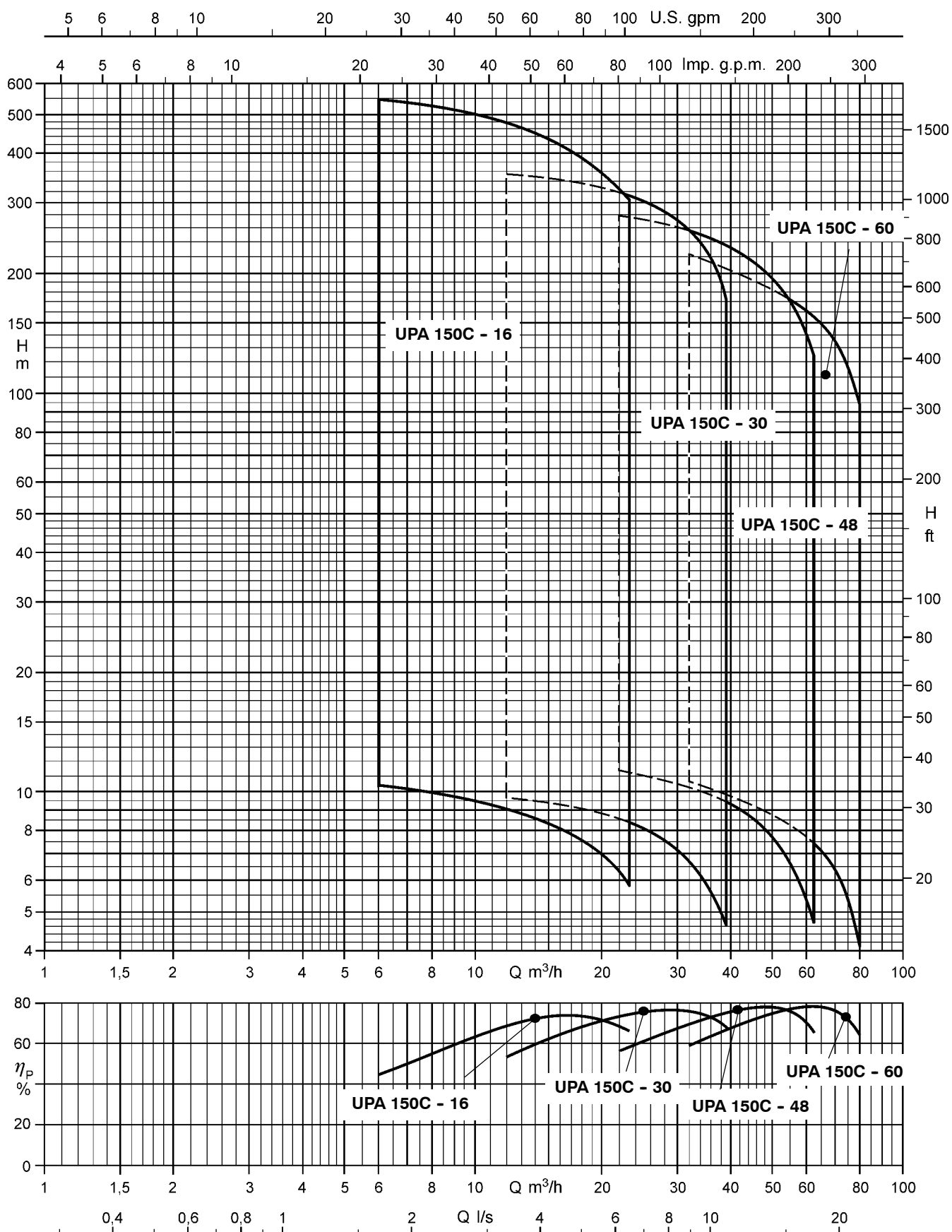


Product Features

- Rust-proof
- Suitable for installation in narrow deep wells
- High efficiency
- Motor designed for maximum pump output
- Low noise level
- For vertical, angled or horizontal installation
- Check valve with anti-blockage valve disc

Selection Charts (Ranges on Offer)

n ~ 2900 rpm



Material Variants

Component	Material	
	C1 (AISI 304)	C2 (AISI 316)
Pump		
Suction casing	1.4408	
Stage casing	1.4301	1.4404
Stage casing with hole	1.4301	1.4404
Upper stage casing	1.4301	1.4404
Suction strainer	1.4401	1.4404
Flanged end piece	1.4408	
Shaft	1.4305	1.4401
Impeller	1.4301	1.4404
Thrust bearing	HY22	
Counter thrust bearing	A2	A4
O-ring	NBR	
Casing wear ring	NBR	
Impeller wear ring	1.4301	1.4404
Bearing bush	NBR	
Disc	1.4301	1.4404
Valve body	1.4408	
Valve spring	1.4401	
Valve plate	1.4404	
Coupling	1.4308	1.4408
Tiebolt	1.4301	1.4404
Hexagon socket head screw	A2	A4
Hexagon socket head screw	A4	A4
Nut	A2	A4
Impeller nut	1.4401	
Locking sleeve	1.4401	
Clamp	1.4301	1.4404
Cable support	1.4301	1.4404
Protection plug	HY22	

Component		Material	
		C1 (AISI 304)	C2 (AISI 316)
Motor			
Shaft		1.4305	1.4462
Bearing carrier	DN 100	1.4301	1.4401
	UMA 150D	JL- 1030	1.4409
Stator case		1.4301	1.4571

Description

1.4301	CrNi steel
1.4305	CrNi steel
1.4308	CrNi steel
1.4401	CrNiMo steel
1.4404	CrNiMo steel
1.4408	CrNiMo steel
1.4462	CrNiMo steel
1.4571	CrNiMo steel
JL - 1030	cast iron
A2	CrNi steel
A4	CrNiMo steel
HY22	Carbon/graphite in PTFE
NBR	Acrylnitril-Butadien-Kautschuk

Bearings / Lubrication

Radial plain bearings: pump bearings lubricated by the fluid handled, motor bearings by the motor's water fill. Axial thrust is balanced by a tilting-pad thrust bearing in the motor (lower end).

Direction of Rotation of the Pump

Clockwise rotation (when looking at the drive shaft end).

Pump End (Discharge)

UPA 150C submersible borehole pumps can be supplied with the following discharge ends:

	G 2 1/2"	G 3"	G 4"	DN 50	DN 65	DN 80
UPA 150C - 16	x	x	-	x	x	x
UPA 150C - 30	-	x	x	-	x	x
UPA 150C - 48	-	x	x	-	x	x
UPA 150C - 60	-	x	x	-	x	x

Coating (Bearing carrier)

UMA 150D motor:

Quality powder coating, approved for drinking water contact

Colour blue (RAL 5003)

Type of Installation

Standard vertical installation. Depending on the number of stages, horizontal installation is also possible.

Motor DN 100: In order to guarantee the dissipation of the motor heat it will be necessary to install a device guiding the flow along the motor (cooling jacket, flow inducer sleeve, etc.) in horizontal installation.

Drive

Design Canned ¹⁾ or wet ²⁾ submersible squirrel-cage motor, 2 poles

Connection NEMA standard

Type of enclosure IP 68

Frequency f 50 Hz

Type of current three-phase (3 ~)

Rated voltage U up to 400V ¹⁾ or 690 V ²⁾

Rated power P_N up to 37 kW

Frequency of starts ... 20 / h ¹⁾ and 15 / h ²⁾

Minimum delay

before restarting 1 min ¹⁾ or 2 min ²⁾

Motor design is in compliance with VDE regulations.

¹⁾ Motor DN 100

²⁾ Motor UMA 150D

Connection to Power Supply

The submersible motors are supplied ex factory with 1 or 2 motor leads, each equipped with an earth conductor. All motors are provided with internal earthing. Any extension cables required are connected using water-tight cable connectors. Motor leads and extension cables are suitable for drinking water applications.

Starting

Motor DN 100 d.o.l. only
(autotransformer or soft starter)
Motor UMA 150D . . . d.o.l. (autotransformer or soft starter)
or star-delta

Variable Speed

The submersible borehole pumps can also be equipped with a speed control system to accommodate different operating points.

Application Temperatures

The submersible borehole pumps are, as a standard, suitable for use in water with temperatures of up to $t = + 30\text{ }^{\circ}\text{C}$. An indispensable requirement for this is a flow velocity of $v = 0.2\text{ m/s}$ past the motor. This requirement is met, for example, when the pump is installed in a deep well above the well screen / filter, etc.

With certain restrictions, some motor sizes may also be used in water with temperatures of up to $t = + 50\text{ }^{\circ}\text{C}$ or for operation without an adequate cooling flow of water past the motor, i.e. $v = 0\text{ m/s}$ (for example, when the unit is installed in a deep well below the screen / filter area or in a pump sump, etc.).

Variants Available on Request

- Other supply voltages up to 1000 V
- Pump sets for 1~ / 230 V up to 2.2 kW/50 Hz
+ 2.5 kW/60 Hz
- Models with cooling, suction or pressure shroud

Design Features of the pump

Corrosion resistance

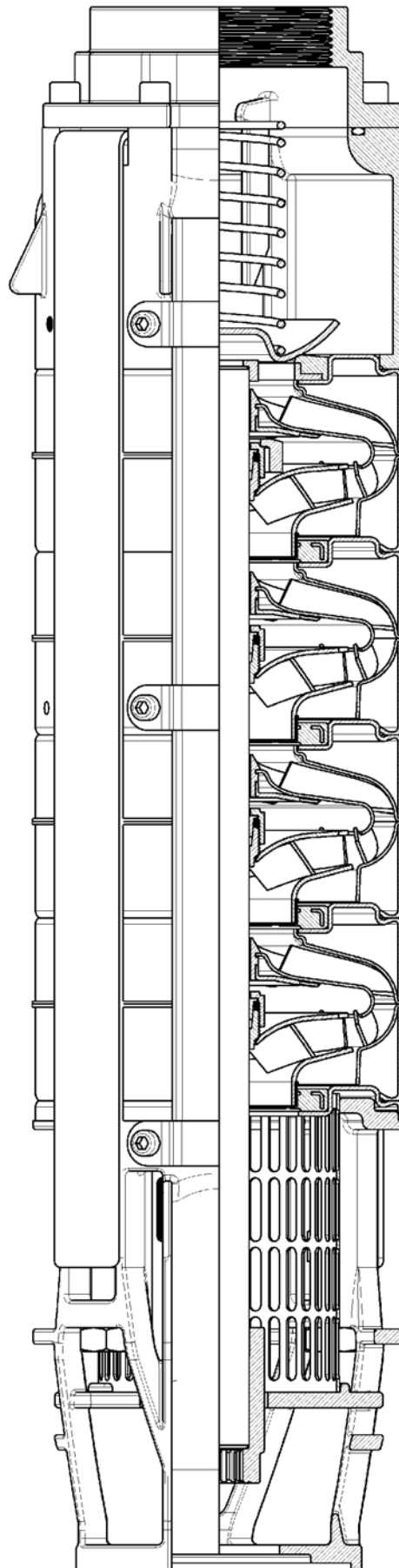
The pump and motor are constructed of high-grade stainless steel as standard – producing consistently high efficiency levels. Also available in higher grade CrNiMo steel for aggressive fluids.

Low operating costs

High efficiency and low-loss check valve maintain long-term energy savings over the entire service life-time of the unit.

Maintenance-friendly design

- Simple disassembly and reassembly
- Rewindable motors



Flexibility

- Exchangeable connection variants
- Check valve can be removed easily
- Suitable for vertical installation in deep wells or horizontal installation
- NEMA connection

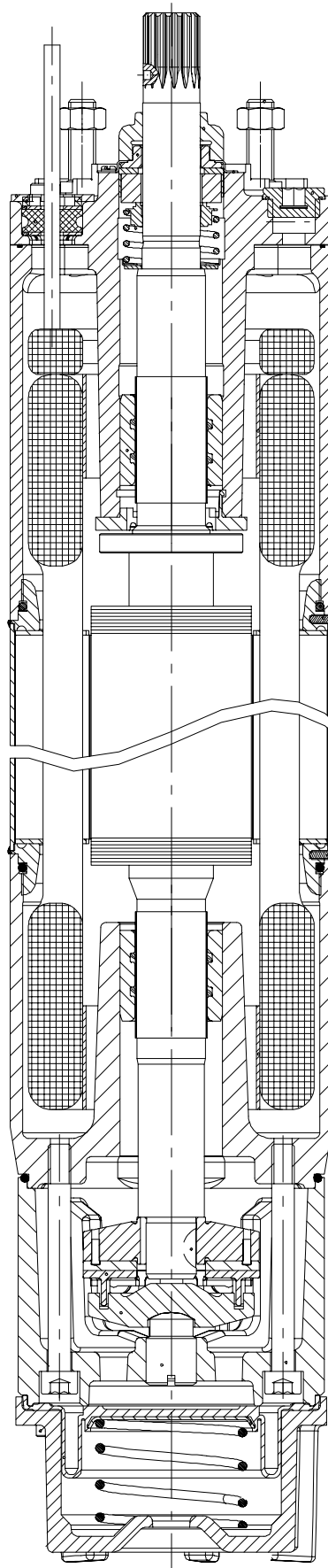
High operating reliability and long service life

Equipped with reinforced suction strainer, robust drive lantern and check valve made of investment cast stainless steel. Laser-welded impellers. Protected against thrust reversal.

Hygienic and approved for drinking water

ACS approved

Design Features of the motor UMA 150D



Counter thrust bearing

- Reliable balancing of negative axial thrust.
- Impellers do not rub on the stage casings.

Tried and tested thrust bearing

- Water-lubricated self-aligning tilting-pad journal bearing.
- No-maintenance design suitable for maximum load-carrying capacity under continuous operation conditions.
- New materials combination (stainless steel / carbon) for high safety factor.

The KSB motor

- VDE-compliant, i.e., high level of electrical safety.
- Designed for max. pump power to protect unit from overloads.

Dynamically balanced rotor

- Ensures smooth running.

UPA 150C - 16 / ...; number of stages 1 - 20

The characteristic curves shown are for preliminary selection only. Exact selection data will be provided in our quotation.

Selection

The pressure losses H_v in the check valve are not considered in the pump characteristic curves.

Legend ...

H_v : Head losses in the check valve

η_p : Pump efficiency (not considering check valve)

NPSH: Net positive suction head required by the pump

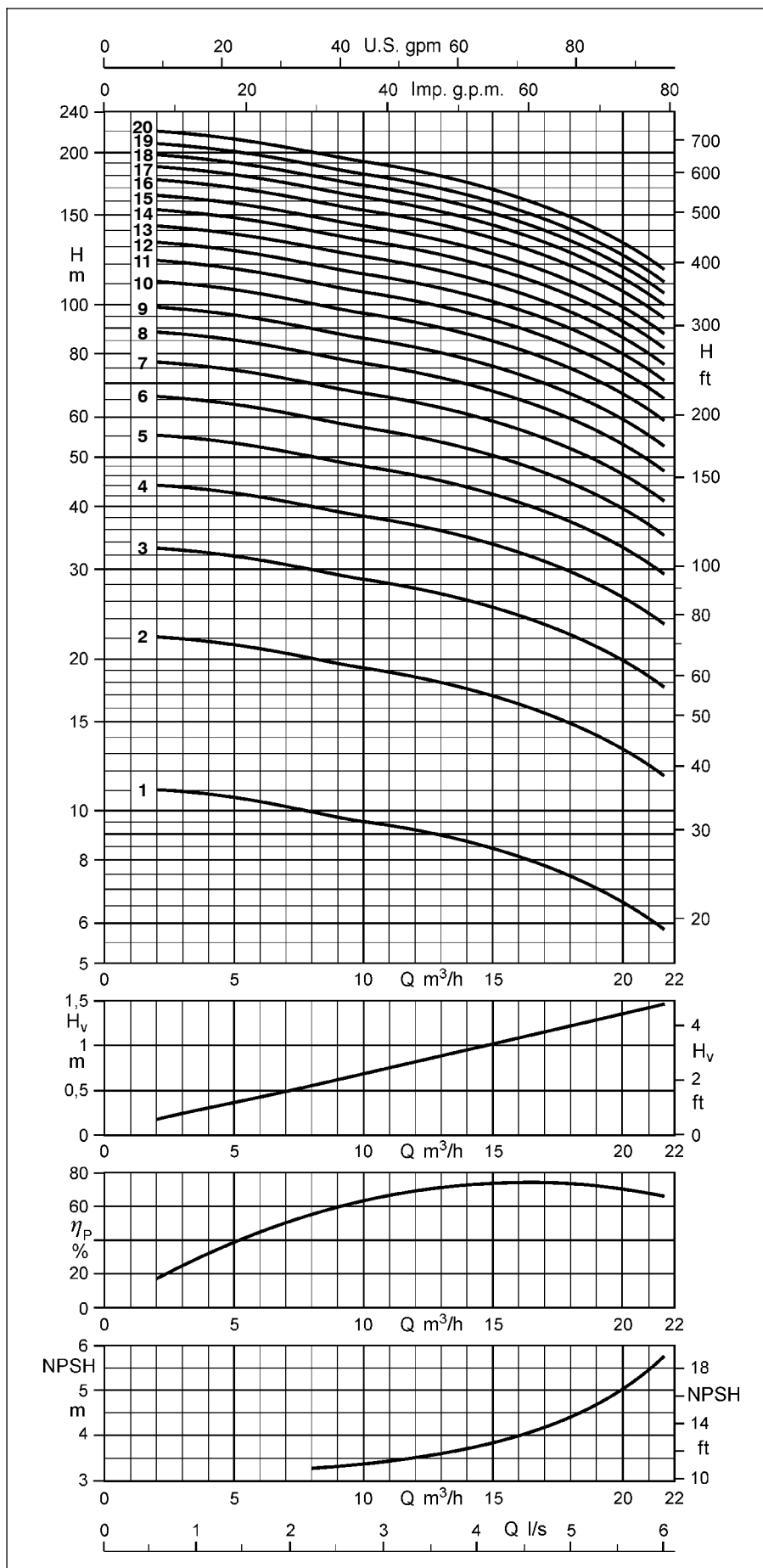
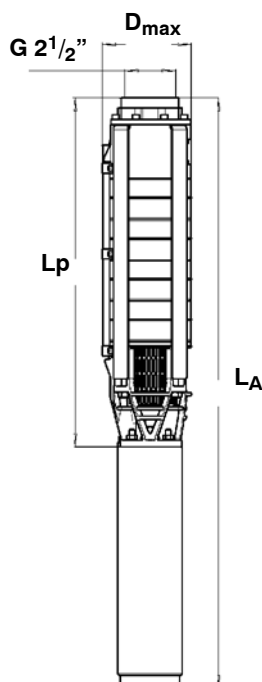
Pump End G 2 1/2"

The information given below is based on the model with check valve and threaded end.

The changes in the main dimensions resulting from different threaded or flanged ends are specified in the table below.

	Overall length (mm)	D_{max} (mm)
G 2 1/2"	40	see page 11
G 3"	48	
G 4"	93	
DN 50	77	165
DN 65	77	185
DN 80	77	200

Threaded end to DIN ISO 228, Part 1.
Flanged end to DIN 2501, Part 1



UPA 150C - 16 / ...; number of stages 21 - 52

The characteristic curves shown are for preliminary selection only. Exact selection data will be provided in our quotation.

Selection

The pressure losses H_v in the check valve are not considered in the pump characteristic curves.

Legend ...

H_v : Head losses in the check valve

η_p : Pump efficiency (not considering check valve)

NPSH: Net positive suction head required by the pump

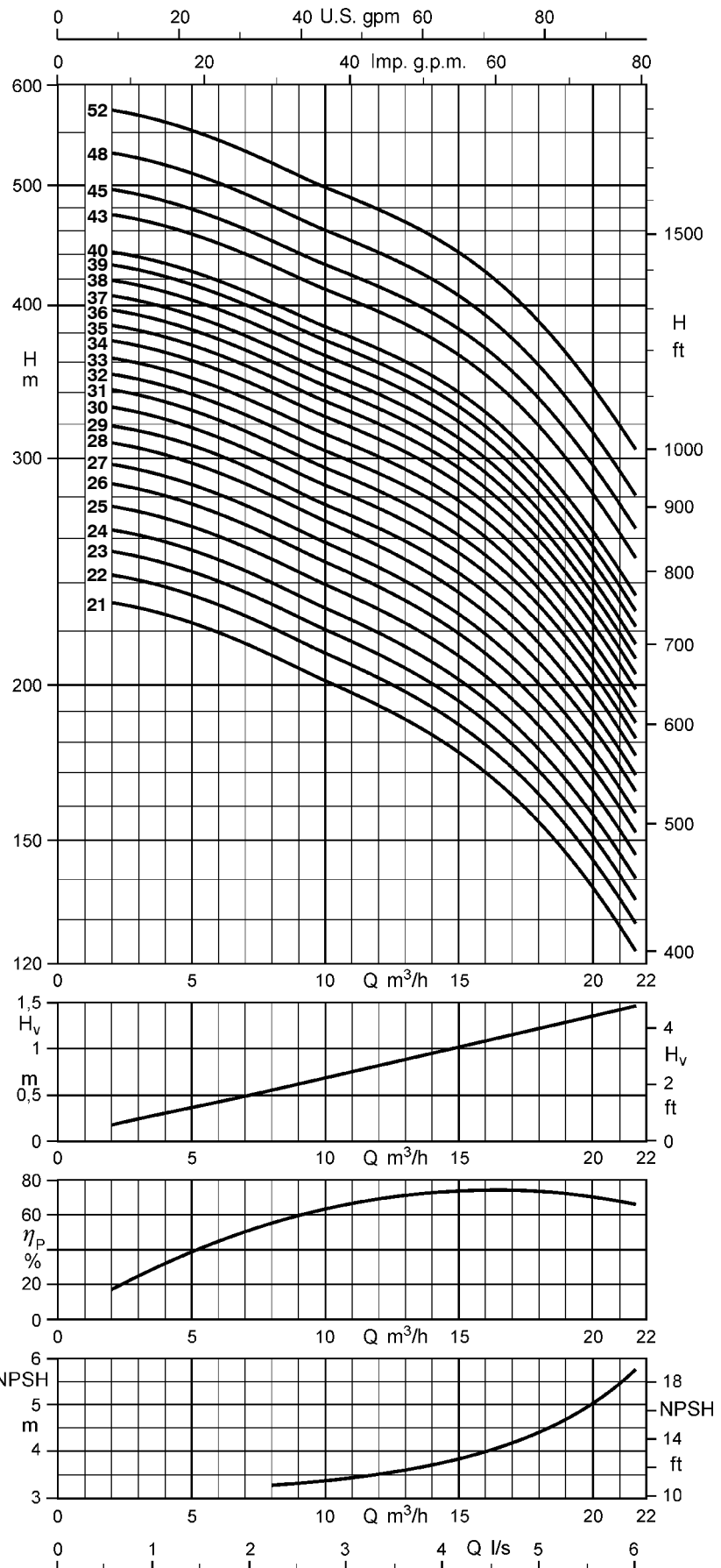
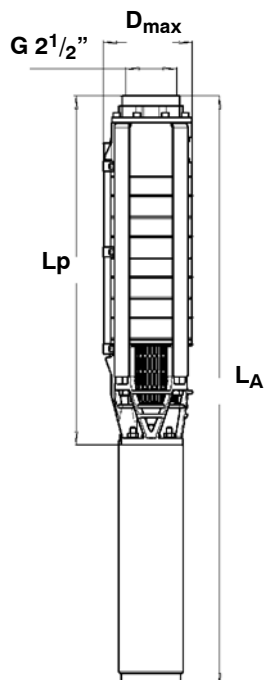
Pump End G 2 1/2"

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G 2 1/2"	40	see page 11
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DN 50	77	165
DN 65	77	185
DN 80	77	200

Threaded end to DIN ISO 228, Part 1.
Flanged end to DIN 2501, Part 1



Technical Data

Pumps with submersible motors for ... - Type of current / voltage **three-phase (3 ~) / 400 V**
 - Starting **d.o.l. (D) or star-delta (Y-Δ)**

UPA 150C 16 / ...	Pump	Motor					Motor lead ²⁾ , flat	
	Discharge head Q = 0 m³/h	Rated power	Max. temperature of the fluid pumped v ≥ 0.2 m/s (0.0 m/s)	Rated current	Efficiency	Power factor	Number x cross-section of conductors (use under water, 400 V and ≤ +30 °C)	
	H ₀ m	P _N kW	t _{max} ¹⁾ °C	I _N A	η _M %	cos φ ---	Direkt mm²	Y-Δ mm²
1 + DN 100 - 0.75	11.2	0.75	30 (30)	2.1	70.0	0.76	4 x 1.5	-
2 + DN 100 - 1.5	22	1.5	30 (30)	3.9	73.0	0.77	4 x 1.5	-
3 + DN 100 - 2.2	32.5	2.2	30 (30)	6.2	75.0	0.75	4 x 1.5	-
4 + DN 100 - 3.0	44	3.0	30 (30)	8.0	76.0	0.76	4 x 1.5	-
5 + DN 100 - 3.0	54	3.0	30 (30)	8.0	76.0	0.76	4 x 1.5	-
6 + DN 100 - 3.7	65	3.7	30 (30)	9.2	77.5	0.80	4 x 1.5	-
7 + UMA 150D 5/21	80	4.5	42 (39)	12.0	76.5	0.74	4 x 2.5	3/4 x 2.5
8 + UMA 150D 5/21	91	5.0	40 (36)	12.7	76.0	0.78	4 x 2.5	3/4 x 2.5
9 + UMA 150D 5/21	102	5.5	37 (33)	13.6	75.5	0.80	4 x 2.5	3/4 x 2.5
10 + UMA 150D 7/21	113	6.5	38 (34)	16.0	77.5	0.79	4 x 2.5	3/4 x 2.5
11 + UMA 150D 7/21	124	7.0	35 (31)	16.8	77.0	0.81	4 x 2.5	3/4 x 2.5
12 + UMA 150D 7/21	134	7.5	33 (28)	17.8	76.5	0.82	4 x 2.5	3/4 x 2.5
13 + UMA 150D 7/21	145	7.5	30 (24)	17.8	76.5	0.82	4 x 2.5	3/4 x 2.5
14 + UMA 150D 9/21	157	8.5	33 (28)	20.0	78.5	0.81	4 x 2.5	3/4 x 2.5
15 + UMA 150D 9/21	168	9.0	31 (25)	20.5	78.0	0.82	4 x 2.5	3/4 x 2.5
16 + UMA 150D 9/21	178	9.3	28 (22)	21.0	77.5	0.83	4 x 2.5	3/4 x 2.5
17 + UMA 150D 13/21	193	10.5	36 (32)	25.0	81.0	0.76	4 x 2.5	3/4 x 2.5
18 + UMA 150D 13/21	204	11.0	35 (30)	25.5	80.5	0.78	4 x 2.5	3/4 x 2.5
19 + UMA 150D 13/21	215	11.5	33 (28)	26.5	80.5	0.79	4 x 2.5	3/4 x 2.5
20 + UMA 150D 13/21	225	12.0	32 (26)	27.0	80.5	0.80	4 x 2.5	3/4 x 2.5
21 + UMA 150D 13/21	236	13.0	30 (24)	29.0	80.0	0.81	4 x 2.5	3/4 x 2.5
22 + UMA 150D 13/21	246	13.0	29 (22)	29.0	80.0	0.81	4 x 2.5	3/4 x 2.5
23 + UMA 150D 13/21	256	13.0	28 (22)	29.0	80.0	0.81	4 x 2.5	3/4 x 2.5
24 + UMA 150D 15/21	269	14.0	33 (28)	30.5	82.0	0.82	4 x 4.0	3/4 x 2.5
25 + UMA 150D 15/21	280	15.0	32 (26)	32.5	81.5	0.83	4 x 4.0	3/4 x 2.5
26 + UMA 150D 15/21	290	15.0	30 (25)	32.5	81.5	0.83	4 x 4.0	3/4 x 2.5
27 + UMA 150D 18/21	305	16.0	32 (27)	36.5	82.5	0.78	4 x 4.0	3/4 x 2.5
28 + UMA 150D 18/21	315	16.5	31 (25)	37.0	82.0	0.79	4 x 4.0	3/4 x 2.5
29 + UMA 150D 18/21	326	17.0	30 (24)	38.0	82.0	0.79	4 x 4.0	3/4 x 2.5
30 + UMA 150D 18/21	336	17.5	29 (22)	39.0	82.0	0.80	4 x 4.0	3/4 x 2.5
31 + UMA 150D 18/21	347	18.0	27 (21)	39.5	82.0	0.81	4 x 4.0	3/4 x 2.5
32 + UMA 150D 18/21	357	18.5	26 (19)	40.5	81.5	0.81	4 x 4.0	3/4 x 2.5
33 + UMA 150D 22/21	373	20.0	33 (28)	44.0	83.5	0.79	4 x 4.0	3/4 x 2.5
34 + UMA 150D 22/21	383	20.0	33 (27)	44.0	83.5	0.79	4 x 4.0	3/4 x 2.5
35 + UMA 150D 22/21	394	21.0	32 (26)	46.0	83.5	0.80	4 x 4.0	3/4 x 2.5
36 + UMA 150D 22/21	404	22.0	31 (25)	47.5	83.5	0.81	4 x 4.0	3/4 x 2.5
37 + UMA 150D 22/21	415	22.0	30 (24)	47.5	83.5	0.81	4 x 4.0	3/4 x 2.5
38 + UMA 150D 22/21	425	22.0	29 (23)	47.5	83.5	0.81	4 x 4.0	3/4 x 2.5
39 + UMA 150D 26/21	441	24.0	36 (31)	52.0	85.0	0.80	4 x 6.0	3/4 x 4.0
40 + UMA 150D 26/21	451	24.0	35 (30)	52.0	85.0	0.80	4 x 6.0	3/4 x 4.0
43 + UMA 150D 26/21	483	26.0	33 (27)	55.0	84.5	0.82	4 x 6.0	3/4 x 4.0
45 + UMA 150D 26/21	504	26.0	31 (26)	55.0	84.5	0.82	4 x 6.0	3/4 x 4.0
48 + UMA 150D 30/21	542	29.0	33 (27)	63.0	84.5	0.80	4 x 6.0	3/4 x 4.0
52 + UMA 150D 30/21	583	30.0	30 (24)	65.0	84.5	0.80	4 x 6.0	3/4 x 4.0

¹⁾ also see page 4

²⁾ 3/4 = 1 x 3-core + 1 x 4-core, 90° spacing.

Dimensions / Weights / Horizontal Installation ¹⁾

UPA 150C - 16 / ...	L _p mm	L _A ≈ mm		m _A ≈ kg	D _{max} ≈ mm		Installation ^{2) 4)}
		C1 (AISI 304)	C2 (AISI 316)		d.o.l.	Y-Δ	
1	337	612	619	17	139	139	v
2	397	727	734	20	139	139	v
3	458	818	825	23	139	139	v
4	518	943	950	27	139	139	v
5	579	1004	1011	28	139	139	v
6	639	1194	1201	36	139	139	v
7	700	1399	1399	63	142	142	v + h ⁴⁾
8	760	1459	1459	66	142	142	v + h ⁴⁾
9	821	1520	1520	67	142	142	v + h ⁴⁾
10	913	1632	1632	70	142	142	v + h ⁴⁾
11	973	1692	1692	72	142	142	v + h ⁴⁾
12	1034	1753	1753	73	142	142	v + h ⁴⁾
13	1094	1813	1813	74	142	142	v + h ⁴⁾
14	1155	1904	1904	79	142	142	v + h ⁴⁾
15	1215	1964	1964	80	142	142	v + h ⁴⁾
16	1276	2025	2025	81	142	142	v + h ⁴⁾
17	1336	2165	2165	90	142	142	v + h ⁴⁾
18	1397	2226	2226	91	142	142	v + h ⁴⁾
19	1457	2286	2286	93	142	142	v + h ⁴⁾
20	1518	2347	2347	94	142	142	v + h ⁴⁾
21	1578	2407	2407	95	142	142	v + h ⁴⁾
22	1639	2468	2468	97	142	142	v + h ⁴⁾
23	1699	2528	2528	98	142	142	v + h ⁴⁾
24	1760	2634	2634	103	142	142	v + h ⁴⁾
25	1820	2694	2694	104	142	142	v + h ⁴⁾
26	1881	2755	2755	105	142	142	v + h ⁴⁾
27	1941	2860	2860	112	142	142	v + h ⁴⁾
28	2002	2921	2921	113	142	142	v + h ⁴⁾
29	2062	2981	2981	114	142	142	v + h ⁴⁾
30	2123	3042	3042	116	142	142	v + h ⁴⁾
31	2183	3102	3102	117	142	142	v + h ⁴⁾
32	2244	3163	3163	118	142	142	v + h ⁴⁾
33	2304	3313	3313	128	142	142	v + h ⁴⁾
34	2365	3374	3374	129	142	142	v + h ⁴⁾
35	2425	3434	3434	130	142	142	v + h ⁴⁾
36	2486	3495	3495	132	142	142	v + h ⁴⁾
37	2546	3555	3555	133	142	142	v + h ⁴⁾
38	2607	3616	3616	135	142	142	v + h ⁴⁾
39	2667	3781	3781	145	142	142	v + h ⁴⁾
40	2728	3842	3842	146	142	142	v + h ⁴⁾
43		on request					
45							
48							
52							

¹⁾ Including check valve with threaded end and standard motor leads.

²⁾ v = vertical / h = horizontal.

⁴⁾ Always consult the manufacturer before attempting to install pumps sets supplied for vertical installation in horizontal position.

Identity No. for Material version C1 (AISI 304)

UPA 150C - 16 / ...	Ident No. Pump Fig.0 ¹⁾	Description Motor	Ident No. Motor starting d.o.l 1 cable	Ident No. Motor starting d.o.l 2 cables parallel	Ident No. Motor starting Y Δ
1	48 882 263	DN 100 - 0.75	90 051 515	--	--
2	48 882 264	DN 100 - 1.5	90 051 517	--	--
3	48 882 265	DN 100 - 2.2	90 011 139	--	--
4	48 882 266	DN 100 - 3.0	90 050 058	--	--
5	48 882 267	DN 100 - 3.0	90 050 058	--	--
6	48 882 268	DN 100 - 3.7	90 011 140	--	--
7	48 882 278	UMA 150D 5/21	90 062 500	--	90 062 540
8	48 882 279	UMA 150D 5/21	90 062 500	--	90 062 540
9	48 882 280	UMA 150D 5/21	90 062 500	--	90 062 540
10	48 882 281	UMA 150D 7/21	90 062 501	--	90 062 541
11	48 882 282	UMA 150D 7/21	90 062 501	--	90 062 541
12	48 882 283	UMA 150D 7/21	90 062 501	--	90 062 541
13	48 882 284	UMA 150D 7/21	90 062 501	--	90 062 541
14	48 882 285	UMA 150D 9/21	90 062 502	--	90 062 542
15	48 882 286	UMA 150D 9/21	90 062 502	--	90 062 542
16	48 882 287	UMA 150D 9/21	90 062 502	--	90 062 542
17	48 882 288	UMA 150D 13/21	90 062 503	--	90 062 543
18	48 882 289	UMA 150D 13/21	90 062 503	--	90 062 543
19	48 882 290	UMA 150D 13/21	90 062 503	--	90 062 543
20	48 882 291	UMA 150D 13/21	90 062 503	--	90 062 543
21	48 882 292	UMA 150D 13/21	90 062 503	--	90 062 543
22	48 882 293	UMA 150D 13/21	90 062 503	--	90 062 543
23	48 882 294	UMA 150D 13/21	90 062 503	--	90 062 543
24	48 882 295	UMA 150D 15/21	90 062 504	--	90 062 544
25	48 882 296	UMA 150D 15/21	90 062 504	--	90 062 544
26	48 882 297	UMA 150D 15/21	90 062 504	--	90 062 544
27	48 882 298	UMA 150D 18/21	90 062 505	01 115 532	90 062 545
28	48 882 299	UMA 150D 18/21	90 062 505	01 115 532	90 062 545
29	48 882 300	UMA 150D 18/21	90 062 505	01 115 532	90 062 545
30	48 882 301	UMA 150D 18/21	90 062 505	01 115 532	90 062 545
31	48 882 302	UMA 150D 18/21	90 062 505	01 115 532	90 062 545
32	48 882 303	UMA 150D 18/21	90 062 505	01 115 532	90 062 545
33	48 882 304	UMA 150D 22/21	90 062 506	01 115 724	90 062 546
34	48 882 305	UMA 150D 22/21	90 062 506	01 115 724	90 062 546
35	48 882 306	UMA 150D 22/21	90 062 506	01 115 724	90 062 546
36	48 882 307	UMA 150D 22/21	90 062 506	01 115 724	90 062 546
37	48 882 308	UMA 150D 22/21	90 062 506	01 115 724	90 062 546
38	48 882 309	UMA 150D 22/21	90 062 506	01 115 724	90 062 546
39	48 882 310	UMA 150D 26/21	90 062 507	01 115 726	90 062 547
40	48 882 311	UMA 150D 26/21	90 062 507	01 115 726	90 062 547
43	on request				
45					
48					
52					

¹⁾ Fig. 0 = including check valve and threaded end

Identity No. for Material version C2 (AISI 316)

UPA 150C - 16 / ...	Ident No. Pump Fig.0 ¹⁾	Description Motor	Ident No. Motor starting d.o.l 1 cable	Ident No. Motor starting d.o.l 2 cables parallel	Ident No. Motor starting Y Δ
1	48 882 312	DN 100 - 0.75	--	--	--
2	48 882 313	DN 100 - 1.5	90 051 522	--	--
3	48 882 314	DN 100 - 2.2	90 039 244	--	--
4	48 882 315	DN 100 - 3.0	90 051 395	--	--
5	48 882 316	DN 100 - 3.0	90 051 395	--	--
6	48 882 317	DN 100 - 3.7	90 039 245	--	--
7	48 882 327	UMA 150D 5/21	90 062 520	--	90 062 560
8	48 882 328	UMA 150D 5/21	90 062 520	--	90 062 560
9	48 882 329	UMA 150D 5/21	90 062 520	--	90 062 560
10	48 882 330	UMA 150D 7/21	90 062 521	--	90 062 561
11	48 882 331	UMA 150D 7/21	90 062 521	--	90 062 561
12	48 882 332	UMA 150D 7/21	90 062 521	--	90 062 561
13	48 882 333	UMA 150D 7/21	90 062 521	--	90 062 561
14	48 882 334	UMA 150D 9/21	90 062 522	--	90 062 562
15	48 882 335	UMA 150D 9/21	90 062 522	--	90 062 562
16	48 882 336	UMA 150D 9/21	90 062 522	--	90 062 562
17	48 882 337	UMA 150D 13/21	90 062 523	--	90 062 563
18	48 882 338	UMA 150D 13/21	90 062 523	--	90 062 563
19	48 882 339	UMA 150D 13/21	90 062 523	--	90 062 563
20	48 882 340	UMA 150D 13/21	90 062 523	--	90 062 563
21	48 882 341	UMA 150D 13/21	90 062 523	--	90 062 563
22	48 882 342	UMA 150D 13/21	90 062 523	--	90 062 563
23	48 882 343	UMA 150D 13/21	90 062 523	--	90 062 563
24	48 882 344	UMA 150D 15/21	90 062 524	--	90 062 564
25	48 882 345	UMA 150D 15/21	90 062 524	--	90 062 564
26	48 882 346	UMA 150D 15/21	90 062 524	--	90 062 564
27	48 882 347	UMA 150D 18/21	90 062 525	01 115 723	90 062 565
28	48 882 348	UMA 150D 18/21	90 062 525	01 115 723	90 062 565
29	48 882 349	UMA 150D 18/21	90 062 525	01 115 723	90 062 565
30	48 882 350	UMA 150D 18/21	90 062 525	01 115 723	90 062 565
31	48 882 351	UMA 150D 18/21	90 062 525	01 115 723	90 062 565
32	48 882 352	UMA 150D 18/21	90 062 525	01 115 723	90 062 565
33	48 882 353	UMA 150D 22/21	90 062 526	01 115 725	90 062 566
34	48 882 354	UMA 150D 22/21	90 062 526	01 115 725	90 062 566
35	48 882 355	UMA 150D 22/21	90 062 526	01 115 725	90 062 566
36	48 882 356	UMA 150D 22/21	90 062 526	01 115 725	90 062 566
37	48 882 357	UMA 150D 22/21	90 062 526	01 115 725	90 062 566
38	48 882 358	UMA 150D 22/21	90 062 526	01 115 725	90 062 566
39	48 882 359	UMA 150D 26/21	90 062 527	01 115 727	90 062 567
40	48 882 360	UMA 150D 26/21	90 062 527	01 115 727	90 062 567
43	on request				
45					
48					
52					

¹⁾ Fig. 0 = including check valve and threaded end

UPA 150C - 30 / ...; number of stages 1 - 18

The characteristic curves shown are for preliminary selection only. Exact selection data will be provided in our quotation.

Selection

The pressure losses H_v in the check valve are not considered in the pump characteristic curves.

Legend ...

H_v : Head losses in the check valve

η_p : Pump efficiency (not considering check valve)

NPSH: Net positive suction head required by the pump

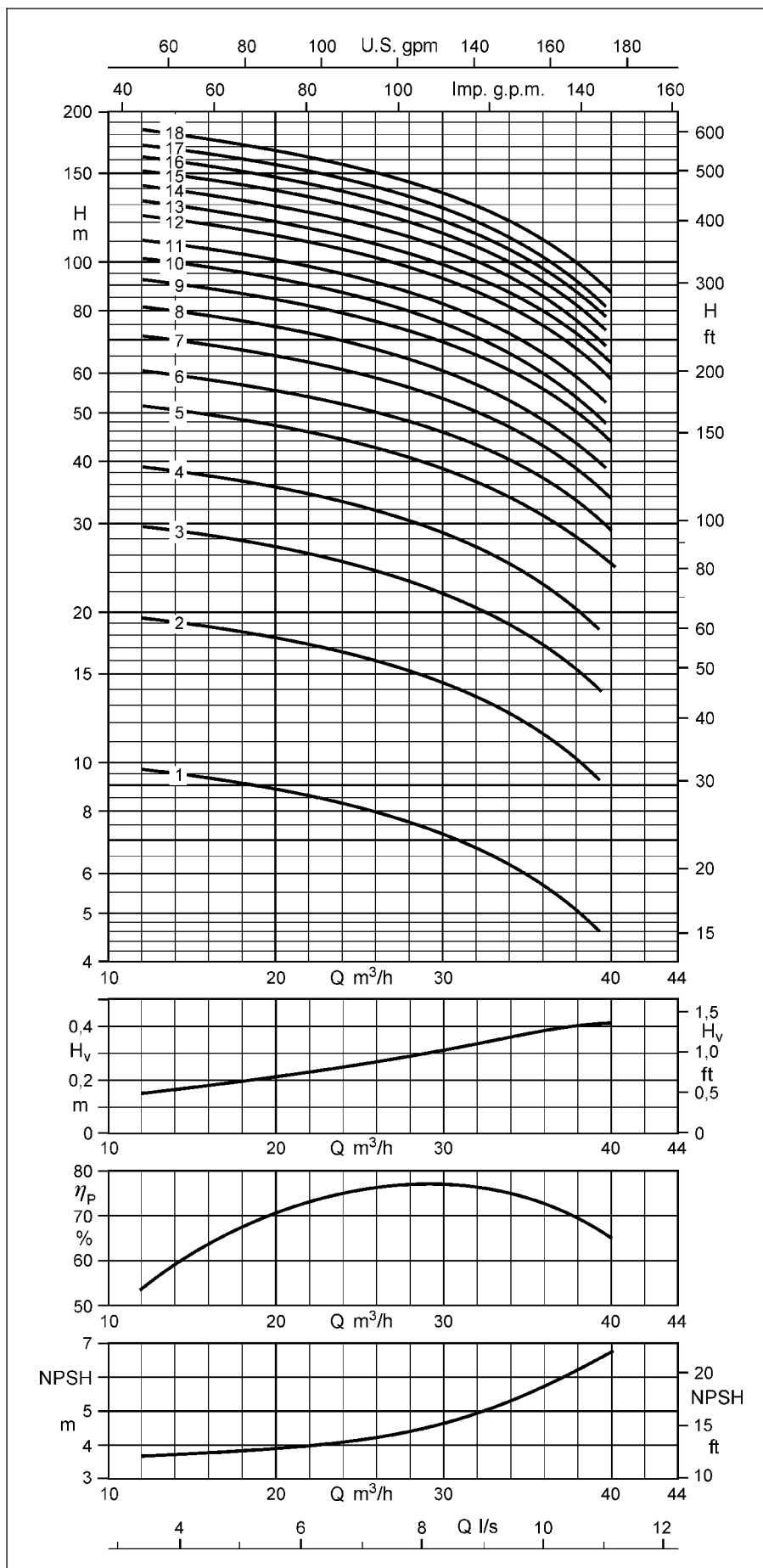
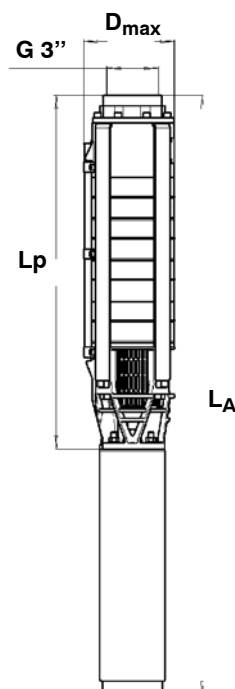
Pump End G 3"

The information given below is based on the model with check valve and threaded end.

The changes in the main dimensions resulting from different threaded or flanged ends are specified in the table below.

	Overall length (mm)	D_{max} (mm)
G 2 1/2"	40	see page 17
G 3"	48	
G 4"	93	
DN 50	77	165
DN 65	77	185
DN 80	77	200

Threaded end to DIN ISO 228, Part 1.
Flanged end to DIN 2501, Part 1



UPA 150C - 30 / ...; number of stages 19 - 35

The characteristic curves shown are for preliminary selection only. Exact selection data will be provided in our quotation.

Selection

The pressure losses H_v in the check valve are not considered in the pump characteristic curves.

Legend ...

H_v : Head losses in the check valve

η_p : Pump efficiency (not considering check valve)

NPSH: Net positive suction head required by the pump

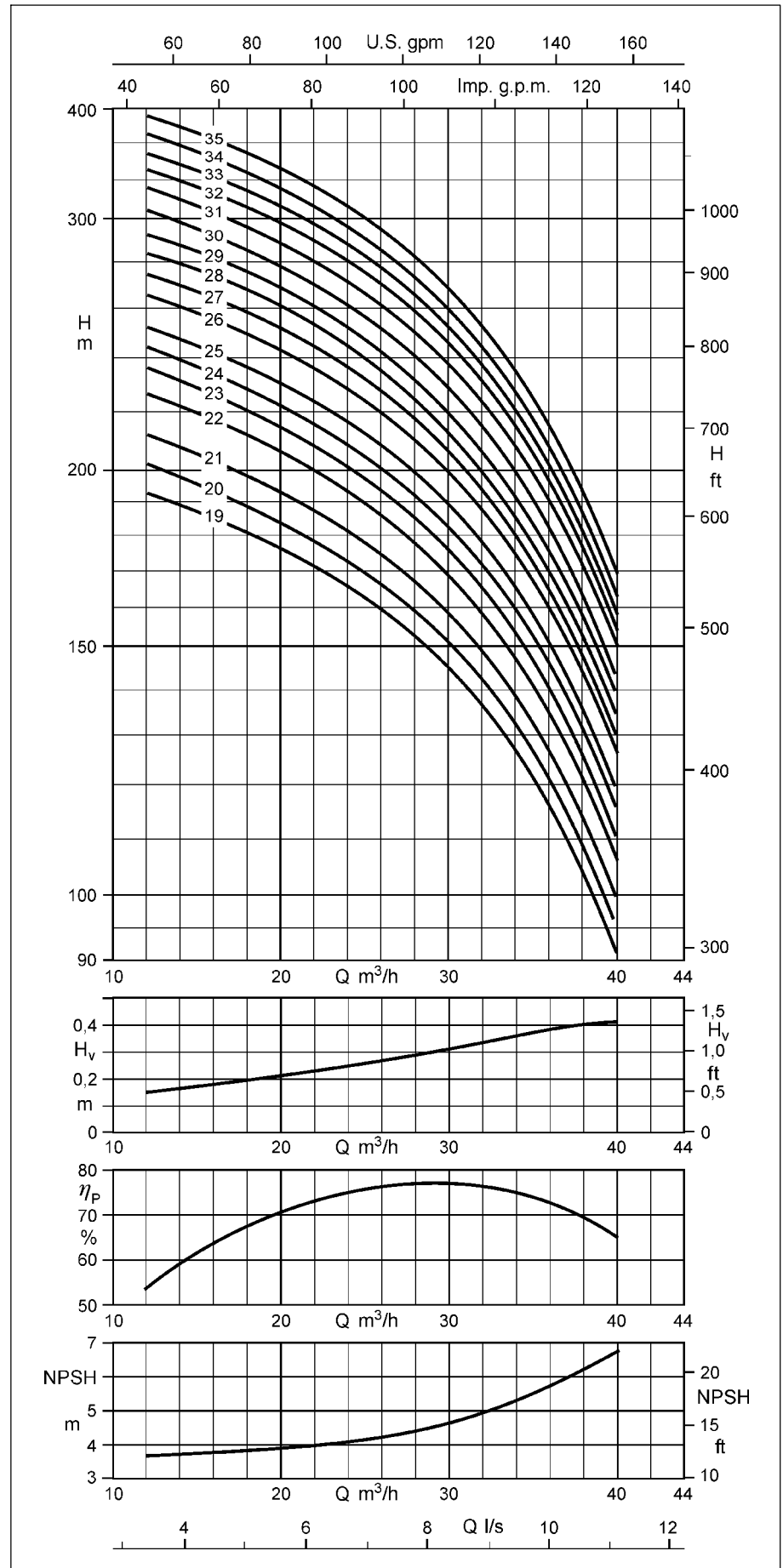
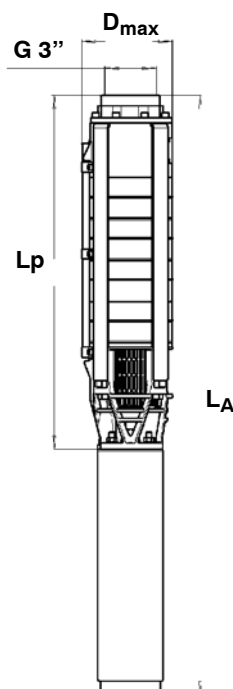
Pump End G 3"

The information given below is based on the model with check valve and threaded end.

The changes in the main dimensions resulting from different threaded or flanged ends are specified in the table below.

	Overall length (mm)	D_{max} (mm)
G 2 1/2"	40	see page 17
G 3"	48	
G 4"	93	
DN 50	77	165
DN 65	77	185
DN 80	77	200

Threaded end to DIN ISO 228, Part 1.
Flanged end to DIN 2501, Part 1



Technical Data

Pumps with submersible motors for ... - Type of current / voltage **three-phase (3 ~) / 400 V**
 - Starting **d.o.l. (D) or star-delta (Y-Δ)**

UPA 150C - 30 / ...	Pump	Motor					Motor lead ²⁾ , flat	
	Discharge head Q = 0 m³/h	Rated power	Max. temperature of the fluid pumped v ≥ 0.2 m/s (0.0 m/s)	Rated current	Efficiency	Power factor	Number x cross-section of conductors (use under water, 400 V and ≤ +30 °C)	
	H ₀ m	P _N kW	t _{max} ¹⁾ °C	I _N A	η _M %	cos φ ---	Direkt mm²	Y-Δ mm²
1 + DN 100 - 1.1	10.6	1.1	30 (30)	3.1	73.5	0.71	4 x 1.5	-
2 + DN 100 - 2.2	21.5	2.2	30 (30)	6.2	75.0	0.75	4 x 1.5	-
3 + DN 100 - 3	32.0	3.0	30 (30)	8.0	76.0	0.76	4 x 1.5	-
4 + DN 100 - 3.7	43.0	3.7	30 (30)	9.2	77.5	0.80	4 x 1.5	-
5 + UMA 150D 5/21	56.0	4.5	41 (38)	12.0	76.5	0.74	4 x 2.5	3/4 x 2.5
6 + UMA 150D 5/21	67.0	5.5	37 (33)	13.6	75.5	0.80	4 x 2.5	3/4 x 2.5
7 + UMA 150D 7/21	78.0	6.5	37 (33)	16.0	77.5	0.79	4 x 2.5	3/4 x 2.5
8 + UMA 150D 7/21	88.0	7.0	33 (29)	16.8	77.0	0.81	4 x 2.5	3/4 x 2.5
9 + UMA 150D 9/21	100.0	8.0	35 (30)	19.0	78.5	0.80	4 x 2.5	3/4 x 2.5
10 + UMA 150D 9/21	110.0	9.0	31 (26)	20.5	78.0	0.82	4 x 2.5	3/4 x 2.5
11 + UMA 150D 9/21	120.0	9.3	28 (22)	21.0	77.5	0.83	4 x 2.5	3/4 x 2.5
12 + UMA 150D 13/21	134.0	11.0	35 (31)	25.5	80.5	0.78	4 x 2.5	3/4 x 2.5
13 + UMA 150D 13/21	144.0	11.5	33 (28)	26.5	80.5	0.79	4 x 2.5	3/4 x 2.5
14 + UMA 150D 13/21	154.0	12.5	31 (25)	28.0	80.5	0.80	4 x 2.5	3/4 x 2.5
15 + UMA 150D 13/21	165.0	13.0	29 (22)	29.0	80.0	0.81	4 x 2.5	3/4 x 2.5
16 + UMA 150D 15/21	176.0	14.5	33 (28)	31.5	82.0	0.82	4 x 4.0	3/4 x 2.5
17 + UMA 150D 15/21	186.0	15.0	31 (25)	32.5	81.5	0.83	4 x 4.0	3/4 x 2.5
18 + UMA 150D 18/21	200.0	16.0	32 (27)	36.5	82.5	0.78	4 x 4.0	3/4 x 2.5
19 + UMA 150D 18/21	210.0	17.0	30 (24)	38.0	82.0	0.79	4 x 4.0	3/4 x 2.5
20 + UMA 150D 18/21	220.0	18.0	29 (22)	39.5	82.0	0.81	4 x 4.0	3/4 x 2.5
21 + UMA 150D 18/21	230.0	18.5	27 (20)	40.5	81.5	0.81	4 x 4.0	3/4 x 2.5
22 + UMA 150D 22/21	244.0	20.0	33 (28)	44.0	83.5	0.79	4 x 4.0	3/4 x 2.5
23 + UMA 150D 22/21	254.0	21.0	32 (26)	46.0	83.5	0.80	4 x 4.0	3/4 x 2.5
24 + UMA 150D 22/21	265.0	22.0	31 (25)	47.5	83.5	0.81	4 x 4.0	3/4 x 2.5
25 + UMA 150D 22/21	275.0	22.0	29 (23)	47.5	83.5	0.81	4 x 4.0	3/4 x 2.5
26 + UMA 150D 26/21	289.0	24.0	36 (31)	52.0	85.0	0.80	4 x 6.0	3/4 x 4.0
27 + UMA 150D 26/21	299.0	24.0	35 (30)	52.0	85.0	0.80	4 x 6.0	3/4 x 4.0
28 + UMA 150D 26/21	309.0	25.0	34 (28)	53.0	85.0	0.81	4 x 6.0	3/4 x 4.0
29 + UMA 150D 26/21	320.0	26.0	32 (27)	55.0	84.5	0.82	4 x 6.0	3/4 x 4.0
30 + UMA 150D 26/21	330.0	26.0	31 (26)	55.0	84.5	0.82	4 x 6.0	3/4 x 4.0
31 + UMA 150D 30/21	345.0	28.0	34 (28)	61.0	84.5	0.79	4 x 6.0	3/4 x 4.0
32 + UMA 150D 30/21	355.0	29.0	33 (27)	63.0	84.5	0.80	4 x 6.0	3/4 x 4.0
33 + UMA 150D 30/21	365.0	30.0	32 (26)	65.0	84.5	0.80	4 x 6.0	3/4 x 4.0
34 + UMA 150D 30/21	376.0	30.0	31 (25)	65.0	84.5	0.80	4 x 6.0	3/4 x 4.0
35 + UMA 150D 37/22	389.0	32.0	46 (41)	71.0	84.0	0.78	3/4 x 4.0 ³⁾	3/4 x 4.0

¹⁾ also see page 4

²⁾ 3/4 = 1 x 3-core + 1 x 4-core, 90° spacing.

³⁾ Parallel cable

Dimensions / Weights / Horizontal Installation ¹⁾

UPA 150C - 30 / ...	L _p mm	L _A ≈ mm		m _A ≈ kg	D _{max} ≈ mm		Installation ²⁾
		C1 (AISI 304)	C2 (AISI 316)		d.o.l.	Y-Δ	
1	389	690	690	18	139	-	v ³⁾
2	485	840	840	23	139	-	v ³⁾
3	581	1005	1005	27	139	-	v ³⁾
4	677	1235	1235	36	139	-	v ³⁾
5	805	1505	1505	63	146	148	v + h
6	901	1600	1600	65	146	148	v + h
7	997	1720	1715	68	146	148	v + h
8	1093	1815	1810	70	146	148	v + h
9	1189	1940	1940	74	146	148	v + h
10	1285	2035	2035	76	146	148	v + h
11	1381	2130	2130	77	146	148	v + h
12	1477	2310	2305	86	146	148	v + h
13	1573	2405	2400	88	146	148	v + h
14	1669	2500	2500	89	146	148	v + h
15	1765	2595	2595	91	146	148	v + h
16	1861	2735	2735	96	147	148	v + h
17	1957	2835	2830	98	147	148	v + h
18	2053	2975	2970	104	147	148	v + h
19	2149	3070	3070	105	147	148	v ³⁾
20	2245	3165	3165	107	147	148	v ³⁾
21	2341	3260	3260	108	147	148	v ³⁾
22	2437	3450	3445	118	147	148	v ³⁾
23	2533	3545	3540	119	147	148	v ³⁾
24	2629	3640	3640	121	147	148	v ³⁾
25	2725	3735	3735	123	147	148	v ³⁾
26	2821	3935	3935	133	149	149	v ³⁾
27	2917	4035	4030	135	149	149	v ³⁾
28	3013	4130	4125	136	149	149	v ³⁾
29	3109	4225	4225	138	149	149	v ³⁾
30	3205	4320	4320	140	149	149	v ³⁾
31	3301	4515	4515	150	149	149	v ³⁾
32	3397	4615	4610	152	149	149	v ³⁾
33	3493	4710	4705	153	149	149	v ³⁾
34	3589	4805	4805	155	149	149	v ³⁾
35	3685	4980	4980	163	149	149	v ³⁾

¹⁾ Including check valve with threaded end and standard motor leads.

²⁾ v = vertical / h = horizontal.

³⁾ horizontal installation on request

Identity No. for Material version C1 (AISI 304)

UPA 150C - 30 / ...	Ident No. Pump Fig.0 ¹⁾	Description Motor	Ident No. Motor starting d.o.l 1 cable	Ident No. Motor starting d.o.l 2 cables parallel	Ident No. Motor starting Y Δ
1	48 882 361	DN 100 - 1,1	90 051 516	--	--
2	48 882 362	DN 100 - 2,2	90 011 139	--	--
3	48 882 363	DN 100 - 3,0	90 050 058	--	--
4	48 882 364	DN 100 - 3,7	90 011 140	--	--
5	48 882 370	UMA 150D 5/21	90 062 500	--	90 062 540
6	48 882 371	UMA 150D 5/21	90 062 500	--	90 062 540
7	48 882 372	UMA 150D 7/21	90 062 501	--	90 062 541
8	48 882 373	UMA 150D 7/21	90 062 501	--	90 062 541
9	48 882 374	UMA 150D 9/21	90 062 502	--	90 062 542
10	48 882 375	UMA 150D 9/21	90 062 502	--	90 062 542
11	48 882 376	UMA 150D 9/21	90 062 502	--	90 062 542
12	48 882 377	UMA 150D 13/21	90 062 503	--	90 062 543
13	48 882 378	UMA 150D 13/21	90 062 503	--	90 062 543
14	48 882 379	UMA 150D 13/21	90 062 503	--	90 062 543
15	48 882 380	UMA 150D 13/21	90 062 503	--	90 062 543
16	48 882 381	UMA 150D 15/21	90 062 504	--	90 062 544
17	48 882 382	UMA 150D 15/21	90 062 504	--	90 062 544
18	48 882 383	UMA 150D 18/21	90 062 505	01 115 532	90 062 545
19	48 882 384	UMA 150D 18/21	90 062 505	01 115 532	90 062 545
20	48 882 385	UMA 150D 18/21	90 062 505	01 115 532	90 062 545
21	48 882 386	UMA 150D 18/21	90 062 505	01 115 532	90 062 545
22	48 882 387	UMA 150D 22/21	90 062 506	01 115 724	90 062 546
23	48 882 388	UMA 150D 22/21	90 062 506	01 115 724	90 062 546
24	48 882 389	UMA 150D 22/21	90 062 506	01 115 724	90 062 546
25	48 882 390	UMA 150D 22/21	90 062 506	01 115 724	90 062 546
26	48 882 391	UMA 150D 26/21	90 062 507	01 115 726	90 062 547
27	48 882 392	UMA 150D 26/21	90 062 507	01 115 726	90 062 547
28	48 882 393	UMA 150D 26/21	90 062 507	01 115 726	90 062 547
29	48 882 394	UMA 150D 26/21	90 062 507	01 115 726	90 062 547
30	48 882 395	UMA 150D 26/21	90 062 507	01 115 726	90 062 547
31	48 882 396	UMA 150D 30/21	90 062 508	01 115 728	90 062 548
32	48 882 397	UMA 150D 30/21	90 062 508	01 115 728	90 062 548
33	48 882 398	UMA 150D 30/21	90 062 508	01 115 728	90 062 548
34	48 882 399	UMA 150D 30/21	90 062 508	01 115 728	90 062 548
35	48 882 400	UMA 150D 37/22	--	90 062 509	90 062 549

¹⁾ Fig. 0 = including check valve and threaded end

Identity No. for Material version C2 (AISI 316)

UPA 150C - 30 / ...	Ident No. Pump Fig.0 ¹⁾	Description Motor	Ident No. Motor starting d.o.l 1 cable	Ident No. Motor starting d.o.l 2 cables parallel	Ident No. Motor starting Y Δ
1	48 882 401	DN 100 - 1,1	90 051 521	--	--
2	48 882 402	DN 100 - 2,2	90 039 244	--	--
3	48 882 403	DN 100 - 3,0	90 051 395	--	--
4	48 882 404	DN 100 - 3,7	90 039 245	--	--
5	48 882 410	UMA 150D 5/21	90 062 520	--	90 062 560
6	48 882 411	UMA 150D 5/21	90 062 520	--	90 062 560
7	48 882 412	UMA 150D 7/21	90 062 521	--	90 062 561
8	48 882 413	UMA 150D 7/21	90 062 521	--	90 062 561
9	48 882 414	UMA 150D 9/21	90 062 522	--	90 062 562
10	48 882 415	UMA 150D 9/21	90 062 522	--	90 062 562
11	48 882 416	UMA 150D 9/21	90 062 522	--	90 062 562
12	48 882 417	UMA 150D 13/21	90 062 523	--	90 062 563
13	48 882 418	UMA 150D 13/21	90 062 523	--	90 062 563
14	48 882 419	UMA 150D 13/21	90 062 523	--	90 062 563
15	48 882 420	UMA 150D 13/21	90 062 523	--	90 062 563
16	48 882 421	UMA 150D 15/21	90 062 524	--	90 062 564
17	48 882 422	UMA 150D 15/21	90 062 524	--	90 062 564
18	48 882 423	UMA 150D 18/21	90 062 525	01 115 723	90 062 565
19	48 882 424	UMA 150D 18/21	90 062 525	01 115 723	90 062 565
20	48 882 425	UMA 150D 18/21	90 062 525	01 115 723	90 062 565
21	48 882 426	UMA 150D 18/21	90 062 525	01 115 723	90 062 565
22	48 882 427	UMA 150D 22/21	90 062 526	01 115 725	90 062 566
23	48 882 428	UMA 150D 22/21	90 062 526	01 115 725	90 062 566
24	48 882 429	UMA 150D 22/21	90 062 526	01 115 725	90 062 566
25	48 882 430	UMA 150D 22/21	90 062 526	01 115 725	90 062 566
26	48 882 431	UMA 150D 26/21	90 062 527	01 115 727	90 062 567
27	48 882 432	UMA 150D 26/21	90 062 527	01 115 727	90 062 567
28	48 882 433	UMA 150D 26/21	90 062 527	01 115 727	90 062 567
29	48 882 434	UMA 150D 26/21	90 062 527	01 115 727	90 062 567
30	48 882 435	UMA 150D 26/21	90 062 527	01 115 727	90 062 567
31	48 882 436	UMA 150D 30/21	90 062 528	01 115 729	90 062 568
32	48 882 437	UMA 150D 30/21	90 062 528	01 115 729	90 062 568
33	48 882 438	UMA 150D 30/21	90 062 528	01 115 729	90 062 568
34	48 882 439	UMA 150D 30/21	90 062 528	01 115 729	90 062 568
35	48 882 440	UMA 150D 37/22	--	90 062 529	90 062 569

¹⁾ Fig. 0 = including check valve and threaded end

UPA 150C - 48 / ...; number of stages 1 - 14

The characteristic curves shown are for preliminary selection only. Exact selection data will be provided in our quotation.

Selection

The pressure losses H_v in the check valve are not considered in the pump characteristic curves.

Legend ...

H_v : Head losses in the check valve

η_p : Pump efficiency (not considering check valve)

NPSH: Net positive suction head required by the pump

Pump End G 3"

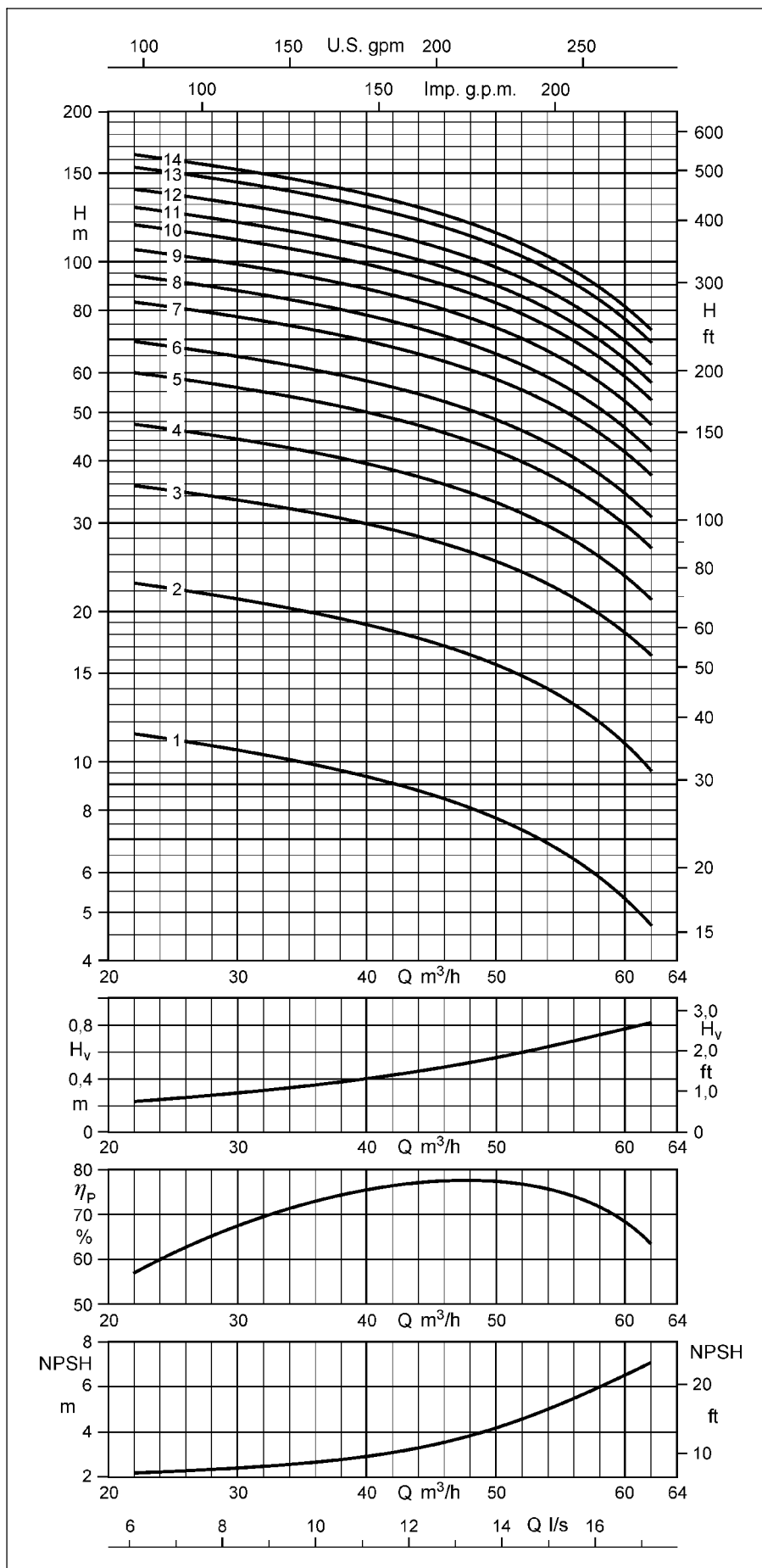
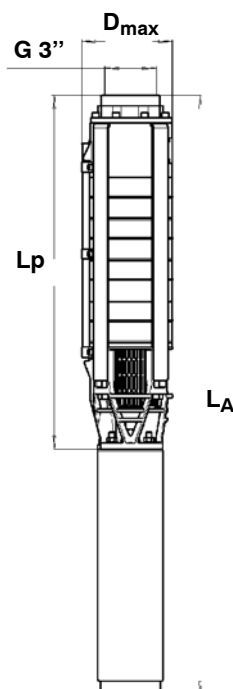
The information given below is based on the model with check valve and threaded end.

The changes in the main dimensions resulting from different threaded or flanged ends are specified in the table below.

	Overall length (mm)	D_{max} (mm)
G 2 1/2"	40	see page 23
G 3"	48	
G 4"	93	
DN 50	77	165
DN 65	77	185
DN 80	77	200

Threaded end to DIN ISO 228, Part 1.

Flanged end to DIN 2501, Part 1



UPA 150C - 48 / ...; number of stages 15 - 24

The characteristic curves shown are for preliminary selection only. Exact selection data will be provided in our quotation.

Selection

The pressure losses H_v in the check valve are not considered in the pump characteristic curves.

Legend ...

H_v : Head losses in the check valve

η_p : Pump efficiency (not considering check valve)

NPSH: Net positive suction head required by the pump

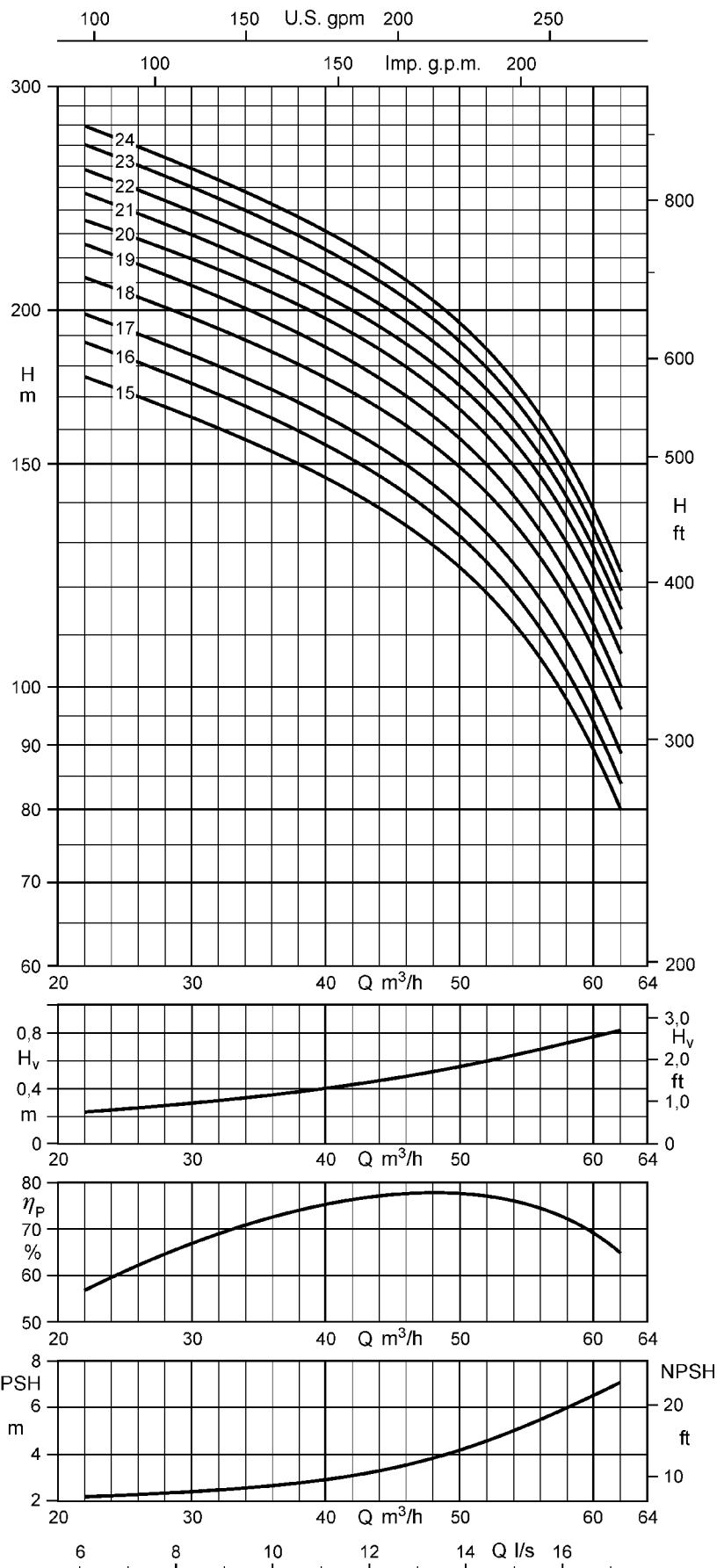
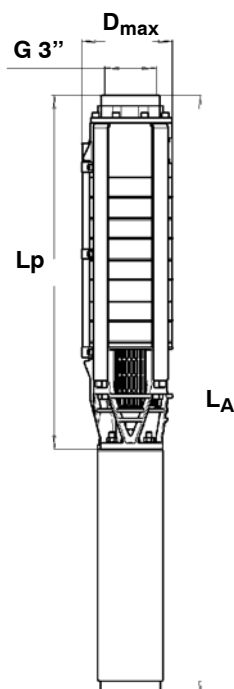
Pump End G 3"

The information given below is based on the model with check valve and threaded end.

The changes in the main dimensions resulting from different threaded or flanged ends are specified in the table below.

	Overall length (mm)	D_{max} (mm)
G 2 1/2"	40	see page 23
G 3"	48	
G 4"	93	
DN 50	77	165
DN 65	77	185
DN 80	77	200

Threaded end to DIN ISO 228, Part 1.
Flanged end to DIN 2501, Part 1



Technical Data

Pumps with submersible motors for ... - Type of current / voltage **three-phase (3 ~) / 400 V**
 - Starting **d.o.l. (D) or star-delta (Y-Δ)**

UPA 150C - 48 / ...	Pump	Motor					Motor lead ²⁾, flat	
	Discharge head Q = 0 m³/h	Rated power	Max. temperature of the fluid pumped v ≥ 0.2 m/s (0.0 m/s)	Rated current	Efficiency	Power factor	Number x cross-section of conductors (use under water, 400 V and ≤ +30 °C)	
	H₀ m	P_N kW	t_{max} ¹⁾ °C	I_N A	η_M %	cos φ ---	Direkt mm²	Y-Δ mm²
1 + DN 100 - 2.2	13.2	2.2	30 (30)	6.2	75.0	0.75	4 x 1.5	-
2 + DN 100 - 3.0	26.5	3.0	30 (30)	8.0	76.0	0.76	4 x 1.5	-
3 + UMA 150D 5/21	42.0	5.0	40 (36)	12.7	76.0	0.78	4 x 2.5	3/4 x 2.5
4 + UMA 150D 7/21	55.0	6.5	37 (32)	16.0	77.5	0.79	4 x 2.5	3/4 x 2.5
5 + UMA 150D 9/21	69.0	8.0	35 (30)	19.0	78.5	0.80	4 x 2.5	3/4 x 2.5
6 + UMA 150D 9/21	81.0	9.3	29 (23)	21.0	77.5	0.83	4 x 2.5	3/4 x 2.5
7 + UMA 150D 13/21	97.0	11.5	34 (29)	26.5	80.5	0.79	4 x 2.5	3/4 x 2.5
8 + UMA 150D 13/21	109.0	12.5	30 (25)	28.0	80.5	0.80	4 x 2.5	3/4 x 2.5
9 + UMA 150D 15/21	123.0	14.5	33 (28)	31.5	82.0	0.82	4 x 4.0	3/4 x 2.5
10 + UMA 150D 18/21	138.0	16.0	32 (27)	36.5	82.5	0.78	4 x 4.0	3/4 x 2.5
11 + UMA 150D 18/21	151.0	17.5	29 (23)	39.0	82.0	0.80	4 x 4.0	3/4 x 2.5
12 + UMA 150D 18/21	163.0	18.5	26 (19)	40.5	81.5	0.81	4 x 4.0	3/4 x 2.5
13 + UMA 150D 22/21	179.0	21.0	32 (26)	46.0	83.5	0.80	4 x 4.0	3/4 x 2.5
14 + UMA 150D 22/21	191.0	22.0	29 (23)	47.5	83.5	0.81	4 x 4.0	3/4 x 2.5
15 + UMA 150D 26/21	207.0	24.0	35 (30)	52.0	85.0	0.80	4 x 6.0	3/4 x 4.0
16 + UMA 150D 26/21	219.0	26.0	33 (28)	55.0	84.5	0.82	4 x 6.0	3/4 x 4.0
17 + UMA 150D 26/21	232.0	26.0	31 (25)	55.0	84.5	0.82	4 x 6.0	3/4 x 4.0
18 + UMA 150D 30/21	248.0	29.0	33 (27)	63.0	84.5	0.80	4 x 6.0	3/4 x 4.0
19 + UMA 150D 30/21	261.0	30.0	31 (25)	65.0	84.5	0.80	4 x 6.0	3/4 x 4.0
20 + UMA 150D 37/22	276.0	32.0	45 (40)	71.0	84.0	0.78	3/4 x 4.0 ³⁾	3/4 x 4.0
21 + UMA 150D 37/22	289.0	33.0	44 (38)	72.0	84.0	0.79	3/4 x 4.0 ³⁾	3/4 x 4.0
22 + UMA 150D 37/22	301.0	35.0	42 (36)	76.0	84.0	0.80	3/4 x 4.0 ³⁾	3/4 x 4.0
23 + UMA 150D 37/22	314.0	36.0	41 (35)	77.0	83.5	0.81	3/4 x 4.0 ³⁾	3/4 x 4.0
24 + UMA 150D 37/22	327.0	37.0	39 (33)	79.0	83.5	0.82	3/4 x 4.0 ³⁾	3/4 x 4.0

¹⁾ also see page 4

²⁾ 3/4 = 1 x 3-core + 1 x 4-core, 90° spacing.

³⁾ Parallel cable

Dimensions / Weights / Horizontal Installation ¹⁾

UPA 150C - 48 / ...	L_p mm	L_A ≈ mm		m_A ≈ kg	D_{max} ≈ mm		Installation ²⁾
		C1 (AISI 304)	C2 (AISI 316)		d.o.l.	Y-Δ	
1	406	765	765	23.0	139	-	v + h
2	519	945	945	29.1	139	-	v + h
3	664	1365	1365	63.3	143	146	v + h
4	777	1500	1495	67.6	143	146	v + h
5	890	1640	1640	72.9	143	146	v + h
6	1003	1755	1750	75.1	143	146	v + h
7	1116	1945	1945	84.4	143	146	v + h
8	1229	2060	2060	86.7	143	146	v + h
9	1342	2220	2215	92.9	145	146	v + h
10	1455	2375	2375	99.2	145	146	v + h
11	1568	2490	2485	101.5	145	146	v + h
12	1681	2600	2600	103.7	145	146	v + h
13	1794	2805	2805	114.0	145	146	v + h
14	1907	2920	2915	116.3	145	146	v + h
15	2020	3135	3135	128.0	146	147	v ³⁾
16	2133	3250	3245	130.0	146	147	v ³⁾
17	2246	3360	3360	132.0	146	147	v ³⁾
18	2359	3575	3575	143.0	146	147	v ³⁾
19	2472	3690	3685	146.0	146	147	v ³⁾
20	2585	3880	3880	155.0	145	147	v ³⁾
21	2698	3995	3990	157.0	145	147	v ³⁾
22	2811	4105	4105	159.0	145	147	v ³⁾
23	2924	4220	4220	162.0	145	147	v ³⁾
24	3037	4335	4330	164.0	145	147	v ³⁾

¹⁾ Including check valve with threaded end and standard motor leads.

²⁾ v = vertical / h = horizontal.

³⁾ horizontal installation on request

Identity No. for Material version C1 (AISI 304)

UPA 150C - 48 / ...	Ident No. Pump Fig.0 ¹⁾	Description Motor	Ident No. Motor starting d.o.l 1 cable	Ident No. Motor starting d.o.l 2 cables parallel	Ident No. Motor starting Y Δ
1	48 886 445	DN 100 - 2.2	90 011 139	--	--
2	48 886 446	DN 100 - 3.0	90 050 058	--	--
3	48 886 450	UMA 150D 5/21	90 062 500	--	90 062 540
4	48 886 451	UMA 150D 7/21	90 062 501	--	90 062 541
5	48 886 452	UMA 150D 9/21	90 062 502	--	90 062 542
6	48 886 453	UMA 150D 9/21	90 062 502	--	90 062 542
7	48 886 454	UMA 150D 13/21	90 062 503	--	90 062 543
8	48 886 455	UMA 150D 13/21	90 062 503	--	90 062 543
9	48 886 456	UMA 150D 15/21	90 062 504	--	90 062 544
10	48 886 457	UMA 150D 18/21	90 062 505	01 115 532	90 062 545
11	48 886 458	UMA 150D 18/21	90 062 505	01 115 532	90 062 545
12	48 886 459	UMA 150D 18/21	90 062 505	01 115 532	90 062 545
13	48 886 460	UMA 150D 22/21	90 062 506	01 115 724	90 062 546
14	48 886 461	UMA 150D 22/21	90 062 506	01 115 724	90 062 546
15	48 886 462	UMA 150D 26/21	90 062 507	01 115 726	90 062 547
16	48 886 463	UMA 150D 26/21	90 062 507	01 115 726	90 062 547
17	48 886 464	UMA 150D 26/21	90 062 507	01 115 726	90 062 547
18	48 886 465	UMA 150D 30/21	90 062 508	01 115 728	90 062 548
19	48 886 466	UMA 150D 30/21	90 062 508	01 115 728	90 062 548
20	48 886 467	UMA 150D 37/22	--	90 062 509	90 062 549
21	48 886 468	UMA 150D 37/22	--	90 062 509	90 062 549
22	48 886 469	UMA 150D 37/22	--	90 062 509	90 062 549
23	48 886 470	UMA 150D 37/22	--	90 062 509	90 062 549
24	48 886 471	UMA 150D 37/22	--	90 062 509	90 062 549

¹⁾ Fig. 0 = including check valve and threaded end

Identity No. for Material version C2 (AISI 316)

UPA 150C - 48 / ...	Ident No. Pump Fig.0 ¹⁾	Description Motor	Ident No. Motor starting d.o.l 1 cable	Ident No. Motor starting d.o.l 2 cables parallel	Ident No. Motor starting Y Δ
1	48 886 473	DN 100 - 2.2	90 039 244	--	--
2	48 886 474	DN 100 - 3.0	90 051 395	--	--
3	48 886 478	UMA 150D 5/21	90 062 520	--	90 062 560
4	48 886 479	UMA 150D 7/21	90 062 521	--	90 062 561
5	48 886 480	UMA 150D 9/21	90 062 522	--	90 062 562
6	48 886 481	UMA 150D 9/21	90 062 522	--	90 062 562
7	48 886 482	UMA 150D 13/21	90 062 523	--	90 062 563
8	48 886 483	UMA 150D 13/21	90 062 523	--	90 062 563
9	48 886 484	UMA 150D 15/21	90 062 524	--	90 062 564
10	48 886 485	UMA 150D 18/21	90 062 525	01 115 723	90 062 565
11	48 886 486	UMA 150D 18/21	90 062 525	01 115 723	90 062 565
12	48 886 487	UMA 150D 18/21	90 062 525	01 115 723	90 062 565
13	48 886 488	UMA 150D 22/21	90 062 526	01 115 725	90 062 566
14	48 886 489	UMA 150D 22/21	90 062 526	01 115 725	90 062 566
15	48 886 490	UMA 150D 26/21	90 062 527	01 115 727	90 062 567
16	48 886 491	UMA 150D 26/21	90 062 527	01 115 727	90 062 567
17	48 886 492	UMA 150D 26/21	90 062 527	01 115 727	90 062 567
18	48 886 493	UMA 150D 30/21	90 062 528	01 115 729	90 062 568
19	48 886 494	UMA 150D 30/21	90 062 528	01 115 729	90 062 568
20	48 886 495	UMA 150D 37/22	--	90 062 529	90 062 569
21	48 886 496	UMA 150D 37/22	--	90 062 529	90 062 569
22	48 886 497	UMA 150D 37/22	--	90 062 529	90 062 569
23	48 886 498	UMA 150D 37/22	--	90 062 529	90 062 569
24	48 886 499	UMA 150D 37/22	--	90 062 529	90 062 569

¹⁾ Fig. 0 = including check valve and threaded end

UPA 150C - 60 / ...; number of stages 1 - 13

The characteristic curves shown are for preliminary selection only. Exact selection data will be provided in our quotation.

Selection

The pressure losses H_v in the check valve are not considered in the pump characteristic curves.

Legend ...

H_v : Head losses in the check valve

η_p : Pump efficiency (not considering check valve)

NPSH: Net positive suction head required by the pump

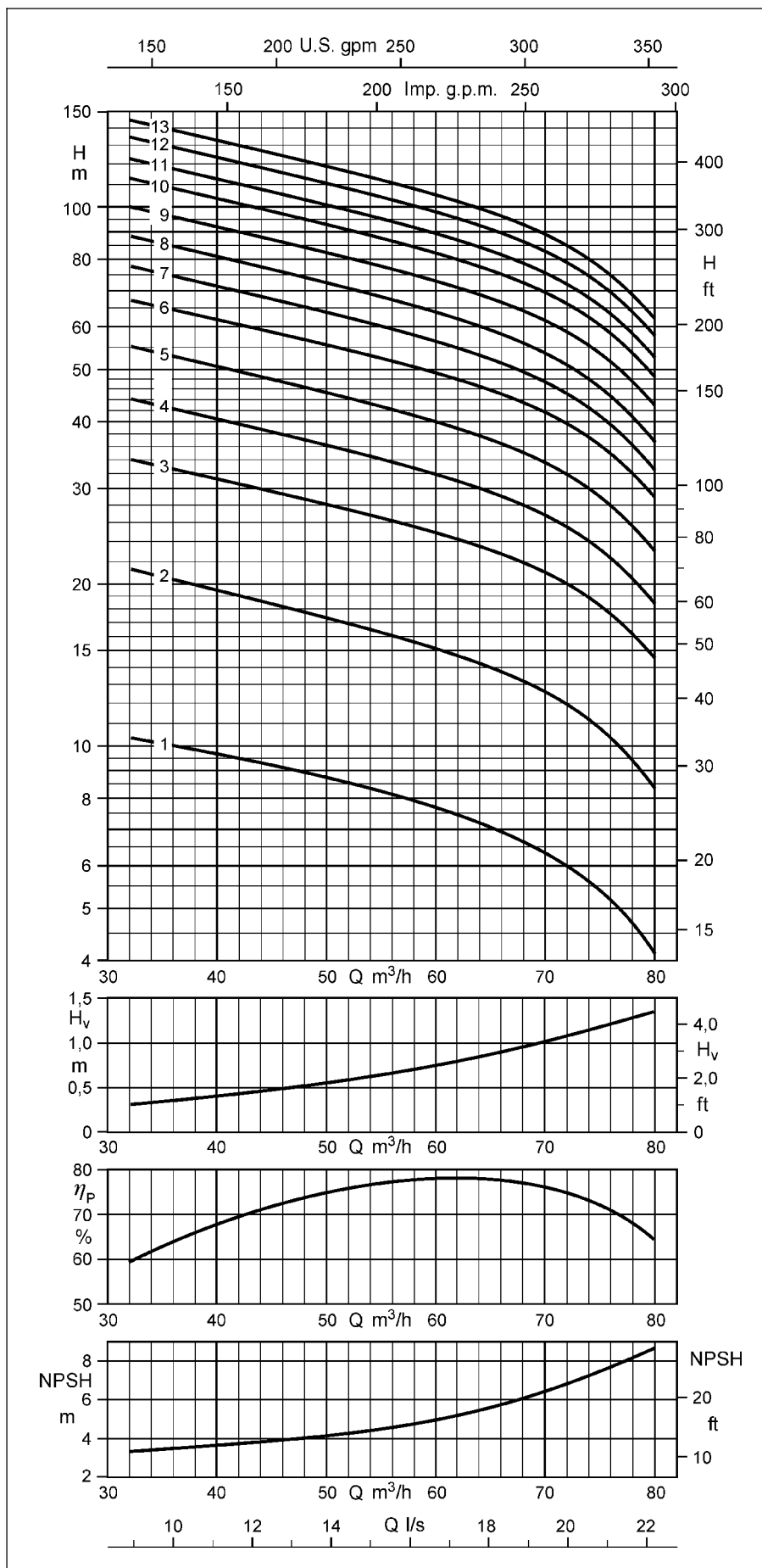
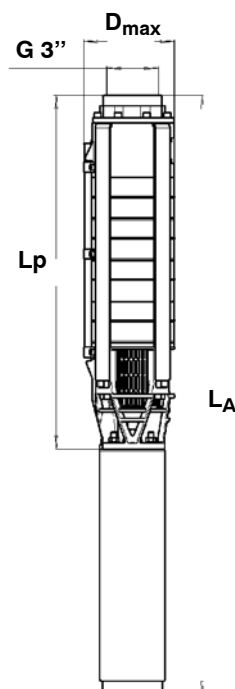
Pump End G 3"

The information given below is based on the model with check valve and threaded end.

The changes in the main dimensions resulting from different threaded or flanged ends are specified in the table below.

	Overall length (mm)	D_{max} (mm)
G 2 1/2"	40	see page 28
G 3"	48	
G 4"	93	
DN 50	77	165
DN 65	77	185
DN 80	77	200

Threaded end to DIN ISO 228, Part 1.
Flanged end to DIN 2501, Part 1



UPA 150C - 60 / ...; number of stages 14 - 20

The characteristic curves shown are for preliminary selection only. Exact selection data will be provided in our quotation.

Selection

The pressure losses H_v in the check valve are not considered in the pump characteristic curves.

Legend ...

H_v : Head losses in the check valve

η_p : Pump efficiency (not considering check valve)

NPSH: Net positive suction head required by the pump

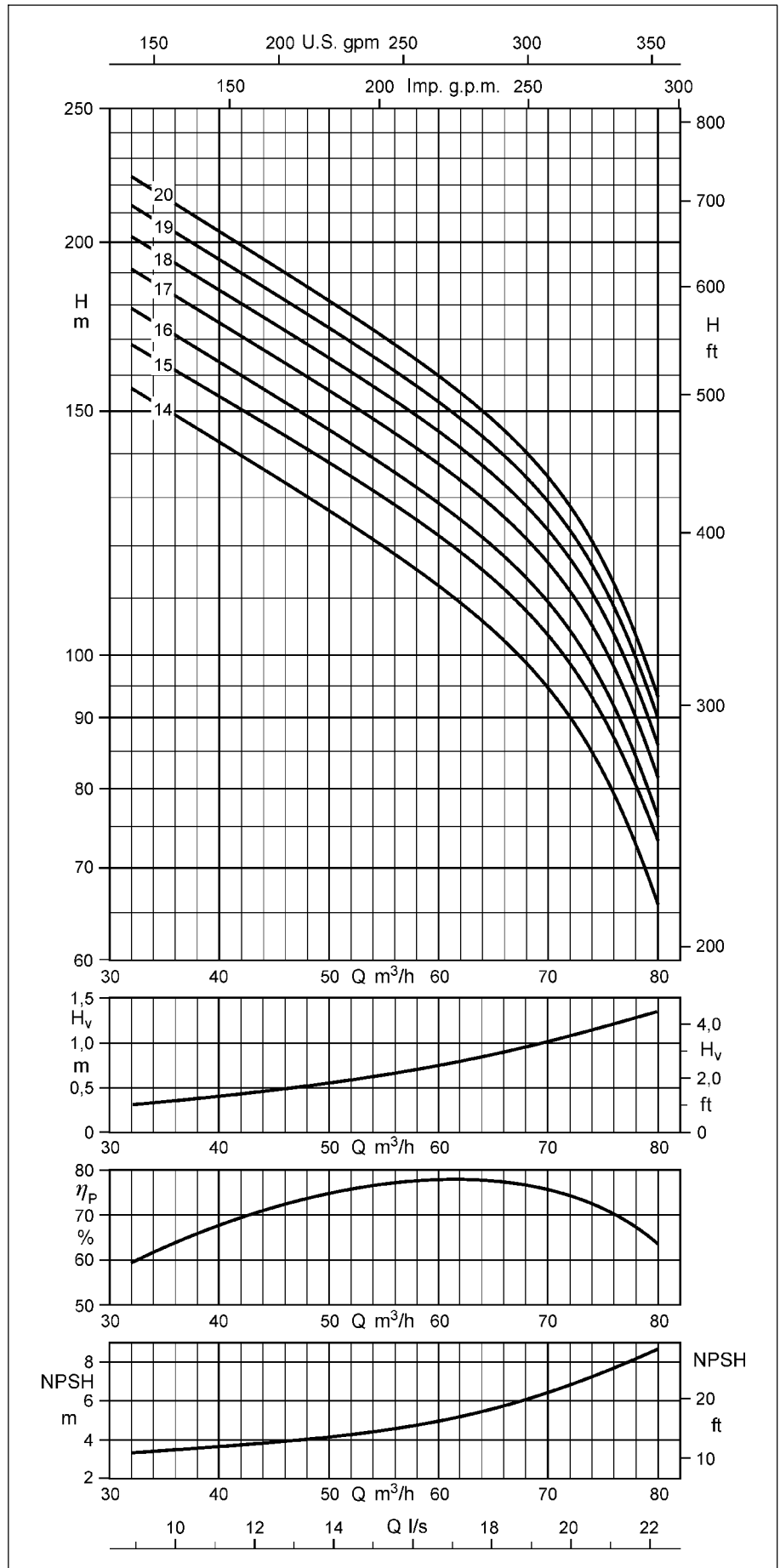
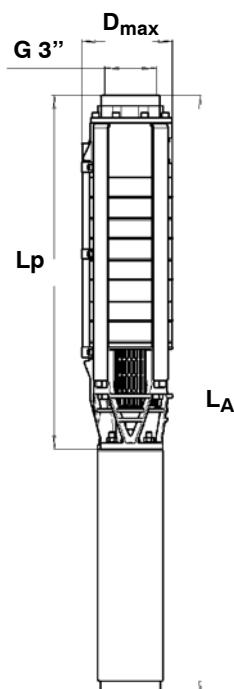
Pump End G 3"

The information given below is based on the model with check valve and threaded end.

The changes in the main dimensions resulting from different threaded or flanged ends are specified in the table below.

	Overall length (mm)	D_{max} (mm)
G 2 1/2"	40	see page 28
G 3"	48	
G 4"	93	
DN 50	77	165
DN 65	77	185
DN 80	77	200

Threaded end to DIN ISO 228, Part 1.
Flanged end to DIN 2501, Part 1



Technical Data

Pumps with submersible motors for ... - Type of current / voltage **three-phase (3 ~) / 400 V**
 - Starting **d.o.l. (D) or star-delta (Y-Δ)**

UPA 150C - 60 / ...	Pump	Motor					Motor lead ²⁾ , flat	
	Discharge head Q = 0 m³/h	Rated power	Max. temperature of the fluid pumped v ≥ 0.2 m/s (0.0 m/s)	Rated current	Efficiency	Power factor	Number x cross-section of conductors (use under water, 400 V and ≤ +30 °C)	
	H ₀ m	P _N kW	t _{max} ¹⁾ °C	I _N A	η _M %	cos φ ---	Direkt mm²	Y-Δ mm²
1 + DN 100 - 2.2	13.4	2.2	30 (30)	6.2	75.0	0.75	4 x 1.5	-
2 + DN 100 - 3.7	27.0	3.7	30 (30)	9.2	77.5	0.80	4 x 1.5	-
3 + UMA 150D 7/21	42.0	6.0	39 (35)	15.1	77.5	0.77	4 x 2.5	3/4 x 2.5
4 + UMA 150D 7/21	55.0	7.5	31 (26)	17.8	76.5	0.82	4 x 2.5	3/4 x 2.5
5 + UMA 150D 9/21	69.0	9.3	29 (23)	21.0	77.5	0.83	4 x 2.5	3/4 x 2.5
6 + UMA 150D 13/21	84.0	11.5	33 (28)	26.5	80.5	0.79	4 x 2.5	3/4 x 2.5
7 + UMA 150D 13/21	97.0	13.0	28 (22)	29.0	80.0	0.81	4 x 2.5	3/4 x 2.5
8 + UMA 150D 15/21	111.0	15.0	31 (25)	32.5	81.5	0.83	4 x 4.0	3/4 x 2.5
9 + UMA 150D 18/21	125.0	17.5	30 (24)	39.0	82.0	0.80	4 x 4.0	3/4 x 2.5
10 + UMA 150D 22/21	140.0	20.0	34 (29)	44.0	83.5	0.79	4 x 4.0	3/4 x 2.5
11 + UMA 150D 22/21	153.0	21.0	31 (25)	46.0	83.5	0.80	4 x 4.0	3/4 x 2.5
12 + UMA 150D 26/21	168.0	23.0	36 (31)	49.5	85.0	0.79	4 x 6.0	3/4 x 4.0
13 + UMA 150D 26/21	181.0	25.0	34 (28)	53.0	85.0	0.81	4 x 6.0	3/4 x 4.0
14 + UMA 150D 26/21	194.0	26.0	31 (25)	55.0	84.5	0.82	4 x 6.0	3/4 x 4.0
15 + UMA 150D 30/21	210.0	29.0	32 (27)	63.0	84.5	0.80	4 x 6.0	3/4 x 4.0
16 + UMA 150D 30/21	223.0	30.0	30 (24)	65.0	84.5	0.80	4 x 6.0	3/4 x 4.0
17 + UMA 150D 37/22	237.0	33.0	44 (39)	72.0	84.0	0.79	3/4 x 4.0 ³⁾	3/4 x 4.0
18 + UMA 150D 37/22	251.0	35.0	43 (37)	76.0	84.0	0.80	3/4 x 4.0 ³⁾	3/4 x 4.0
19 + UMA 150D 37/22	264.0	36.0	41 (35)	77.0	83.5	0.81	3/4 x 4.0 ³⁾	3/4 x 4.0
20 + UMA 150D 37/22	277.0	37.0	39 (32)	79.0	83.5	0.82	3/4 x 4.0 ³⁾	3/4 x 4.0

¹⁾ also see page 4

²⁾ 3/4 = 1 x 3-core + 1 x 4-core, 90° spacing.

³⁾ Parallel cable

Dimensions / Weights / Horizontal Installation ¹⁾

UPA 150C - 60 / ...	L _P mm	L _A ≈ mm		m _A ≈ kg	D _{max} ≈ mm		Installation ²⁾
		C1 (AISI 304)	C2 (AISI 316)		d.o.l.	Y-Δ	
1	406	765	765	22,9	139	-	v + h
2	519	1075	1075	36,5	139	-	v + h
3	664	1385	1385	65,2	143	146	v + h
4	777	1500	1495	67,5	143	146	v + h
5	890	1640	1640	72,8	143	146	v + h
6	1003	1835	1830	82,0	143	146	v + h
7	1116	1945	1945	84,3	143	146	v + h
8	1229	2105	2105	90,6	145	146	v + h
9	1342	2265	2260	96,8	145	146	v + h
10	1455	2465	2465	107,1	145	146	v + h
11	1568	2580	2575	109,4	145	146	v + h
12	1681	2795	2795	120,6	146	147	v + h
13	1794	2910	2910	122,9	146	147	v + h
14	1907	3025	3020	125,0	146	147	v ³⁾
15	2020	3235	3235	136,0	146	147	v ³⁾
16	2133	3350	3345	139,0	146	147	v ³⁾
17	2246	3540	3540	148,0	145	147	v ³⁾
18	2359	3655	3655	150,0	145	147	v ³⁾
19	2472	3770	3765	153,0	145	147	v ³⁾
20	2585	3880	3880	155,0	145	147	v ³⁾

¹⁾ Including check valve with threaded end and standard motor leads.

²⁾ v = vertical / h = horizontal.

³⁾ horizontal installation on request

Identity No. for Material version C1 (AISI 304)

UPA 150C - 60 / ...	Ident No. Pump Fig.0 ¹⁾	Description Motor	Ident No. Motor starting d.o.l 1 cable	Ident No. Motor starting d.o.l 2 cables parallel	Ident No. Motor starting Y Δ
1	48 886 501	DN 100 - 2,2	90 011 139	--	--
2	48 886 502	DN 100 - 3,7	90 011 140	--	--
3	48 886 505	UMA 150D 7/21	90 062 501	--	90 062 541
4	48 886 506	UMA 150D 7/21	90 062 501	--	90 062 541
5	48 886 507	UMA 150D 9/21	90 062 502	--	90 062 542
6	48 886 508	UMA 150D 13/21	90 062 503	--	90 062 543
7	48 886 509	UMA 150D 13/21	90 062 503	--	90 062 543
8	48 886 510	UMA 150D 15/21	90 062 504	--	90 062 544
9	48 886 511	UMA 150D 18/21	90 062 505	01 115 532	90 062 545
10	48 886 512	UMA 150D 22/21	90 062 506	01 115 724	90 062 546
11	48 886 513	UMA 150D 22/21	90 062 506	01 115 724	90 062 546
12	48 886 514	UMA 150D 26/21	90 062 507	01 115 726	90 062 547
13	48 886 515	UMA 150D 26/21	90 062 507	01 115 726	90 062 547
14	48 886 516	UMA 150D 26/21	90 062 507	01 115 726	90 062 547
15	48 886 517	UMA 150D 30/21	90 062 508	01 115 728	90 062 548
16	48 886 518	UMA 150D 30/21	90 062 508	01 115 728	90 062 548
17	48 886 519	UMA 150D 37/22	--	90 062 509	90 062 549
18	48 886 520	UMA 150D 37/22	--	90 062 509	90 062 549
19	48 886 521	UMA 150D 37/22	--	90 062 509	90 062 549
20	48 886 522	UMA 150D 37/22	--	90 062 509	90 062 549

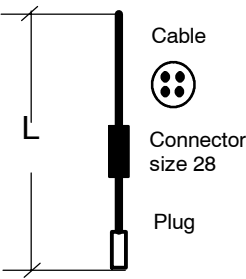
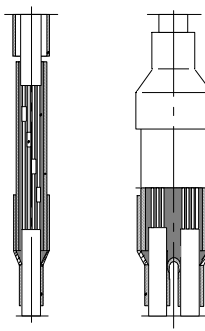
¹⁾ Fig. 0 = including check valve and threaded end

Identity No. for Material version C2 (AISI 316)

UPA 150C - 60 / ...	Ident No. Pump Fig.0 ¹⁾	Description Motor	Ident No. Motor starting d.o.l 1 cable	Ident No. Motor starting d.o.l 2 cables parallel	Ident No. Motor starting Y Δ
1	48 886 525	DN 100 - 2,2	90 039 244	--	--
2	48 886 526	DN 100 - 3,7	90 039 245	--	--
3	48 886 529	UMA 150D 7/21	90 062 521	--	90 062 561
4	48 886 530	UMA 150D 7/21	90 062 521	--	90 062 561
5	48 886 531	UMA 150D 9/21	90 062 522	--	90 062 562
6	48 886 532	UMA 150D 13/21	90 062 523	--	90 062 563
7	48 886 533	UMA 150D 13/21	90 062 523	--	90 062 563
8	48 886 534	UMA 150D 15/21	90 062 524	--	90 062 564
9	48 886 535	UMA 150D 18/21	90 062 525	01 115 723	90 062 565
10	48 886 536	UMA 150D 22/21	90 062 526	01 115 725	90 062 566
11	48 886 537	UMA 150D 22/21	90 062 526	01 115 725	90 062 566
12	48 886 538	UMA 150D 26/21	90 062 527	01 115 727	90 062 567
13	48 886 539	UMA 150D 26/21	90 062 527	01 115 727	90 062 567
14	48 886 540	UMA 150D 26/21	90 062 527	01 115 727	90 062 567
15	48 886 541	UMA 150D 30/21	90 062 528	01 115 729	90 062 568
16	48 886 542	UMA 150D 30/21	90 062 528	01 115 729	90 062 568
17	48 886 543	UMA 150D 37/22	--	90 062 529	90 062 569
18	48 886 544	UMA 150D 37/22	--	90 062 529	90 062 569
19	48 886 545	UMA 150D 37/22	--	90 062 529	90 062 569
20	48 886 546	UMA 150D 37/22	--	90 062 529	90 062 569

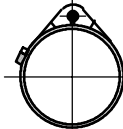
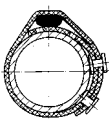
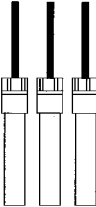
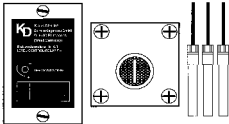
¹⁾ Fig. 0 = including check valve and threaded end

Accessories

Description		Ident. No.	≈ kg/m	
	Electric extension cable¹⁾, blue , rubber-sheathed cable for submerged operation in drinking water applications, ambient temperatures $t \leq +50\text{ °C}$.			
	- Cable kit, 4-core, round, only for pump sets with three-phase current (3~) motors, DN 100, G RD GWT - J - 4G 1.5 (4 x 1.5 mm ²) with earth conductor L = 5 m Consisting of: 1 plug, 10 m 2.5 m cable, 1 cable connector size 28 15 m and additional cable lengths. 20 m 25 m 30 m 35 m 40 m	90 068 166 90 068 167 90 068 168 90 068 169 90 068 170 90 068 171 90 068 172 90 068 173	1.55 2.45 3.35 4.25 5.15 6.05 6.95 7.85	
	- Cable, 4-core, round, G RD GWT - J - with earth conductor	4G 1.5 (4 x 1.5 mm ²) 4G 2.5 (4 x 2.5 mm ²) 4G 4.0 (4 x 4.0 mm ²) 4G 6.0 (4 x 6.0 mm ²) 4G 10 (4 x 10 mm ²) 4G 16 (4 x 16 mm ²) 4G 25 (4 x 25 mm ²) 4G 35 (4 x 35 mm ²) 4G 50 (4 x 50 mm ²) 4G 70 (4 x 70 mm ²)	90 068 174 90 068 175 90 068 176 90 068 177 90 068 178 90 068 179 90 068 180 90 068 181 90 068 182 90 068 183	0.180 0.259 0.356 0.475 0.837 1.220 1.770 2.304 3.185 4.364
		- Cable, 3-core, flat, G FL GWT - O - without earth conductor	3 x 1.5 mm ² 3 x 2.5 mm ² 3 x 4.0 mm ² 3 x 6.0 mm ² 3 x 10 mm ² 3 x 16 mm ² 3 x 25 mm ² 3 x 35 mm ² 3 x 50 mm ² 3 x 70 mm ²	90 068 148 90 068 149 90 068 150 90 068 151 90 068 152 90 068 153 90 068 154 90 068 155 90 068 156 90 068 157
For selection see details and examples on pages 33 - 36.				
Shielded Hydrofirm (T) cable S07BC4B-F 3x6/6KON Shielded Hydrofirm (T) cable S07BC4B-F 3x16/16KON Shielded Hydrofirm (T) cable S07BC4B-F 3x35+3G16/3		on request		
 Cable connector for connecting 1 extension cable to 1 or 2 motor leads		see page 37	0.6	

¹⁾ For permissible cable lengths see pages 35 und 36.

Accessories

Description			Ident. No.	≈ kg																										
 Size 1 Size ≥ 2 Cable clamps for fastening power supply cable to riser - Size 1 (rubber strap / plastic studs), for cable sizes up to 1 FL 3 x 6 mm² or 4 x 6 mm² and 1 RD 4 x 6 mm² - Sizes 2 - 11 (metal strap / screw band with tension screw / rubber cable protector), for larger cross-sections up to 70 mm² available on request Note: Use 1 cable tie each per cable and per 3 m of riser pipe. For selection see details and examples on page 38.			see page 38																											
 “UPA CONTROL” box for 1~ / 230 V and 3~ / 400 V, for d.o.l. starting, temperature-compensated, insulating enclosure, with 4 PG cable glands for round cable, 3 immersion electrodes and integrated selector switch for “Dry running protection” or “Water level control” operation, as well as with thermal overcurrent relay with phase failure protection, for motor sizes ... <table><tr><td>1~/230 V:</td><td>3~/400 V:</td></tr><tr><td>---</td><td>0.37 kW</td></tr><tr><td>---</td><td>0.55 kW + 0.75 kW</td></tr><tr><td>---</td><td>1.10 kW + 1.50 kW</td></tr><tr><td>0.37 + 0.55 kW</td><td>---</td></tr><tr><td>0.75 kW</td><td>2.20 kW</td></tr><tr><td>1.10 kW</td><td>3.00 kW + 3.7 kW</td></tr><tr><td>1.50 kW</td><td>---</td></tr><tr><td>2.2 kW</td><td>5.50 kW</td></tr><tr><td>---</td><td>7.50 kW</td></tr><tr><td>---</td><td>UMA 150D - 5/21</td></tr><tr><td>---</td><td>UMA 150D - 7/21</td></tr><tr><td>---</td><td>UMA 150D - 9/21</td></tr></table>  Plus 1 control current line, blue, 1 x 1.5 mm², for each electrode per m			1~/230 V:	3~/400 V:	---	0.37 kW	---	0.55 kW + 0.75 kW	---	1.10 kW + 1.50 kW	0.37 + 0.55 kW	---	0.75 kW	2.20 kW	1.10 kW	3.00 kW + 3.7 kW	1.50 kW	---	2.2 kW	5.50 kW	---	7.50 kW	---	UMA 150D - 5/21	---	UMA 150D - 7/21	---	UMA 150D - 9/21	40 980 887 40 980 889 40 980 891 40 980 893 40 980 895 40 980 897 40 980 899 40 984 811 90 052 649 40 984 811 90 052 649 90 052 650 01 046 306	3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 0.051
1~/230 V:	3~/400 V:																													
---	0.37 kW																													
---	0.55 kW + 0.75 kW																													
---	1.10 kW + 1.50 kW																													
0.37 + 0.55 kW	---																													
0.75 kW	2.20 kW																													
1.10 kW	3.00 kW + 3.7 kW																													
1.50 kW	---																													
2.2 kW	5.50 kW																													
---	7.50 kW																													
---	UMA 150D - 5/21																													
---	UMA 150D - 7/21																													
---	UMA 150D - 9/21																													
 Automatic control units Cervomatic EDP with G 1¹/₄” connection, for a max. capacity of 12 m³/h, max. flow rate of 12 m³/h, a max. operating pressure of 10 bar and a max. current rating of 10 A, for 1~ + 3~/ 220 to 240 V and 3~/ 380 to 415 V (with electric protection from 0 to 10 A, can be set in 0.5 A steps). Controlmatic E with G 1¹/₄” connection, for a max. flow rate of 10 m³/h, a max. operating pressure of 10 bar and a max. current rating of 10 A, for 1~ 220 to 240 V			90 053 396 90 053 395	2.2 1.3																										
 Dry running protection equipment for ... - semi-automatic operation (1 relay, 1 pushbutton + 2 electrodes) - fully automatic operation (1 relay + 3 electrodes) Plus 1 control current line, blue, 1 x 1.5 mm², for each electrode per m			90 009 553 90 009 554 01 096 713	2.0 2.0 0.051																										
 Pressure controller, (membrane-type), insulating enclosure 1 - 10 bar, with R 3/8 connection.			01 088 101	0.9																										
Flanged end piece : <table><tr><td>Flanged Adapter</td><td>DN 50, PN 16 - 40 DN 65, PN 16 - 40 DN 80, PN 16 - 40</td></tr><tr><td>Threated Adapter</td><td>G3 G4</td></tr></table>			Flanged Adapter	DN 50, PN 16 - 40 DN 65, PN 16 - 40 DN 80, PN 16 - 40	Threated Adapter	G3 G4	01 116 438 01 116 439 01 116 440 01 124 645 01 124 644	3.28 3.64 7.00 2.50 3.00																						
Flanged Adapter	DN 50, PN 16 - 40 DN 65, PN 16 - 40 DN 80, PN 16 - 40																													
Threated Adapter	G3 G4																													

Accessories

	Pair of supporting and installation clamps for the following riser sizes ... incl. screws, bolts and nuts, - R 2" / DN 50, L = 600 mm, F = 17.5 kN for installation / dismantling of - R 2 1/2" / DN 65, L = 600 mm, F = 17.5 kN vertical submersible pump sets - R 3" / DN 80, L = 600 mm, F = 17.5 kN in / from wells, tanks, etc. - R 4" / DN 100 L = 700 mm, F = 24.5 kN Material: Steel, painted. Note: 2 pairs are required for installation / dismantling. Other sizes and materials on request.	95 000 294 95 000 296 95 000 298 95 000 300	11.5 12.0 12.0 21.0
	Set of bearing pedestals for horizontal installation consisting of 2 bearing pedestals, incl. screws, bolts and nuts. Material: CrNi steel 1.4301 - UPA 150C pumps with UMA 150D motors Note: Screws, bolts and nuts for fixing the bearing pedestals on the foundation are to be supplied by the customer / end user. Other sizes and materials on request.	01 117 821	1.5
Pt 100 Cable connector for Pt 100 (size 18)	- connected and sealed at the factory - supplied, but not connected	90 063 006 90 062 234 90 062 233	1.1
	Pt 100 temperature monitoring equipment for use in submersible motors to protect the windings from overheating. Consisting of - Resistance thermometer - Control current line, blue, round 4 x 0.5 mm² - Display / control box (supply voltage U = 110/220V) per m	-- 01 103 205 90 064 446	-- 0.085 0.320
	Centralizer for submersible motors UMA 150D for well diameters: 250 mm for well diameters: 300 mm for well diameters: 350 mm Note: Other sizes and materials on request.	90 047 662 90 047 663 90 047 664	-- -- --
	Cooling, suction and pressure shroud for vertical and horizontal installation Galvanized steel and CrNiMo steel material variants on request.	on request	
	Lightning protection with earthing terminal for - 1~/ 230 V (fitted in soft starter of DN 100 motor) - 3~/ 400 V (supplied separately) cable clamp per unit	00 533 291 00 533 299 40 980 709	0.20 0.28

Electric Cable for Use in Drinking Water Applications

Applications

For use in water as submersible motor lead (3- + 4-core, flat) and for use in air as extension cable from motor lead to control box / mains (3-core, flat and 4-core, round).

Application Limits

Rated voltage:

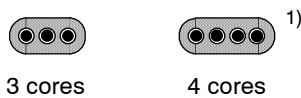
- $U_N \leq 1000 \text{ V}$ for ex. in wells,
- $U_N \leq 750 \text{ V}$ in swimming pools.

Ambient temperature $t \leq +50 \text{ }^\circ\text{C}$.

Immersion depth $\leq 500 \text{ m}$.

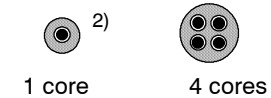
Description / Design

a) Flat cables:



¹⁾ As a standard, for use as motor lead only.

b) Round cables:



²⁾ For use as earth conductor only.

3-/4-core rubber-sheathed cable. Consisting of finely stranded bare copper conductors, core insulation and outer sheath made of special rubber compound on EPR basis (ethylene propylene rubber), blue. With BAM ¹⁾ certificate, i.e. suitable for permanent use in drinking water applications.

¹⁾ German Federal Institute for Materials Research

Designation (Example)

Flat cable:	ZN 1391	- G	FL	GWT	-J	4G25	- Cu-Rubber
Factory standard	_____	_____	_____	_____	_____	_____	_____
Insulation: rubber	_____	_____	_____	_____	_____	_____	_____
FL: flat + RD: round	_____	_____	_____	_____	_____	_____	_____
For drinking water	_____	_____	_____	_____	_____	_____	_____
Earth conductor: "O" = without, "- J" = with	_____	_____	_____	_____	_____	_____	_____
Cores (O: "3 x 25", J: "4 G 25")	_____	_____	_____	_____	_____	_____	_____
Materials	_____	_____	_____	_____	_____	_____	_____

Dimensions + Weights

Type		Cross-section q in mm²									
		1.5	2.5	4	6	10	16	25	35	50	70
	↑ mm	5.2 + 1	6.1 + 1.5	7.0 + 2	7.6 + 2.2	9.3 + 2.2	11.2 + 2.3	13.0 + 2.5	14.6 + 2.9	17.0 + 3	19.3 + 2.7
	↔ mm	11.0 + 2	13.2 + 2.3	15.5 + 3.5	17.4 + 3.6	21.5 + 3.5	26.7 + 4.3	31.6 + 3.9	35.5 + 5	42.1 + 4.9	48.4 + 3.6
	m kg/m	0.110	0.171	0.252	0.319	0.486	0.750	1.107	1.438	2.054	2.760
	↑ mm	5.2 + 1	6.1 + 1.5	7.0 + 2	7.6 + 2.2	9.3 + 2.2	11.2 + 2.3	13.0 + 2.5	---	---	---
	↔ mm	14.5 + 2.7	17.5 + 2.5	21.0 + 2.5	23.5 + 3	29.0 + 3.5	35.0 + 2.4	41.5 + 4.5	---	---	---
	m kg/m	0.165	0.237	0.339	0.440	0.704	1.026	1.457	---	---	---
	Ø mm	5.3 + 1.1	---	---	---	---	---	---	13.8 + 3.6	16 + 3.8	---
	m kg/m	0.051	---	---	---	---	---	---	0.499	0.699	---
	Ø mm	10.0 + 2	12.0 + 1.9	13.9 + 2	15.7 + 2.1	21.1 + 2.1	24.5 + 4.3	29.7 + 4.3	33.3 + 5.5	39.0 + 5.6	44.2 + 5.8
	m kg/m	0.180	0.259	0.356	0.475	0.837	1.220	1.770	2.304	3.185	4.364

Maximum Permissible Rated Motor Current $I_{\max}$

a) Ambient temperature $t \leq + 30\text{ °C}$!

Starting	Used as ...	$I_{\max}$ in A for cross-section of ... mm ²									
		1.5	2.5	4	6	10	16	25	35	50	70
D.o.I. (1 cable or 2 cables in parallel ¹⁾)	Motor lead ²⁾	29	38	52	67	94	125	166	205	256	316
	Extension cable ³⁾	23	30	41	53	74	99	131	162	202	250
Y-Δ (2 cables)	Motor lead ²⁾	50	66	90	116	163	217	288	355	443	547
	Extension cable ³⁾	40	52	71	92	128	171	227	280	350	433

¹⁾ For 2 cables II: $I_N \leq 2 \times I_{\max}$.

²⁾ $I_{\max}$ for submerged use, laid in free water or closely along the pump. For other conditions see DIN VDE 0298.

³⁾ $I_{\max}$ for use in open air, laid along a surface. For other conditions see DIN VDE 0298.

b) Ambient temperature $t > + 30\text{ °C}$!

If $t > + 30\text{ °C}$, the current-carrying capacity of the cables is lower.

$I_{\max}$ indicated under a) must be de-rated by a factor f_T :

		t in °C			
		≤ 35	≤ 40	≤ 45	≤ 50
f_T	[--]	0.96	0.91	0.87	0.82

Voltage Drop ΔU Along Extension Cable

When calculating the required copper conductor cross-section q , not only I_N , but also the voltage drop ΔU along the cable length L (distance from motor to control box) must be taken into account. Proper functioning of our submersible motors requires that $\Delta U \leq 3\%$ of the supply voltage U !

If $\Delta U > 3\%$, a larger cable must be used.

The voltage drop is calculated using the following equations:

a) **D.o.I. starting / autotransformer ...**

- 1 cable:

$$3 \sim \dots \quad \Delta U = \frac{3.1 \times L \times I_N \times \cos \phi}{q \times U} \quad [\%]$$

$$1 \sim \dots \quad \Delta U = \frac{3.6 \times L \times I_N \times \cos \phi}{q \times U} \quad [\%]$$

- 2 cables in parallel (II):

$$3 \sim \dots \quad \Delta U = \frac{1.55 \times L \times I_N \times \cos \phi}{q \times U} \quad [\%]$$

$$1 \sim \dots \quad \Delta U = \frac{1.8 \times L \times I_N \times \cos \phi}{q \times U} \quad [\%]$$

b) **Y-Δ starting (2 cables) ...**

$$\Delta U = \frac{2.1 \times L \times I_N \times \cos \phi}{q \times U} \quad [\%]$$

Power Loss ΔP Along the Extension Cable

$$\Delta P = \frac{\Delta U}{(\cos \phi)^2} \quad [\%]$$

where ...

L = single cable length [m]

I_N = rated current [A]

$\cos \phi$ = power factor at 4/4 load

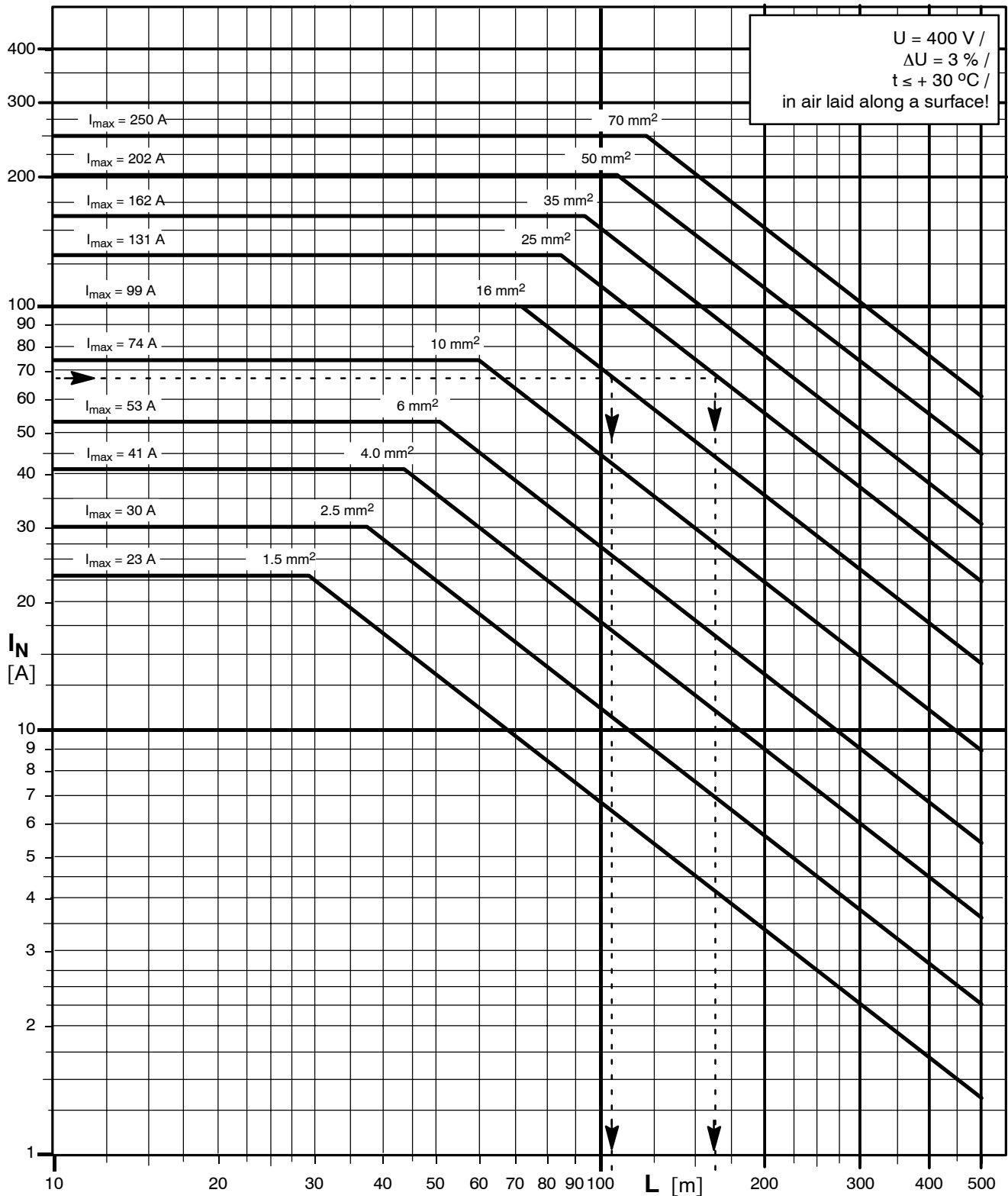
q = copper conductor cross-section [mm²]

U = supply voltage [V]

Permissible Cable Lengths L

D.O.L. Starting

(1 cable or 2 cables in parallel)



Example:

a) $I_N = 68\text{ A}$, $1 \times 16\text{ mm}^2$, $\Delta U \leq 3\%$ → $L \leq 105\text{ m!}$
 I_N = motor current resulting from actual voltage

b) $I_N = 68\text{ A}$, $1 \times 25\text{ mm}^2$, $\Delta U \leq 3\%$ → $L \leq 165\text{ m!}$

For supply voltages other than 400 V, the cable lengths must be calculated as follows, for ex. ...

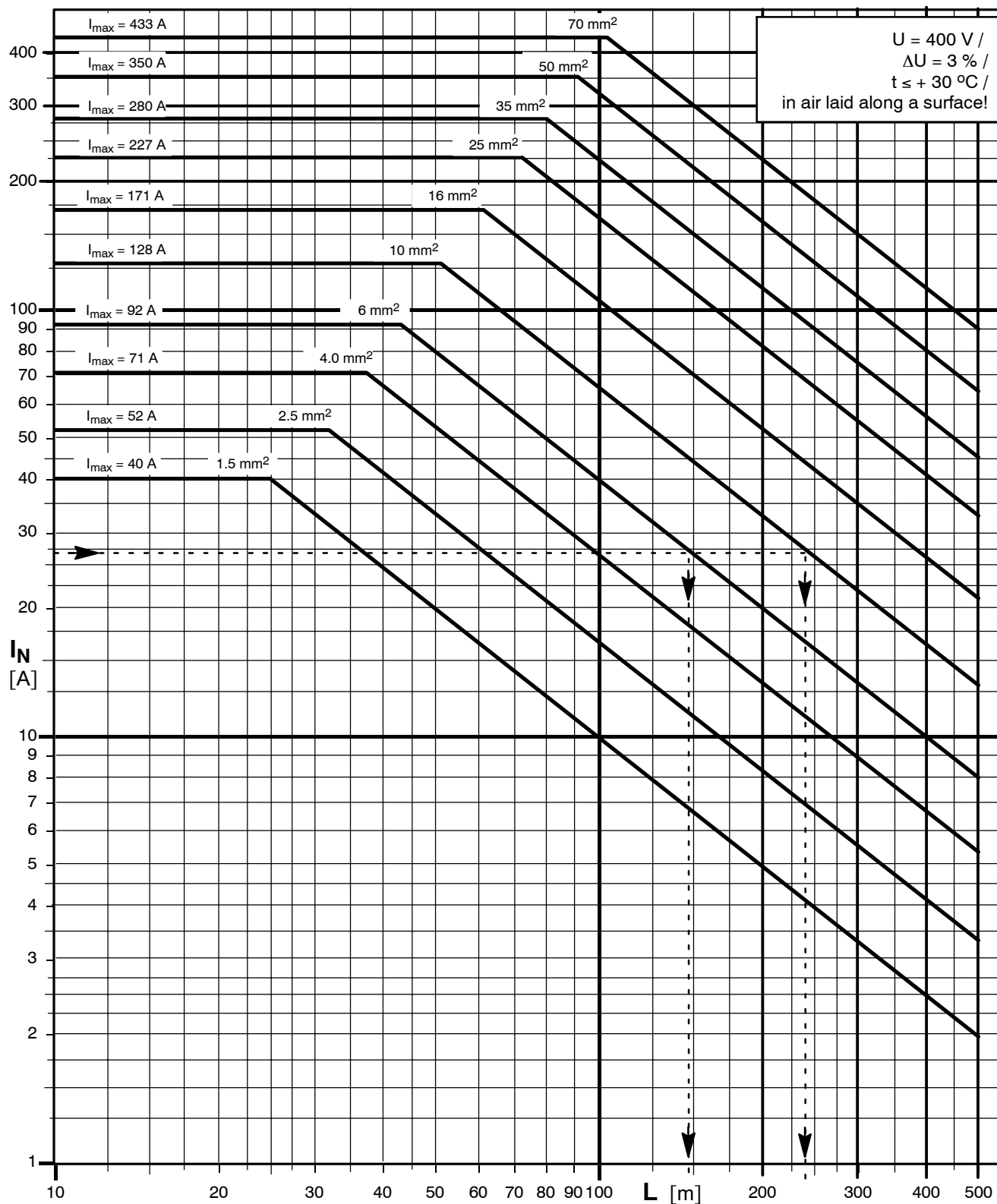
$U_1 = 400\text{ V}$, $L_1 = 105\text{ m}$, $U_2 = 500\text{ V}$ → $L_2 = (U_2 : U_1) \times L_1$, $L_2 = (500\text{ V} : 400\text{ V}) \times 105\text{ m} = 131.3\text{ m!}$

For **parallel cables** the value is doubled to obtain the permissible length.

Permissible Cable Lengths L

Y-Δ Starting

(2 cables)



Example:

a) $I_N = 27 \text{ A}$, $2 \times 6 \text{ mm}^2$, $\Delta U \leq 3 \%$ → $L \leq 145 \text{ m}$!
 I_N = motor current resulting from actual voltage

b) $I_N = 27 \text{ A}$, $2 \times 10 \text{ mm}^2$, $\Delta U \leq 3 \%$ → $L \leq 235 \text{ m}$!

For supply voltages other than 400 V, the cable lengths must be calculated as follows, for ex. ...

$U_1 = 400 \text{ V}$, $L_1 = 145 \text{ m}$, $U_2 = 500 \text{ V}$, → $L_2 = (U_2 : U_1) \times L_1$, $L_2 = (500 \text{ V} : 400 \text{ V}) \times 145 \text{ m} = 181.3 \text{ m}$

Connector for Electric Cable

Applications

Used to provide a sealed, water-tight connection between electric extension cable and submersible motor lead.

Supply voltage $U \leq 750 \text{ V}$.

Ambient temperature $t \leq +50 \text{ }^{\circ}\text{C}$.

Immersion depth $\leq 500 \text{ m}$.

Selection Criteria

Type, number and dimensions of the motor lead and the extension cable.

Selection Table

The table below only shows the electric cables **on stock**. Connectors for other cables on request.

Motors with one cable

Motor leads

Extension cable

Motors with two cables

Motor leads

Extension cable

		extension cable							
		1.5	2.5	4	6	10	16	25	35
motor leads	1.5	28	28	28	35	35	43	53	53
		90 049 385	90 049 385	90 049 385	90 049 387	90 049 387	90 049 389	90 049 391	90 049 391
		95 005 106	95 005 106	95 005 106	90 049 397	90 049 397	90 049 399	90 049 401	90 049 401
	2.5	28	28	28	35	35	43	53	53
		90 049 385	90 049 385	90 049 385	90 049 387	90 049 387	90 049 389	90 049 391	90 049 391
		95 005 106	95 005 106	95 005 106	90 049 397	90 049 397	90 049 399	90 049 401	90 049 401
	4	28	35	35	35	35	43	53	53
		90 049 385	90 049 387	90 049 387	90 049 387	90 049 387	90 049 389	90 049 391	90 049 391
		95 005 106	90 049 397	90 049 397	90 049 397	90 049 397	90 049 399	90 049 401	90 049 401
	6	35	35	35	35	35	43	53	53
		90 049 387	90 049 387	90 049 387	90 049 387	90 049 387	90 049 389	90 049 391	90 049 391
		90 049 397	90 049 397	90 049 397	90 049 397	90 049 397	90 049 399	90 049 401	90 049 401

		extension cable							
		1.5	2.5	4	6	10	16	25	35
motor leads	1.5	28	28	28	35	35	43	53	53
		90 049 385	90 049 385	90 049 385	90 049 387	90 049 387	90 049 389	90 049 391	90 049 391
		95 005 106	95 005 106	95 005 106	90 049 397	90 049 397	90 049 399	90 049 401	90 049 401
	2.5	28	28	28	35	35	43	53	53
		90 049 385	90 049 385	90 049 385	90 049 387	90 049 387	90 049 389	90 049 391	90 049 391
		95 005 106	95 005 106	95 005 106	90 049 397	90 049 397	90 049 399	90 049 401	90 049 401
	4	28	28	28	35	35	43	53	53
		90 049 385	90 049 385	90 049 385	90 049 387	90 049 387	90 049 389	90 049 391	90 049 391
		95 005 106	95 005 106	95 005 106	90 049 397	90 049 397	90 049 399	90 049 401	90 049 401
	6		35	35	35	35	43	53	53
			90 049 387	90 049 387	90 049 387	90 049 387	90 049 389	90 049 391	90 049 391
			90 049 397	90 049 397	90 049 397	90 049 397	90 049 399	90 049 401	90 049 401

Example:

		extension cable	
		1.5 mm ²	2.5 mm ²
1.5 mm ²	28	28	
	90 049 385	90 049 385	
	95 005 106	95 005 106	

Size of the cable connector

Ident.-No., connected and sealed at the factory

Ident.-No., supplied, but not connected

Cable Clamp for Electric Cable

Applications

Securing electric cable at the riser / discharge pipe. Suitable for use in normal or slightly aggressive water.
Models for use in more aggressive wasser (for ex. seawater) available on request.

Selection Criteria

Type, number and size of the electric cable, as well as nominal diameter and length of the riser / discharge pipe.

Selection Table

Electric cable			Tie size	m ¹⁾	Required length of strap L per cable clamp in ... mm for risers G .../DN ...					
Type	Number x core dia. in mm ²		--	≈ kg	1 1/4/ 32	1 1/2/ 40	2/ 50	2 1/2/ 65	3/ 80	4/ 100
Flat	3 x 1.5 to 3 x 6.0	4 x 1.5 to 4 x 6.0	1	--	270	280	320	360	400	450
	3 x 10 to 3 x 70	4 x 10 to 4 x 70	11	0.01	--	--	350	400	450	550
Round	3 x 1.5 to 3 x 6.0	4 x 1.5 to 4 x 6.0	1	--	270	280	320	360	400	450
	3 x 10	4 x 10	2	0.08	--	--	350	400	450	550
	3 x 16 to 3 x 25	4 x 16	3a	0.19	---	---	350	400	450	550
	3 x 35 to 3 x 50	4 x 25 to 4 x 35	3	0.19	---	---	---	450	500	600
	3 x 70	4 x 50	3b	0.19	---	---	---	450	500	600
	3 x 95	4 x 70 to 4 x 95	4	0.55	---	---	---	---	---	650

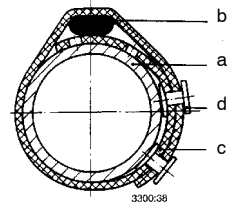
¹⁾ Cable clamps (Sizes 11, 2 to 4).

Note:

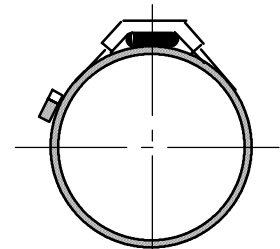
- Use 1 cable clamp each per cable and per 3 m of riser pipe.
- If an extension cable with a larger diameter is connected to the motor lead, the cable clamp size required for the larger cable is to be used along the entire cable length.

Size 1:

a = Riser
b = Electric cable
c = Rubber strap
d = Plastic stud
(2 pcs/cable clamps)

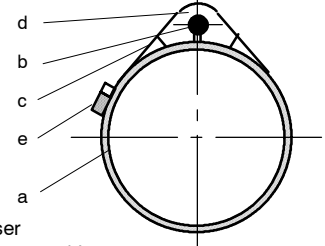


Size 11:



Sizes 2, 3, 3a, 3b, 4:

a = Riser
b = Electric cable
c = Metal strap
d = Cable protector
e = tie bar



Ident. No. for Cable clamps

Cable clamps	metal strap	tie bar	cable protector
Size 1	01 088 095 (0.04 kg)		
Size 2	01 051 068 (0.02 kg)	01 051 038 (0.02 kg)	90 007 112 (0.04 kg)
Size 3	01 051 068 (0.02 kg)		90 007 113 (0.13 kg)
Size 3a	01 051 068 (0.02 kg)		90 008 415 (0.1 kg)
Size 3b	01 051 068 (0.02 kg)		90 008 416 (0.15 kg)
Size 4	01 051 068 (0.02 kg)		90 007 114 (0.15 kg)
Size 11	01 051 068 (0.02 kg)		90 029 132 (0.12 kg)

