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Lowara

GLS-GLV Series

Submersible
wastewater
pumps

50 Hz



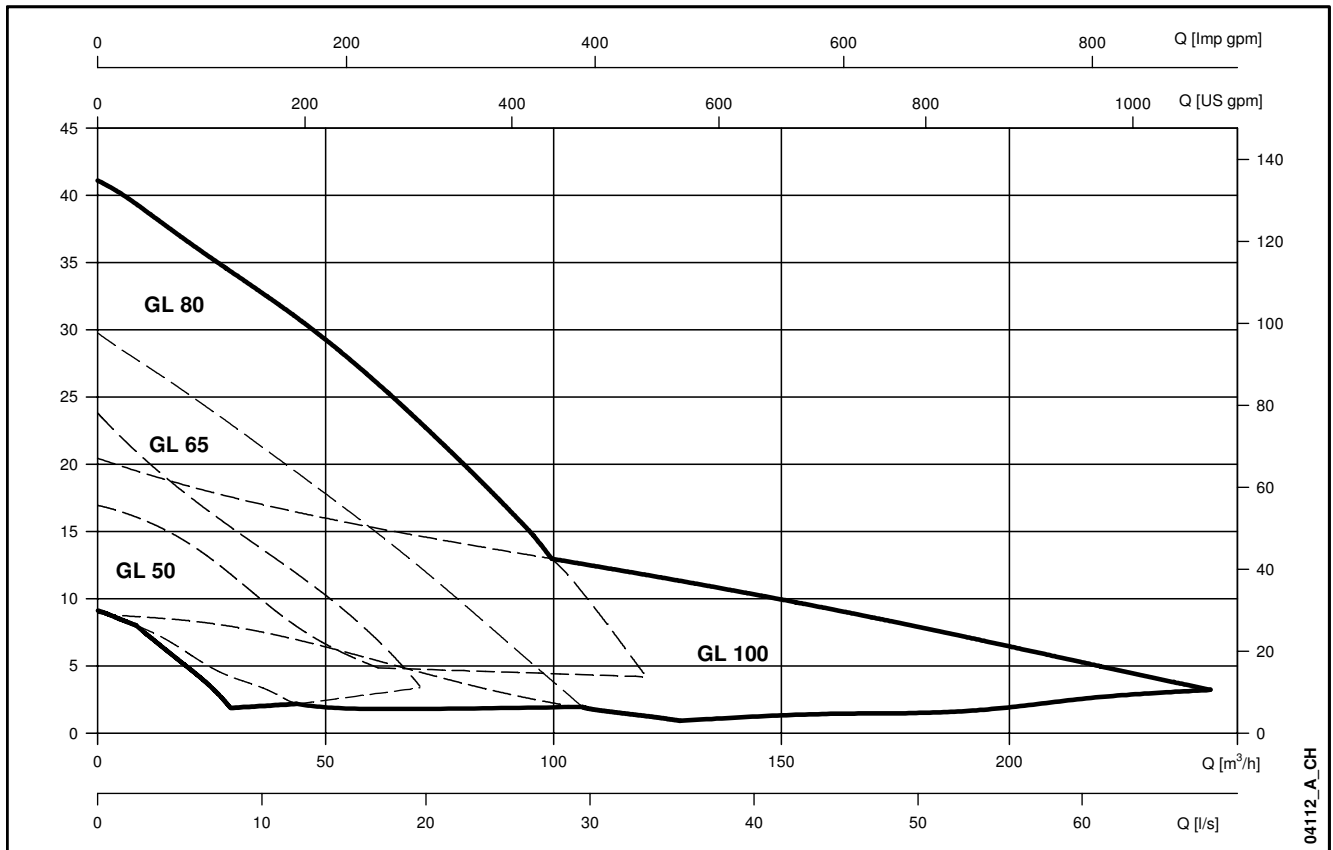
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GLS - GLV SERIES HYDRAULIC PERFORMANCE RANGE AT 50 Hz



04112_A_CH



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SELECTION GUIDE

The GLS, GLV, and DLG series of submersible electric pumps featured in the Lowara catalogue are designed to satisfy the most varied liquid handling requirements under even extreme conditions, thanks to the wide variety of materials and impeller and motor types.

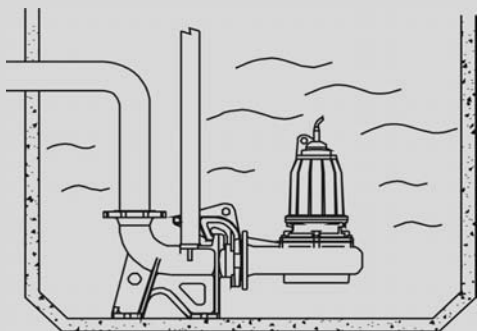
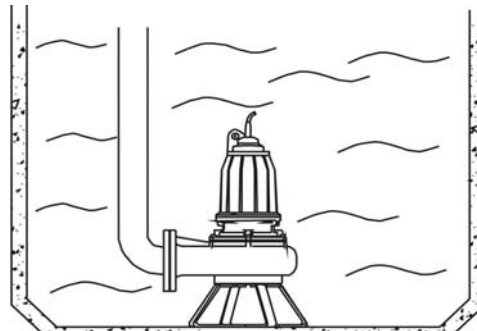
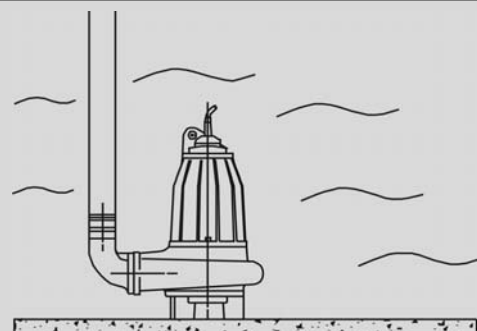
In order to optimise the pump's performances and reduce energy consumption, it is very important to select the "correct" electric pump for intended application.

TIPICAL APPLICATIONS

APPLICATIONS	PUMP TYPE		
	GLS	GLV	DLG
Purification systems	✓	✓	
Sewers - single-family dwellings, small condominiums, multi-family dwellings	✓	✓	✓
Sewers - campsites	✓	✓	✓
Sewers - restaurants, hotels	✓	✓	
Industry	✓	✓	✓
Sludge	✓	✓	
Land reclamation, irrigation, agriculture	✓	✓	
Stock farming		✓	
Aquaculture	✓	✓	

GL-en_a_sc

INSTALLATION

LOWERING SYSTEM		Fixed submerged installation, with coupling foot and guide rails. Access to the electric pump for inspection or maintenance is quick and easy: to extract the pump, just lift it with a chain. The pump's stability and sealing are ensured by its weight. The pump's motor is cooled by the surrounding liquid. A minimum liquid level, indicated in the dimensional drawings for the different versions, must be guaranteed.
TRIPOD STAND		Portable submerged installation, with tripod stand. The pump's motor is cooled by the surrounding liquid. A minimum liquid level, indicated in the dimensional drawings for the different versions, must be guaranteed.
90° DELIVERY UNION		Free submerged installation with support feet and threaded bend. The pump's motor is cooled by the surrounding liquid. A minimum liquid level, indicated in the dimensional drawings for the different versions, must be guaranteed.

Submersible Electric Pumps

MARKET SECTORS

RESIDENTIAL AND COMMERCIAL BUILDINGS, INDUSTRIES.

APPLICATIONS

- Submersible pump for pumping clean water, surface water and wastewater containing solids or long-fibred material.

GLS Series



SPECIFICATIONS

- **Delivery:** up to 244 m³/h.
- **Head:** up to 41 m.
- **Free passage:** 48 mm (see hydraulic data table).
- **Discharge** connection: DN 50 - 65 - 80 - 100 mm.
- **Motor power:** up to 7,4 kW.
- Maximum liquid **temperature:** 40 °C.
- Maximum immersion **depth:** 20 m.
- pH **pumped liquid:** pH 5,5-14.
- Maximum liquid **density:** 1100 Kg/m³.
- Motor with IP68 **protection** and class H insulation(180°C).
- **Power supply** 230V single-phase, 400V three-phase, 50 Hz.
- Voltage **variation:**
 - continuous running: max ±5%.
 - intermittent running: max ±10%.
- Voltage **imbalance** between phases: max 2%.
- Maximum number of starts per hour: 30.

OPTIONAL FEATURES

- 20 m cable.
- Explosion proof version.
- Different voltages: 380V and 415V for three-phase version, 220V and 240V for single-phase version.

ACCESSORIES / INSTALLATION

- Lowering system.
- 90° delivery elbow with hose connector.
- 90° threaded delivery elbow.
- Stand.
- Non-return ball valve.
- Float for solid-laden waters.
- Command and control panels.

CONSTRUCTION CHARACTERISTICS

- Sturdy cast iron construction.
- Self-Cleaning **impeller**.
- **Double seal:** Tungsten Carbide/Ceramic on pump side, Carbon/Ceramic on motor side, with interposed oil chamber.
- **Cable** (10 m standard version):
 - Direct-on-line start: SUBCAB® 4G1,5+2x1,5.
 - Y/D start: SUBCAB® 7G2,5+2x1,5.
- Motor thermal **protection:** opening temperature 125°C.



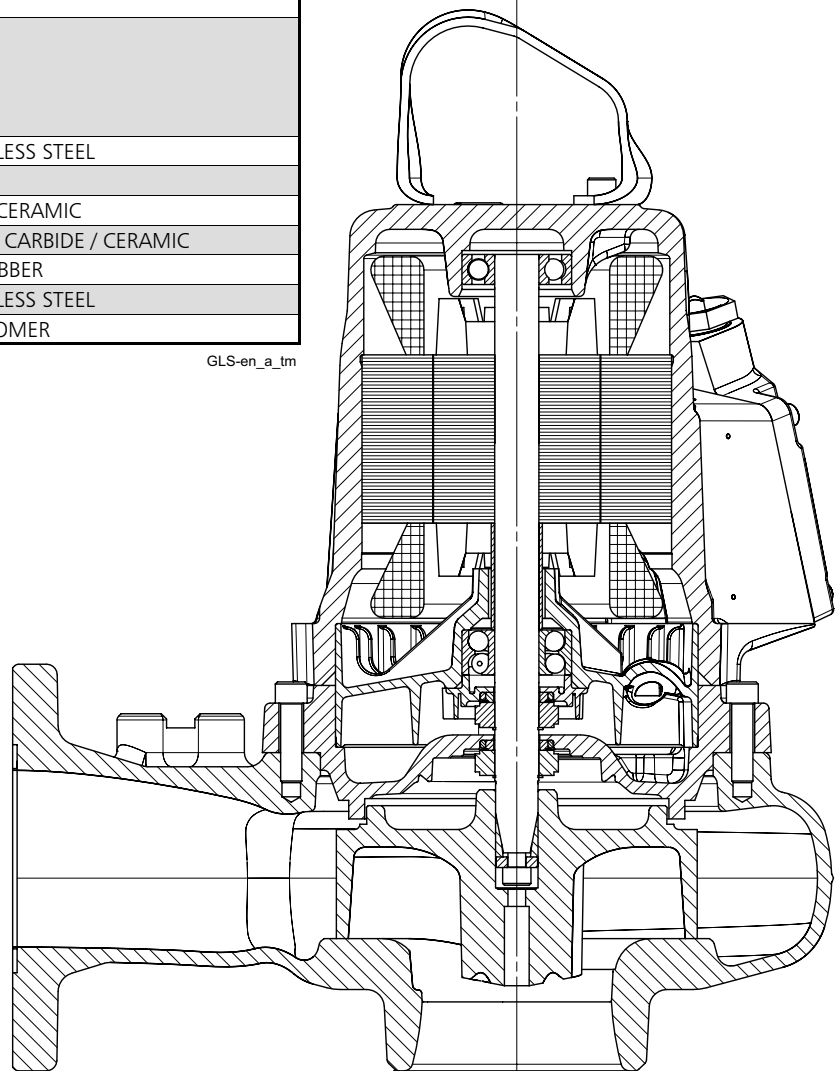
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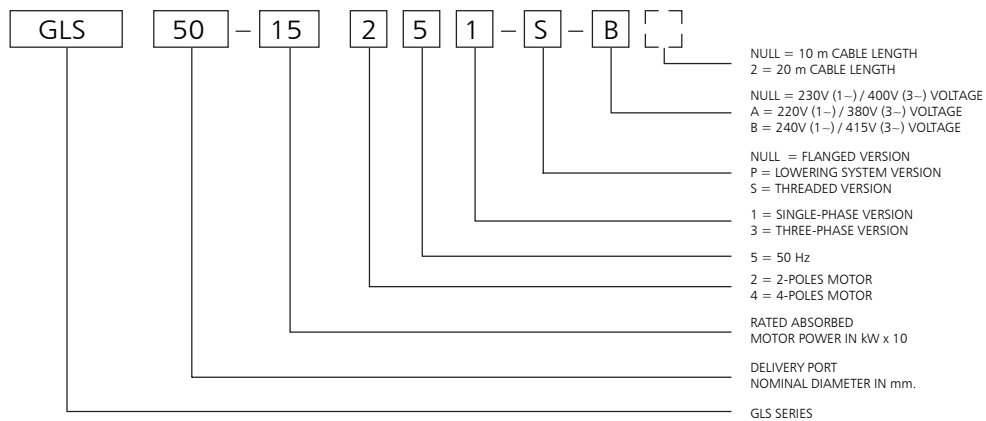
GLS SERIES PUMP SECTION AND TABLE OF MATERIALS

PART	MATERIAL
Motor casing	GREY IRON
Seal oil chamber	
Pump body	
Impeller	
Shaft	431 STAINLESS STEEL
Bearings	BALL TYPE
Motor-side seal	CARBON / CERAMIC
Pump-side seal	TUNGSTEN CARBIDE / CERAMIC
Gaskets	NITRILE RUBBER
Bolts and screws	304 STAINLESS STEEL
Power cord	CPE ELASTOMER

GLS-en_a_tm



IDENTIFICATION CODE



EXAMPLE : GLS 50-15 251-S-B

GLS series electric pump, 50 mm nominal delivery port, 1,5 kW rated absorbed motor power, 2-poles version, 50 Hz, single-phase, threaded version, 415 V of voltage, 10 m cable length.

GLS SERIES

ELECTRICAL DATA TABLE AT 50 Hz

PUMP TYPE	min ⁻¹	Pgr (P1) kW *	(P2) Nom kW **	VOLTAGE / PHASES ***	CURRENT		START	ELECTRICAL CABLE TYPE	RUNNING CAPACITOR µF/V	STARTING CAPACITOR µF/V
					ABSORBED I _{abs} (A)	INRUSH I _{sp} (A)				
GLS 50-15-251-S	2900	2	1,5	230/1	8,4	32	DOL	4G1,5 + 2x1,5	35/400	100/330
GLS 50-15-251-P	2900	2	1,5	230/1	8,4	32	DOL	4G1,5 + 2x1,5	35/400	100/330
GLS 50-16-253-S	2900	1,9	1,6	400/3	3,6	27	DOL	4G1,5 + 2x1,5	-	-
GLS 50-16-253-P	2900	1,9	1,6	400/3	3,6	27	DOL	4G1,5 + 2x1,5	-	-
GLS 50-20-253-S	2900	2,4	2	400/3	4,3	27	DOL	4G1,5 + 2x1,5	-	-
GLS 50-20-253-P	2900	2,4	2	400/3	4,3	27	DOL	4G1,5 + 2x1,5	-	-
GLS 50-24-253-S	2900	3,2	2,4	400/3	5,1	27	DOL	4G1,5 + 2x1,5	-	-
GLS 50-24-253-P	2900	3,2	2,4	400/3	5,1	27	DOL	4G1,5 + 2x1,5	-	-
GLS 65-15-251	2900	2	1,5	230/1	8,4	32	DOL	4G1,5 + 2x1,5	35/400	100/330
GLS 65-16-253	2900	1,9	1,6	400/3	3,6	27	DOL	4G1,5 + 2x1,5	-	-
GLS 65-20-253	2900	2,4	2	400/3	4,3	27	DOL	4G1,5 + 2x1,5	-	-
GLS 65-24-253	2900	3,2	2,4	400/3	5,1	27	DOL	4G1,5 + 2x1,5	-	-
GLS 65-32-253	2900	3,9	3,2	400/3	6,1	52	YD	7G2,5 + 2x1,5	-	-
GLS 65-42-253	2900	5,3	4,2	400/3	8,2	52	YD	7G2,5 + 2x1,5	-	-
GLS 80-32-253	2900	3,9	3,2	400/3	6,1	52	YD	7G2,5 + 2x1,5	-	-
GLS 80-42-253	2900	5,3	4,2	400/3	8,2	52	YD	7G2,5 + 2x1,5	-	-
GLS 80-59-253	2900	6,9	5,9	400/3	11	114	YD	7G2,5 + 2x1,5	-	-
GLS 80-74-253	2900	8,7	7,4	400/3	14	114	YD	7G2,5 + 2x1,5	-	-
GLS 100-24-453	1450	2,8	2,4	400/3	5,5	38	YD	7G2,5 + 2x1,5	-	-
GLS 100-31-453	1450	3,7	3,1	400/3	6,7	38	YD	7G2,5 + 2x1,5	-	-
GLS 100-45-453	1450	5,3	4,5	400/3	9,7	77	YD	7G2,5 + 2x1,5	-	-
GLS 100-59-453	1450	7	5,9	400/3	12	77	YD	7G2,5 + 2x1,5	-	-

Stator thermal protection included in all models.

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* Maximum value of absorbed motor power within the operating range.

** P2 = Rated shaft power.

*** All the pumps are available also in 220 and 240 versions (single-phase) and 380 and 415 versions (three-phase).

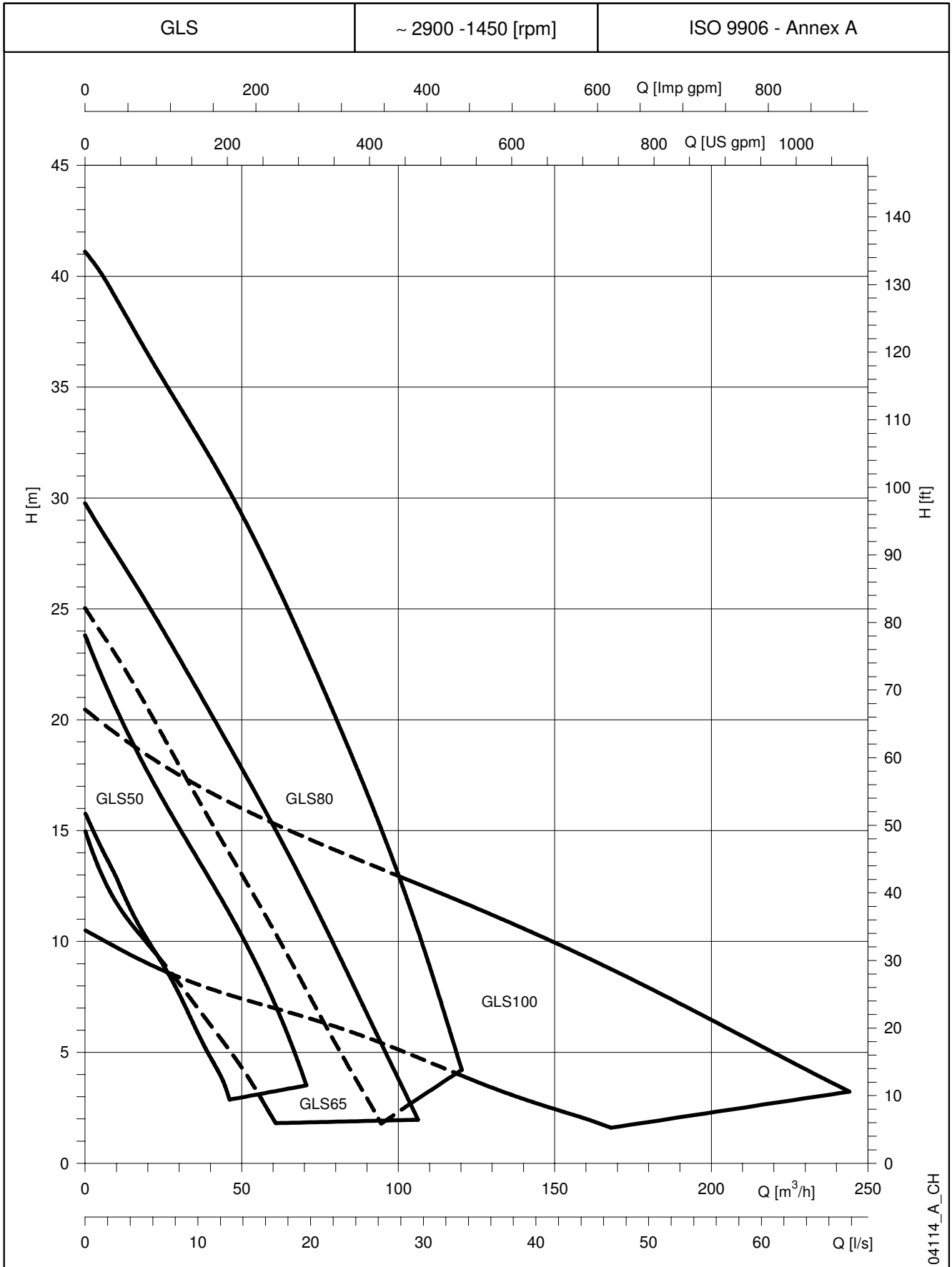


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GLS SERIES

HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 2 and 4 POLES



These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.



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GLS SERIES HYDRAULIC PERFORMANCE TABLE AT 50 Hz

PUMP TYPE	Pgr (P1) kW *	(P2) Nom kW **	D Impeller mm	min ⁻¹	Q = DELIVERY																	Passes solids up to (mm)
					l/s 0	2	4	6	8	10	15	20	25	30	40	45	50	60	67,8			
					m³/h 0	7,2	14,4	21,6	28,8	36	54	72	90	108	144	162	180	216	244			
H = TOTAL HEAD METRES COLUMN OF WATER																						
GLS 50-15-251-S	2	1,5	104	2900	17,0	13,8	11,5	9,7	8,0	5,9										48		
GLS 50-15-251-P	2	1,5	104	2900	15,8	13,7	11,8	10,3	8,8	7,4	3,5									48		
GLS 50-16-253-S	1,9	1,6	104	2900	17,2	14,0	11,7	9,9	8,2	6,1										48		
GLS 50-16-253-P	1,9	1,6	104	2900	16,0	13,8	12,0	10,5	9,1	7,7	3,8									48		
GLS 50-20-253-S	2,4	2	112	2900	19,0	16,8	14,3	12,0	10,1	8,2										48		
GLS 50-20-253-P	2,4	2	112	2900	19,0	16,8	14,9	13,2	11,6	10,2	6,3									48		
GLS 50-24-253-S	3,2	2,4	122	2900	24,0	21,3	19,4	17,1	14,6	12,3	6,3									48		
GLS 50-24-253-P	3,2	2,4	122	2900	23,8	21,3	19,2	17,2	15,4	13,7	9,2									48		
GLS 65-15-251	2	1,5	104	2900	15,0	12,4	10,9	9,6	8,3	7,0	3,4									48		
GLS 65-16-253	1,9	1,6	104	2900	15,1	12,7	11,0	9,7	8,5	7,3	3,6									48		
GLS 65-20-253	2,4	2	112	2900	17,4	15,2	13,4	11,9	10,5	9,2	5,6									48		
GLS 65-24-253	3,2	2,4	122	2900	20,9	18,9	17,1	15,5	14,0	12,5	8,4									48		
GLS 65-32-253	3,9	3,2	142	2900	25,0	23,5	21,9	20,1	18,3	16,4	12,1	7,5	2,9							26		
GLS 65-42-253	5,3	4,2	154	2900	29,8	28,1	26,5	24,8	23,1	21,3	16,8	12,0	6,7							26		
GLS 80-32-253	3,9	3,2	142	2900	25,0	23,5	21,9	20,1	18,3	16,4	12,1	7,5	2,9							26		
GLS 80-42-253	5,3	4,2	154	2900	29,8	28,1	26,5	24,8	23,1	21,3	16,8	12,0	6,7							26		
GLS 80-59-253	6,9	5,9	165	2900	35,6	33,9	32,3	30,6	28,9	27,1	22,5	17,4	11,5	5,0						26		
GLS 80-74-253	8,7	7,4	177	2900	41,1	39,7	37,9	36,1	34,4	32,8	28,2	22,7	16,7	9,8						26		
GLS 100-24-453	2,8	2,4	179	1450	10,5	9,9	9,4	8,9	8,5	8,1	7,2	6,5	5,7	4,7	2,7	1,9				39		
GLS 100-31-453	3,7	3,1	198	1450	13,8	13,0	12,4	11,8	11,3	10,8	9,9	9,0	8,2	7,2	5,1	3,9	2,9			39		
GLS 100-45-453	5,3	4,5	216	1450	17,2	16,5	15,8	15,2	14,6	14,1	12,9	11,9	10,9	9,9	7,8	6,7	5,5	3,0		38		
GLS 100-59-453	7	5,9	233	1450	20,5	19,6	18,9	18,2	17,6	17,0	15,7	14,6	13,5	12,5	10,3	9,2	7,9	5,3	3,2	38		

Performances according to ISO Standard 9906 –Annex A.

GLS-50-en_a_th

These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

* Maximum value of absorbed motor power within the operating range.

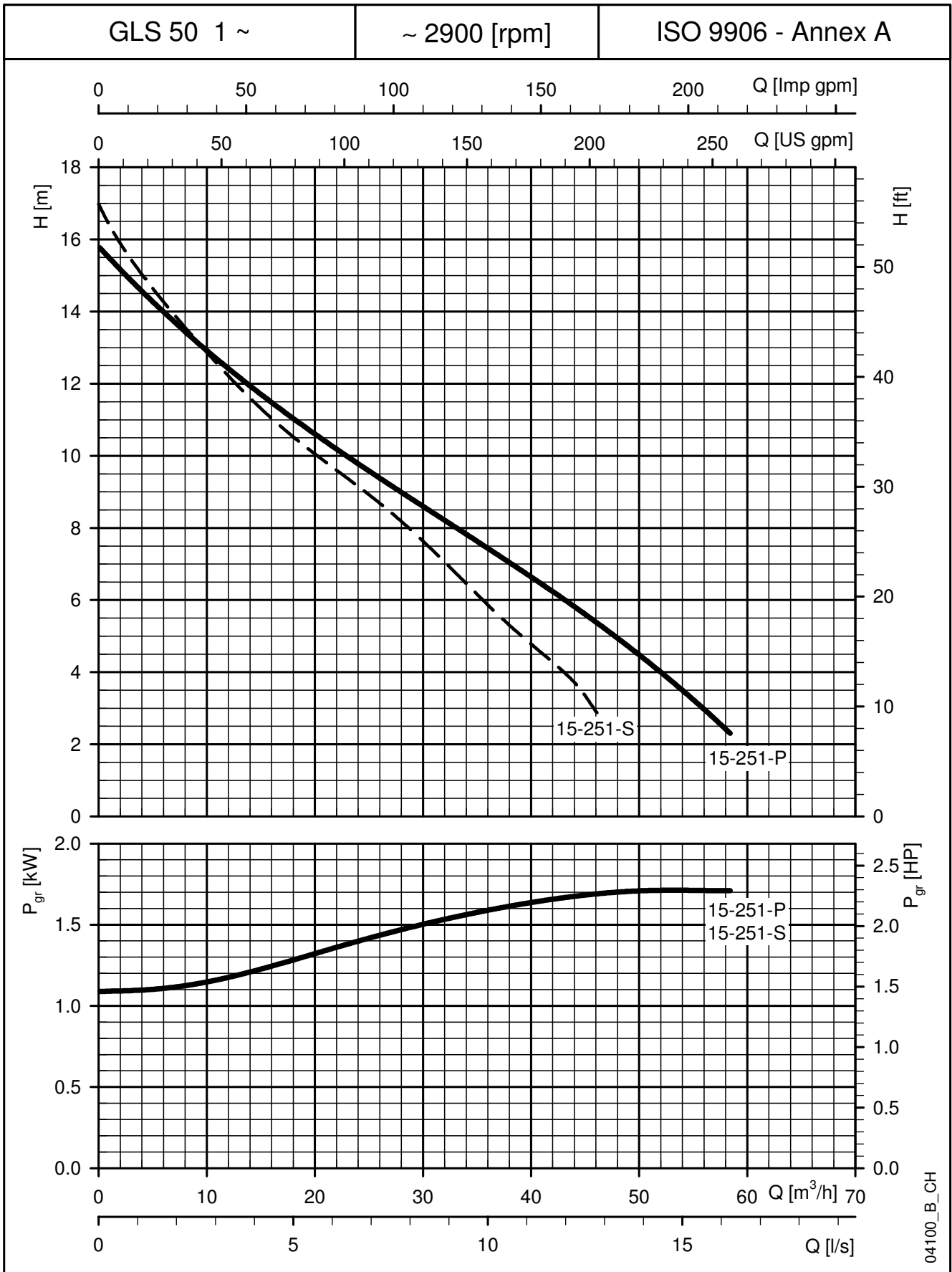
** P2 = Rated shaft power.



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GLS 50 SERIES (SINGLE-PHASE) OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

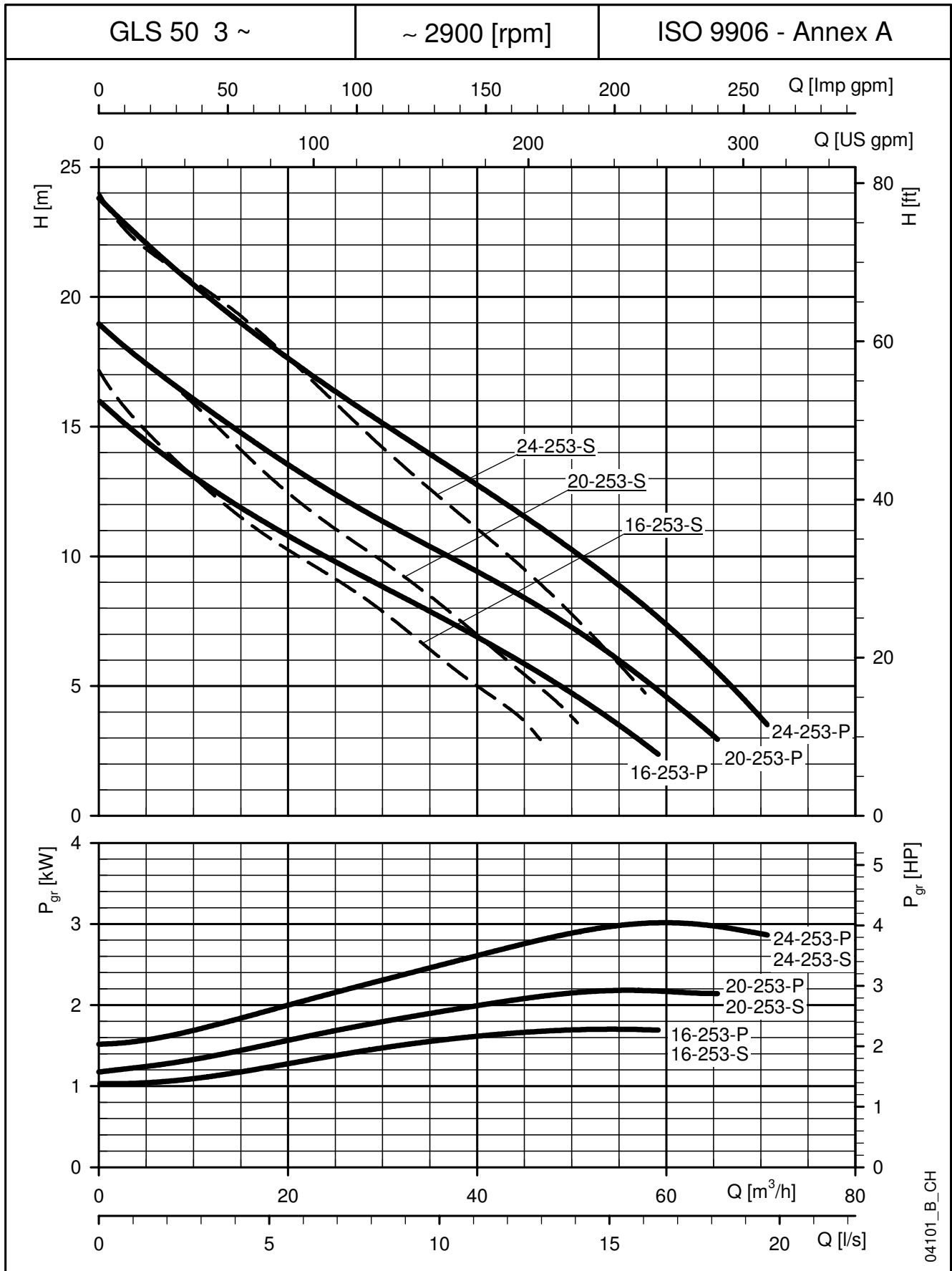


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GLS 50 SERIES (THREE-PHASE)

OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



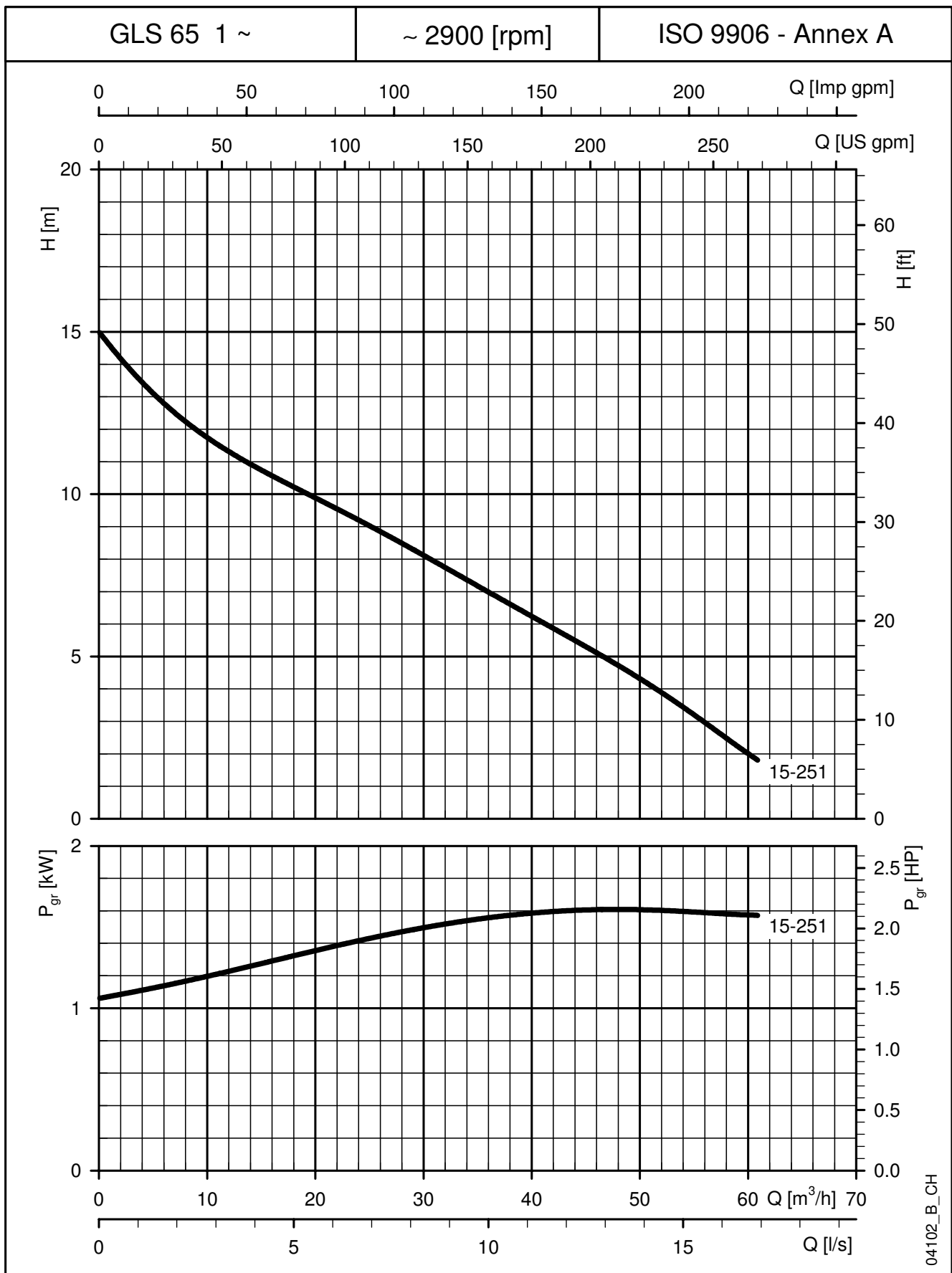
These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.



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GLS 65 SERIES (SINGLE-PHASE) OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

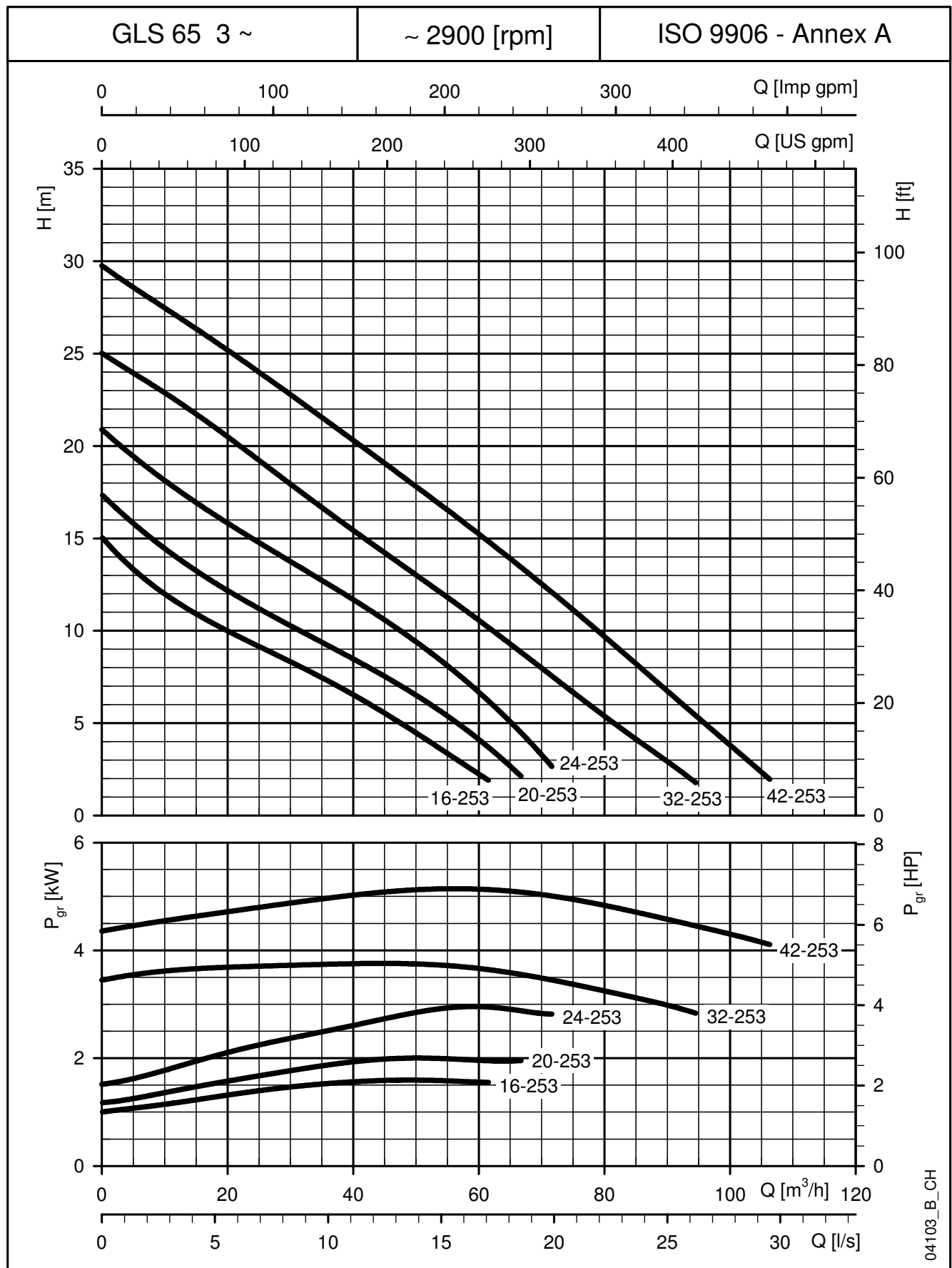


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GLS 65 SERIES (THREE-PHASE)

OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



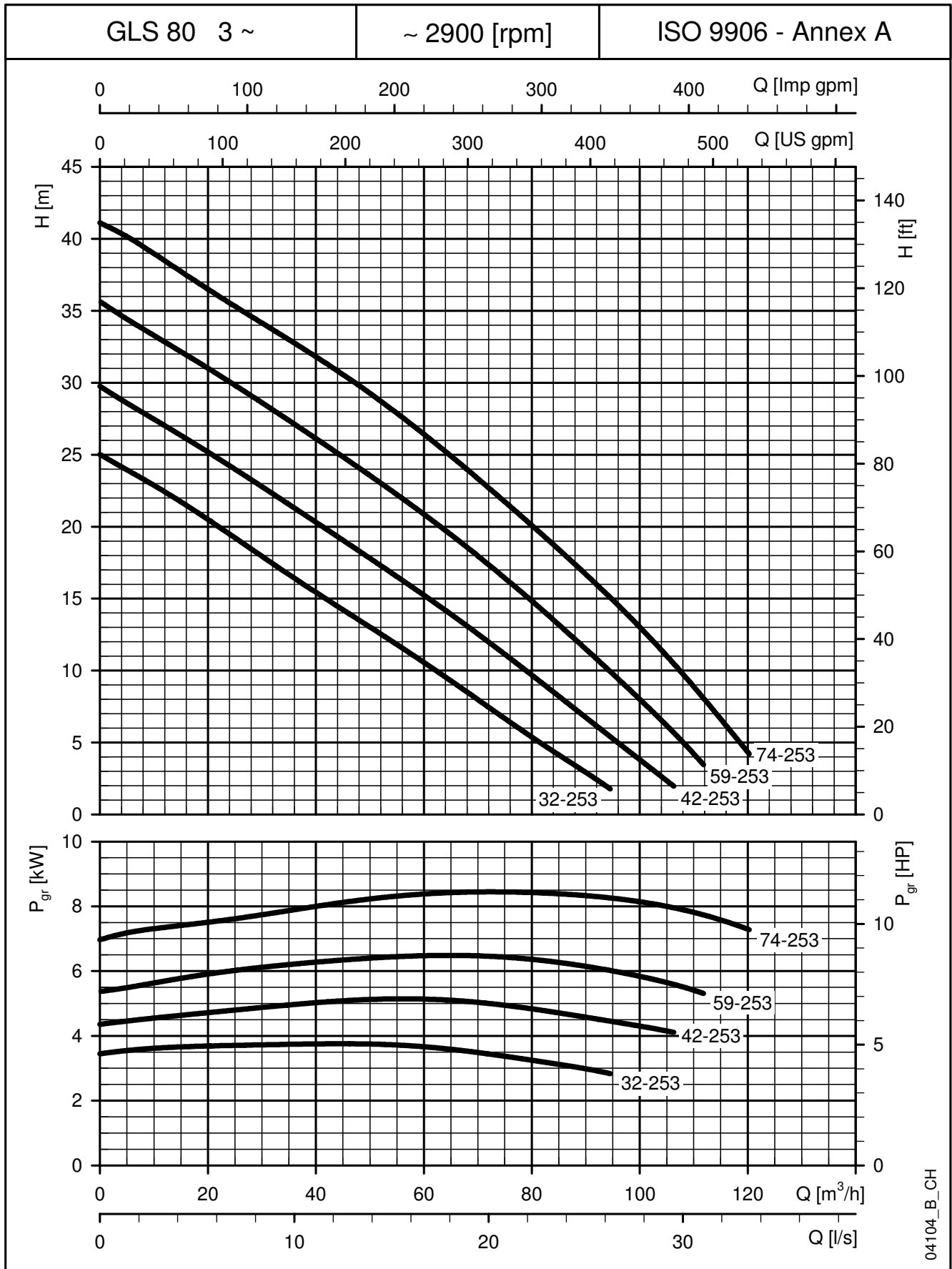
These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.



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GLS 80 SERIES (THREE-PHASE) OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



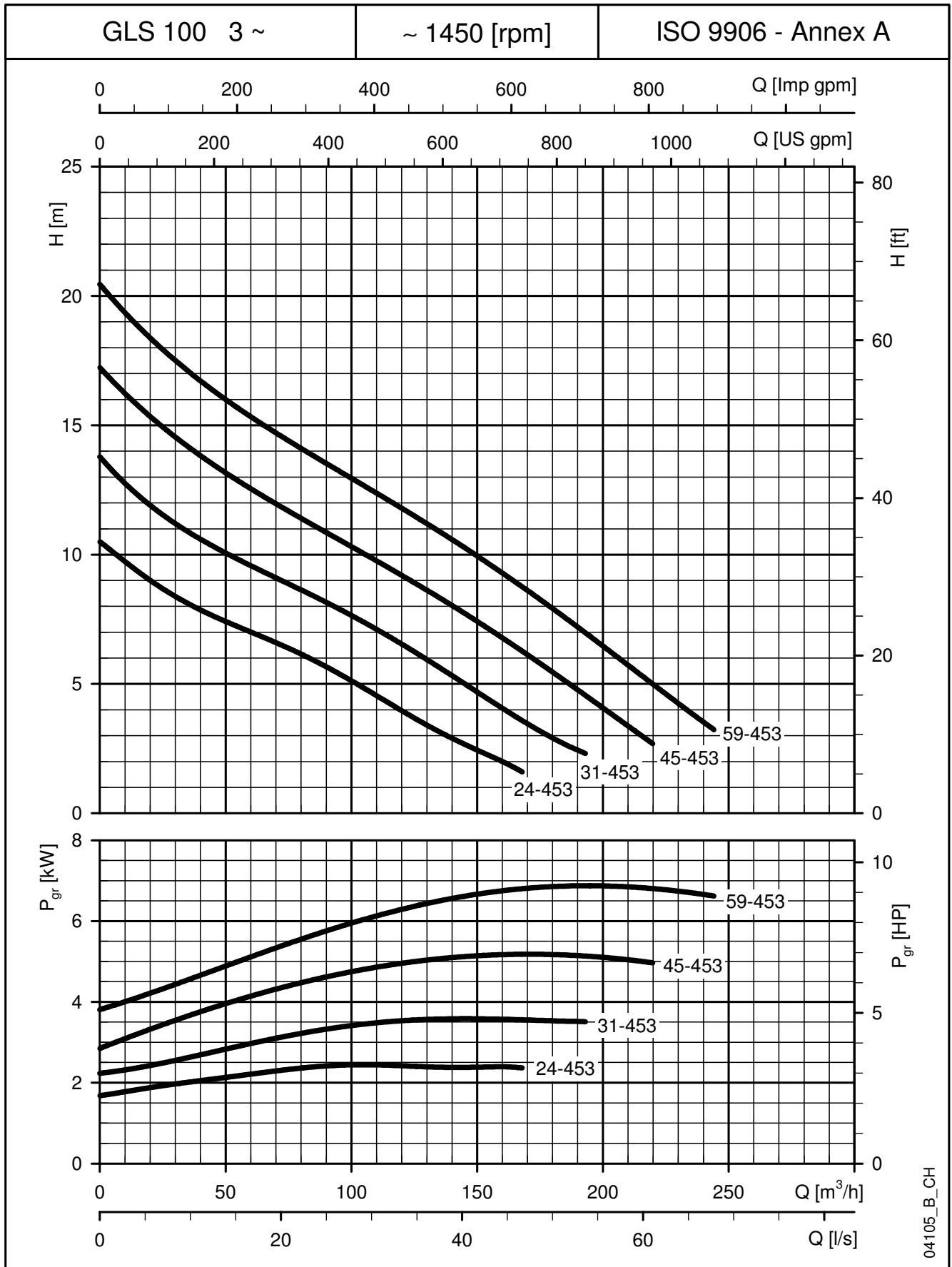
These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.



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GLS 100 SERIES (THREE-PHASE) OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.



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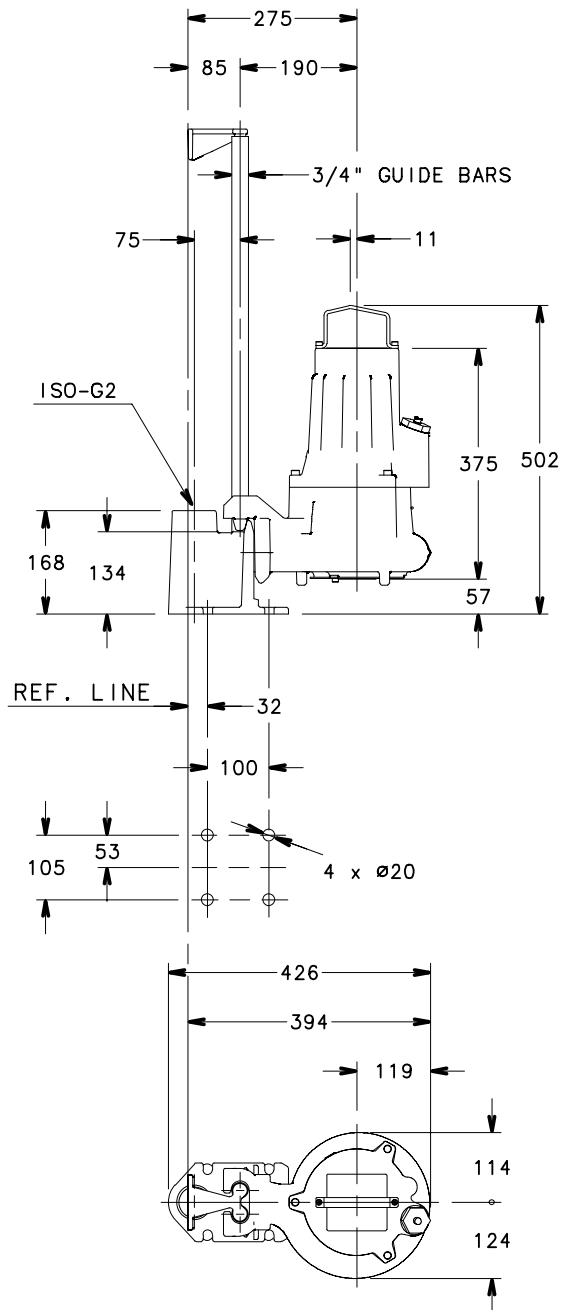
GLS SERIES DIMENSIONS AND WEIGHTS



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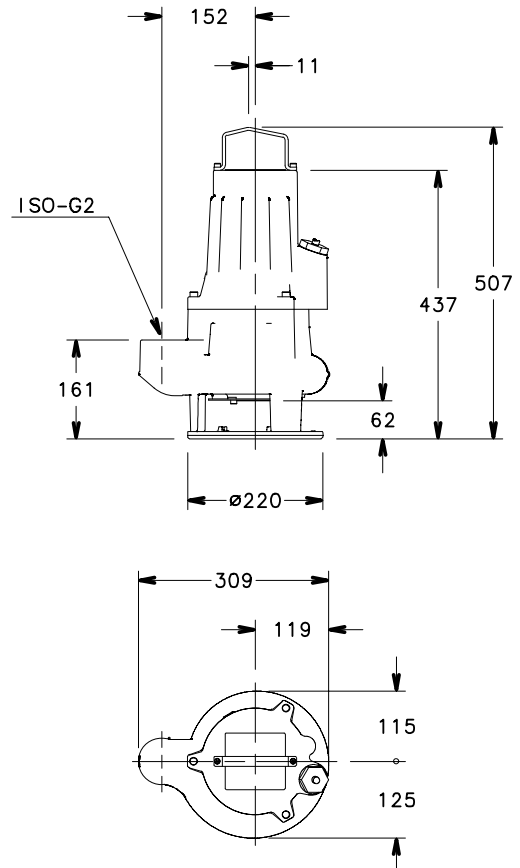
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GLS 50 SERIES (DN50) DIMENSIONS AND WEIGHTS



PUMP TYPE	WEIGHT kg
GLS 50-15-251-P-B	35
GLS 50-16-253-P-B	35
GLS 50-20-253-P-B	35
GLS 50-24-253-P-B	35

gls50-p-2p50-en_a_td



PUMP TYPE	WEIGHT kg
GLS 50-15-251-S-B	35
GLS 50-16-253-S-B	35
GLS 50-20-253-S-B	35
GLS 50-24-253-S-B	35

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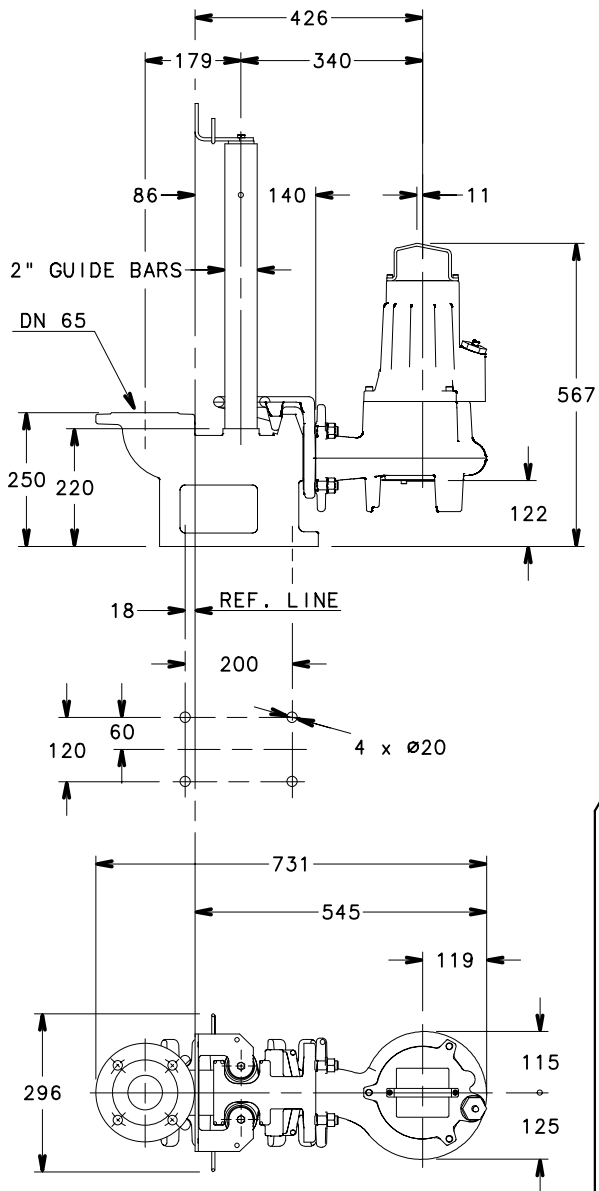
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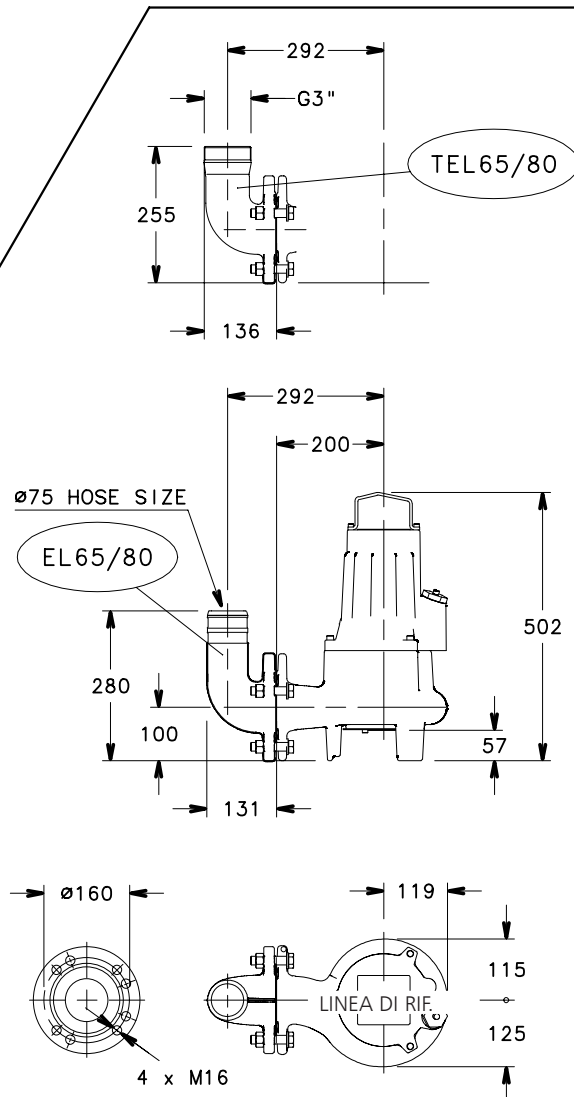
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GLS 65 SERIES (DN65) DIMENSIONS AND WEIGHTS



PUMP TYPE	WEIGHT kg
GLS 65-15-251-B	40
GLS 65-16-253-B	40
GLS 65-20-253-B	40
GLS 65-24-253-B	40

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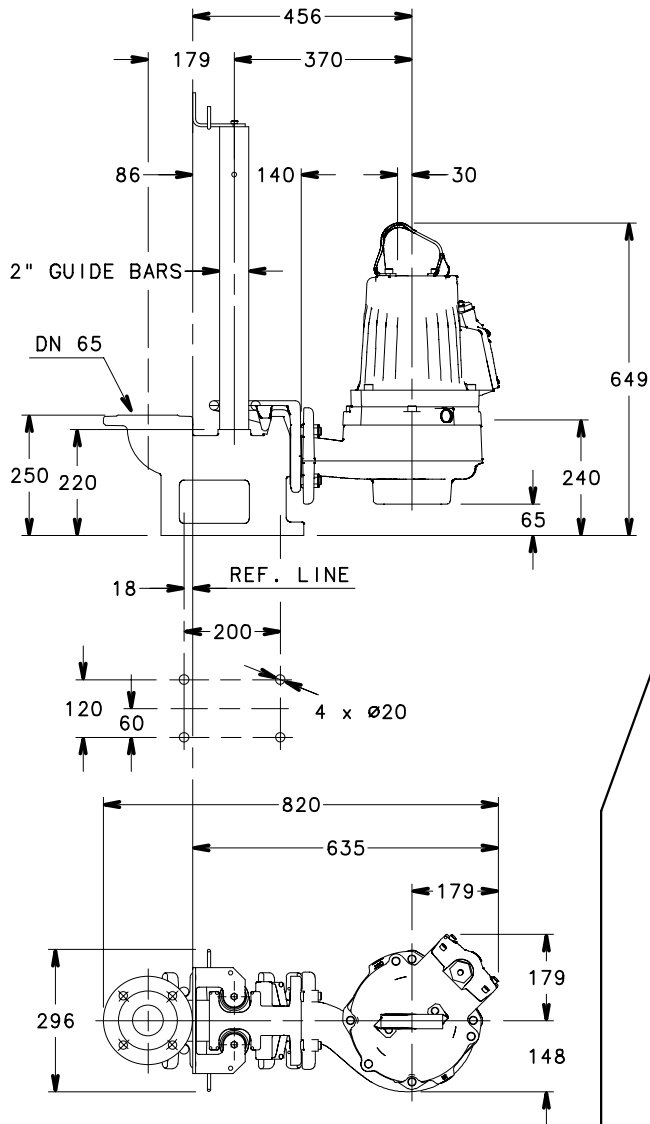
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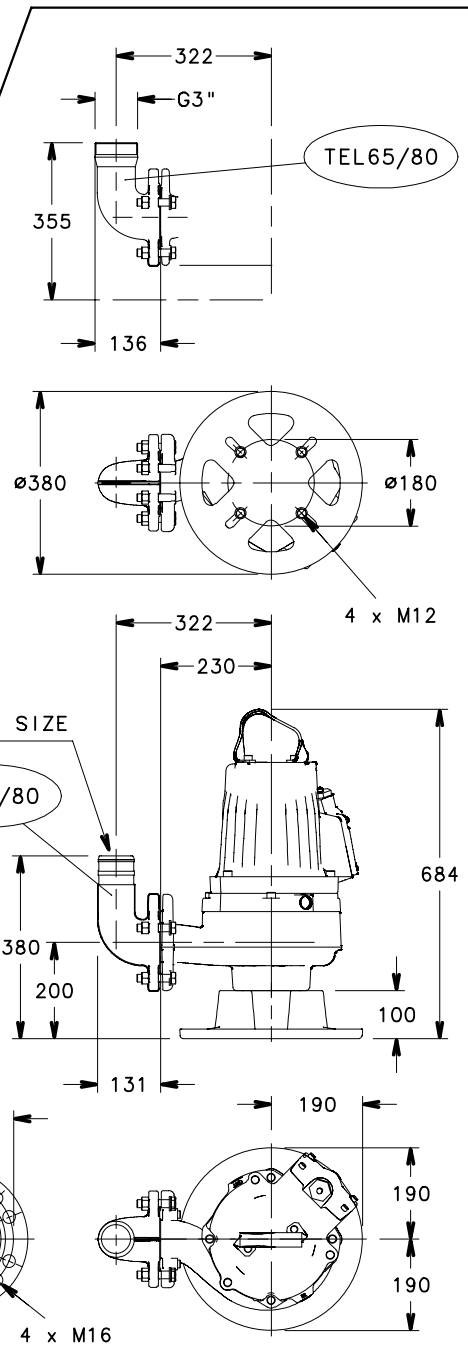
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GLS 65 SERIES (DN65) DIMENSIONS AND WEIGHTS



PUMP TYPE	WEIGHT kg
GLS 65-32-253-B	55
GLS 65-42-253-B	55

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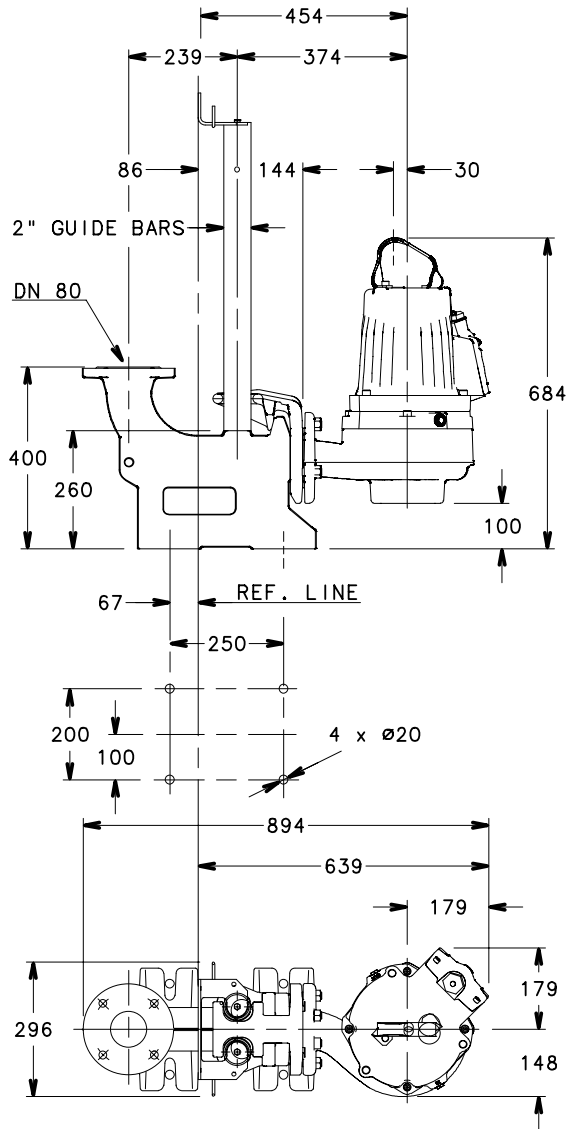
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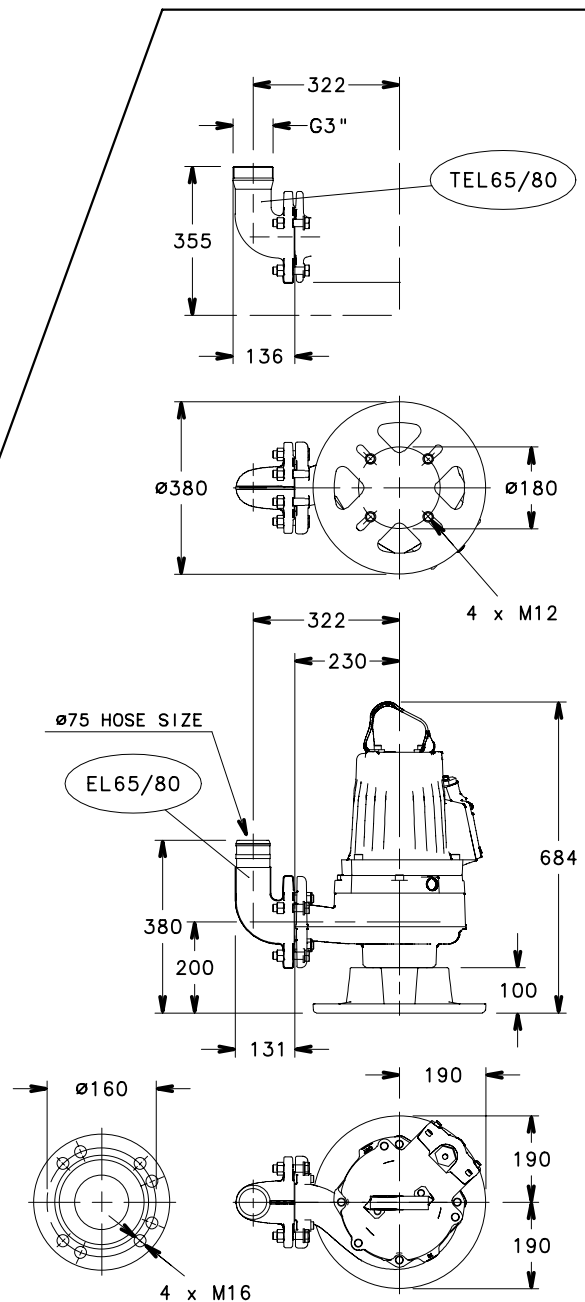
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GLS 80 SERIES (DN80) DIMENSIONS AND WEIGHTS



PUMP TYPE	WEIGHT kg
GLS 80-32-253-B	55
GLS 80-42-253-B	55

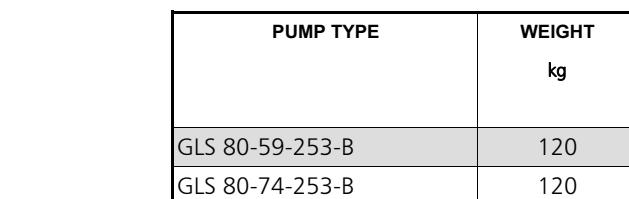
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GLS 80 SERIES (DN80) DIMENSIONS AND WEIGHTS

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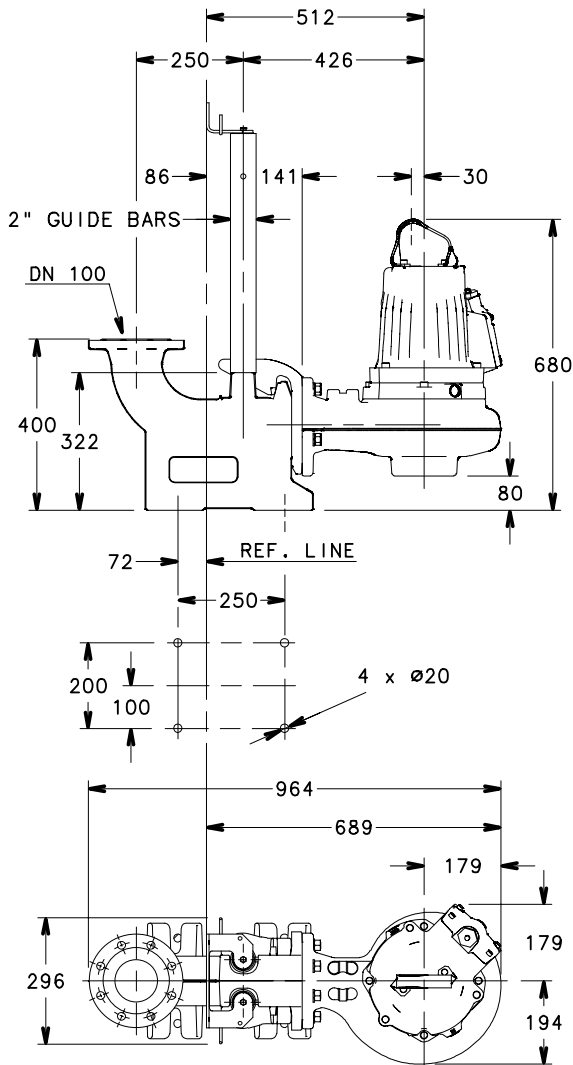
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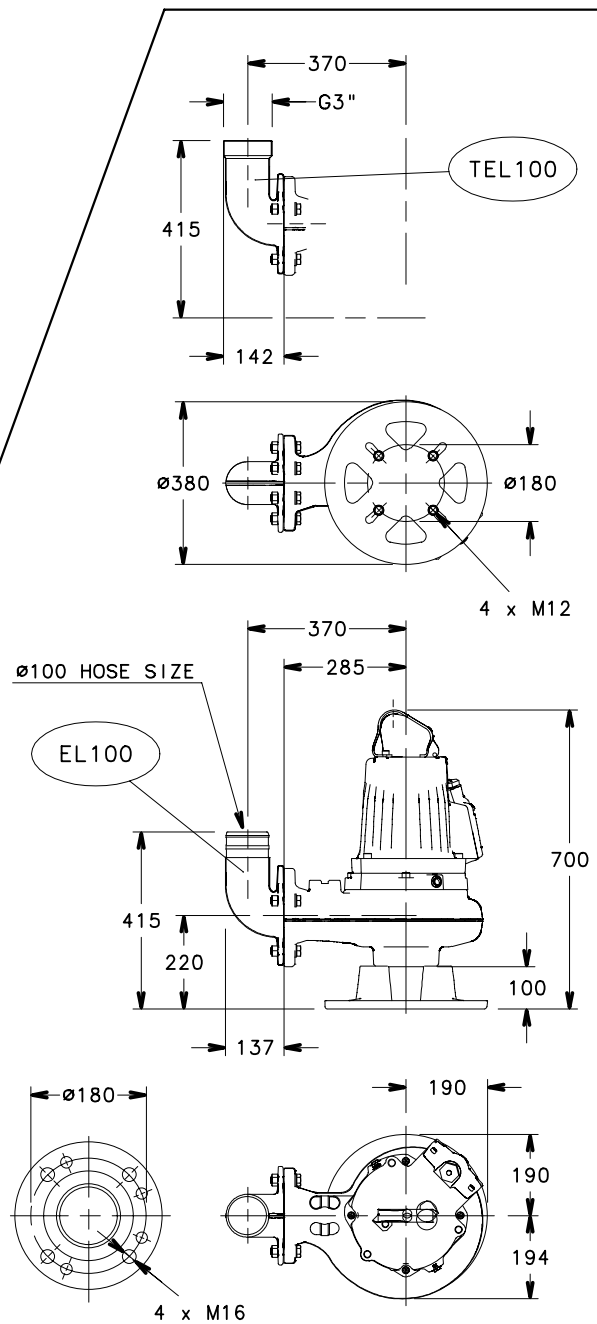
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GLS 100 SERIES (DN100) DIMENSIONS AND WEIGHTS



PUMP TYPE	WEIGHT kg
GLS 100-24-253-B	65
GLS 100-31-253-B	65

gls100-1-2p50-en_a_td



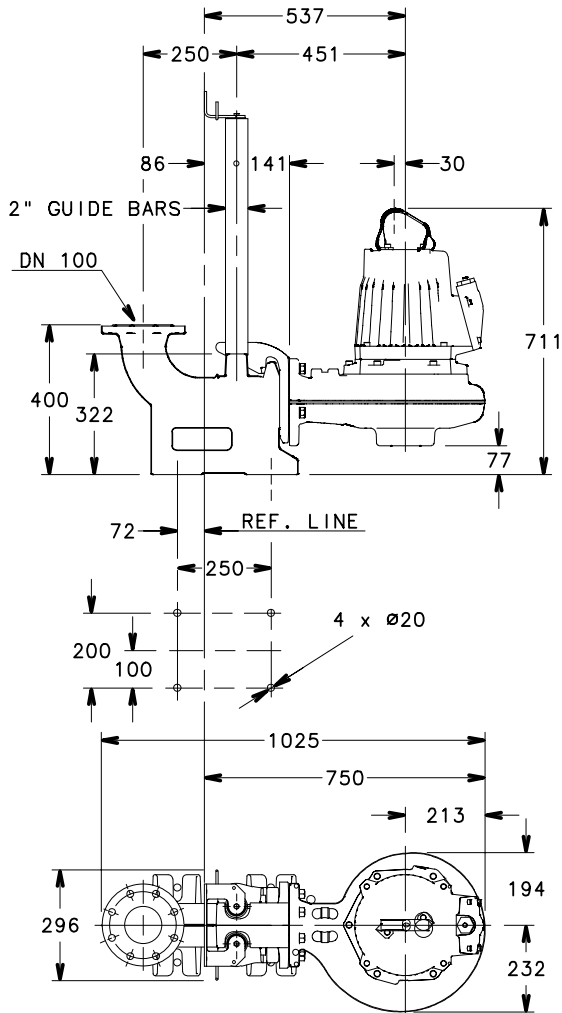
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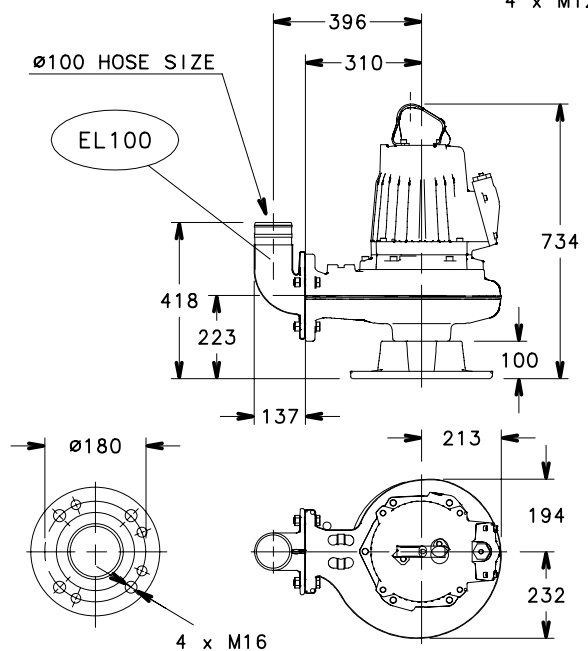
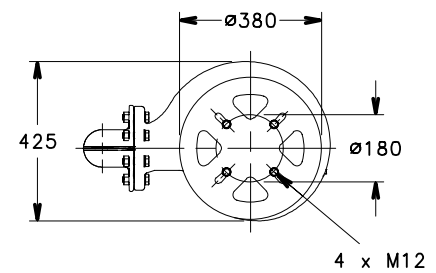
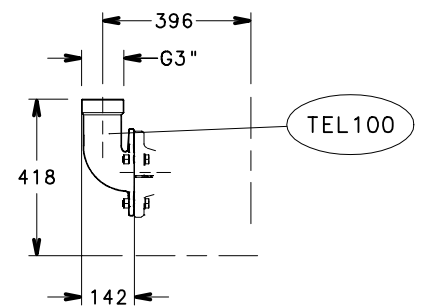
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GLS 100 SERIES (DN100) DIMENSIONS AND WEIGHTS



PUMP TYPE	WEIGHT kg
GLS 100-45-253-B	135
GLS 100-59-253-B	135

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Submersible Electric Pumps

MARKET SECTORS

RESIDENTIAL AND COMMERCIAL BUILDINGS, INDUSTRIES.

GLV Series



APPLICATIONS

- Submersible pump for pumping clean water, surface water and wastewater containing solids or long-fibred material. The vortex impeller is the best choice in low volume, high head applications and in media which contains sand and other abrasive solids.

SPECIFICATIONS

- **Delivery:** up to 200 m³/h.
- **Head:** up to 29 m.
- **Free passage:** up to 100 mm (see hydraulic data table).
- **Discharge connection:** DN 50 - 65 - 80 - 100 mm.
- **Motor power:** up to 7,4 kW.
- Maximum liquid **temperature:** 40 °C.
- Maximum immersion **depth:** 20 m.
- pH **pumped liquid:** pH 5,5-14.
- Maximum liquid **density:** 1100 Kg/m³.
- Motor with IP68 **protection** and class H insulation(180°C).
- **Power supply** 230V single-phase, 400V three-phase, 50 Hz.
- Voltage **variation:**
 - continuous running: max ±5%.
 - intermittent running: max ±10%.
- Voltage **imbalance** between phases: max 2%.
- Maximum number of starts per hour: 30.

OPTIONAL FEATURES

- 20 m cable.
- Explosion proof version.
- Different voltages: 380V and 415V for three-phase version, 220V and 240V for single-phase version.

ACCESSORIES / INSTALLATION

- Lowering system.
- 90° delivery elbow with hose connector.
- 90° threaded delivery elbow.
- Stand.
- Non-return ball valve.
- Float for solid-laden waters.
- Command and control panels.

CONSTRUCTION CHARACTERISTICS

- Sturdy cast iron construction.
- Vortex-type open **impeller**.
- **Double seal:** Tungsten Carbide/Ceramic on pump side, Carbon/Ceramic on motor side, with interposed oil chamber.
- **Cable** (10 m standard version):
 - Direct-on-line start: SUBCAB® 4G1,5+2x1,5.
 - Y/D start: SUBCAB® 7G2,5+2x1,5.
- Motor thermal **protection:** opening temperature 125°C.



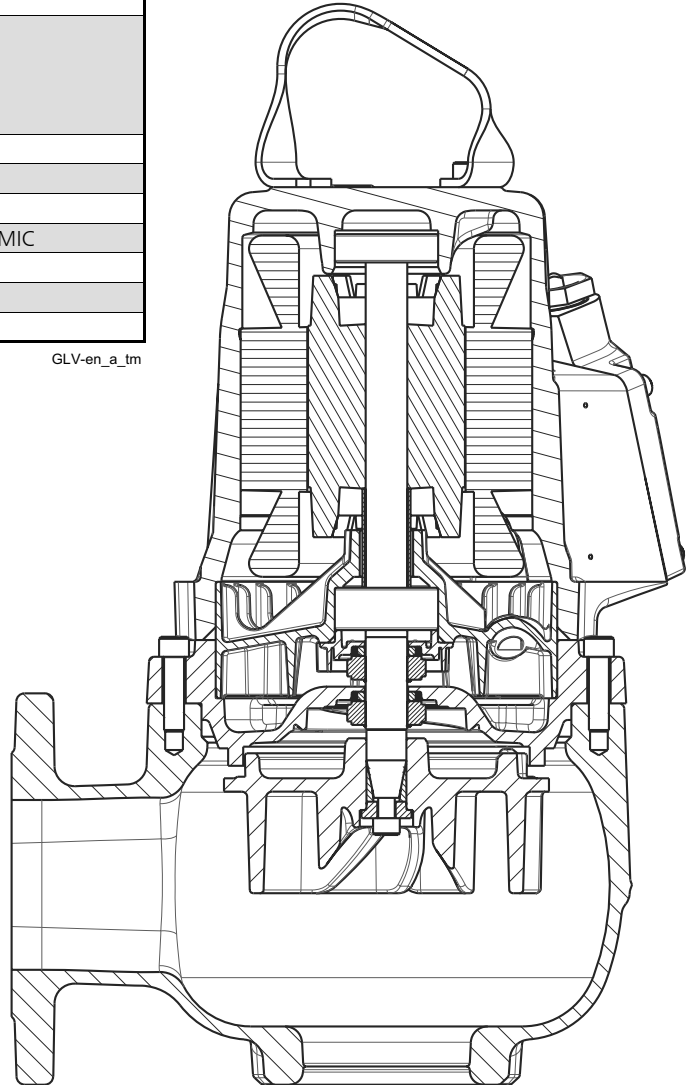
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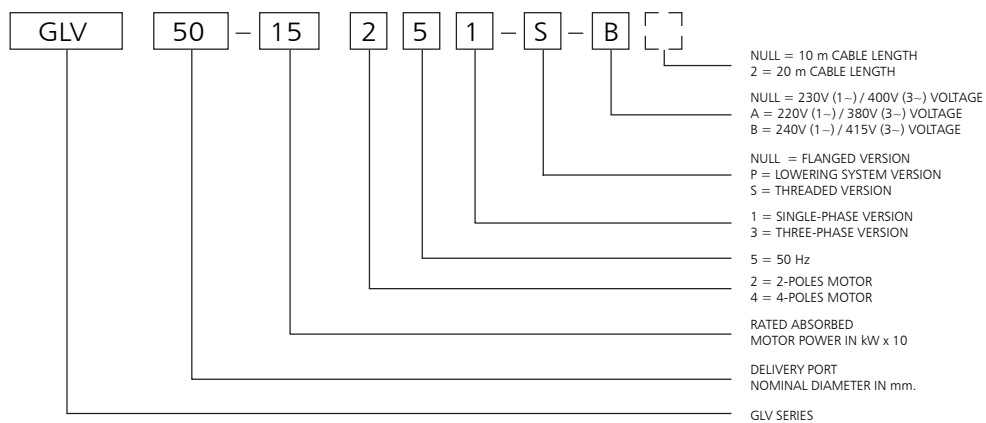
GLV SERIES PUMP SECTION AND TABLE OF MATERIALS

PART	MATERIAL
Motor casing	GREY IRON
Seal oil chamber	
Pump body	
Impeller	
Shaft	431 STAINLESS STEEL
Bearings	BALL TYPE
Motor-side seal	CARBONE / CERAMICA
Pump-side seal	TUNGSTEN CARBIDE / CERAMIC
Gaskets	NITRILE RUBBER
Bolts and screws	304 STAINLESS STEEL
Power cord	CPE ELASTOMER

GLV-en_a_tm



IDENTIFICATION CODE



EXAMPLE : GLV 50-15 251-S-B

GLV series electric pump, 50 mm nominal delivery port, 1,5 kW rated absorbed motor power, 2-poles version, 50 Hz, single-phase, threaded version, 415 V of voltage, 10 m cable length.

GLV SERIES

ELECTRICAL DATA TABLE AT 50 Hz

PUMP TYPE	min ⁻¹	Pgr (P1) kW *	(P2) Nom kW **	VOLTAGE / PHASES ***	CURRENT		START	ELECTRICAL TABLE TYPE	RUNNING CAPACITOR μF/V	STARTING CAPACITOR μF/V
					ABSORBED I _{abs} (A)	INRUSH I _{sp} (A)				
GLV 50-12-251-S	2900	1,5	1,2	230/1	6,7	32	DOL	4G1,5 + 2x1,5	35/400	100/330
GLV 50-12-251-P	2900	1,5	1,2	230/1	6,7	32	DOL	4G1,5 + 2x1,5	35/400	100/330
GLV 50-15-251-S	2900	2	1,5	230/1	8,4	32	DOL	4G1,5 + 2x1,5	35/400	100/330
GLV 50-15-251-P	2900	2	1,5	230/1	8,4	32	DOL	4G1,5 + 2x1,5	35/400	100/330
GLV 50-16-253-S	2900	1,9	1,6	400/3	3,6	27	DOL	4G1,5 + 2x1,5	-	-
GLV 50-16-253-P	2900	1,9	1,6	400/3	3,6	27	DOL	4G1,5 + 2x1,5	-	-
GLV 50-20-253-S	2900	2,6	2	400/3	4,3	27	DOL	4G1,5 + 2x1,5	-	-
GLV 50-20-253-P	2900	2,6	2	400/3	4,3	27	DOL	4G1,5 + 2x1,5	-	-
GLV 50-24-253-S	2900	3,2	2,4	400/3	5,1	27	DOL	4G1,5 + 2x1,5	-	-
GLV 50-24-253-P	2900	3,2	2,4	400/3	5,1	27	DOL	4G1,5 + 2x1,5	-	-
GLV 65-15-251	2900	2	1,5	230/1	8,4	32	DOL	4G1,5 + 2x1,5	35/400	100/330
GLV 65-15-253	2900	2	1,6	400/3	3,6	27	DOL	4G1,5 + 2x1,5	-	-
GLV 65-20-253	2900	2,5	2	400/3	4,3	27	DOL	4G1,5 + 2x1,5	-	-
GLV 65-24-253	2900	3,2	2,4	400/3	5,1	27	DOL	4G1,5 + 2x1,5	-	-
GLV 65-32-253	2900	3,8	3,2	400/3	6,1	52	YD	7G2,5 + 2x1,5	-	-
GLV 65-42-253	2900	5,3	4,2	400/3	8,2	52	YD	7G2,5 + 2x1,5	-	-
GLV 80-32-253	2900	3,8	3,2	400/3	6,1	52	YD	7G2,5 + 2x1,5	-	-
GLV 80-42-253	2900	5,3	4,2	400/3	8,2	52	YD	7G2,5 + 2x1,5	-	-
GLV 80-59-253	2900	6,9	5,9	400/3	11	114	YD	7G2,5 + 2x1,5	-	-
GLV 80-74-253	2900	8,7	7,4	400/3	14	114	YD	7G2,5 + 2x1,5	-	-
GLV 100-24-453	1450	2,8	2,4	400/3	5,5	38	YD	7G2,5 + 2x1,5	-	-
GLV 100-31-453	1450	3,7	3,1	400/3	6,7	38	YD	7G2,5 + 2x1,5	-	-
GLV 100-45-453	1450	5,3	4,5	400/3	9,7	77	YD	7G2,5 + 2x1,5	-	-
GLV 100-59-453	1450	7	5,9	400/3	12	77	YD	7G2,5 + 2x1,5	-	-

Stator thermal protection included in all models.

GLV-en_A_te

* Maximum value of absorbed motor power within the operating range.

** P2 = Rated shaft power.

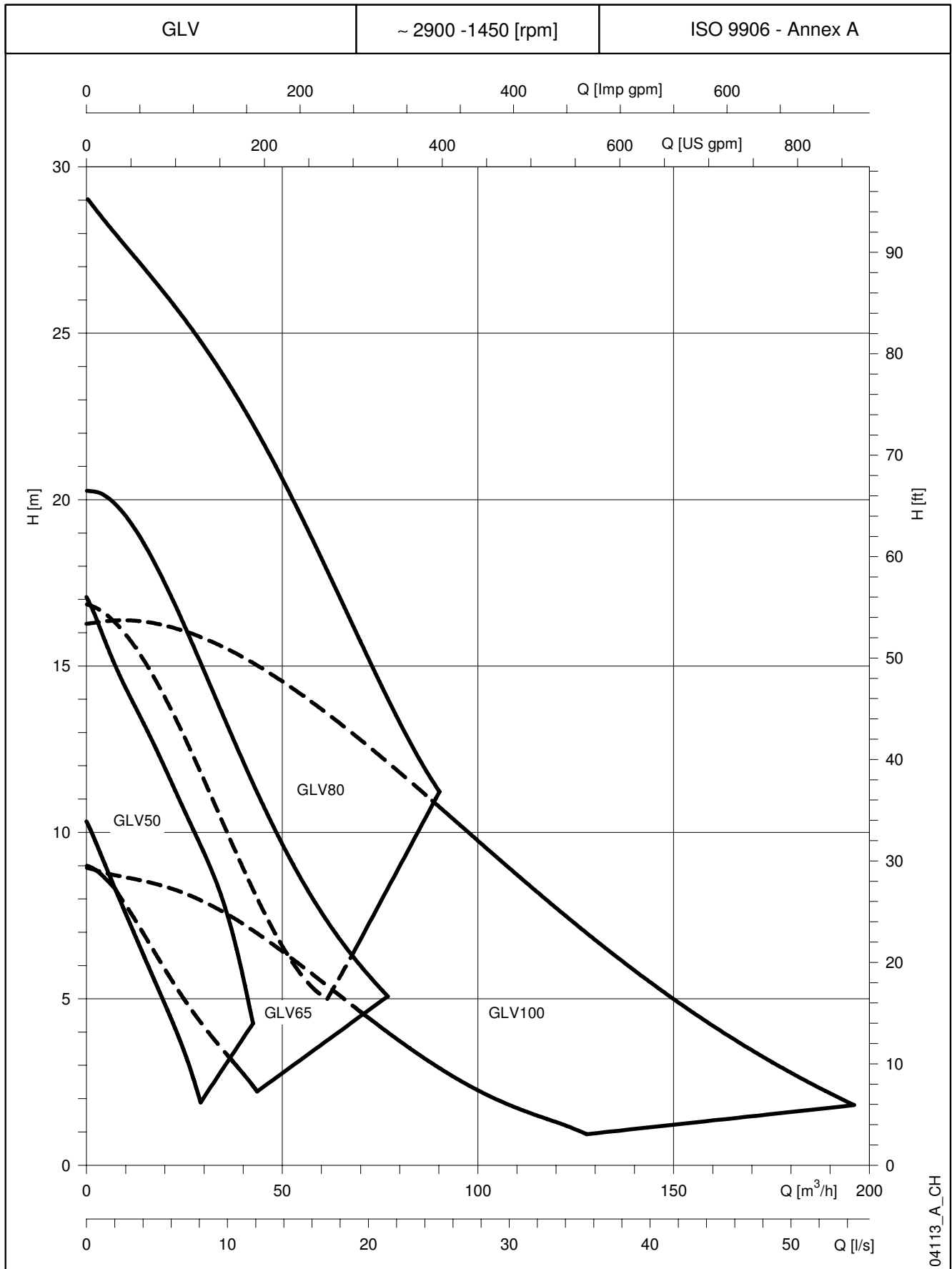
*** All the pumps are available also in 220 and 240 versions (single-phase) and 380 and 415 versions (three-phase).



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GLV SERIES HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 2 and 4 POLES



These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

GLV SERIES

HYDRAULIC PERFORMANCE TABLE AT 50 Hz

PUMP TYPE	Pgr (P1) kW *	(P2) Nom kW **	D Impeller mm	min ⁻¹	Q = DELIVERY															Passes solids up to (mm)
					l/s 0	2	4	6	8	10	12,5	15	20	25	30	35	40	45	54	
					m³/h 0	7,2	14,4	21,6	28,8	36	45	54	72	90	108	126	144	162	196	
H = TOTAL HEAD METRES COLUMN OF WATER																				
GLV 50-12-251-S	1,5	1,2	104	2900	10,3	8,2	6,1	4,0	1,5											48
GLV 50-12-251-P	1,5	1,2	104	2900	10,3	8,3	6,4	4,4	2,0											48
GLV 50-15-251-S	2	1,5	118	2900	14,1	11,8	9,8	7,5	4,7											48
GLV 50-15-251-P	2	1,5	118	2900	13,4	11,7	9,9	7,9	5,4											48
GLV 50-16-253-S	1,9	1,6	104	2900	10,4	8,3	6,2	4,1	1,6											48
GLV 50-16-253-P	1,9	1,6	104	2900	10,4	8,4	6,5	4,5	2,2											48
GLV 50-20-253-S	2,6	2	118	2900	14,2	12,0	10,0	7,7	5,0											48
GLV 50-20-253-P	2,6	2	118	2900	13,6	11,8	10,2	8,2	5,6											48
GLV 50-24-253-S	3,2	2,4	128	2900	17,5	15,1	13,0	10,8	8,5	5,8										48
GLV 50-24-253-P	3,2	2,4	128	2900	17,1	15,0	13,3	11,5	9,7	7,5										48
GLV 65-15-251	2	1,5	105	2900	9,0	8,3	7,0	5,6	4,3	3,3										65
GLV 65-15-253	2	1,6	105	2900	9,1	8,4	7,1	5,7	4,5	3,4										65
GLV 65-20-253	2,5	2	117	2900	11,7	10,9	9,5	8,0	6,4	5,1	3,5									65
GLV 65-24-253	3,2	2,4	129	2900	14,6	13,6	12,2	10,7	9,1	7,6	5,7	3,6								65
GLV 65-32-253	3,8	3,2	138	2900	16,9	16,3	15,2	13,7	11,9	10,0	7,7	5,9								65
GLV 65-42-253	5,3	4,2	155	2900	20,3	19,9	18,7	17,1	15,2	13,2	10,8	8,8	5,7							65
GLV 80-32-253	3,8	3,2	138	2900	16,9	16,3	15,2	13,7	11,9	10,0	7,7	5,9								65
GLV 80-42-253	5,3	4,2	155	2900	20,3	19,9	18,7	17,1	15,2	13,2	10,8	8,8	5,7							65
GLV 80-59-253	6,9	5,9	159	2900	24,4	23,4	22,4	21,5	20,3	19,0	17,1	14,8	10,2							65
GLV 80-74-253	8,7	7,4	168	2900	29,1	28,0	27,0	26,0	24,8	23,5	21,7	19,7	15,2	11,2						65
GLV 100-24-453	2,8	2,4	175	1450	8,9	8,7	8,5	8,3	8,0	7,5	6,9	6,1	4,4	2,9	1,8	1,0				80
GLV 100-31-453	3,7	3,1	193	1450	11,1	10,9	10,7	10,4	10,1	9,7	9,2	8,6	7,1	5,6	4,1	2,8	1,9			80
GLV 100-45-453	5,3	4,5	204	1450	13,2	13,2	13,2	13,0	12,7	12,3	11,7	11,0	9,5	7,9	6,2	4,8	3,4	2,3		100
GLV 100-59-453	7	5,9	223	1450	16,3	16,4	16,3	16,2	15,9	15,5	14,9	14,2	12,6	10,8	8,9	7,1	5,5	4,0	1,8	100

Performances according to ISO Standard 9906 –Annex A.

GLV-50-en_a_th

These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

* Maximum value of absorbed motor power within the operating range.

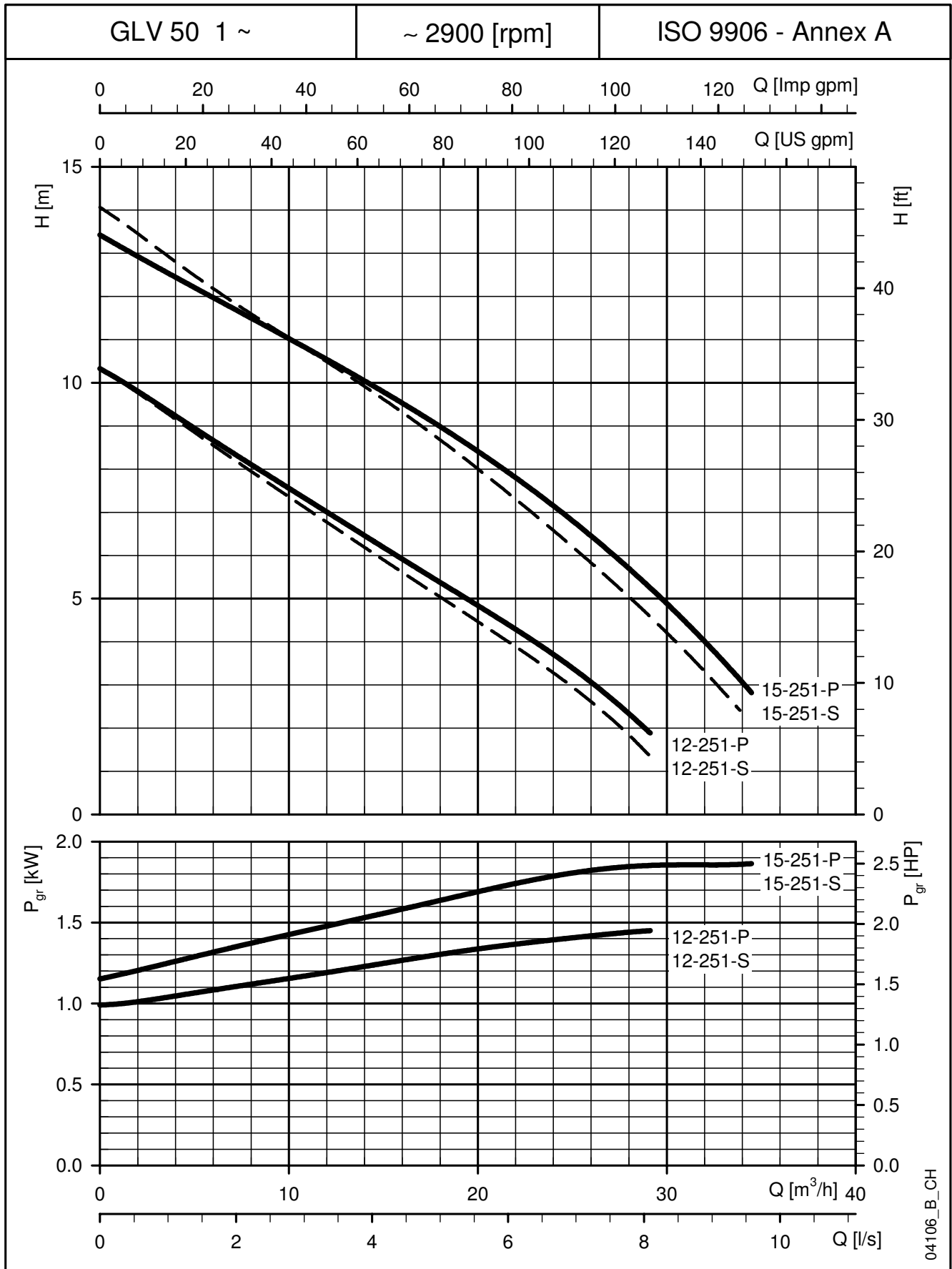
** P2 = Rated shaft power.



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GLV 50 SERIES (SINGLE-PHASE) OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



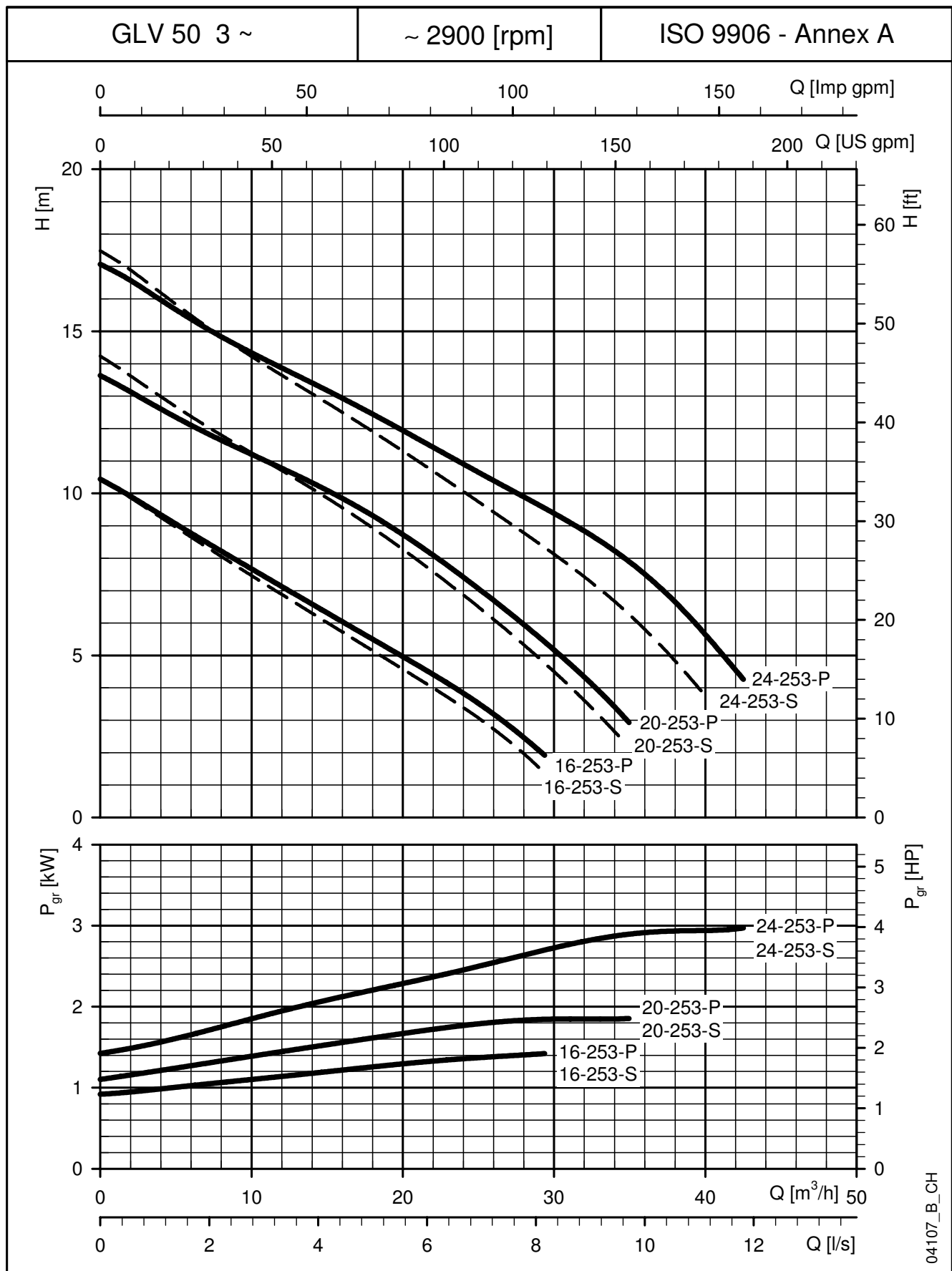
These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.



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GLV 50 SERIES (THREE-PHASE) OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



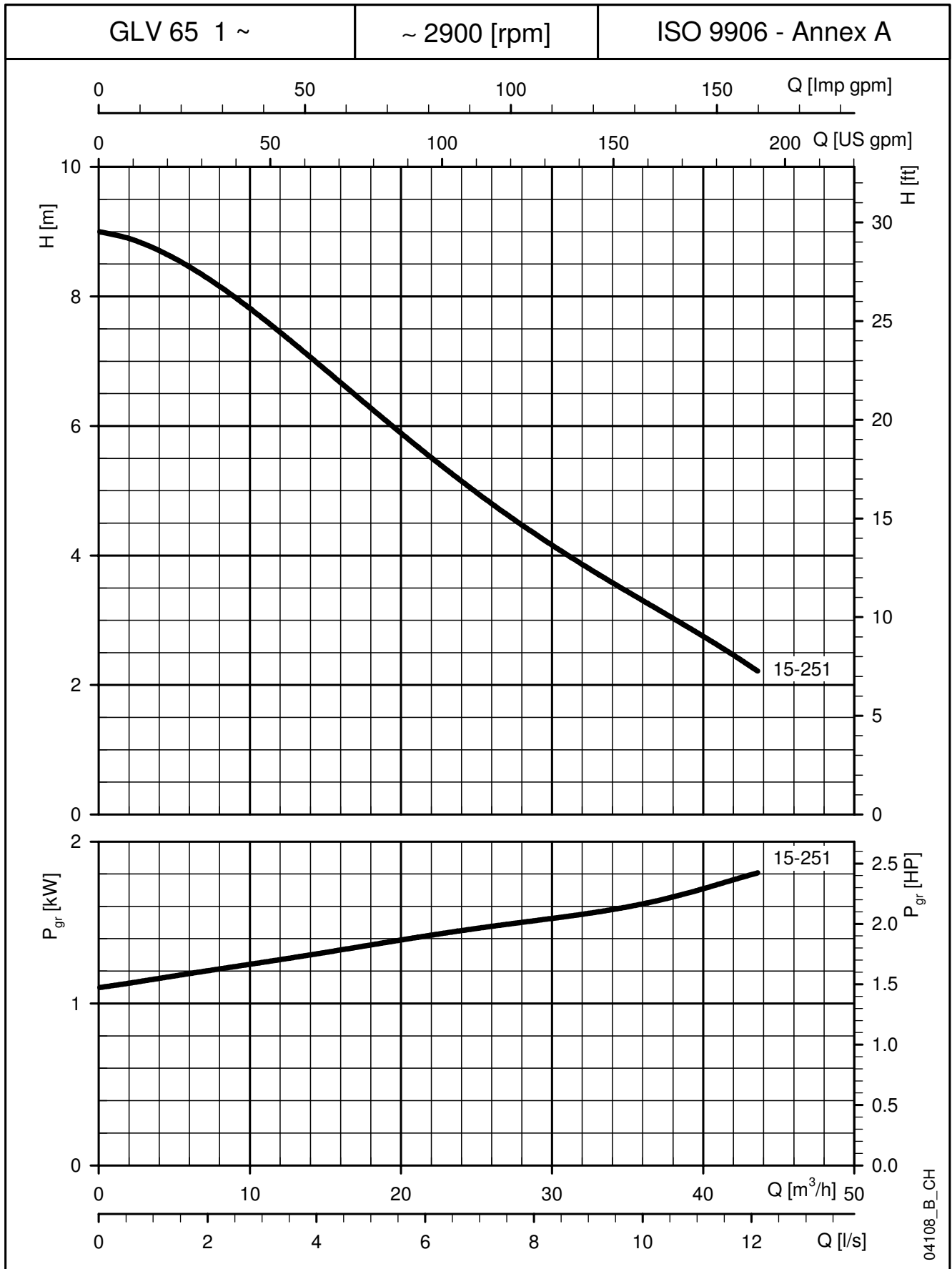
These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.



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GLV 65 SERIES (SINGLE-PHASE) OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



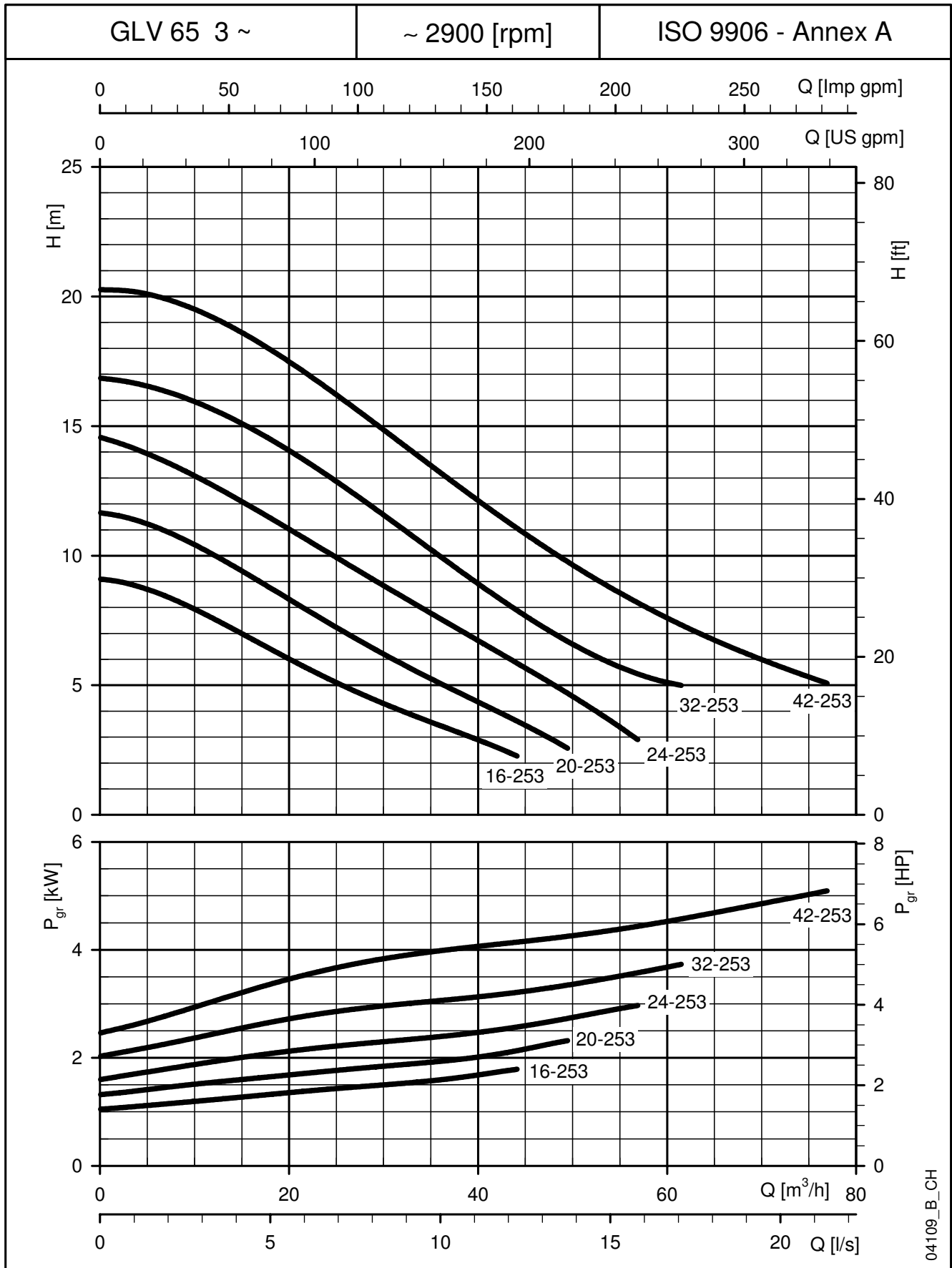
These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.



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GLV 65 SERIES (THREE-PHASE) OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



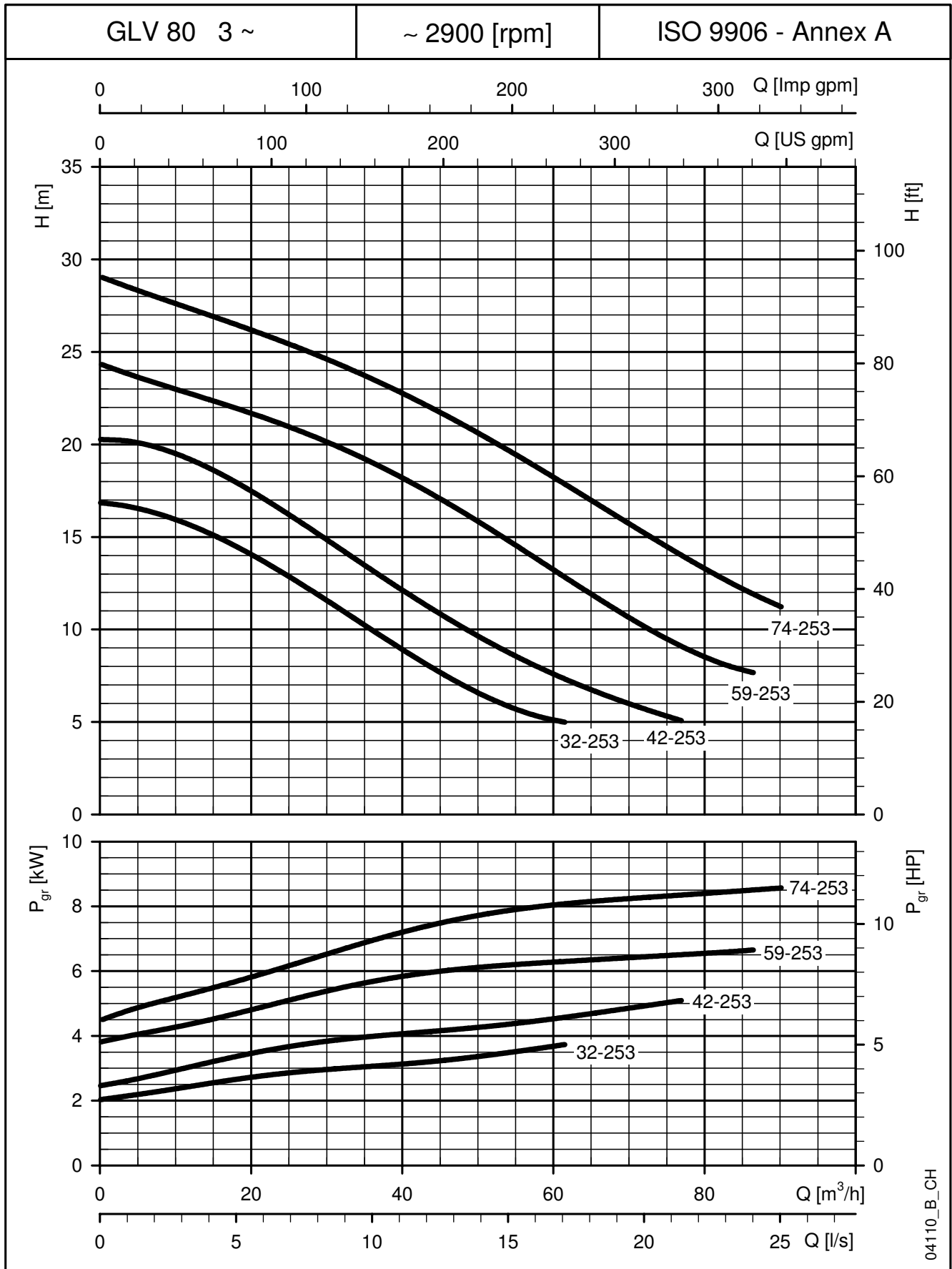
These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.



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GLV 80 SERIES (THREE-PHASE) OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



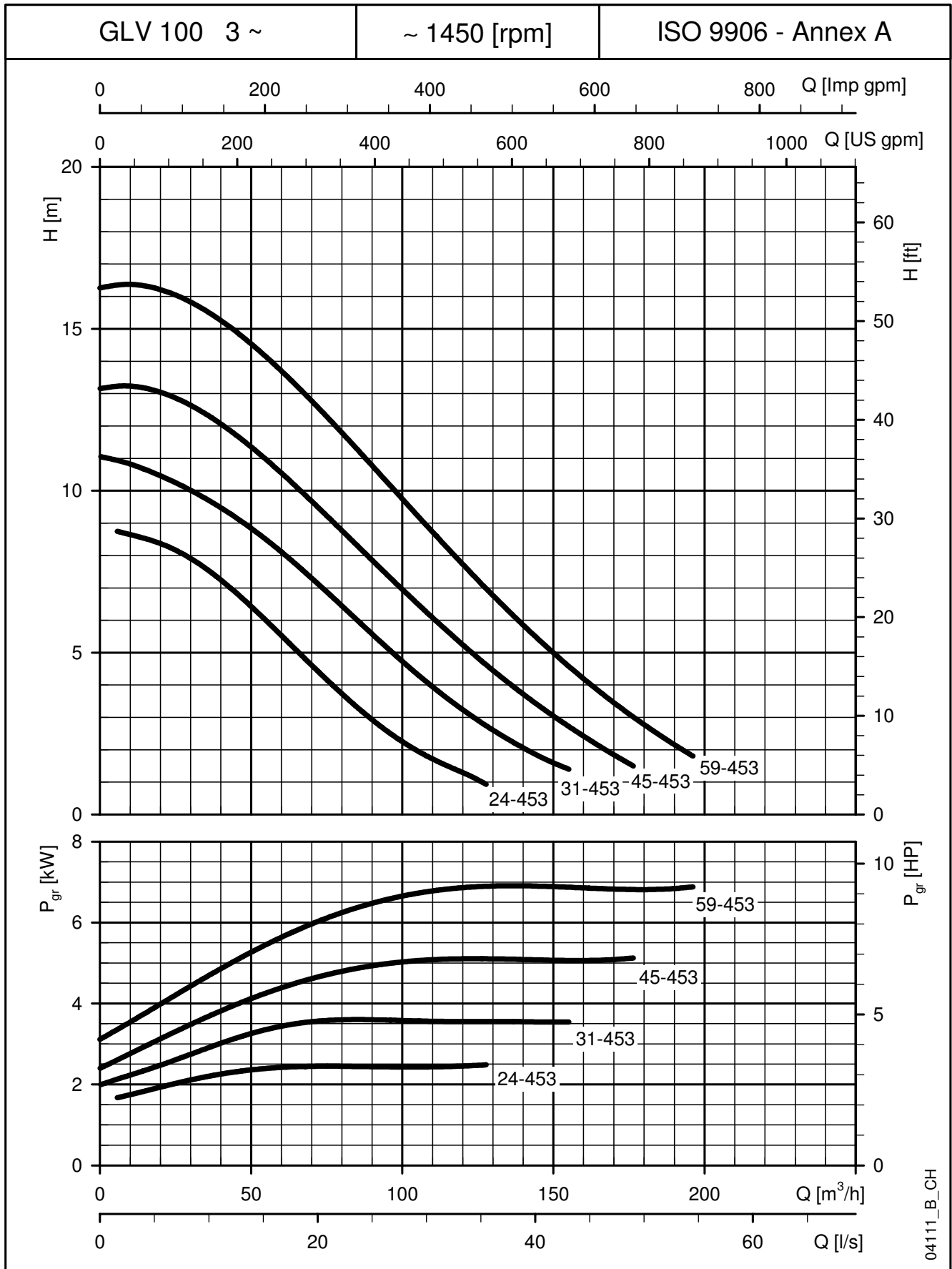
These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.



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GLV 100 SERIES (THREE-PHASE) OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.



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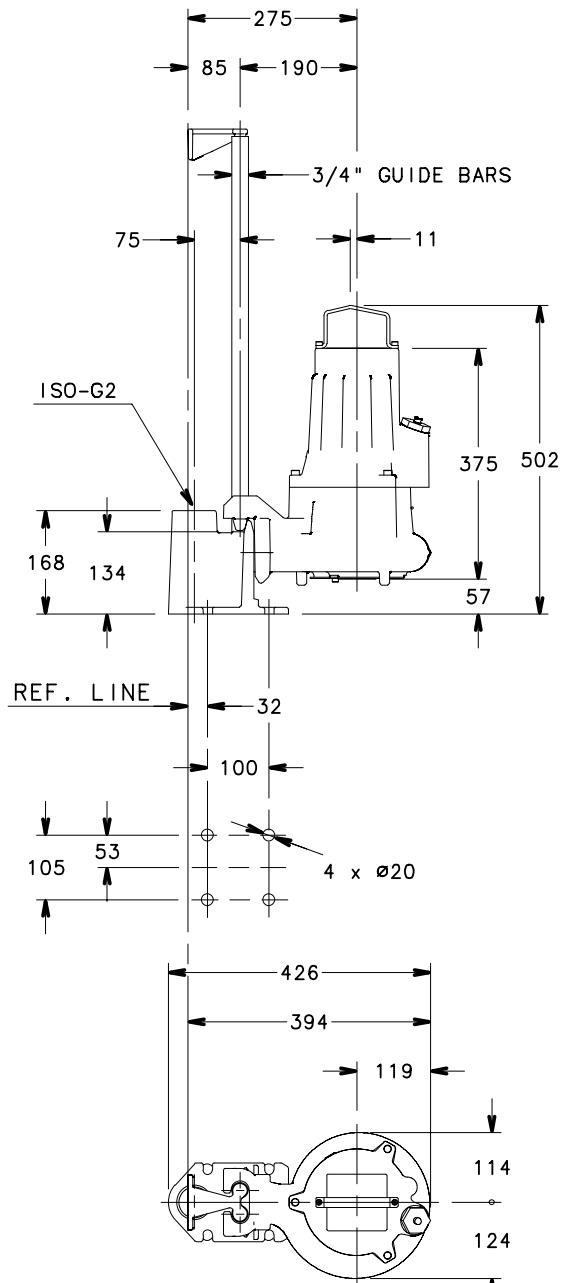
GLV SERIES DIMENSIONS AND WEIGHTS



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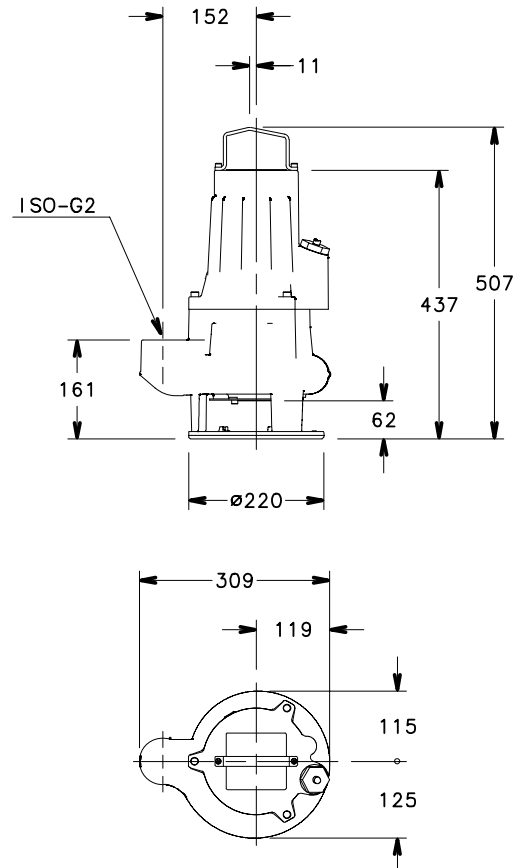
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GLV 50 SERIES (DN50) DIMENSIONS AND WEIGHTS



PUMP TYPE	WEIGHT kg
GLV 50-12-251-P-B	35
GLV 50-15-251-P-B	35
GLV 50-16-253-P-B	35
GLV 50-20-253-P-B	35
GLV 50-24-253-P-B	35

glv50-p-2p50-en_a_td



PUMP TYPE	WEIGHT kg
GLV 50-12-251-S-B	35
GLV 50-15-251-S-B	35
GLV 50-16-253-S-B	35
GLV 50-20-253-S-B	35
GLV 50-24-253-S-B	35

glv50-s-2p50-en_a_td

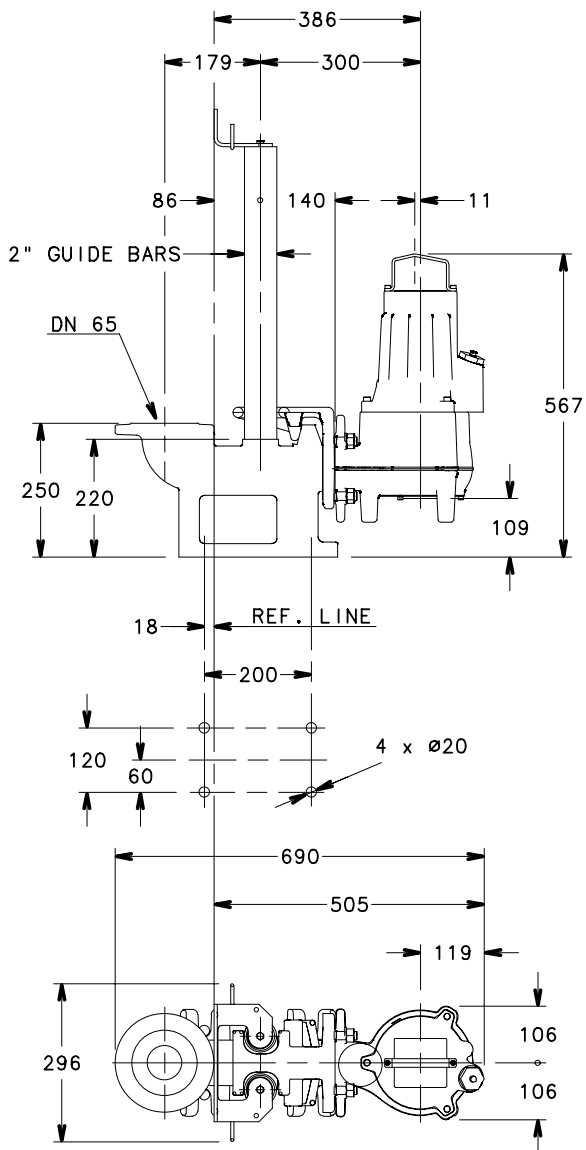
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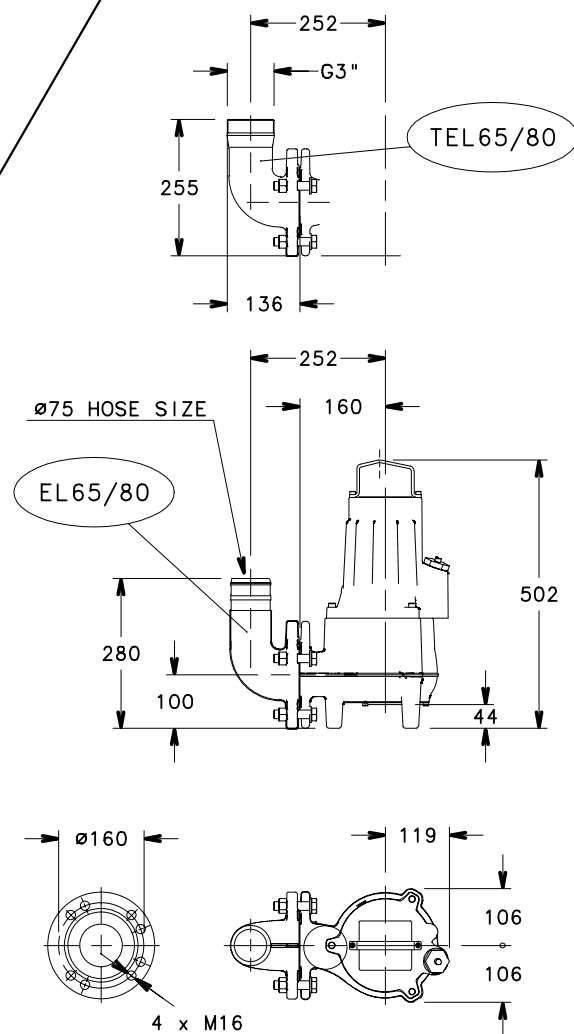
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GLV 65 SERIES (DN65) DIMENSIONS AND WEIGHTS



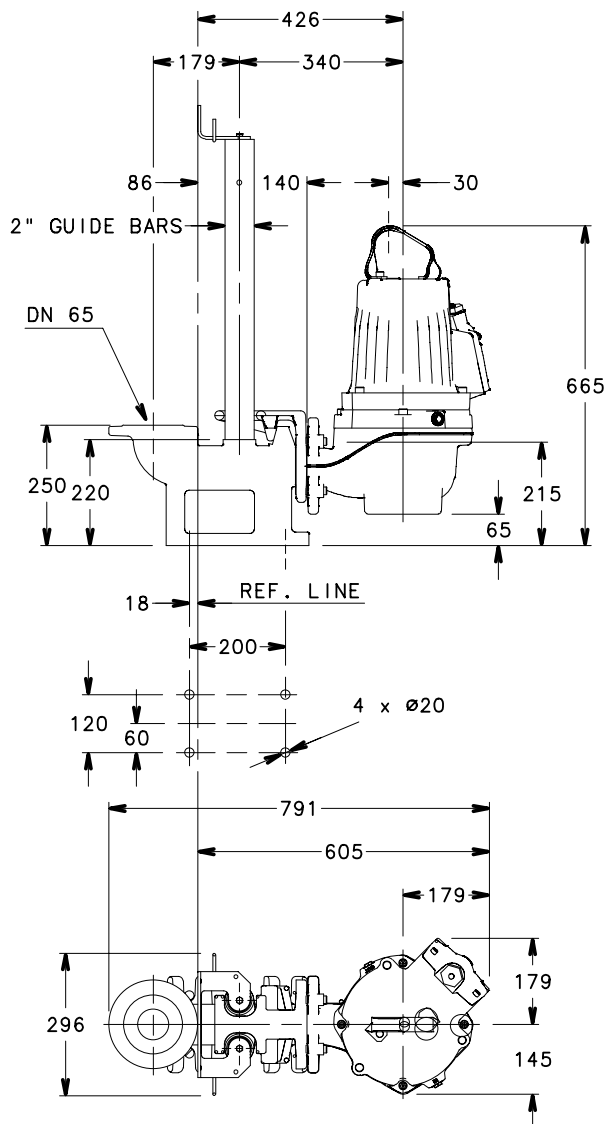
PUMP TYPE	WEIGHT kg
GLV 65-15-251-B	40
GLV 65-16-253-B	40
GLV 65-20-253-B	40
GLV 65-24-253-B	40

glv65-1-2p50-en_a_td



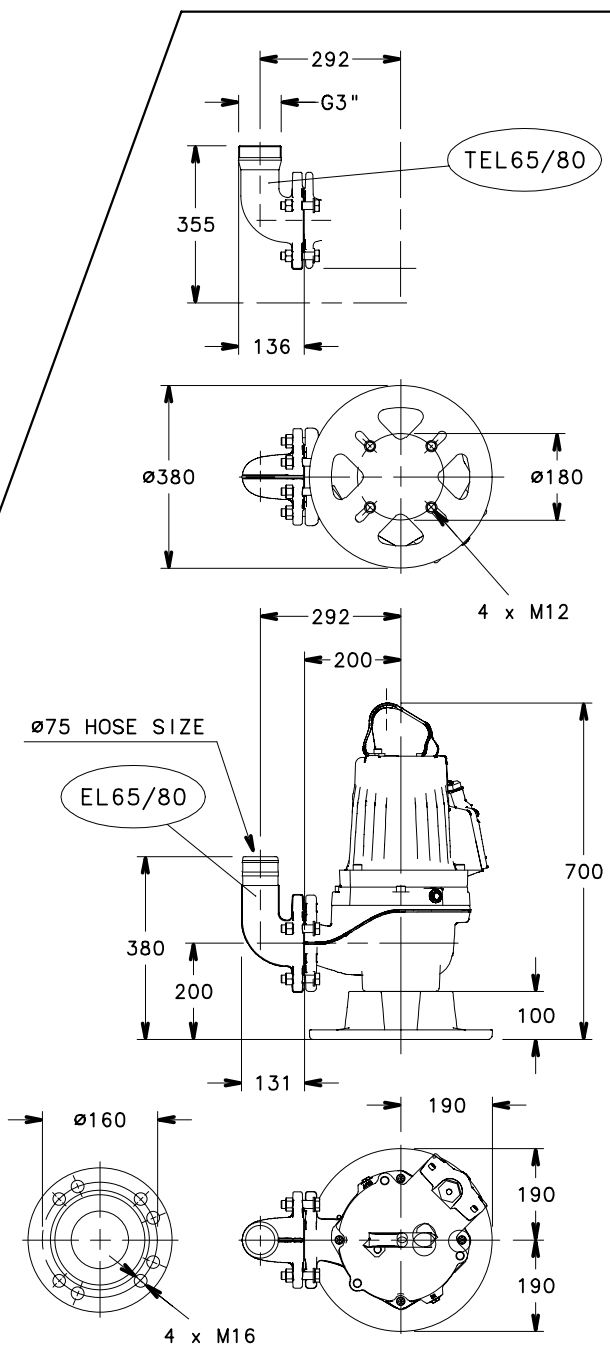
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GLV 65 SERIES (DN65) DIMENSIONS AND WEIGHTS



PUMP TYPE	WEIGHT kg
GLV 65-32-253-B	50
GLV 65-42-253-B	50

glv65-2-2p50-en_a_td



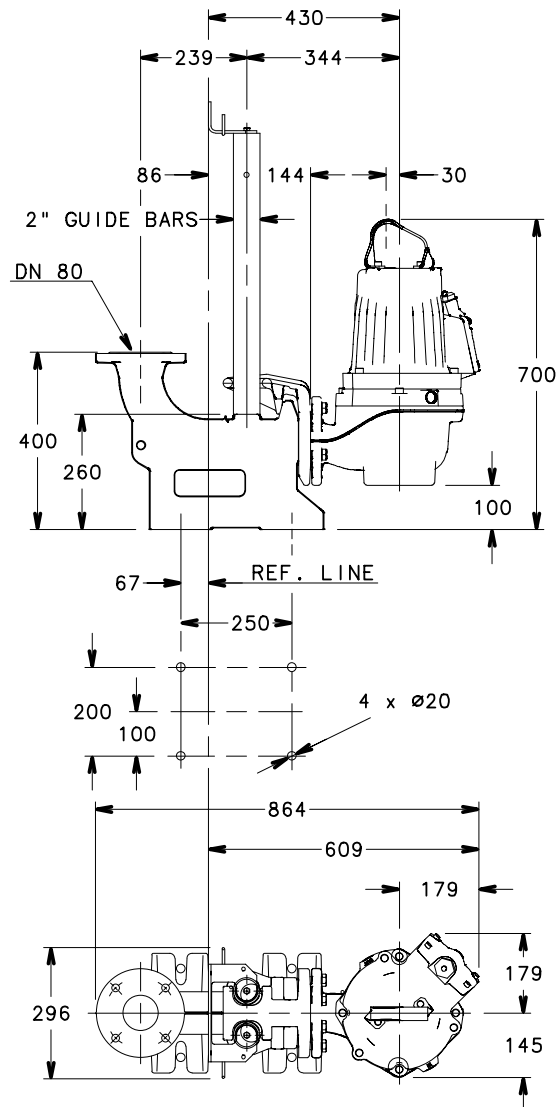
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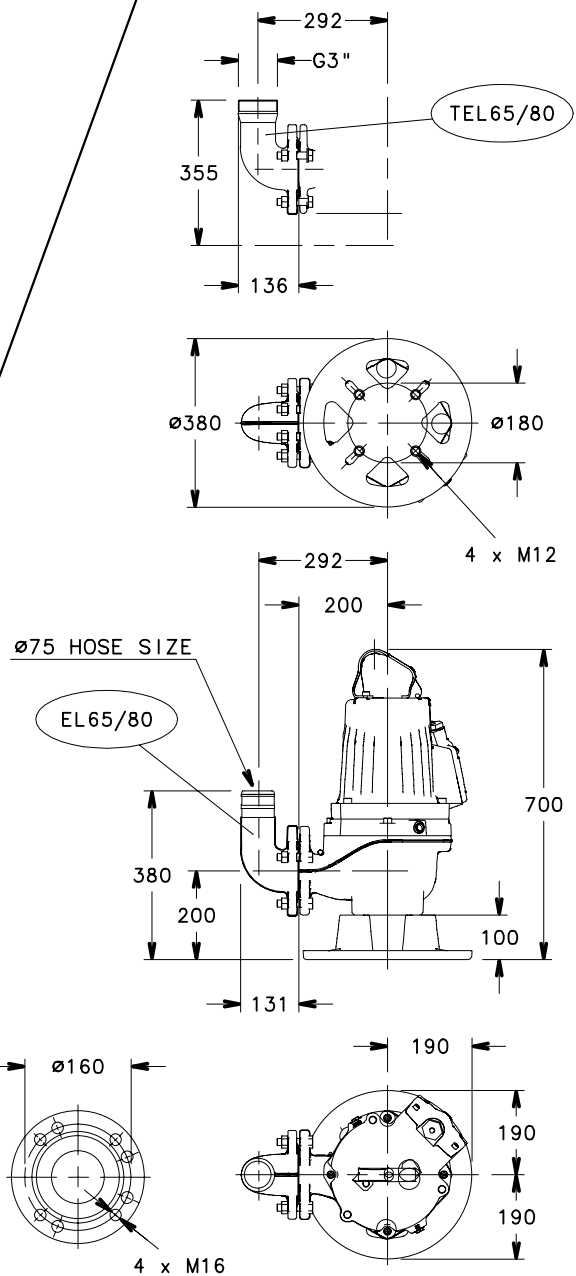
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GLV 80 SERIES (DN80) DIMENSIONS AND WEIGHTS



PUMP TYPE	WEIGHT kg
GLV 80-32-253-B	50
GLV 80-42-253-B	50

glv80-1-2p50-en_a_td



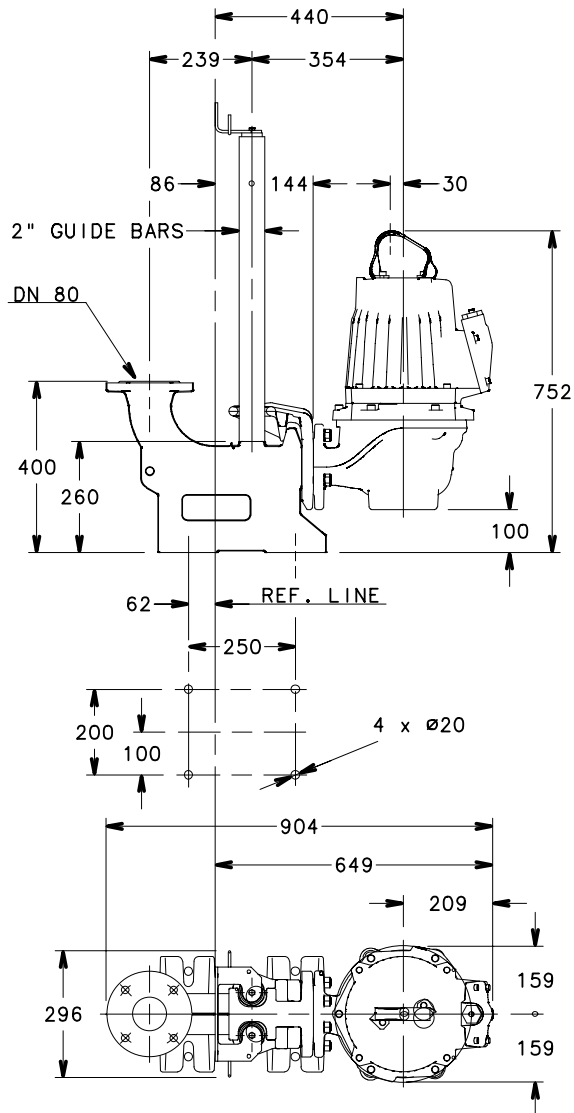
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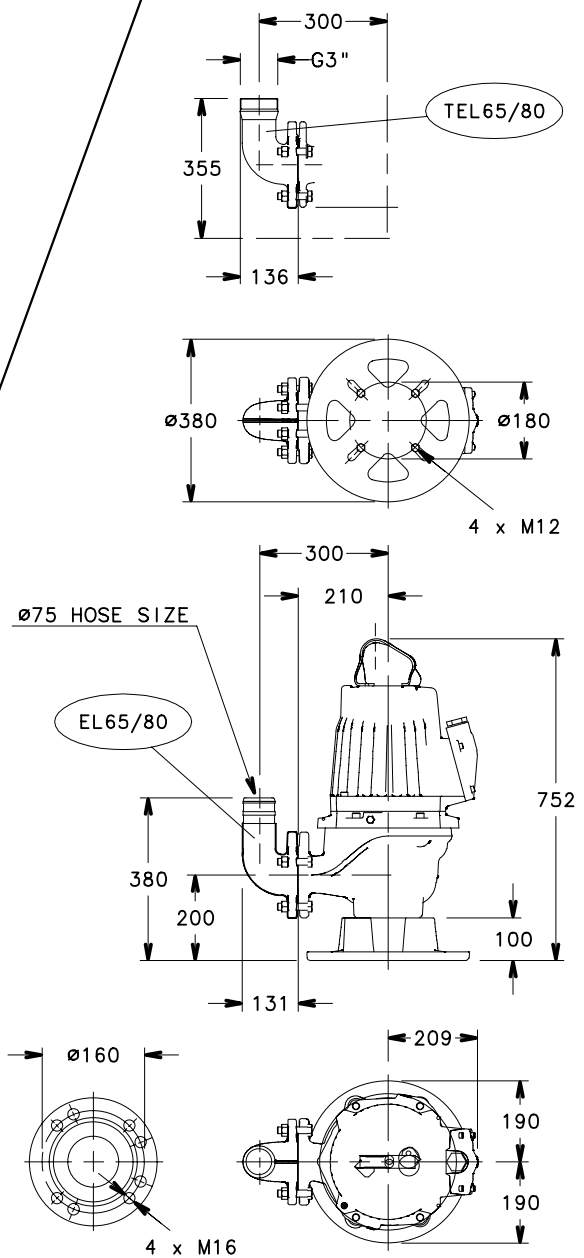
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GLV 80 SERIES (DN80) DIMENSIONS AND WEIGHTS



PUMP TYPE	WEIGHT kg
GLV 80-59-253-B	110
GLV 80-74-253-B	110

glv80-2-2p50-en_a_td



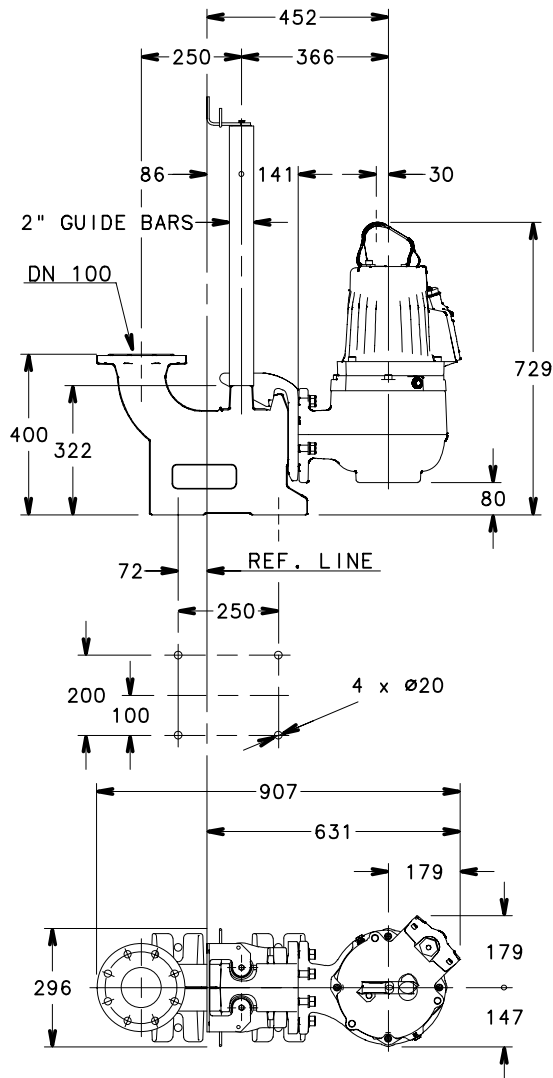
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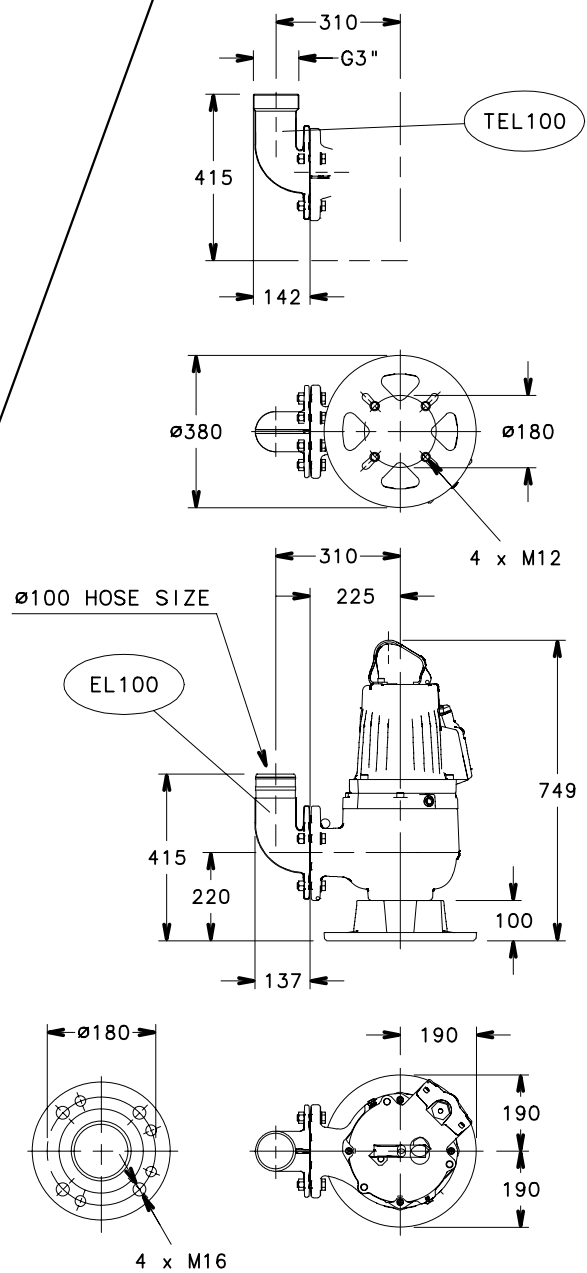
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GLV 100 SERIES (DN100) DIMENSIONS AND WEIGHTS



PUMP TYPE	WEIGHT kg
GLV 100-24-253-B	55
GLV 100-31-253-B	55

glv100-1-2p50-en_a_td



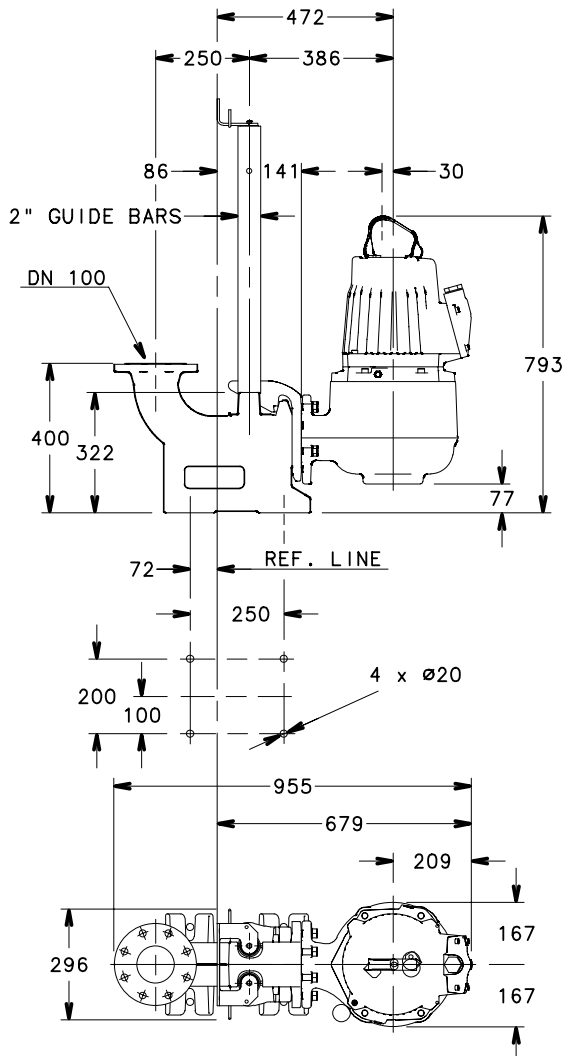
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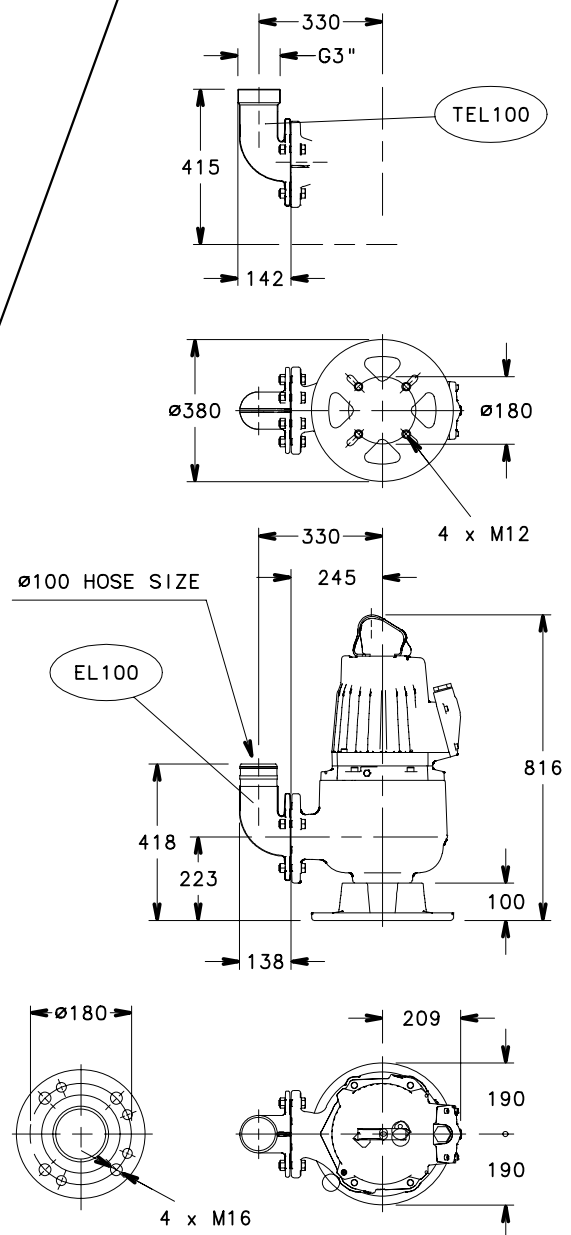
Lowara

GLV 100 SERIES (DN100) DIMENSIONS AND WEIGHTS



PUMP TYPE	WEIGHT kg
GLV 100-45-253-B	125
GLV 100-59-253-B	125

glv100-2-2p50-en_a_td



04192_A_DD

Submersible Electric Pumps

MARKET SECTORS

RESIDENTIAL AND COMMERCIAL BUILDINGS, INDUSTRIES.

APPLICATIONS

- Handling of sewage, liquids, wastewater and industrial sludge, draining of flooded excavations and marshy ground.

DLG Series



SPECIFICATIONS

- **Delivery:** up to 15 m³/h.
- **Head:** up to 52 m.
- Maximum liquid **temperature:** 40 °C.
- Maximum immersion depth: 20 m.
- **Passes solids:** up to 6 mm. in diameter.
- DN 50.
- Motor with IP68 protection and class H insulation (180°C).
- **Power supply:** 230V single-phase, 400V three-phase, 50 Hz.
- **Motor power:** up to 5,1 kW.
- Maximum number of starts per hour: 20.

- Oversized motor bearings.
- 10-metre power supply cable with neoprene sheath (H07RN-F).
- Control panel for the single-phase versions without motor thermal protection.

OPTIONAL FEATURES

- Moisture sensor in oil chamber (see electric data table).
- Motor thermal protection (see electric data table).

CONSTRUCTION CHARACTERISTICS

- Sturdy cast iron construction.
- Open **impeller** with grinder assembly.
- Integrated stand.
- Double seal: Silicon Carbide / Silicon Carbide seal on pump side, Ceramic / Carbon on motor side, with interposed oil chamber.
- Adjustable volute bottom cover to compensate for impeller wear and ensure stable long-lasting hydraulic performances.

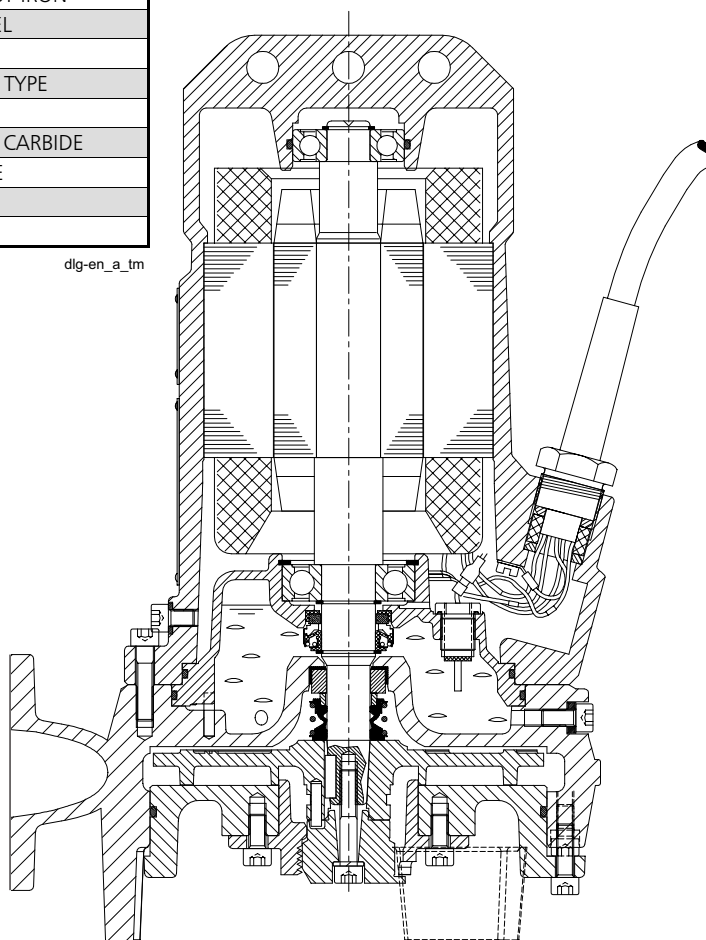
ACCESSORIES / INSTALLATION

- Lowering system.
- 90° delivery elbow with hose connector.
- Threaded flange for delivery port.
- 90° threaded delivery elbow.
- Metal sheath for protection of electrical cable (up to 15 kW).
- Non-return ball valve.
- Float for solids-laden waters.
- Command and control panels.

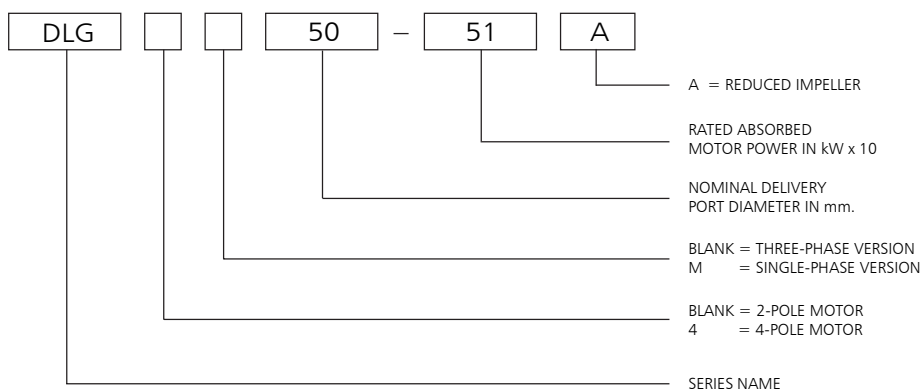
DLG SERIES PUMP SECTION AND TABLE OF MATERIALS

PART	MATERIAL
Motor casing	GREY IRON
Seal oil chamber	
Pump body	
Impeller	SPHEROIDAL GRAPHITE CAST IRON
Grinder	HARDENED STAINLESS STEEL
Shaft	431 STAINLESS STEEL
Bearings	LIFETIME LUBRICATED BALL TYPE
Motor-side seal	CERAMIC / CARBON
Pump-side seal	SILICON CARBIDE / SILICON CARBIDE
Gaskets	NITRILE RUBBER; NEOPRENE
Bolts and screws	304 STAINLESS STEEL
Power cord	NEOPRENE

dlg-en_a_tm



IDENTIFICATION CODE



EXAMPLE : DLG 50-51 A
 DLG series electric pump, 2-pole version, three-phase, 50 mm nominal delivery port, 5,1 kW rated absorbed motor power, A reduced impeller.



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DLG SERIES ELECTRICAL DATA TABLE AT 50 Hz

PUMP TYPE	min ⁻¹	Pgr (P1) kW *	(P2) Nom kW ***	VOLTAGE / PHASES	CURRENT			START	ELECTRICAL CABLE TYPE	CAPACITOR 450V RUN / START μF	STATOR THERMAL PROTECT. **	WATER SENSOR IN OIL CHAMBER **
					NOMINAL I _n (A)	INRUSH I _{sp} (A)	ABSORBED I _{abs} (A)					
DLGM 50-15 A	2900	1,2	1,1	230V/1	8,5	-	6,9	-	4G1.5	35/60	✓	✓
DLGM 50-15	2900	1,7	1,1	230V/1	8,5	-	8,5	-	4G1.5	35/60	✓	✓
DLGM 50-21 A	2900	2	1,4	230V/1	10,7	-	9,8	-	4G1.5	35/60	✓	✓
DLGM 50-21	2900	2,3	1,4	230V/1	10,7	-	10,7	-	4G1.5	35/60	✓	✓
DLG 50-15 A	2900	1,1	1,1	400V/3	2,5	17,3	2,4	DOL	4G1.5	-	✓	✓
DLG 50-15	2900	1,5	1,1	400V/3	2,5	17,3	2,5	DOL	4G1.5	-	✓	✓
DLG 50-21 A	2900	1,8	1,5	400V/3	3,4	16,6	2,9	DOL	4G1.5	-	✓	✓
DLG 50-21	2900	2,1	1,5	400V/3	3,4	16,6	3,4	DOL	4G1.5	-	✓	✓
DLG 50-28	2900	2,6	2,2	400V/3	4,5	24	4,5	DOL	4G1.5	-	✓	✓
DLG 50-35 A	2900	3	2,6	400V/3	5,6	25,6	4,8	DOL	4G1.5	-	✓	✓
DLG 50-35	2900	3,5	2,6	400V/3	5,6	25,6	5,6	DOL	4G1.5	-	✓	✓
DLG 50-51 A	2900	4,1	4	400V/3	8,5	53	6,9	YD	7G1.5	-	✓	✓
DLG 50-51	2900	4,7	4	400V/3	8,5	53	8,5	YD	7G1.5	-	✓	✓
DLG4M 50-09	1450	0,95	0,65	230V/1	4,3	-	4,3	-	4G1.5	20/40	✓	✓
DLG4 50-09	1450	0,95	0,65	400V/3	1,7	6,4	1,7	DOL	4G1.5	-	✓	✓

* Maximum value of absorbed motor power within the operating range.

DLG-en_C_te

** ✓ Option available on request.

*** P2 = Rated shaft power.

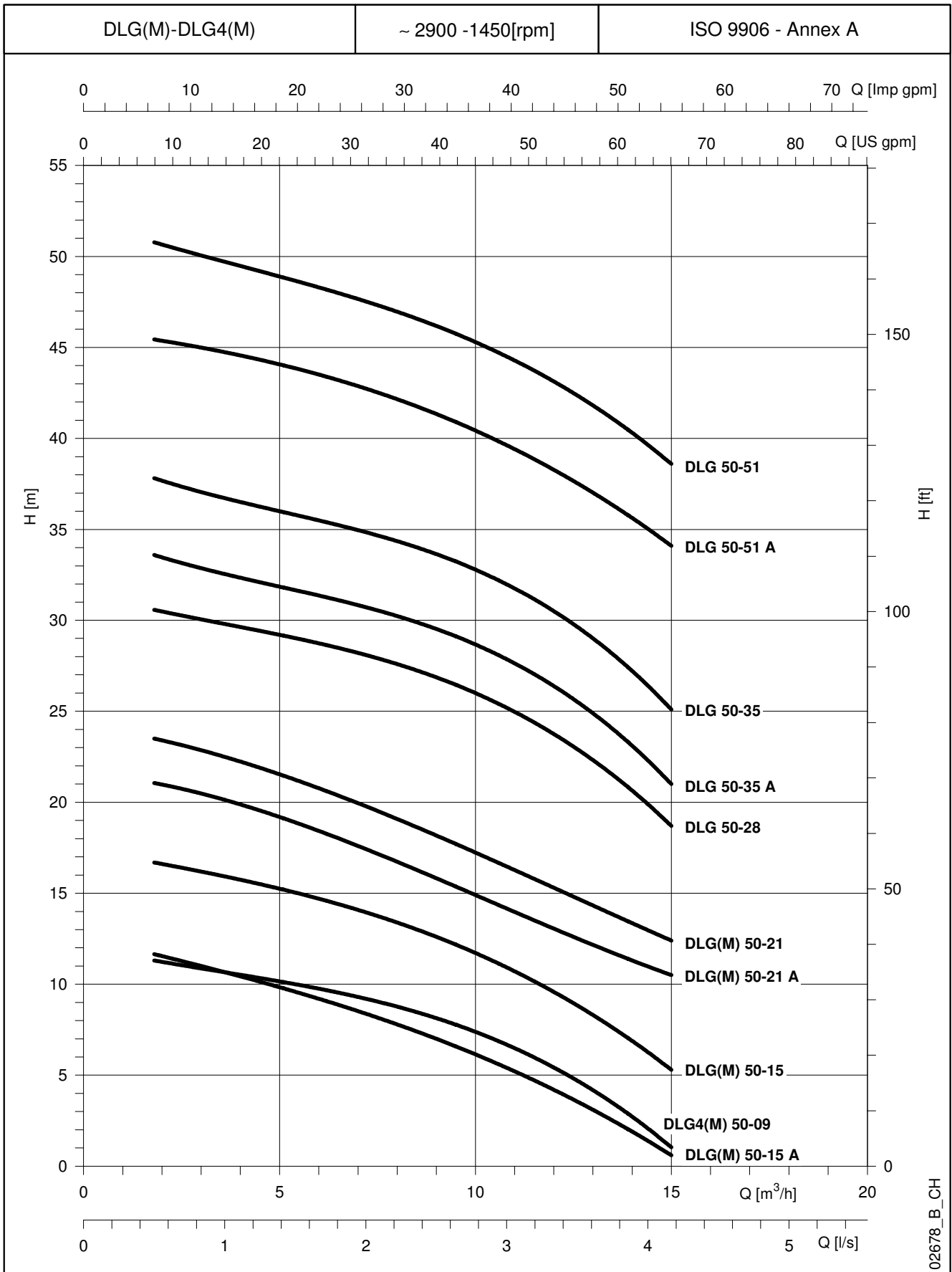


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DLG - DLG4 SERIES

HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 2 and 4 POLES



These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.



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DLG SERIES HYDRAULIC PERFORMANCE TABLE AT 50 Hz

PUMP TYPE	Pgr	(P2)	D		Q = DELIVERY																			Passes
	(P1)	Nom	Impeller		l/min 0	17	30	33	50	67	83	100	117	133	150	167	183	200	217	233	250	solids		
	kW	kW	mm		m³/h 0	1	1,8	2	3	4	5	6	7	8,0	9	10	11	12	13	14	15	up to		
	*	**	min⁻¹		H = TOTAL HEAD METRES COLUMN OF WATER																			(mm)
DLGM 50-15 A	1,1	1,1	101	2900	12,6		11,7	11,6	11,0	10,4	9,8	9,2	8,5	7,8	7,0	6,1	5,2	4,2	3,1	1,9	0,6	6		
DLGM 50-15	1,5	1,1	114	2900	17,4		16,7	16,6	16,2	15,7	15,3	14,7	14,1	13,4	12,6	11,7	10,7	9,6	8,3	6,9	5,3	6		
DLGM 50-21 A	1,9	1,4	123	2900	21,6		21,1	21,0	20,5	19,9	19,2	18,4	17,6	16,7	15,8	14,9	14,0	13,1	12,1	11,3	10,5	6		
DLGM 50-21	2,1	1,4	130	2900	24,2		23,5	23,4	22,9	22,2	21,5	20,8	19,9	19,1	18,2	17,2	16,3	15,3	14,3	13,4	12,4	6		
DLG 50-15 A	1,1	1,1	101	2900	12,6		11,7	11,6	11,0	10,4	9,8	9,2	8,5	7,8	7,0	6,1	5,2	4,2	3,1	1,9	0,6	6		
DLG 50-15	1,5	1,1	114	2900	17,4		16,7	16,6	16,2	15,7	15,3	14,7	14,1	13,4	12,6	11,7	10,7	9,6	8,3	6,9	5,3	6		
DLG 50-21 A	1,8	1,5	123	2900	21,6		21,1	21,0	20,5	19,9	19,2	18,4	17,6	16,7	15,8	14,9	14,0	13,1	12,1	11,3	10,5	6		
DLG 50-21	2,1	1,5	130	2900	24,2		23,5	23,4	22,9	22,2	21,5	20,8	19,9	19,1	18,2	17,2	16,3	15,3	14,3	13,4	12,4	6		
DLG 50-28	2,6	2,2	146	2900	31,5		30,6	30,5	30,0	29,6	29,2	28,7	28,2	27,6	26,9	26,0	25,0	23,8	22,3	20,7	18,7	6		
DLG 50-35 A	3	2,6	156	2900	35,0		33,6	33,5	32,9	32,3	31,9	31,4	30,8	30,2	29,5	28,6	27,7	26,4	24,9	23,1	21,0	6		
DLG 50-35	3,5	2,6	160	2900	39,3		37,8	37,7	37,1	36,5	36,0	35,5	34,9	34,4	33,6	32,8	31,8	30,5	29,0	27,3	25,1	6		
DLG 50-51 A	4,1	4	176	2900	46,0		45,4	45,4	45,0	44,6	44,1	43,5	42,9	42,2	41,3	40,4	39,4	38,3	37,0	35,7	34,1	6		
DLG 50-51	4,7	4	182	2900	52,0		50,8	50,7	50,1	49,5	48,9	48,3	47,7	47,0	46,2	45,3	44,3	43,1	41,8	40,3	38,6	6		
DLG4M 50-09	0,95	0,65	182	1450	12,1		11,3	11,2	10,9	10,5	10,2	9,8	9,3	8,8	8,1	7,4	6,5	5,4	4,2	2,8	1,0	6		
DLG4 50-09	0,95	0,65	180	1450	12,1		11,3	11,2	10,9	10,5	10,2	9,8	9,3	8,8	8,1	7,4	6,5	5,4	4,2	2,8	1,0	6		

Performances according to ISO Standard 9906 –Annex A.

dlg_50-en_b_th

These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

* Maximum value of absorbed motor power within the operating range.

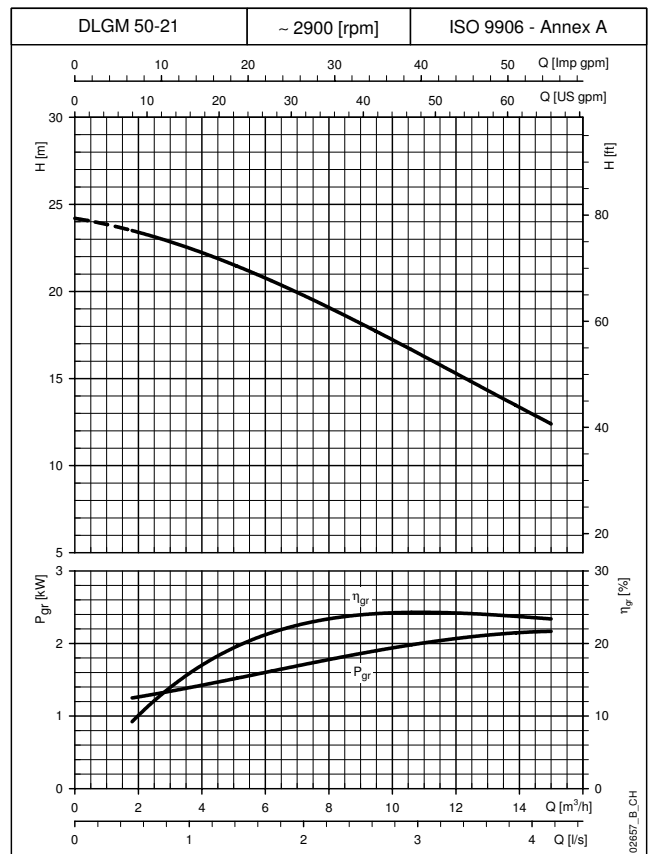
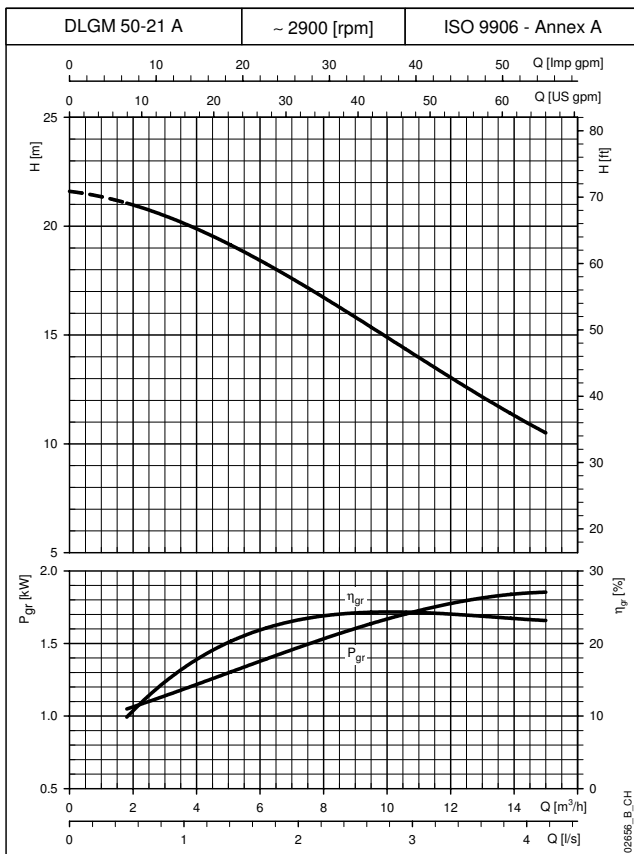
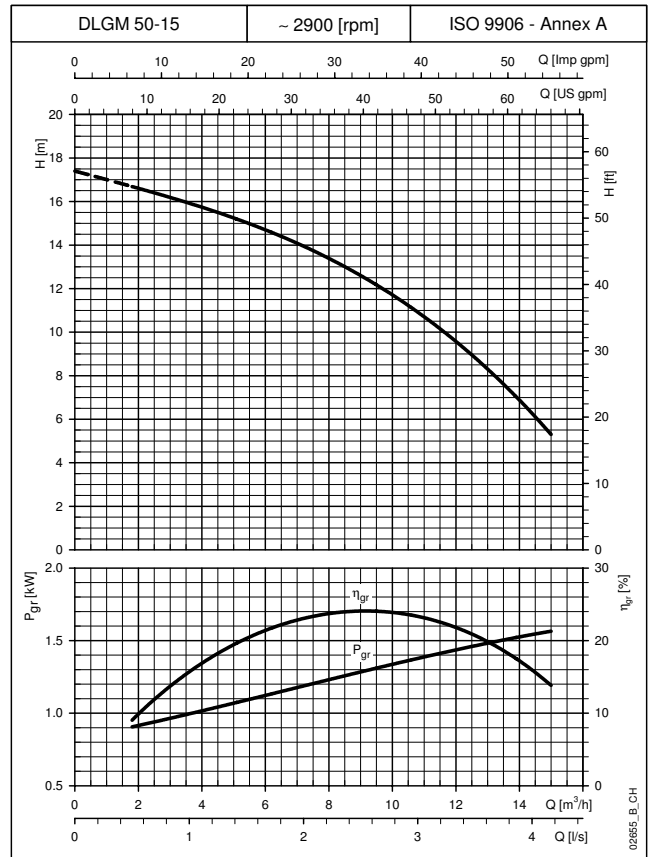
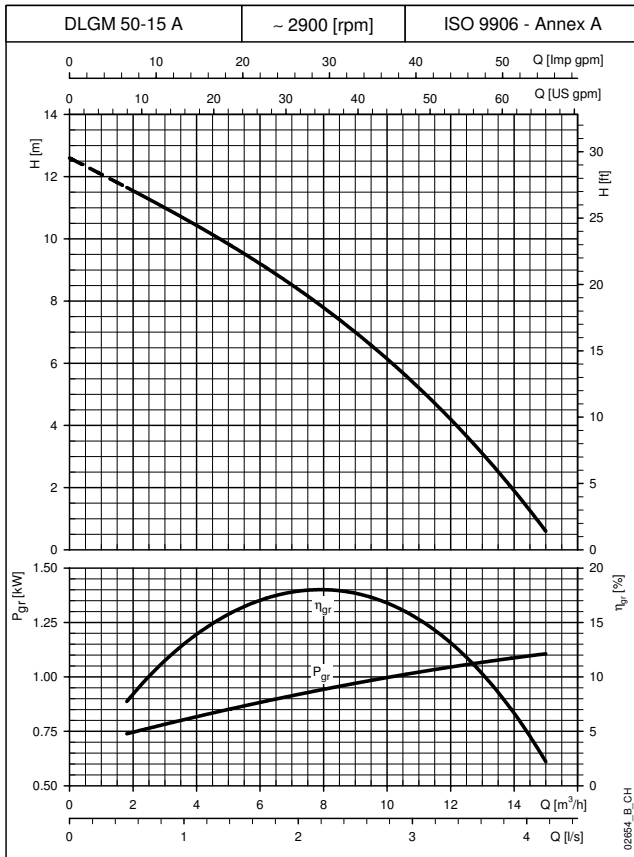
** P2 = Rated shaft power.



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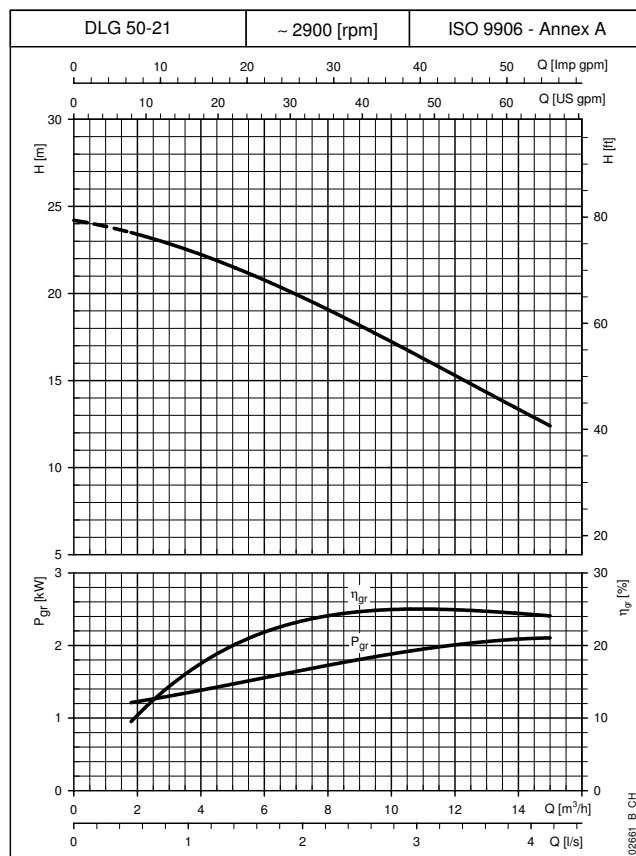
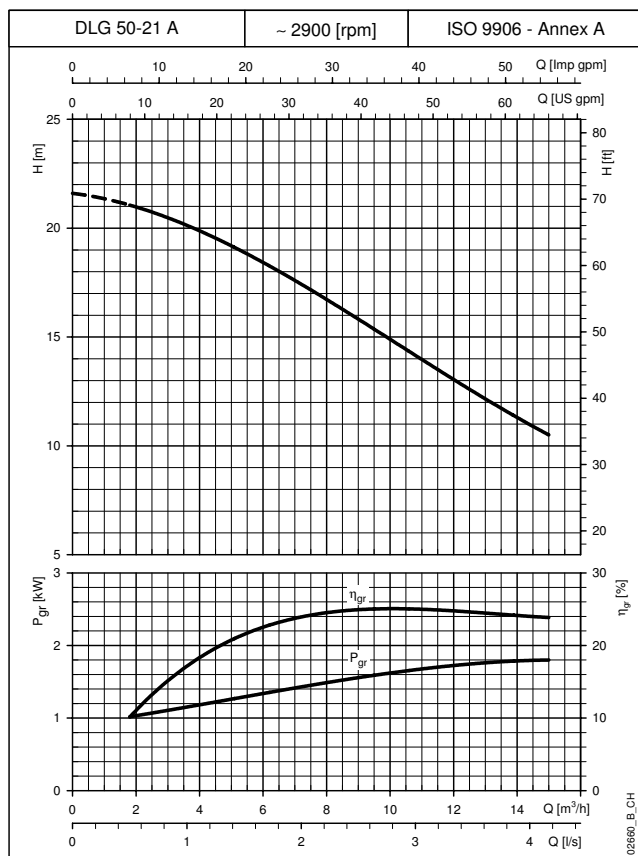
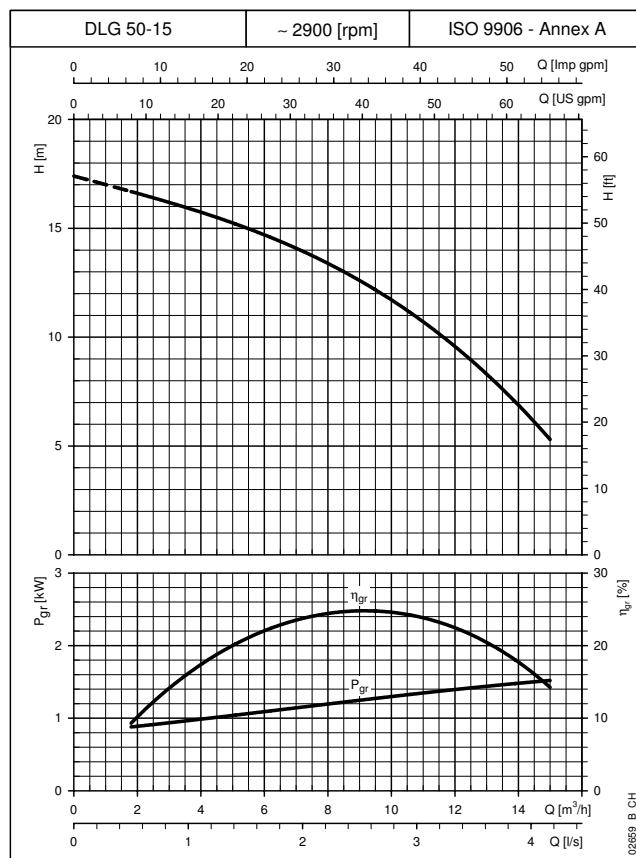
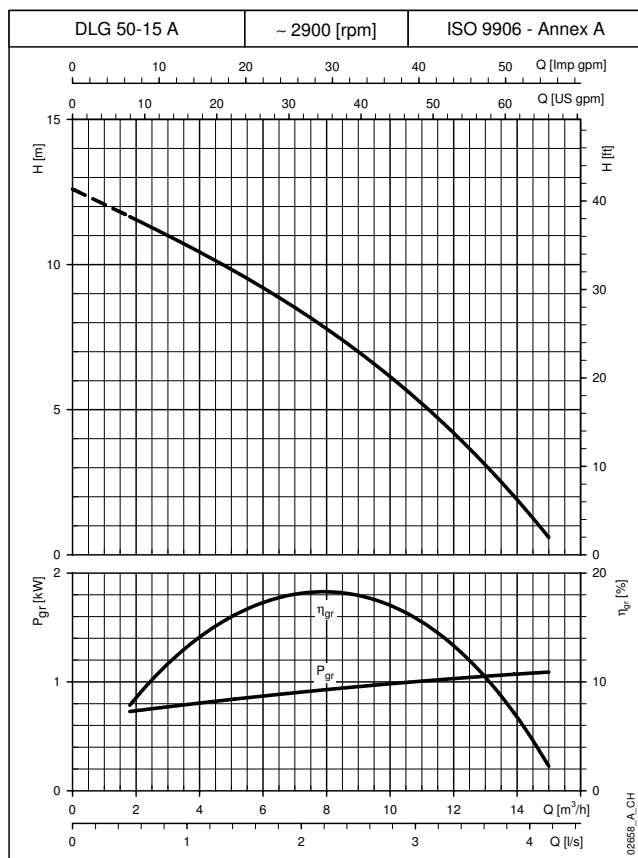
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DLG SERIES OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



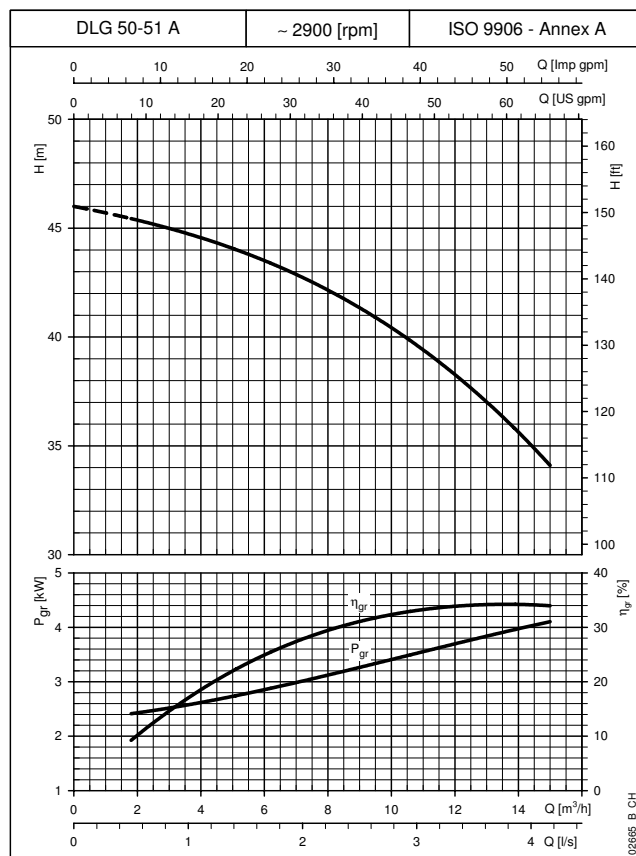
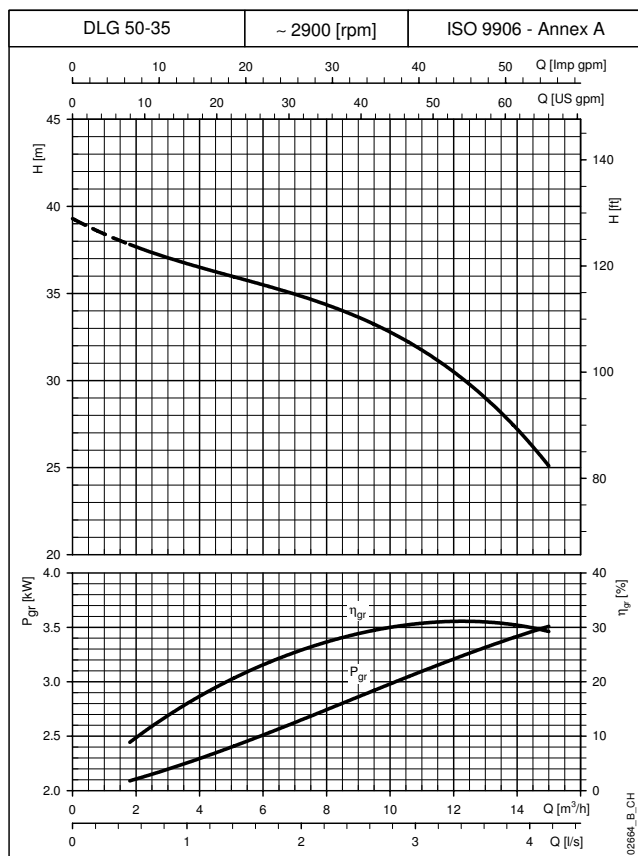
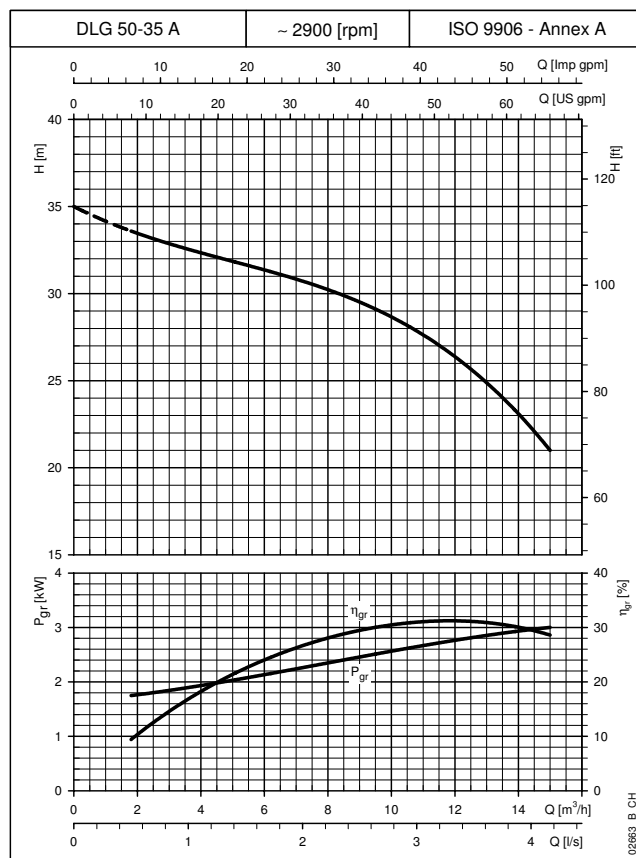
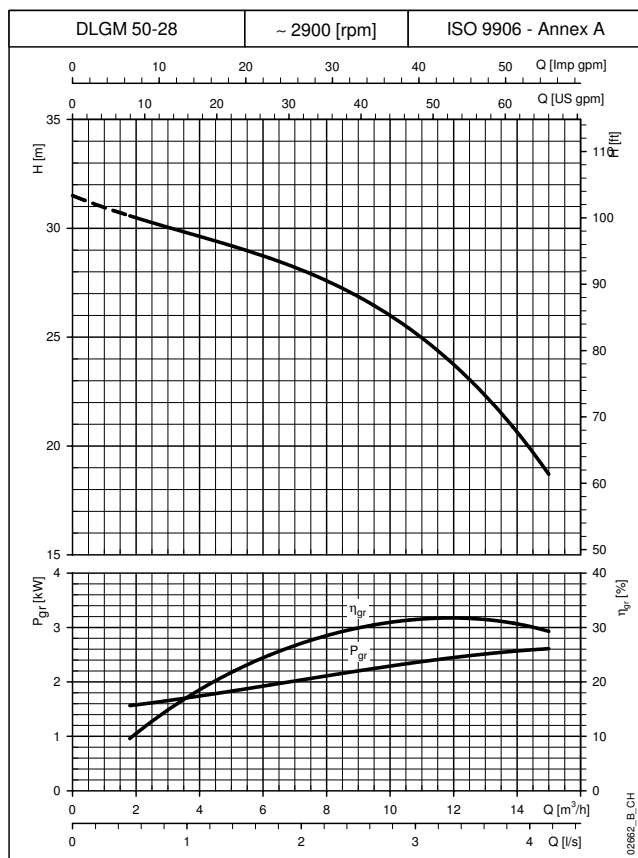
These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

DLG SERIES OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

DLG SERIES OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



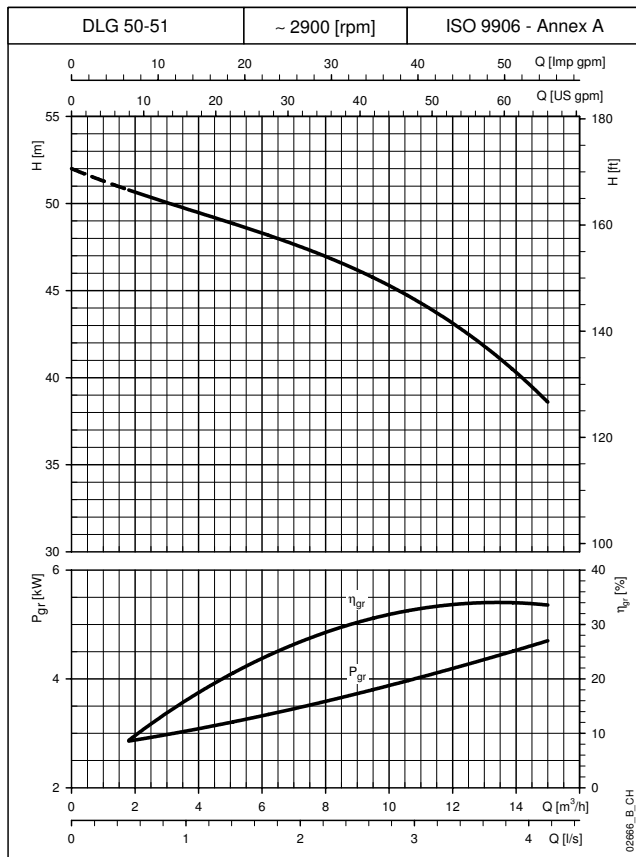
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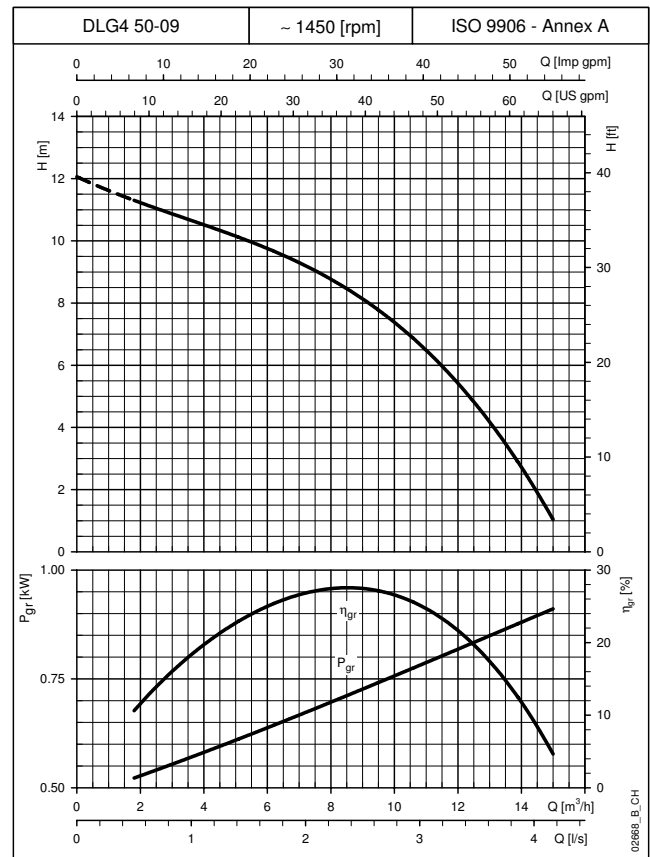
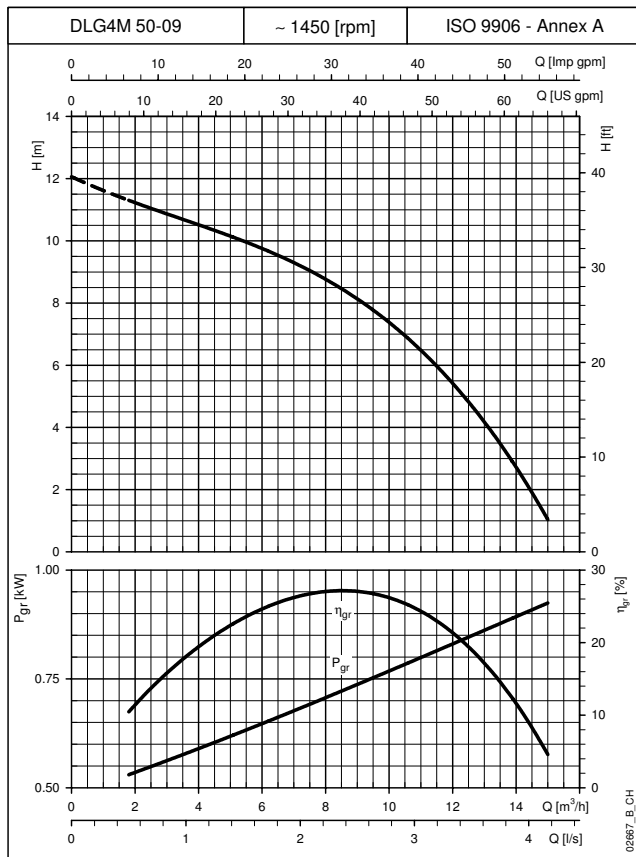
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DLG SERIES OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

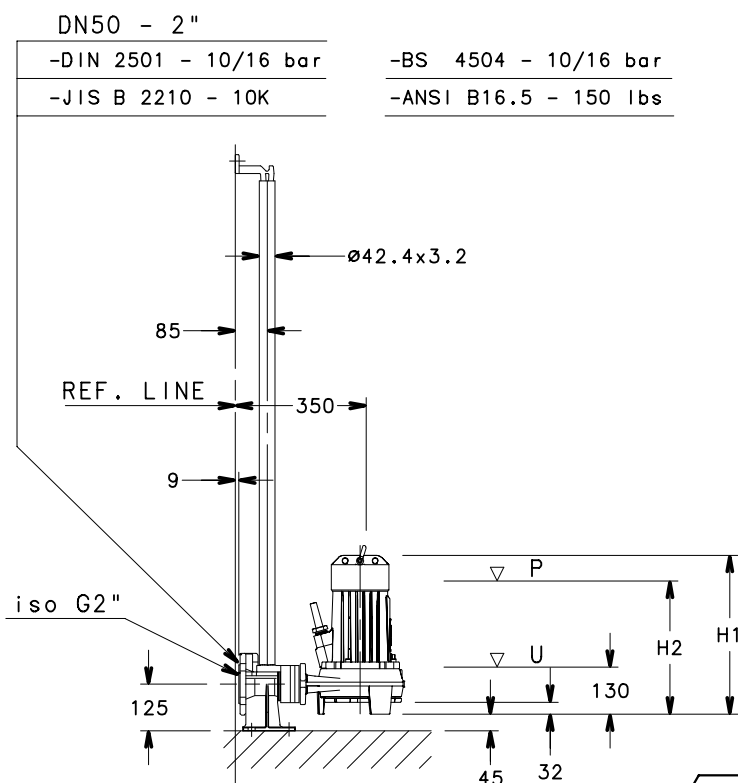
DLG4 SERIES OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



These performances are valid for liquids with density $\rho = 1.0 \text{ Kg/dm}^3$ and kinematic viscosity $\nu = 1 \text{ mm}^2/\text{sec}$.

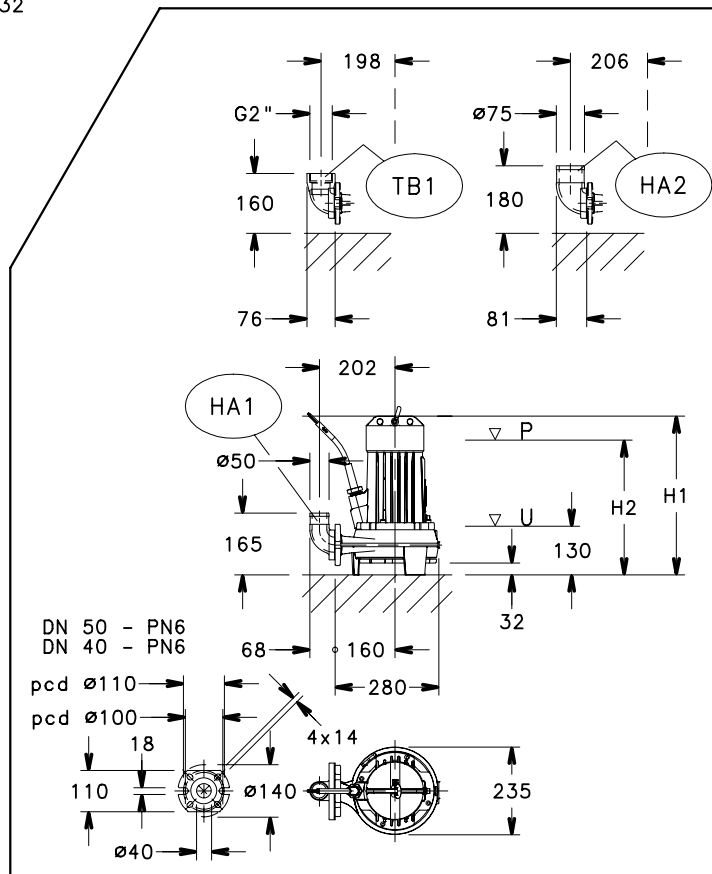
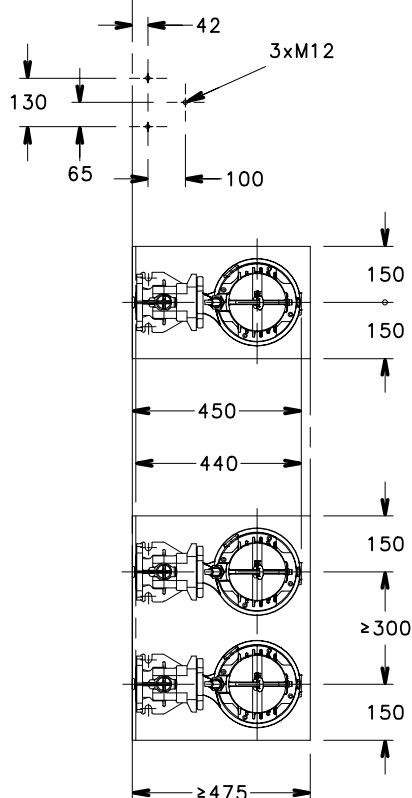
DLG SERIES DIMENSIONS AND WEIGHTS

DLG 50 SERIES (DN50) DS1 DIMENSIONS AND WEIGHTS



PUMP TYPE	DIMENSIONS		WEIGHT kg
	(mm)		
	H1	H2	
DLGM 50-15A	425	360	42
DLGM 50-15	425	360	42
DLGM 50-21A	425	360	42
DLGM 50-21	425	360	42
DLG 50-15A	425	360	42
DLG 50-15	425	360	42
DLG 50-21A	425	360	42
DLG 50-21	425	360	42
DLG 50-28	425	360	42
DLG 50-35A	425	360	42
DLG 50-35	425	360	42
DLG 50-51A	425	360	42
DLG 50-51	425	360	42
DLG4M 50-09	425	360	42
DLG4 50-09	425	360	40

DLG-DS1-2-4p50-en b td



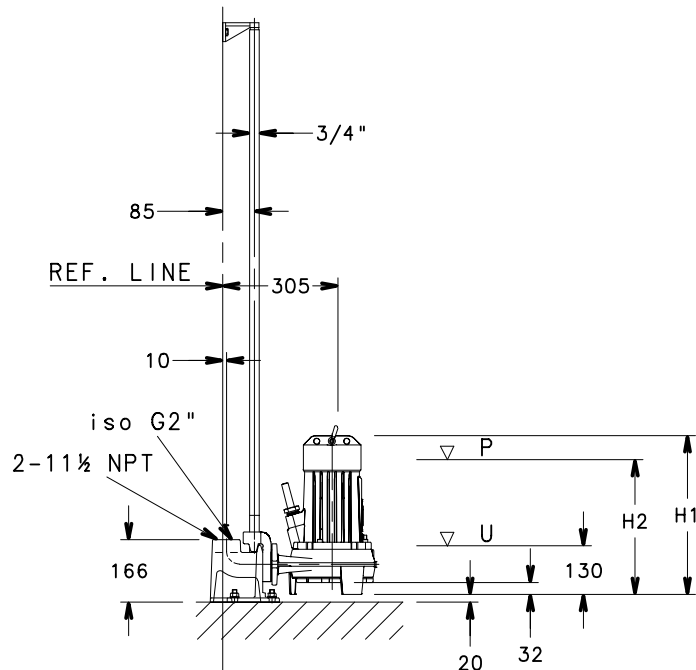
P = Minimum liquid level for continuous operation.
U = Minimum operating level to prevent air entrance into pump.



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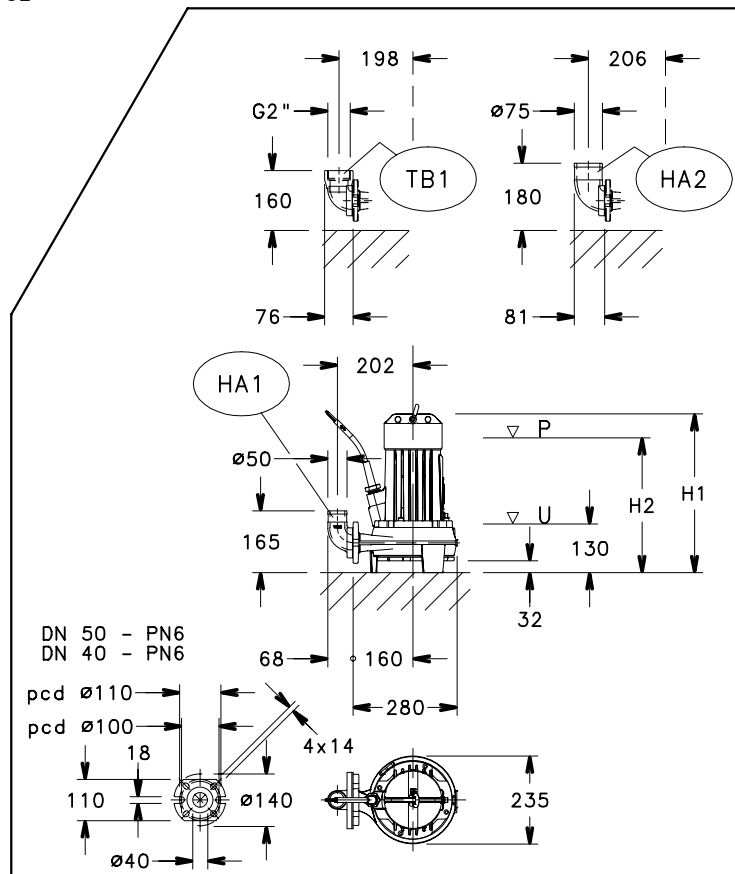
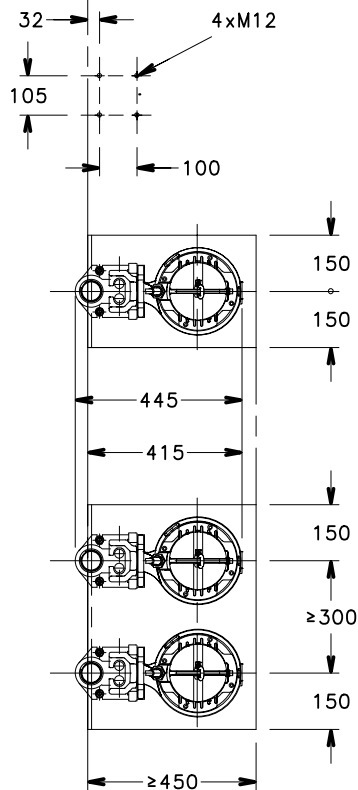
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DLG 50 SERIES (DN50) DS2A DIMENSIONS AND WEIGHTS



PUMP TYPE	DIMENSIONS (mm)		WEIGHT kg
	H1	H2	
DLGM 50-15A	425	360	42
DLGM 50-15	425	360	42
DLGM 50-21A	425	360	42
DLGM 50-21	425	360	42
DLG 50-15A	425	360	42
DLG 50-15	425	360	42
DLG 50-21A	425	360	42
DLG 50-21	425	360	42
DLG 50-28	425	360	42
DLG 50-35A	425	360	42
DLG 50-35	425	360	42
DLG 50-51A	425	360	42
DLG 50-51	425	360	42
DLG4M 50-09	425	360	42
DLG4 50-09	425	360	40

DLG-DS2-2-4p50-en_b_td



02542_C_DD

P = Minimum liquid level for continuous operation.
U = Minimum operating level to prevent air entrance into pump.



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ACCESSORIES

Electrical panels	59
Combination table - Control panels	69
Accessories	72
Installation example	75

Electrical panel for drainage pumps

QDRM Series single-phase



APPLICATIONS

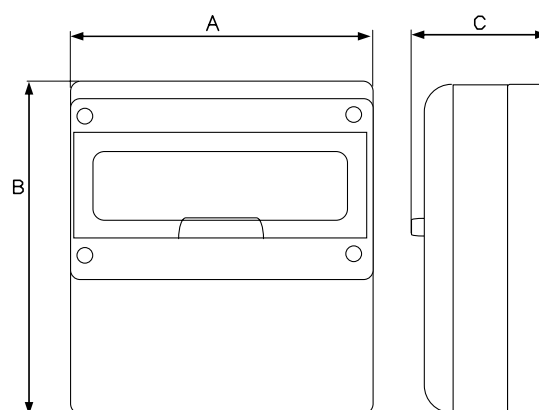
- Protection and control of one single-phase drainage pump.

SPECIFICATIONS

- Automatic control through electromechanical floats.
- Power supply voltage: 1 x 230 V $\pm$ 10%.
- Frequency: 50/60 Hz.
- Power: 0,25 to 2,2 kW.
- Direct motor start.
- Protection class: IP55.
- Ambient temperature: -5 to +40 °C (according to EN 60439-1).
- Maximum relative humidity: 50% at +40°C, provided that no condensation occurs (according to EN 60439-1).
- Wall mounted.
- Plastic enclosure.
- Electronic control module with test and alarm reset buttons, and power-on, pump running and high level alarm indicator LED's.
- Alarm silencing button.

OPTIONAL ACCESSORIES

- Audible or visual signalling device, 12 Vdc 0.3 A max (two connection terminals provided inside the electrical panel) for high-level alarm.
- VR1 single-phase module (for QDRM) for overvoltage protection (lightning protector).



MODEL	RATED VOLTAGE V	RATED POWER		RATED CURRENT A	DIMENSIONS			WEIGHT Kg
		kW	HP		A mm	B mm	C mm	
QDRM/02	1 x 230 V $\pm$ 10 %	0,25	0,33	1 ÷ 1,6	280	220	160	2,2
QDRM/03	1 x 230 V $\pm$ 10 %	0,37	0,5	1,6 ÷ 2,5	280	220	160	2,2
QDRM/05	1 x 230 V $\pm$ 10 %	0,55	0,75	2,5 ÷ 4	280	220	160	2,2
QDRM/07	1 x 230 V $\pm$ 10 %	0,75	1	4 ÷ 6,3	280	220	160	2,2
QDRM/15	1 x 230 V $\pm$ 10 %	1,1 ÷ 1,5	1,5 ÷ 2	6,3 ÷ 10	280	220	160	2,2
QDRM/22	1 x 230 V $\pm$ 10 %	2,2	3	10 ÷ 16	280	370	160	4,1

CB-QDRM-en_c_te

Electrical panel for drainage pumps

QDRMC Series single-phase



APPLICATIONS

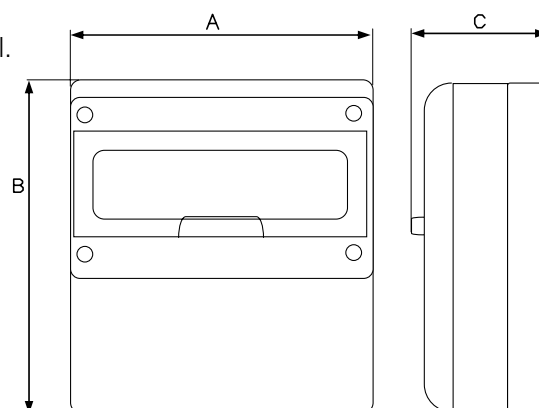
- Protection and control of one single-phase drainage pump with external capacitor.

SPECIFICATIONS

- Automatic control through electromechanical floats.
- Power supply voltage: 1 x 230 V $\pm$ 10%.
- Frequency: 50/60 Hz.
- Power: 0,75 to 2,2 kW.
- Direct motor start.
- Protection class: IP55.
- Ambient temperature: -5 to +40 °C (according to EN 60439-1).
- Maximum relative humidity: 50% at +40°C, provided that no condensation occurs (according to EN 60439-1).
- Wall mounted.
- Plastic enclosure.
- Electronic control module with test and alarm reset buttons, and power-on, pump running, high level alarm, thermal probe (versions /TS and /WD) and water in oil chamber (version /WD) indicator LED's.
- Alarm silencing button.
- Start and run capacitor incorporated in the control panel.
- /TS version equipped with stator thermal protection circuit.
- /WD version equipped with oil chamber water sensor control circuit and stator thermal protection.

OPTIONAL ACCESSORIES

- Audible or visual signalling device, 12 Vdc 0.3 A max (two connection terminals provided inside the electrical panel) for high-level alarm.
- VR1 single-phase module (for QDRM) for overvoltage protection (lightning protector).



MODEL	RATED VOLTAGE V	RATED POWER		RATED CURRENT			DIMENSIONS			WEIGHT Kg	C uF	Cs uF
		kW	HP	A	÷	A	A mm	B mm	C mm			
QDRMC/07	1 x 230 V $\pm$ 10 %	0,75	1	4	÷	6,3	280	370	160	3,1	20	40
QDRMC/15	1 x 230 V $\pm$ 10 %	1,5	2	6,3	÷	10	280	370	160	3,1	35	60
QDRMC/22	1 x 230 V $\pm$ 10 %	2,2	3	10	÷	16	280	370	160	3,1	35	60
QDRMC/07/TS	1 x 230 V $\pm$ 10 %	0,75	1	4	÷	6,3	280	370	160	3,5	20	40
QDRMC/15/TS	1 x 230 V $\pm$ 10 %	1,5	2	6,3	÷	10	280	370	160	3,5	35	60
QDRMC/22/TS	1 x 230 V $\pm$ 10 %	2,2	3	10	÷	16	280	370	160	3,5	35	60
QDRMC/07/WD	1 x 230 V $\pm$ 10 %	0,75	1	4	÷	6,3	280	370	160	4	20	40
QDRMC/15/WD	1 x 230 V $\pm$ 10 %	1,5	2	6,3	÷	10	280	370	160	4	35	60
QDRMC/22/WD	1 x 230 V $\pm$ 10 %	2,2	3	10	÷	16	280	370	160	4	35	60

C= Run capacitor; Cs= Start capacitor

CB-QDRMC-en_d_te

Electrical panel for drainage pumps

QDRM2 Series single-phase



APPLICATIONS

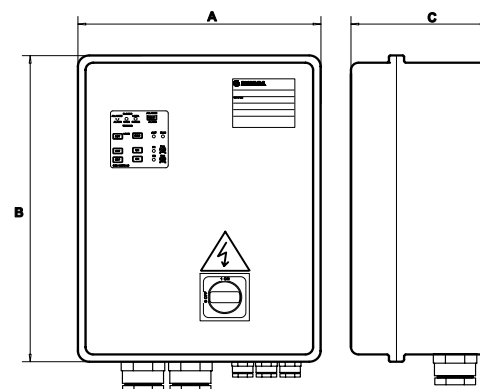
- Protection and control of two single-phase drainage pumps.

SPECIFICATIONS

- Automatic control through electromechanical floats.
- Power supply voltage: 1 x 230 V $\pm$ 10%.
- Frequency: 50/60 Hz.
- Power: 0,25 to 2,2 kW.
- Direct motor start.
- Protection class: IP54.
- Ambient temperature: -5 to +40 °C (according to EN 60439-1).
- Maximum relative humidity: 50% at +40°C, provided that no condensation occurs (according to EN 60439-1).
- Wall mounted.
- Metal enclosure.
- Electronic board with power, thermal overload, high level alarm, pump start/stop indicator LEDs.
- Alarm silencing button.

OPTIONAL ACCESSORIES

- Audible or visual signalling device, 12 Vdc 0.3 A max (two connection terminals provided inside the electrical panel) for high-level alarm.
 - VR1 single-phase module for overvoltage protection (lightning protector).
 - Signal relay board kit (power, auto/man, start/stop, thermal overload, high level).



MODEL	RATED VOLTAGE V	RATED POWER		RATED CURRENT A	DIMENSIONS			WEIGHT Kg
		kW	HP		A mm	B mm	C mm	
QDRM2/02	1 x 230 V $\pm$ 10 %	0,25	0,33	1 $\div$ 1,6	260	380	150	9,4
QDRM2/03	1 x 230 V $\pm$ 10 %	0,37	0,5	1,6 $\div$ 2,5	260	380	150	9,4
QDRM2/05	1 x 230 V $\pm$ 10 %	0,55	0,75	2,5 $\div$ 4	260	380	150	9,4
QDRM2/07	1 x 230 V $\pm$ 10 %	0,75	1	4 $\div$ 6,3	260	380	150	9,4
QDRM2/15	1 x 230 V $\pm$ 10 %	1,1 $\div$ 1,5	1,5 $\div$ 2	6,3 $\div$ 10	260	380	150	9,4
QDRM2/22	1 x 230 V $\pm$ 10 %	2,2	3	10 $\div$ 16	260	380	150	9,4

CB-QDRM2-en_a_te

Electrical panel for drainage pumps

QDRMC2 Series single-phase



APPLICATIONS

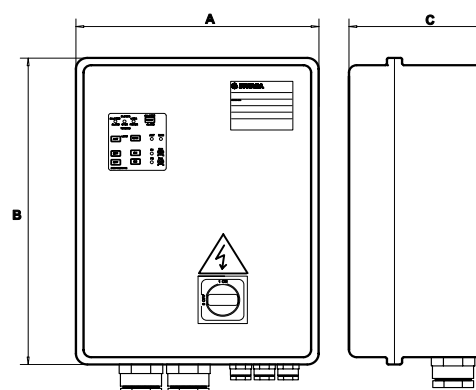
- Protection and control of two single-phase drainage pumps with external capacitor.

SPECIFICATIONS

- Automatic control through electromechanical floats.
- Power supply voltage: 1 x 230 V $\pm$ 10%.
- Frequency: 50/60 Hz.
- Power: 0,5 to 0,7 kW.
- Direct motor start.
- Protection class: IP54.
- Ambient temperature: -5 to +40 °C (according to EN 60439-1).
- Maximum relative humidity: 50% at +40°C, provided that no condensation occurs (according to EN 60439-1).
- Wall mounted.
- Plastic enclosure.
- Electronic board with power, thermal overload, high level alarm, pump start/stop indicator LEDs.
- Alarm silencing button.
- Start and run capacitor incorporated in the control panel.
- /TS version equipped with stator thermal protection circuit.
- /WD version equipped with oil chamber water sensor control circuit and stator thermal protection.

OPTIONAL ACCESSORIES

- Audible or visual signalling device, 12 Vdc 0.3 A max (two connection terminals provided inside the electrical panel) for high-level alarm.
- VR1 single-phase module for overvoltage protection (lightning protector).
- Signal relay board kit (power, auto/man, start/stop, thermal overload, high level).



MODEL	RATED VOLTAGE V	RATED POWER		RATED CURRENT			DIMENSIONS			WEIGHT Kg	C uF	Cs uF
		kW	HP	A	÷	A	A mm	B mm	C mm			
QDRMC2/07	1 x 230 V $\pm$ 10 %	0,75	1	4	÷	6,3	390	470	130	8,5	20	40
QDRMC2/15	1 x 230 V $\pm$ 10 %	1,5	2	6,3	÷	10	390	470	130	8,5	35	60
QDRMC2/22	1 x 230 V $\pm$ 10 %	2,2	3	10	÷	16	390	470	130	8,5	35	60
QDRMC2/07/TS	1 x 230 V $\pm$ 10 %	0,75	1	4	÷	6,3	390	470	130	9	20	40
QDRMC2/15/TS	1 x 230 V $\pm$ 10 %	1,5	2	6,3	÷	10	390	470	130	9	35	60
QDRMC2/22/TS	1 x 230 V $\pm$ 10 %	2,2	3	10	÷	16	390	470	130	9	35	60
QDRMC2/07/WD	1 x 230 V $\pm$ 10 %	0,75	1	4	÷	6,3	390	470	130	10	20	40
QDRMC2/15/WD	1 x 230 V $\pm$ 10 %	1,5	2	6,3	÷	10	390	470	130	10	35	60
QDRMC2/22/WD	1 x 230 V $\pm$ 10 %	2,2	3	10	÷	16	390	470	130	10	35	60

C = Run capacitor; Cs = Start capacitor.

CB-QDRMC2-en_c_te

Electrical panel for drainage pumps

QDR Series three-phase



APPLICATIONS

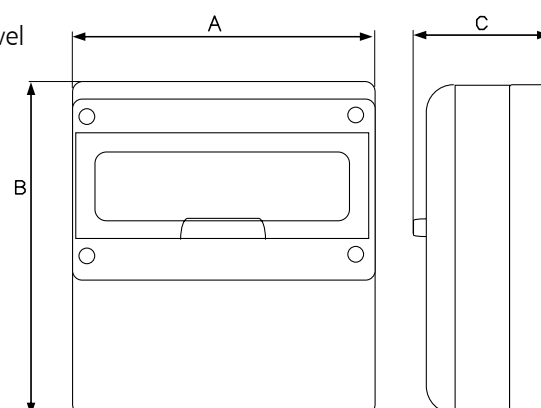
- Protection and control of one three-phase drainage pump.

SPECIFICATIONS

- Automatic control through electromechanical floats.
- Power supply voltage: 3 x 400 V $\pm$ 10%.
- Frequency: 50/60 Hz.
- Power: 0,37 to 9,2 kW.
- Direct motor start.
- Protection class: IP55.
- Ambient temperature: -5 to +40 °C (according to EN 60439-1).
- Maximum relative humidity: 50% at +40°C, provided that no condensation occurs (according to EN 60439-1).
- Wall mounted.
- Plastic enclosure.
- Power, thermal overload, high level indicator lights.
- Alarm silencing button.
- /TS version equipped with stator thermal protection circuit.
- /WD version equipped with oil chamber water sensor control circuit and stator thermal protection.

OPTIONAL ACCESSORIES

- Audible or visual signalling device, 12 Vdc 0.3 A max (two connection terminals provided inside the electrical panel) for high-level alarm.
- VR3 three-phase module (for QDR) for overvoltage protection (lightning protector).



MODEL	RATED VOLTAGE V	RATED POWER		RATED CURRENT A	DIMENSIONS			WEIGHT Kg
		kW	HP		A mm	B mm	C mm	
QDR/03	3 x 400 V $\pm$ 10 %	0,37	0,5	0,63 ÷ 1	280	370	150	4,1
QDR/05	3 x 400 V $\pm$ 10 %	0,55	0,75	1 ÷ 1,6	280	370	150	4,1
QDR/07	3 x 400 V $\pm$ 10 %	0,75	1	1,6 ÷ 2,5	280	370	150	4,1
QDR/15	3 x 400 V $\pm$ 10 %	1,1 ÷ 1,5	1,5 ÷ 2	2,5 ÷ 4	280	370	150	4,1
QDR/22	3 x 400 V $\pm$ 10 %	2,2	3	4 ÷ 6,3	280	370	150	4,1
QDR/40	3 x 400 V $\pm$ 10 %	3 ÷ 4	4 ÷ 5,5	6,3 ÷ 10	280	370	150	4,1
QDR/75	3 x 400 V $\pm$ 10 %	5,5 ÷ 7,5	7,5 ÷ 10	10 ÷ 16	280	370	150	4,1
QDR/07/TS	3 x 400 V $\pm$ 10 %	0,75	1	1,6 ÷ 2,5	280	370	150	4,5
QDR/15/TS	3 x 400 V $\pm$ 10 %	1,5	2	2,5 ÷ 4	280	370	150	4,5
QDR/22/TS	3 x 400 V $\pm$ 10 %	2,2	3	4 ÷ 6,3	280	370	150	4,5
QDR/07/WD	3 x 400 V $\pm$ 10 %	0,75	1	1,6 ÷ 2,5	280	370	150	5
QDR/15/WD	3 x 400 V $\pm$ 10 %	1,5	2	2,5 ÷ 4	280	370	150	5
QDR/22/WD	3 x 400 V $\pm$ 10 %	2,2	3	4 ÷ 6,3	280	370	150	5

The /WD option also includes the /TS option.

CB-QDR-en_c_te

Electrical panel for drainage pumps

QYR Series three-phase



APPLICATIONS

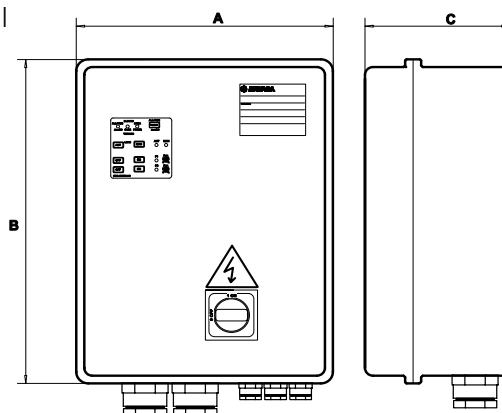
- Protection and control of one three-phase drainage pump with star-delta start.

SPECIFICATIONS

- Automatic control through electromechanical floats.
- Power supply voltage: 3 x 400 V $\pm$ 10%.
- Frequency: 50/60 Hz.
- Power: 4,0 to 75 kW.
- Star-delta motor start.
- Protection class: IP54.
- Ambient temperature: -5 to +40 °C (according to EN 60439-1).
- Maximum relative humidity: 50% at +40°C, provided that no condensation occurs (according to EN 60439-1).
- Wall mounted.
- Metal enclosure.
- Electronic board with power, thermal overload, high level alarm, pump start/stop indicator LEDs.
- Alarm silencing button.
- /TS version equipped with stator thermal protection circuit.
- /WD version equipped with oil chamber water sensor control circuit and stator thermal protection.

OPTIONAL ACCESSORIES

- Audible or visual signalling device, 12 Vdc 0.3 A max (two connection terminals provided inside the electrical panel) for high-level alarm.
 - VR3 three-phase module (for QDR) for overvoltage protection (lightning protector).
 - Signal relay board kit (power, auto/man, start/stop, thermal overload, high level).





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QYR SERIES PANELS ELECTRICAL DATA TABLE

MODEL	RATED VOLTAGE V	RATED POWER		RATED CURRENT A	DIMENSIONS			WEIGHT Kg
		kW	HP		A mm	B mm	C mm	
QYR/40	3 x 400 V $\pm$ 10 %	3 $\div$ 4	4 $\div$ 5,5	6,3 $\div$ 10	400	500	200	25
QYR/75	3 x 400 V $\pm$ 10 %	5,5 $\div$ 7,5	7,5 $\div$ 10	10 $\div$ 16	400	500	200	25
QYR/92	3 x 400 V $\pm$ 10 %	9,2	12,5	16 $\div$ 20	400	500	200	25
QYR/110	3 x 400 V $\pm$ 10 %	11	15	20 $\div$ 25	400	500	200	25
QYR/150	3 x 400 V $\pm$ 10 %	15	20	22 $\div$ 32	400	600	200	27
QYR/185	3 x 400 V $\pm$ 10 %	18,5	25	28 $\div$ 40	400	600	200	27
QYR/220	3 x 400 V $\pm$ 10 %	22	30	36 $\div$ 50	500	700	200	32
QYR/300	3 x 400 V $\pm$ 10 %	30	40	45 $\div$ 63	500	700	200	32
QYR/370	3 x 400 V $\pm$ 10 %	37	50	57 $\div$ 75	600	800	250	32
QYR/450	3 x 400 V $\pm$ 10 %	45	60	70 $\div$ 90	600	800	250	32
QYR/550	3 x 400 V $\pm$ 10 %	55	75	80 $\div$ 108	600	900	250	37
QYR/750	3 x 400 V $\pm$ 10 %	75	100	105 $\div$ 138	600p	1300p	300p	70
QYR/40/TS	3 x 400 V $\pm$ 10 %	3 $\div$ 4	4 $\div$ 5,5	6,3 $\div$ 10	400	500	200	26
QYR/75/TS	3 x 400 V $\pm$ 10 %	5,5 $\div$ 7,5	7,5 $\div$ 10	10 $\div$ 16	400	500	200	26
QYR/92/TS	3 x 400 V $\pm$ 10 %	9,2	12,5	16 $\div$ 20	400	500	200	26
QYR/110/TS	3 x 400 V $\pm$ 10 %	11	15	20 $\div$ 25	400	500	200	26
QYR/150/TS	3 x 400 V $\pm$ 10 %	15	20	22 $\div$ 32	400	600	200	27
QYR/185/TS	3 x 400 V $\pm$ 10 %	18,5	25	28 $\div$ 40	400	600	200	27
QYR/220/TS	3 x 400 V $\pm$ 10 %	22	30	36 $\div$ 50	500	700	200	32
QYR/300/TS	3 x 400 V $\pm$ 10 %	30	40	45 $\div$ 63	500	700	200	32
QYR/370/TS	3 x 400 V $\pm$ 10 %	37	50	57 $\div$ 75	600	800	250	33
QYR/450/TS	3 x 400 V $\pm$ 10 %	45	60	70 $\div$ 90	600	800	250	33
QYR/550/TS	3 x 400 V $\pm$ 10 %	55	75	80 $\div$ 108	600	900	250	37
QYR/750/TS	3 x 400 V $\pm$ 10 %	75	100	105 $\div$ 138	600p	1300p	300p	70
QYR/40/WD	3 x 400 V $\pm$ 10 %	3 $\div$ 4	4 $\div$ 5,5	6,3 $\div$ 10	400	500	200	26
QYR/75/WD	3 x 400 V $\pm$ 10 %	5,5 $\div$ 7,5	7,5 $\div$ 10	10 $\div$ 16	400	500	200	26
QYR/92/WD	3 x 400 V $\pm$ 10 %	9,2	12,5	16 $\div$ 20	400	500	200	26
QYR/110/WD	3 x 400 V $\pm$ 10 %	11	15	20 $\div$ 25	400	500	200	26
QYR/150/WD	3 x 400 V $\pm$ 10 %	15	20	22 $\div$ 32	400	600	200	28
QYR/185/WD	3 x 400 V $\pm$ 10 %	18,5	25	28 $\div$ 40	400	600	200	28
QYR/220/WD	3 x 400 V $\pm$ 10 %	22	30	36 $\div$ 50	500	700	200	33
QYR/300/WD	3 x 400 V $\pm$ 10 %	30	40	45 $\div$ 63	500	700	200	33
QYR/370/WD	3 x 400 V $\pm$ 10 %	37	50	57 $\div$ 75	600	800	250	33
QYR/450/WD	3 x 400 V $\pm$ 10 %	45	60	70 $\div$ 90	600	800	250	33
QYR/550/WD	3 x 400 V $\pm$ 10 %	55	75	80 $\div$ 108	600	900	250	38
QYR/750/WD	3 x 400 V $\pm$ 10 %	75	100	105 $\div$ 138	600p	1300p	300p	71

Dimensions: p = floor-standing cabinet.

CB-QYR-en_d_te

Electrical panel for drainage pumps

QYR2 Series three-phase



APPLICATIONS

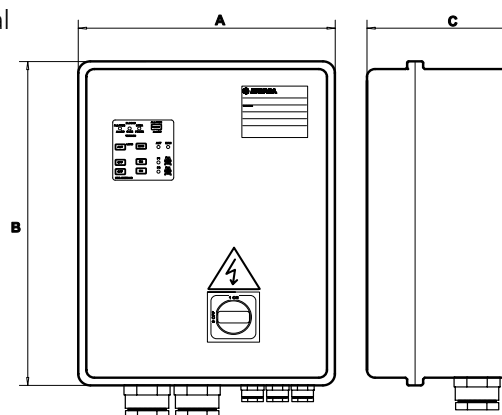
- Protection and control of two three-phase drainage pumps with star-delta start.

SPECIFICATIONS

- Automatic control through electromechanical floats.
- Power supply voltage: 3 x 400 V $\pm$ 10%.
- Frequency: 50/60 Hz.
- Power: 4,0 to 75 kW.
- Star-delta motor start.
- Protection class: IP54.
- Ambient temperature: -5 to +40 °C (according to EN 60439-1).
- Maximum relative humidity: 50% at +40°C, provided that no condensation occurs (according to EN 60439-1).
- Wall mounted.
- Metal enclosure.
- Electronic board with power, thermal overload, high level alarm, pump start/stop indicator LEDs.
- Alarm silencing button.
- /TS version equipped with stator thermal protection circuit.
- /WD version equipped with oil chamber water sensor control circuit and stator thermal protection.

OPTIONAL ACCESSORIES

- Audible or visual signalling device, 12 Vdc 0.3 A max (two connection terminals provided inside the electrical panel) for high-level alarm.
 - VR3 three-phase module for overvoltage protection (lightning protector).
 - Signal relay board kit (power, auto/man, start/stop, thermal overload, high level).





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QYR2 SERIES PANELS ELECTRIC DATA TABLE

MODEL	RATED VOLTAGE V	RATED POWER		RATED CURRENT A	DIMENSIONS			WEIGHT Kg
		kW	HP		A mm	B mm	C mm	
QYR2/40	3 x 400 V ± 10 %	3 ÷ 4	4 ÷ 5,5	6,3 ÷ 10	500	700	200	55
QYR2/75	3 x 400 V ± 10 %	5,5 ÷ 7,5	7,5 ÷ 10	10 ÷ 16	500	700	200	55
QYR2/92	3 x 400 V ± 10 %	9,2	12,5	16 ÷ 20	500	700	200	55
QYR2/110	3 x 400 V ± 10 %	11	15	20 ÷ 25	500	700	200	55
QYR2/150	3 x 400 V ± 10 %	15	20	22 ÷ 32	600	800	250	68
QYR2/185	3 x 400 V ± 10 %	18,5	25	28 ÷ 40	600	800	250	68
QYR2/220	3 x 400 V ± 10 %	22	30	36 ÷ 50	600	900	250	75
QYR2/300	3 x 400 V ± 10 %	30	40	45 ÷ 63	600	900	250	75
QYR2/370	3 x 400 V ± 10 %	37	50	57 ÷ 75	600p	1300p	300p	92
QYR2/450	3 x 400 V ± 10 %	45	60	70 ÷ 90	800p	1700p	300p	125
QYR2/550	3 x 400 V ± 10 %	55	75	80 ÷ 108	800p	1700p	300p	125
QYR2/750	3 x 400 V ± 10 %	75	100	105 ÷ 138	800p	1900p	300p	148
QYR2/40/TS	3 x 400 V ± 10 %	3 ÷ 4	4 ÷ 5,5	6,3 ÷ 10	500	700	200	55
QYR2/75/TS	3 x 400 V ± 10 %	5,5 ÷ 7,5	7,5 ÷ 10	10 ÷ 16	500	700	200	55
QYR2/92/TS	3 x 400 V ± 10 %	9,2	12,5	16 ÷ 20	500	700	200	55
QYR2/110/TS	3 x 400 V ± 10 %	11	15	20 ÷ 25	500	700	200	55
QYR2/150/TS	3 x 400 V ± 10 %	15	20	22 ÷ 32	600	800	250	68
QYR2/185/TS	3 x 400 V ± 10 %	18,5	25	28 ÷ 40	600	800	250	68
QYR2/220/TS	3 x 400 V ± 10 %	22	30	36 ÷ 50	600	900	250	75
QYR2/300/TS	3 x 400 V ± 10 %	30	40	45 ÷ 63	600	900	250	75
QYR2/370/TS	3 x 400 V ± 10 %	37	50	57 ÷ 75	600p	1300p	300p	92
QYR2/450/TS	3 x 400 V ± 10 %	45	60	70 ÷ 90	800p	1700p	300p	125
QYR2/550/TS	3 x 400 V ± 10 %	55	75	80 ÷ 108	800p	1700p	300p	125
QYR2/750/TS	3 x 400 V ± 10 %	75	100	105 ÷ 138	800p	1900p	300p	148
QYR2/40/WD	3 x 400 V ± 10 %	3 ÷ 4	4 ÷ 5,5	6,3 ÷ 10	500	700	200	55
QYR2/75/WD	3 x 400 V ± 10 %	5,5 ÷ 7,5	7,5 ÷ 10	10 ÷ 16	500	700	200	55
QYR2/92/WD	3 x 400 V ± 10 %	9,2	12,5	16 ÷ 20	500	700	200	55
QYR2/110/WD	3 x 400 V ± 10 %	11	15	20 ÷ 25	500	700	200	55
QYR2/150/WD	3 x 400 V ± 10 %	15	20	22 ÷ 32	600	800	250	68
QYR2/185/WD	3 x 400 V ± 10 %	18,5	25	28 ÷ 40	600	800	250	68
QYR2/220/WD	3 x 400 V ± 10 %	22	30	36 ÷ 50	600	900	250	75
QYR2/300/WD	3 x 400 V ± 10 %	30	40	45 ÷ 63	600	900	250	75
QYR2/370/WD	3 x 400 V ± 10 %	37	50	57 ÷ 75	600p	1300p	300p	92
QYR2/450/WD	3 x 400 V ± 10 %	45	60	70 ÷ 90	800p	1700p	300p	125
QYR2/550/WD	3 x 400 V ± 10 %	55	75	80 ÷ 108	800p	1700p	300p	125
QYR2/750/WD	3 x 400 V ± 10 %	75	100	105 ÷ 138	800p	1900p	300p	148

Dimensions: p = floor-standing cabinet.

CB-QYR2-en_a_te

Electrical panel for drainage pumps

QDR2 Series three-phase



APPLICATIONS

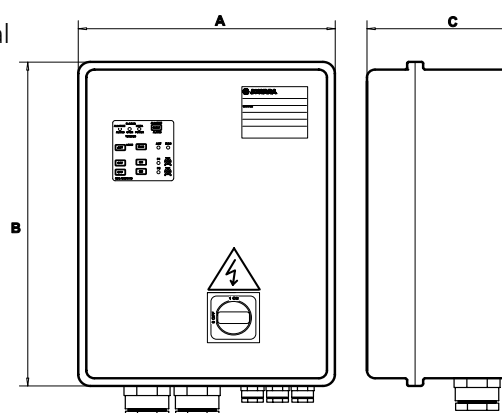
- Protection and control of two three-phase drainage pumps.

SPECIFICATIONS

- Automatic control through electromechanical floats.
- Power supply voltage: 3 x 400 V $\pm$ 10%.
- Frequency: 50/60 Hz.
- Power: 0,37 to 9,2 kW.
- Direct motor start.
- Protection class: IP54.
- Ambient temperature: -5 to +40 °C (according to EN 60439-1).
- Maximum relative humidity: 50% at +40°C, provided that no condensation occurs (according to EN 60439-1).
- Wall mounted.
- Metal enclosure.
- Electronic board with power, thermal overload, high level alarm, pump start/stop indicator LEDs.
- Alarm silencing button.
- /TS version equipped with stator thermal protection circuit.
- /WD version equipped with oil chamber water sensor control circuit and stator thermal protection.

OPTIONAL ACCESSORIES

- Audible or visual signalling device, 12 Vdc 0.3 A max (two connection terminals provided inside the electrical panel) for high-level alarm.
 - VR3 three-phase module for overvoltage protection (lightning protector).
 - Signal relay board kit (power, auto/man, start/stop, thermal overload, high level).



MODEL	RATED VOLTAGE V	RATED POWER		RATED CURRENT A	DIMENSIONS			WEIGHT Kg
		kW	HP		A mm	B mm	C mm	
QDR2/03	3 x 400 V $\pm$ 10 %	0,37	0,5	0,63 ÷ 1	260	380	150	9,4
QDR2/05	3 x 400 V $\pm$ 10 %	0,55	0,75	1 ÷ 1,6	260	380	150	9,4
QDR2/07	3 x 400 V $\pm$ 10 %	0,75	1	1,6 ÷ 2,5	260	380	150	9,4
QDR2/15	3 x 400 V $\pm$ 10 %	1,1 ÷ 1,5	1,5 ÷ 2	2,5 ÷ 4	260	380	150	9,4
QDR2/22	3 x 400 V $\pm$ 10 %	2,2	3	4 ÷ 6,3	260	380	150	9,4
QDR2/40	3 x 400 V $\pm$ 10 %	3 ÷ 4	4 ÷ 5,5	6,3 ÷ 10	260	380	150	9,4
QDR2/75	3 x 400 V $\pm$ 10 %	5,5 ÷ 7,5	7,5 ÷ 10	10 ÷ 16	260	380	150	9,4
QDR2/92	3 x 400 V $\pm$ 10 %	9,2	12,5	16 ÷ 20	300	400	180	11
QDR2/07/TS	3 x 400 V $\pm$ 10 %	0,75	1	1,6 ÷ 2,5	400	500	200	14
QDR2/15/TS	3 x 400 V $\pm$ 10 %	1,1 ÷ 1,5	1,5 ÷ 2	2,5 ÷ 4	400	500	200	14
QDR2/22/TS	3 x 400 V $\pm$ 10 %	2,2	3	4 ÷ 6,3	400	500	200	14
QDR2/07/WD	3 x 400 V $\pm$ 10 %	0,75	1	1,6 ÷ 2,5	400	500	200	18
QDR2/15/WD	3 x 400 V $\pm$ 10 %	1,1 ÷ 1,5	1,5 ÷ 2	2,5 ÷ 4	400	500	200	18
QDR2/22/WD	3 x 400 V $\pm$ 10 %	2,2	3	4 ÷ 6,3	400	500	200	18

The /WD option also includes the /TS option.

CB-QDR2-en_a_te

GLS SERIES COMBINATION TABLE - CONTROL PANELS

TYPE ELECTRIC PUMP	STANDARD VERSION		PANEL RATED CURRENT (A)
	1 PUMP	2 PUMPS	
GLS 50-15-251-S	QDRMC/15/TS/GL	QDRMC2/15/TS/GL	6,3-10A
GLS 50-15-251-P	QDRMC/15/TS/GL	QDRMC2/15/TS/GL	6,3-10A
GLS 50-16-253-S	QDR/15/TS	QDR2/15/TS	2,5-4A
GLS 50-16-253-P	QDR/15/TS	QDR2/15/TS	2,5-4A
GLS 50-20-253-S	QDR/22/TS	QDR2/22/TS	4-6,3A
GLS 50-20-253-P	QDR/22/TS	QDR2/22/TS	4-6,3A
GLS 50-24-253-S	QDR/22/TS	QDR2/22/TS	4-6,3A
GLS 50-24-253-P	QDR/22/TS	QDR2/22/TS	4-6,3A
GLS 65-15-251	QDRMC/15/TS/GL	QDRMC2/15/TS/GL	6,3-10A
GLS 65-16-253	QDR/15/TS	QDR2/15/TS	2,5-4A
GLS 65-20-253	QDR/22/TS	QDR2/22/TS	4-6,3A
GLS 65-24-253	QDR/22/TS	QDR2/22/TS	4-6,3A
GLS 65-32-253	QYR/40/TS	QYR2/40/TS	6,3-10A
GLS 65-42-253	QYR/40/TS	QYR2/40/TS	6,3-10A
GLS 80-32-253	QYR/40/TS	QYR2/40/TS	6,3-10A
GLS 80-42-253	QYR/40/TS	QYR2/40/TS	6,3-10A
GLS 80-59-253	QYR/75/TS	QYR2/75/TS	10-16A
GLS 80-74-253	QYR/75/TS	QYR2/75/TS	10-16A
GLS 100-24-453	QYR/22/TS	QYR2/22/TS	4-6,3A
GLS 100-31-453	QYR/40/TS	QYR2/40/TS	6,3-10A
GLS 100-45-453	QYR/40/TS	QYR2/40/TS	6,3-10A
GLS 100-59-453	QYR/75/TS	QYR2/75/TS	10-16A

GLS-en_A_TQ

GLV SERIES COMBINATION TABLE - CONTROL PANELS

TYPE ELECTRIC PUMP	STANDARD VERSION		PANEL RATED CURRENT (A)
	1 PUMP	2 PUMPS	
GLV 50-12-251-S	QDRMC/15/TS/GL	QDRMC2/15/TS/GL	6,3-10A
GLV 50-12-251-P	QDRMC/15/TS/GL	QDRMC2/15/TS/GL	6,3-10A
GLV 50-15-251-S	QDRMC/15/TS/GL	QDRMC2/15/TS/GL	6,3-10A
GLV 50-15-251-P	QDRMC/15/TS/GL	QDRMC2/15/TS/GL	6,3-10A
GLV 50-16-253-S	QDR/15/TS	QDR2/15/TS	2,5-4A
GLV 50-16-253-P	QDR/15/TS	QDR2/15/TS	2,5-4A
GLV 50-20-253-S	QDR/22/TS	QDR2/22/TS	4-6,3A
GLV 50-20-253-P	QDR/22/TS	QDR2/22/TS	4-6,3A
GLV 50-24-253-S	QDR/22/TS	QDR2/22/TS	4-6,3A
GLV 50-24-253-P	QDR/22/TS	QDR2/22/TS	4-6,3A
GLV 65-15-251	QDRMC/15/TS/GL	QDRMC2/15/TS/GL	6,3-10A
GLV 65-15-253	QDR/15/TS	QDR2/15/TS	2,5-4A
GLV 65-20-253	QDR/22/TS	QDR2/22/TS	4-6,3A
GLV 65-24-253	QDR/22/TS	QDR2/22/TS	4-6,3A
GLV 65-32-253	QYR/40/TS	QYR2/40/TS	6,3-10A
GLV 65-42-253	QYR/40/TS	QYR2/40/TS	6,3-10A
GLV 80-32-253	QYR/40/TS	QYR2/40/TS	6,3-10A
GLV 80-42-253	QYR/40/TS	QYR2/40/TS	6,3-10A
GLV 80-59-253	QYR/75/TS	QYR2/75/TS	10-16A
GLV 80-74-253	QYR/75/TS	QYR2/75/TS	10-16A
GLV 100-24-453	QYR/22/TS	QYR2/22/TS	4-6,3A
GLV 100-31-453	QYR/40/TS	QYR2/40/TS	6,3-10A
GLV 100-45-453	QYR/40/TS	QYR2/40/TS	6,3-10A
GLV 100-59-453	QYR/75/TS	QYR2/75/TS	10-16A

GLV-en_A_TQ



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DLG SERIES COMBINATION TABLE - CONTROL PANELS

TYPE ELECTRIC PUMP	STANDARD VERSION		/TS VERSION		/WD VERSION		PANEL RATED CURRENT (A)
	1 PUMP	2 PUMPS	1 PUMP	2 PUMPS	1 PUMP	2 PUMPS	
DLGM 50-15 A	-	QDRMC2/15	QDRMC/15/TS	QDRMC2/15/TS	QDRMC/15/WD	QDRMC2/15/WD	6,3-10A
DLGM 50-15	-	QDRMC2/15	QDRMC/15/TS	QDRMC2/15/TS	QDRMC/15/WD	QDRMC2/15/WD	6,3-10A
DLGM 50-21 A	-	QDRMC2/22	QDRMC/22/TS	QDRMC2/22/TS	QDRMC/22/WD	QDRMC2/22/WD	10-16A
DLGM 50-21	-	QDRMC2/22	QDRMC/22/TS	QDRMC2/22/TS	QDRMC/22/WD	QDRMC2/22/WD	10-16A
DLG 50-15 A	QDR/15	QDR2/15	QDR/15/TS	QDR2/15/TS	QDR/15/WD	QDR2/15/WD	2,5-4A
DLG 50-15	QDR/15	QDR2/15	QDR/15/TS	QDR2/15/TS	QDR/15/WD	QDR2/15/WD	2,5-4A
DLG 50-21 A	QDR/15	QDR2/15	QDR/15/TS	QDR2/15/TS	QDR/15/WD	QDR2/15/WD	2,5-4A
DLG 50-21	QDR/15	QDR2/15	QDR/15/TS	QDR2/15/TS	QDR/15/WD	QDR2/15/WD	2,5-4A
DLG 50-28	QDR/22	QDR2/22	QDR/22/TS	QDR2/22/TS	QDR/22/WD	QDR2/22/WD	4-6,3A
DLG 50-35 A	QDR/22	QDR2/22	QDR/22/TS	QDR2/22/TS	QDR/22/WD	QDR2/22/WD	4-6,3A
DLG 50-35	QDR/22	QDR2/22	QDR/22/TS	QDR2/22/TS	QDR/22/WD	QDR2/22/WD	4-6,3A
DLG 50-51 A	QYR/40	QYR2/40	QYR/40/TS	QYR2/40/TS	QYR/40/WD	QYR2/40/WD	6,3-10A
DLG 50-51	QYR/40	QYR2/40	QYR/40/TS	QYR2/40/TS	QYR/40/WD	QYR2/40/WD	6,3-10A
DLG4M 50-09	-	QDRMC2/07A	QDRMC/07A/TS	QDRMC2/07A/TS	QDRMC/07A/WD	QDRMC2/07A/WD	4- 6,3A
DLG4 50-09	QDR/07	QDR2/07	QDR/07/TS	QDR2/07/TS	QDR/07/WD	QDR2/07/WD	1,6-2,5A

Single-phase DLG pumps come with control panel. For two-pump applications use pump version without panel.

DLG-en_C_TQ

GLS SERIES ACCESSORIES

ELECTRIC PUMP TYPE	LOWERING SYSTEM				KIT 90° ELBOW WITH HOSE CONNECTOR	THREADED KIT 90° ELBOW	STAND KIT
	BASEPLATE	UPPER GUIDE RAIL HOLDER	FIXING KIT	KIT GUIDECLAW			
GLS 50-15-251-S	BP50	UG50	FK50	-	-	-	integrated
GLS 50-15-251-P	BP50	UG50	FK50	integrated	-	-	-
GLS 50-16-253-S	BP50	UG50	FK50	-	-	-	integrated
GLS 50-16-253-P	BP50	UG50	FK50	integrated	-	-	-
GLS 50-20-253-S	BP50	UG50	FK50	-	-	-	integrated
GLS 50-20-253-P	BP50	UG50	FK50	integrated	-	-	-
GLS 50-24-253-S	BP50	UG50	FK50	-	-	-	integrated
GLS 50-24-253-P	BP50	UG50	FK50	integrated	-	-	-
GLS 65-15-251	BP65	UG65/80/100	FK65/80/100	GC65	EL65/80	TEL65/80	integrated
GLS 65-16-253	BP65	UG65/80/100	FK65/80/100	GC65	EL65/80	TEL65/80	integrated
GLS 65-20-253	BP65	UG65/80/100	FK65/80/100	GC65	EL65/80	TEL65/80	integrated
GLS 65-24-253	BP65	UG65/80/100	FK65/80/100	GC65	EL65/80	TEL65/80	integrated
GLS 65-32-253	BP65	UG65/80/100	FK65/80/100	GC65	EL65/80	TEL65/80	ST65/80/100
GLS 65-42-253	BP65	UG65/80/100	FK65/80/100	GC65	EL65/80	TEL65/80	ST65/80/100
GLS 80-32-253	BP80	UG65/80/100	FK65/80/100	GC80	EL65/80	TEL65/80	ST65/80/100
GLS 80-42-253	BP80	UG65/80/100	FK65/80/100	GC80	EL65/80	TEL65/80	ST65/80/100
GLS 80-59-253	BP80	UG65/80/100	FK65/80/100	GC80	EL65/80	TEL65/80	ST65/80/100
GLS 80-74-253	BP80	UG65/80/100	FK65/80/100	GC80	EL65/80	TEL65/80	ST65/80/100
GLS 100-24-453	BP100	UG65/80/100	FK65/80/100	GC100	EL100	TEL100	ST65/80/100
GLS 100-31-453	BP100	UG65/80/100	FK65/80/100	GC100	EL100	TEL100	ST65/80/100
GLS 100-45-453	BP100	UG65/80/100	FK65/80/100	GC100	EL100	TEL100	ST65/80/100
GLS 100-59-453	BP100	UG65/80/100	FK65/80/100	GC100	EL100	TEL100	ST65/80/100
LEGEND							
BP50 = Baseplate DN50				GC65 = Kit guideclaw DN65			
BP65 = Baseplate DN65				GC80 = Kit guideclaw DN80			
BP80 = Baseplate DN80				GC100 = Kit guideclaw DN100			
BP100 = Baseplate DN100				EL65/80 = Kit 90° elbow with hose connector DN65/80 - 75mm			
UG50 = Upper guide rail holder DN50				EL100 = Kit 90° elbow with hose connector DN100 - 100mm			
UG65/80/100 = Upper guide rail holder DN65/80/100				TEL65/80 = Threaded kit 90° elbow ISO G3"			
FK50 = Fixing kit DN50				TEL100 = Threaded kit 90° elbow ISO G4"			
FK65/80/100 = Fixing kit DN65/80/100				ST65/80/100 = Stand kit DN65/80/100			

GLS-en_A_TA

GLV SERIES ACCESSORIES

ELECTRIC PUMP TYPE	LOWERING SYSTEM				KIT 90° ELBOW WITH HOSE CONNECTOR	THREADED KIT 90° ELBOW	STAND KIT
	BASEPLATE	UPPER GUIDE RAIL HOLDER	FIXING KIT	KIT GUIDECLAW			
GLV 50-12-251-S	BP50	UG50	FK50	-	-	-	integrated
GLV 50-12-251-P	BP50	UG50	FK50	integrated	-	-	-
GLV 50-15-251-S	BP50	UG50	FK50	-	-	-	integrated
GLV 50-15-251-P	BP50	UG50	FK50	integrated	-	-	-
GLV 50-16-253-S	BP50	UG50	FK50	-	-	-	integrated
GLV 50-16-253-P	BP50	UG50	FK50	integrated	-	-	-
GLV 50-20-253-S	BP50	UG50	FK50	-	-	-	integrated
GLV 50-20-253-P	BP50	UG50	FK50	integrated	-	-	-
GLV 50-24-253-S	BP50	UG50	FK50	-	-	-	integrated
GLV 50-24-253-P	BP50	UG50	FK50	integrated	-	-	-
GLV 65-15-251	BP65	UG65/80/100	FK65/80/100	GC65	EL65/80	TEL65/80	integrated
GLV 65-15-253	BP65	UG65/80/100	FK65/80/100	GC65	EL65/80	TEL65/80	integrated
GLV 65-20-253	BP65	UG65/80/100	FK65/80/100	GC65	EL65/80	TEL65/80	integrated
GLV 65-24-253	BP65	UG65/80/100	FK65/80/100	GC65	EL65/80	TEL65/80	integrated
GLV 65-32-253	BP65	UG65/80/100	FK65/80/100	GC65	EL65/80	TEL65/80	ST65/80/100
GLV 65-42-253	BP65	UG65/80/100	FK65/80/100	GC65	EL65/80	TEL65/80	ST65/80/100
GLV 80-32-253	BP80	UG65/80/100	FK65/80/100	GC80	EL65/80	TEL65/80	ST65/80/100
GLV 80-42-253	BP80	UG65/80/100	FK65/80/100	GC80	EL65/80	TEL65/80	ST65/80/100
GLV 80-59-253	BP80	UG65/80/100	FK65/80/100	GC80	EL65/80	TEL65/80	ST65/80/100
GLV 80-74-253	BP80	UG65/80/100	FK65/80/100	GC80	EL65/80	TEL65/80	ST65/80/100
GLV 100-24-453	BP100	UG65/80/100	FK65/80/100	GC100	EL100	TEL100	ST65/80/100
GLV 100-31-453	BP100	UG65/80/100	FK65/80/100	GC100	EL100	TEL100	ST65/80/100
GLV 100-45-453	BP100	UG65/80/100	FK65/80/100	GC100	EL100	TEL100	ST65/80/100
GLV 100-59-453	BP100	UG65/80/100	FK65/80/100	GC100	EL100	TEL100	ST65/80/100
LEGEND							
BP50 = Baseplate DN50				GC65 = Kit guideclaw DN65			
BP65 = Baseplate DN65				GC80 = Kit guideclaw DN80			
BP80 = Baseplate DN80				GC100 = Kit guideclaw DN100			
BP100 = Baseplate DN100				EL65/80 = Kit 90° elbow with hose connector DN65/80 - 75mm			
UG50 = Upper guide rail holder DN50				EL100 = Kit 90° elbow with hose connector DN100 - 100mm			
UG65/80/100 = Upper guide rail holder DN65/80/100				TEL65/80 = Threaded kit 90° elbow ISO G3"			
FK50 = Fixing kit DN50				TEL100 = Threaded kit 90° elbow ISO G4"			
FK65/80/100 = Fixing kit DN65/80/100				ST65/80/100 = Stand kit DN65/80/100			

GLV-en_A_TA

**DLG SERIES
ACCESSORIES**

TYPE ELECTRIC PUMP	LOWERING SYSTEM KIT		90° ELBOW WITH HOSE CONNECTOR		THREADED 90° ELBOW	THREADED FLANGE	STAND
	TYPE 1	TYPE 2	TYPE 1	TYPE 2			
DLGM 50-15 A	DS1	DS2A	HA1	HA2	TB1	TF3	integrated
DLGM 50-15	DS1	DS2A	HA1	HA2	TB1	TF3	integrated
DLGM 50-21 A	DS1	DS2A	HA1	HA2	TB1	TF3	integrated
DLGM 50-21	DS1	DS2A	HA1	HA2	TB1	TF3	integrated
DLG 50-15 A	DS1	DS2A	HA1	HA2	TB1	TF3	integrated
DLG 50-15	DS1	DS2A	HA1	HA2	TB1	TF3	integrated
DLG 50-21 A	DS1	DS2A	HA1	HA2	TB1	TF3	integrated
DLG 50-21	DS1	DS2A	HA1	HA2	TB1	TF3	integrated
DLG 50-28	DS1	DS2A	HA1	HA2	TB1	TF3	integrated
DLG 50-35 A	DS1	DS2A	HA1	HA2	TB1	TF3	integrated
DLG 50-35	DS1	DS2A	HA1	HA2	TB1	TF3	integrated
DLG 50-51 A	DS1	DS2A	HA1	HA2	TB1	TF3	integrated
DLG 50-51	DS1	DS2A	HA1	HA2	TB1	TF3	integrated
DLG4M 50-09	DS1	DS2A	HA1	HA2	TB1	TF3	integrated
DLG4 50-09	DS1	DS2A	HA1	HA2	TB1	TF3	integrated
LEGEND							
DS1 = DS1 lowering kit DN 50-65/C					HA1 = HA1 hose connector 50mm		
DS2A = DS2A lowering kit DN 50-65 2R/C					HA2 = HA2 hose connector 75mm		
TB1 = TB1 2" F elbow			TF3 = TF3 2" F flange				

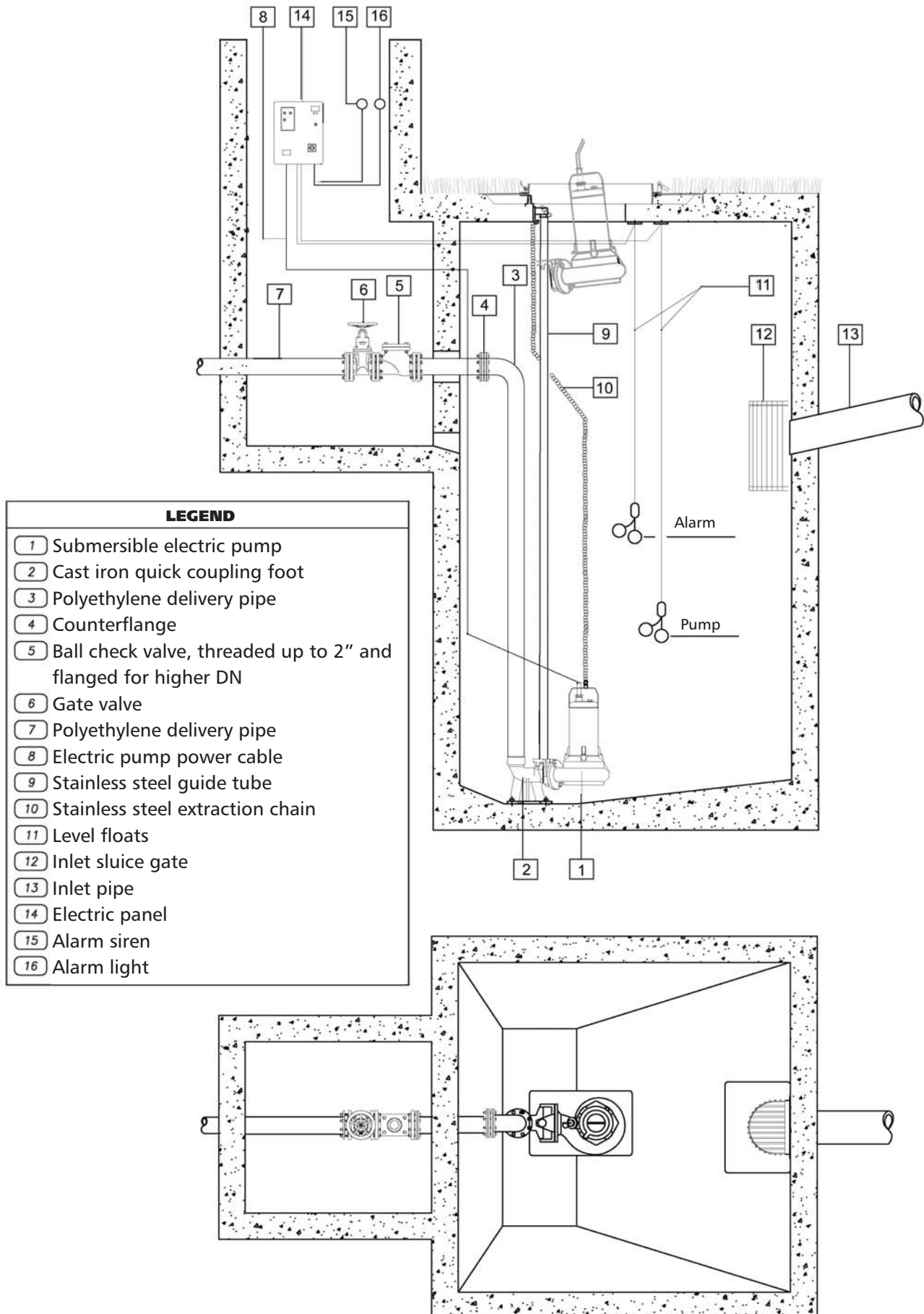
DLG-en_B_TA



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EXAMPLE OF INSTALLATION OF SINGLE-PUMP SYSTEM

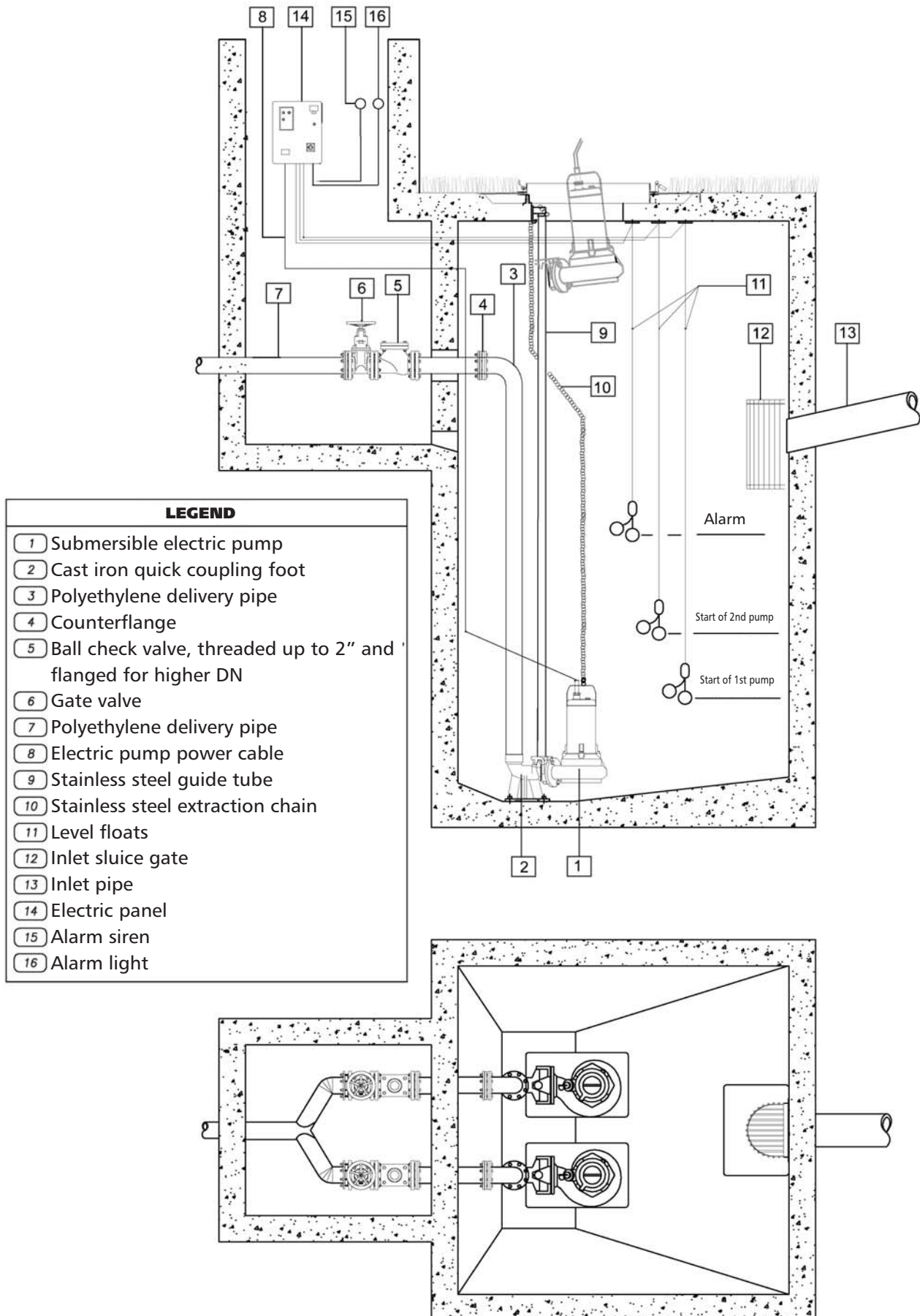




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EXAMPLE OF INSTALLATION OF TWO-PUMP SYSTEM WITH THREE FLOATS

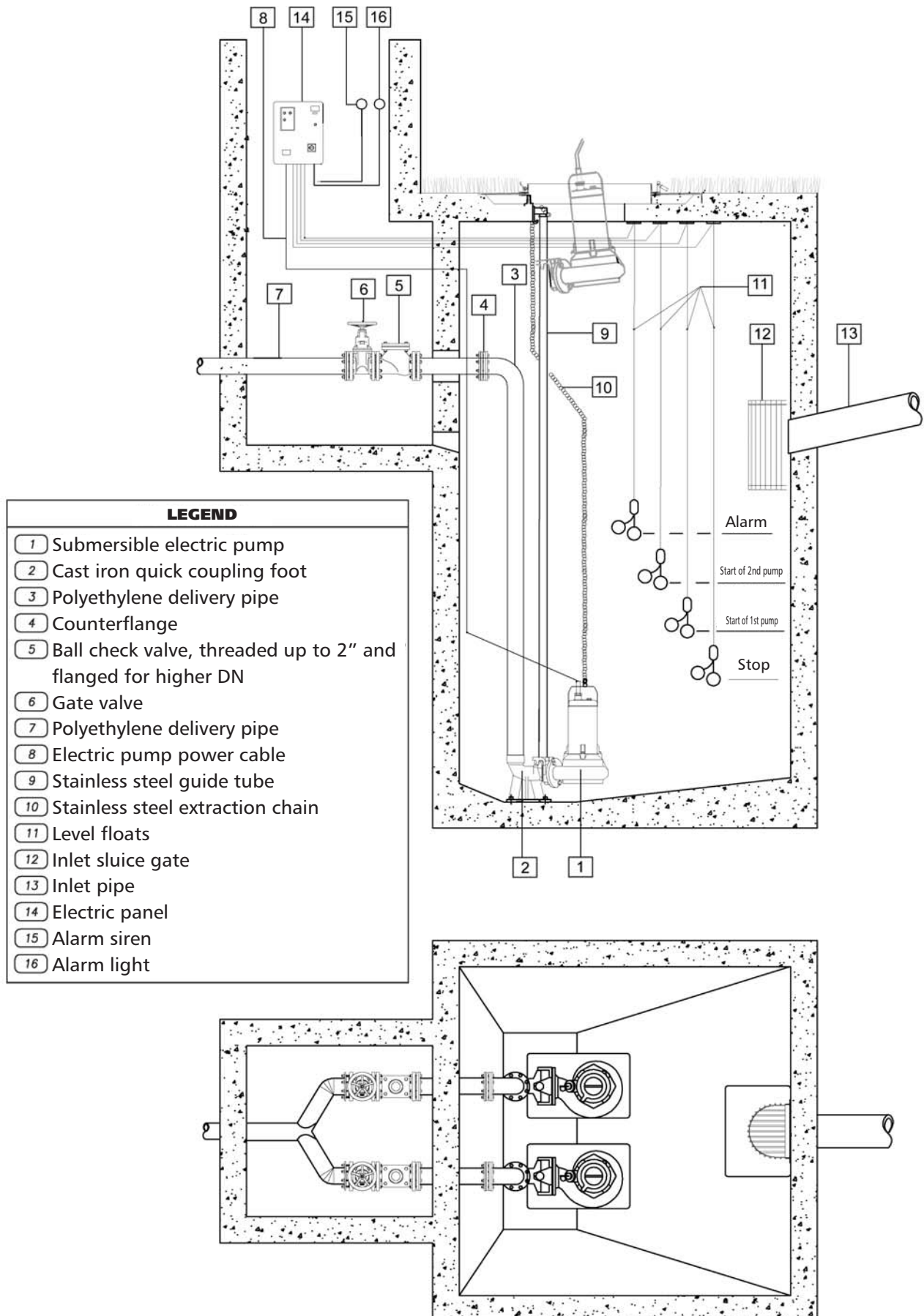




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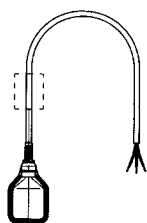
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EXAMPLE OF INSTALLATION OF TWO-PUMP SYSTEM WITH FOUR FLOATS



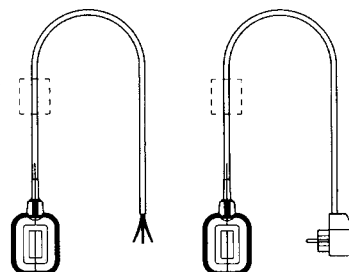
LEVEL CONTROL FLOAT

SMALL MODEL



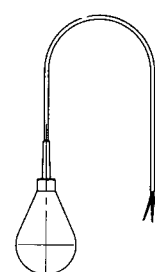
For single function (draining)
cable lenght 1.5, 5, 10 m.
Counterweight available on request for
version with 5, 10 m cable.

KEY MODEL



For dual function (draining/filling)
cable lenght 1.5, 5, 10, 20 m.
Counterweight available on request for
version with 5, 10 m cable.
Version with plug and socket for
single-phase pumps up to 1 kW.

RDN-10 MODEL



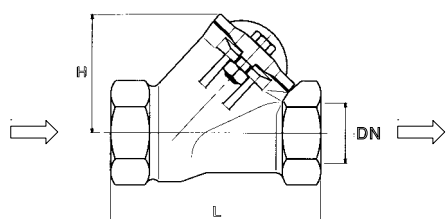
For solids-laden water.
Cable lenght: 15 m. (PVC)

BALL CHECK VALVE FOR SOLIDS-LADEN WATER

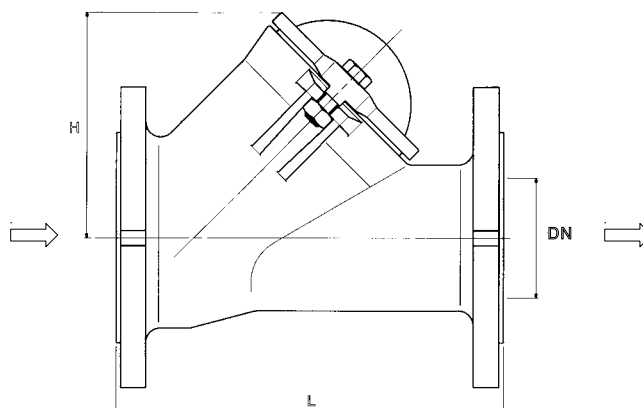
No-clog, maximum reliability, low flow resistance.
Maximum operating pressure: 10 bar.
Maximum temperature: 85°C.
Horizontal or vertical operating position.

MODEL	DIMENSIONS (mm)			WEIGHT kg
	Ø BALL	L	H	
Rp 1 1/4	48	140	80	2
Rp 1 1/2	50	140	80	4
Rp 2	60	200	98	5,5
DN 65	95	230	148	12
DN 80	95	260	148	13
DN 100	120	300	182	18
DN 150	175	400	251	37,5
DN 200	240	500	333	70
DN 250	300	600	406	128

Valv-palla-en_a_td



Rp 1 1/4 - 1 1/2 - 2 MODEL



65 - 80 - 100 - 150 - 200 - 250 MODEL

TECHNICAL APPENDIX



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FLOW RESISTANCE

TABLE OF FLOW RESISTANCE IN 100 m OF A NEW AND STRAIGHT CAST IRON PIPELINE

FLOW RATE			NOMINAL DIAMETER IN mm AND INCHES																
m³/h	l/min.		15 ½"	20 ¾"	25 1"	32 1 ¼"	40 1 ½"	50 2"	65 2 ½"	80 3"	100 4"	125 5"	150 6"	175 7"	200 8"	250 10"	300 12"	350 14"	400 16"
0,6	10	V hr	0,94 11,8	0,53 2,82	0,34 1	0,21 0,25													
0,9	15	V hr	1,42 25,1	0,8 6,04	0,51 2,16	0,31 0,55													
1,2	20	V hr	1,89 43,1	1,06 10,4	0,68 3,72	0,41 0,95	0,27 0,31												
1,5	25	V hr	2,36 64,5	1,33 15,8	0,85 5,68	0,52 1,47	0,33 0,47												
1,8	30	V hr	2,83 92	1,59 22,3	1,02 8	0,62 2,09	0,4 0,66												
2,1	35	V hr	3,3 123	1,86 29,8	1,19 10,8	0,73 2,81	0,46 0,89	0,3 0,31											
2,4	40	V hr	3,77 164	2,12 38,2	1,36 13,8	0,83 2,65	0,53 1,15	0,34 0,4											
3	50	V hr	4,72 246	2,65 58,2	1,7 21,5	1,04 5,6	0,66 1,75	0,42 0,61											
3,6	60	V hr		3,18 82	2,04 30	1,24 8	0,8 2,48	0,51 0,86											
4,2	70	V hr		3,72 110	2,38 40	1,45 10,8	0,93 3,33	0,59 1,14											
4,8	80	V hr		4,25 141	2,72 51,5	1,66 13,9	1,06 4,3	0,68 1,46											
5,4	90	V hr			3,06 64	1,87 17,5	1,19 5,4	0,76 1,82	0,45 0,46										
6	100	V hr			3,4 79	2,07 21,4	1,33 6,6	0,85 2,22	0,5 0,56										
7,5	125	V hr			4,25 120	2,59 33	1,66 10	1,06 3,4	0,63 0,86										
9	150	V hr				3,11 47	1,99 14,2	1,27 4,74	0,75 1,21	0,5 0,43									
10,5	175	V hr				3,63 63	2,32 19	1,49 6,3	0,88 1,63	0,58 0,57									
12	200	V hr				4,15 82	2,65 24,5	1,7 8,1	1,01 2,1	0,66 0,74									
15	250	V hr				5,18 126	3,32 37,5	2,12 12,3	1,26 3,2	0,83 1,12	0,53 0,36								
18	300	V hr					3,98 53	2,55 17,3	1,51 4,5	1 1,58	0,64 0,51								
24	400	V hr					5,31 92	3,4 29,5	2,01 7,8	1,33 2,7	0,85 0,89								
30	500	V hr					6,63 140	4,25 44,8	2,51 12	1,66 4,13	1,06 1,36	0,68 0,48							
36	600	V hr						5,1 63	3,02 16,9	1,99 5,8	1,27 1,93	0,82 0,68							
42	700	V hr						5,94 84	3,52 22,6	2,32 7,8	1,49 2,6	0,95 0,9							
48	800	V hr						6,79 108	4,02 29	2,65 10	1,70 3,35	1,09 1,16	0,75 0,43						
54	900	V hr						7,64 134	4,52 36	2,99 12,5	1,91 4,2	1,22 1,45	0,85 0,54						
60	1000	V hr						5,03 44,5	3,32 15,2	2,12 5,14	1,36 1,76	0,94 0,66							
75	1250	V hr						6,28 68	4,15 23	2,65 7,9	1,70 2,68	1,18 1	0,87 0,48						
90	1500	V hr						7,54 96	4,98 32,6	3,18 11,2	2,04 3,77	1,42 1,42	1,04 0,68						
105	1750	V hr						8,79 129	5,81 43,5	3,72 15	2,38 5,04	1,65 1,9	1,21 0,91	0,93 0,45					
120	2000	V hr							6,63 56	4,25 19,4	2,72 6,5	1,89 2,43	1,39 1,18	1,06 0,58	0,68 0,16				
150	2500	V hr							8,29 85	5,31 30	3,40 9,8	2,36 3,75	1,73 1,79	1,33 0,89	0,85 0,25				
180	3000	V hr							9,95 120	6,37 42	4,08 13,8	2,83 5,3	2,08 2,53	1,59 1,25	1,02 0,35	0,71 0,15			
300	5000	V hr								10,62 124,9	6,79 41,3	4,72 16,74	3,47 7,81	2,65 4,03	1,70 1,34	1,18 0,54	0,87 0,25	0,66 0,13	
600	10000	V hr									13,59 161	9,44 65	6,93 30,2	5,31 15,6	3,4 5,16	2,36 2,09	1,73 0,97	1,33 0,5	
1200	20000	V hr													6,79 20,1	4,72 8,13	3,47 3,8	2,65 1,95	
1800	30000	V hr														7,7 18,07	5,2 8,39	4,0 4,32	
3000	50000	V hr														11,8 49,5	8,67 23	6,63 11,8	
4500	75000	V hr															17,7 110,5	13 51,3	9,9 26,4
6000	100000	V hr																17,33 90,6	13,27 46,6

THE FLOW RESISTANCE MUST BE MULTIPLIED BY:

- 0.8 for stainless steel pipes
- 1.25 for slightly rusted steel pipes
- 1.7 for pipes with deposits that reduce the flow section
- 0.7 for aluminium pipes
- 1.3 for fibre-cement pipes

Hr = FLOW RESISTANCE (m/100 m OF PIPELINE)

V = WATER SPEED (m/sec)



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FLOW RESISTANCE IN BENDS, VALVES AND GATES IN cm OF COLUMN OF WATER

WATER SPEED m/ ec	SHARP BENDS 					SMOOTH BENDS 					STANDARD GATE VALVES	FOOT VALVES	CHECK VALVES
	a = 30°	a = 40°	a = 60°	a = 80°	a = 90°	$\frac{d}{R} = 0,4$	$\frac{d}{R} = 0,6$	$\frac{d}{R} = 0,8$	$\frac{d}{R} = 1$	$\frac{d}{R} = 1,5$			
0,10	0,03	0,04	0,05	0,07	0,08	0,007	0,008	0,01	0,0155	0,027	0,030	30	30
0,15	0,06	0,07	0,10	0,14	0,17	0,016	0,019	0,024	0,033	0,06	0,033	31	31
0,2	0,11	0,13	0,18	0,26	0,31	0,028	0,033	0,04	0,058	0,11	0,058	31	31
0,25	0,17	0,21	0,28	0,4	0,48	0,044	0,052	0,063	0,091	0,17	0,090	31	31
0,3	0,25	0,30	0,41	0,6	0,7	0,063	0,074	0,09	0,13	0,25	0,13	31	31
0,35	0,33	0,40	0,54	0,8	0,93	0,085	0,10	0,12	0,18	0,33	0,18	31	31
0,4	0,43	0,52	0,71	1,0	1,2	0,11	0,13	0,16	0,23	0,43	0,23	32	31
0,5	0,67	0,81	1,1	1,6	1,9	0,18	0,21	0,26	0,37	0,67	0,37	33	32
0,6	0,97	1,2	1,6	2,3	2,8	0,25	0,29	0,36	0,52	0,97	0,52	34	32
0,7	1,35	1,65	2,2	3,2	3,9	0,34	0,40	0,48	0,70	1,35	0,70	35	32
0,8	1,7	2,1	2,8	4,0	4,8	0,45	0,53	0,64	0,93	1,7	0,95	36	33
0,9	2,2	2,7	3,6	5,2	6,2	0,57	0,67	0,82	1,18	2,2	1,20	37	34
1,0	2,7	3,3	4,5	6,4	7,6	0,7	0,82	1,0	1,45	2,7	1,45	38	35
1,5	6,0	7,3	10	14	17	1,6	1,9	2,3	3,3	6	3,3	47	40
2,0	11	14	18	26	31	2,8	3,3	4,0	5,8	11	5,8	61	48
2,5	17	21	28	40	48	4,4	5,2	6,3	9,1	17	9,1	78	58
3,0	25	30	41	60	70	6,3	7,4	9	13	25	13	100	71
3,5	33	40	55	78	93	8,5	10	12	18	33	18	123	85
4,0	43	52	70	100	120	11	13	16	23	42	23	150	100
4,5	55	67	90	130	160	14	21	26	37	55	37	190	120
5,0	67	82	110	160	190	18	29	36	52	67	52	220	140

- 1) Flow resistance in bends is due to the contraction of the liquid threads resulting from the change of direction: the development of the bends must therefore be included in the length of the pipeline.
- 2) Flow resistance in valves and gates was determined on the basis of practical tests.

[illegible]

ITT-Lowara (www.lowara.com), headquarters of "Residential and Commercial Water - EMEA" part of the ITT Corporation and located in Montecchio Maggiore, Vicenza - Italy, is a leading manufacturer of hydraulic pumps and water handling and control systems. It has 1.819 employees in Europe, 675 operating in Italy. In 2009 its consolidated sales totalled about 286 million €, or over 396 million \$. ITT Corporation is a high-technology engineering and manufacturing company operating on all seven continents in three vital markets: water and fluids management, global defense and security, and motion and flow control. With a heritage of innovation, ITT partners with its customers to deliver extraordinary solutions that create more livable environments, provide protection and safety and connect our world. Headquartered in White Plains, N.Y., the company generated 2009 revenue of \$10.9 billion.

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