





OVERVIEW OF PUMPS

PUMPS					
		HCB / HDB / HEB	HCD/HDD / HED	H series 60 Hz	VP Series
Pump Specifications	Mounting Position	Vertical	Vertical	Vertical	Ver. / Hor.
	Impeller Type	Closed	Closed	Closed	Three Spindles
	Housing	Cast Iron	Cast Iron	Cast Iron	Cast Iron
	Volute / Diffuser	Stainless St.	Stainless St.	Stainless St.	Cast Iron
	Shaft	Stainless Steel	Stainless Steel	Stainless Steel	Hardened Steel
	Impeller	Stainless St.	Stainless St.	Stainless St.	Hardened St.
	Mechanical Seal	C - SiC - Viton	C - SiC - Viton	C - SiC - Viton	-
	Pipe Connection	G1 / G2	G1 / G2	G1 / G2	G 1 / SAE 1
	H _{max} (m)	250 / 235	250 / 235	250	1000
	Q _{max} (l/min)	85 / 150 / 300	85 / 150 / 300	300	78
	H _{opt} (m)				
Q _{opt} (l/min)					
Motor	Power (kW)	1.1 - 11.0	1.1 - 11.0	0.37 - 11.0	1.1 - 22
	Protection Degree	IP 55	IP 55	IP 55	IP 55
	Isolation Class	F	F	F	F
Fluid Specifications	Kinematic Viscosity	1...30 mm ² /s	1...30 mm ² /s	1...30 mm ² /s	1..400 mm ² /s
	Temperature	0...80 °C	0...80 °C	0...80 °C	0...80 °C
	Chip Size - max (mm)	2	2	2	0
	Cutting Oils	+	+	+	+
	Grinding Oils	+	+	+	+
	Coolants	+	+	+	+
	Water	o	o	o	-
	Paint / Ink	-	-	-	-
Chemical Liquids	-	-	-	-	
Applications	Cutting	+	+	+	+
	Boring	+	+	+	+
	Turning	+	+	+	+
	Milling	+	+	+	+
	Grinding	o	o	o	+
	Deep Hole Boring	+	+	+	+
	Erosion	-	-	-	+
	Filtration Systems	+	+	+	+
	Printing Processes	-	-	-	-
	Circulation Systems	+	+	+	+
	Coolant Systems	-	-	-	+
Page	62-63 / 68-71	72 - 77	78 - 97	134 - 151	

Description of the signs : + Applicable - Not applicable o Contact us before selection

H SERIES HIGH PRESSURE PUMPS

H series pumps are closed impeller, multistage pumps and they are used for middle and high pressure pumping applications in industry extensively. Pump pressure can be raised from 1 bar to 25 bar due to multistage pump construction. When the pumps work as serial it possible to reach higher pressure.

The main applications of the high pressure pumps;

- CNC lathes,
- CNC machining centers,
- Especially deep hole boring operations,
- Erosion machines,
- Washing processes,
- Cooling systems.

Immersion depth of the high pressure pumps depend on stage quantity. It can be extended by using empty stages.

For example;

Immersion depth of HCB 10 pump is 291 mm but immersion depth of extended type HCB 10/25 is 606 mm (Please contact us for more details).

HCB, HDB and HEB type pumps are mostly used at deep hole boring applications on CNC machine tools. On deep hole boring applications, while work piece are drilled by cutting tool, coolant liquid are sprayed to the work piece get through from cutting tool. So work piece and cutting tool can be cold, metal chips can be thrown out via threads of the drilling tool. High pressure pumps work against the high piping resistance so they increase machining quality and life of the cutting tools.



Figure 27 - H series pumps

High pressure pumps' impellers and diffusers are made of stainless steel (AISI 304) so they have a good chemical resistance against to various chemical liquids. There are O-rings on the diffusers for reaching high pressure and preventing back flow to maintain high efficiency (Figure 29). O-rings are made of Viton for high chemical resistance.

Mechanical Seal

Mechanical seals are consist of four parts. These parts are; stable part, rotary part, bellows and spring. Mechanical seal materials must be choose according to liquid specifications and pump application type. These materials are shown on table 1.

Components	Type 1	Type 2
Stable Part	SiC	TC
Rotary Part	C	TC
Bellows	Viton	
Spring	Stainless steel	

Table 1 - Materials of the mechanical seals

- SiC : Silicon Carbide
- TC : Tungsten Carbide
- C : Resin-Impregnated Carbon
- V : Viton (FKM)

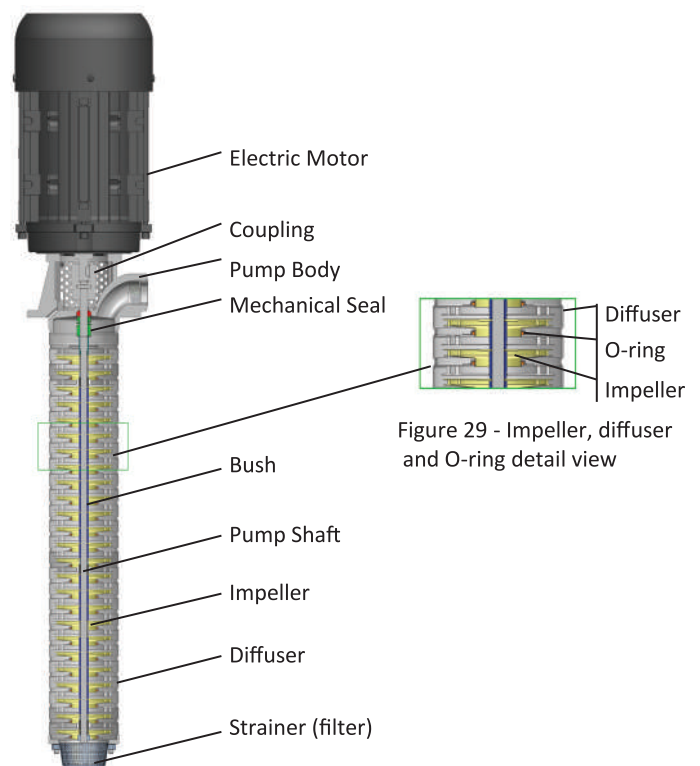


Figure 28 - H series pump section

Grinding Applications

If H series pumps will be used on grinding applications or filtration systems for pumping metal chip containing liquids, TC mechanical seals must be chosen. Because TC has a good mechanical resistance against to metal chips. So the pump can work without any problem.

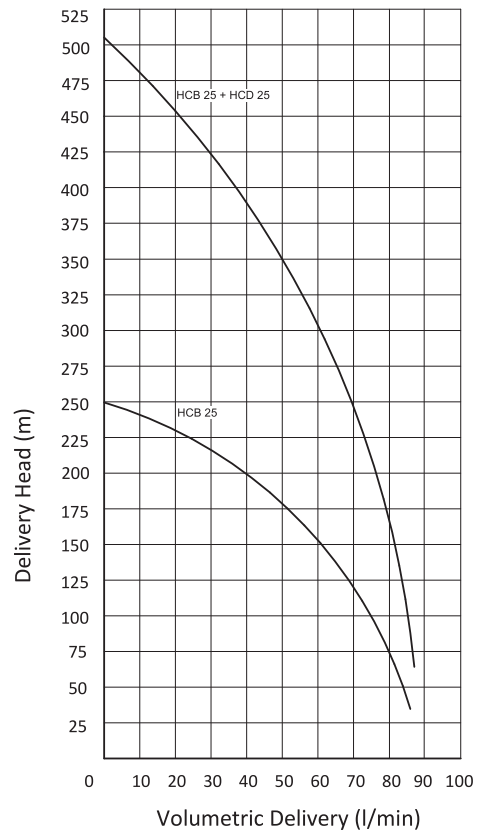
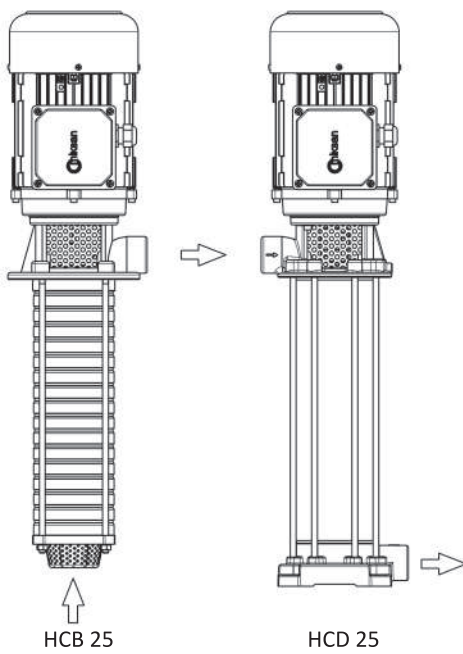
Another important point is that O-ring is not used on the diffuser for these applications. Because metal dusts are abrasive so they can damage to O-rings.

Because of these reasons, H series pumps are produced without O-rings. So delivery head of the pump will be decrease and it must be considered on pump selection.

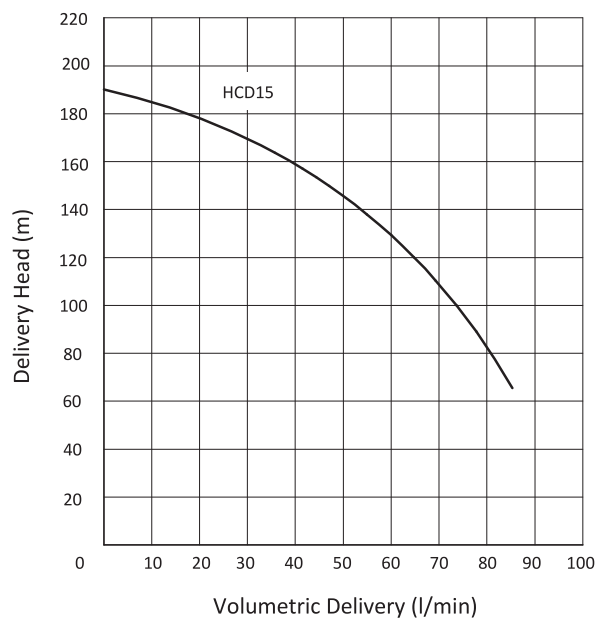
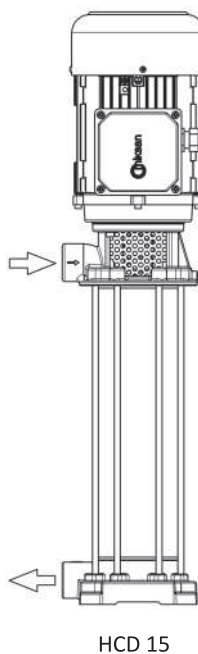
Delivery heads decrease rates are;

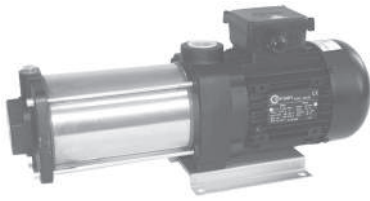
- HC / HCA / HCB Pumps : % 17
- HD / HDA / HDB Pumps : % 14
- HEB Pumps : % 7

Serial Connection of H Series Pump



With +4 Bar of Positive Head





HC PUMP

Applications:

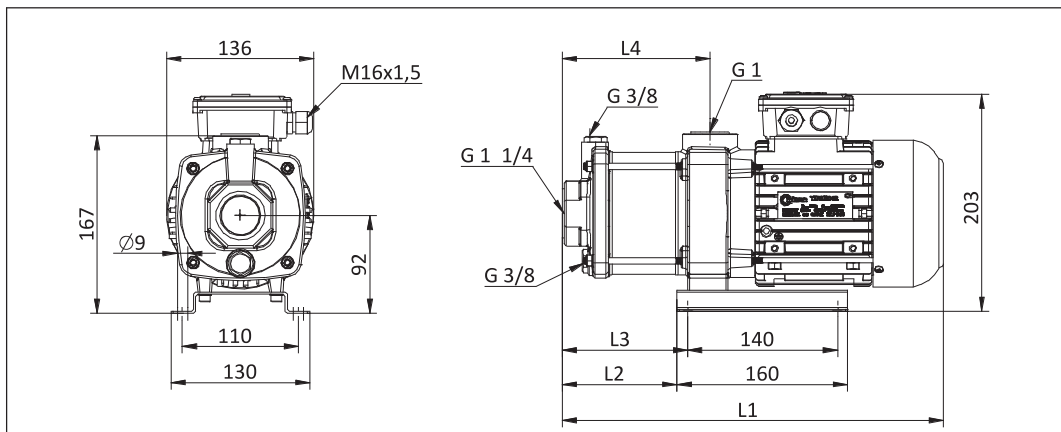
- Cutting, turning, milling, boring, grinding and similar applications of the machine tools,
- Erosion machines,
- Circulation systems. HC Pumps are used for pumping of cutting / cooling fluids.

Fluid Specifications:

- Coolants,
- Cutting oils,
- Grinding oils,
- Water,
- Fluid temperature 0...80 °C
- Kinematic viscosity 1...30 mm²/s

Materials:

Pump body	: Cast iron - DIN GG 25
Inlet body	: Cast iron - DIN GG 25
Diffuser	: Stainless steel - DIN 4301 (AISI 304)
Impeller	: Stainless steel - DIN 4301 (AISI 304)
Stage cover	: Stainless steel - DIN 4301 (AISI 304)
Pump shaft	: Stainless steel - DIN 4401 (AISI 316)
O-ring	: Viton
Mechanical seal	: C - SiC - Viton TC - TC - Viton (Optional)
Electric motor	: 3 phase induction motor - 2 pole, Protection degree IP 55

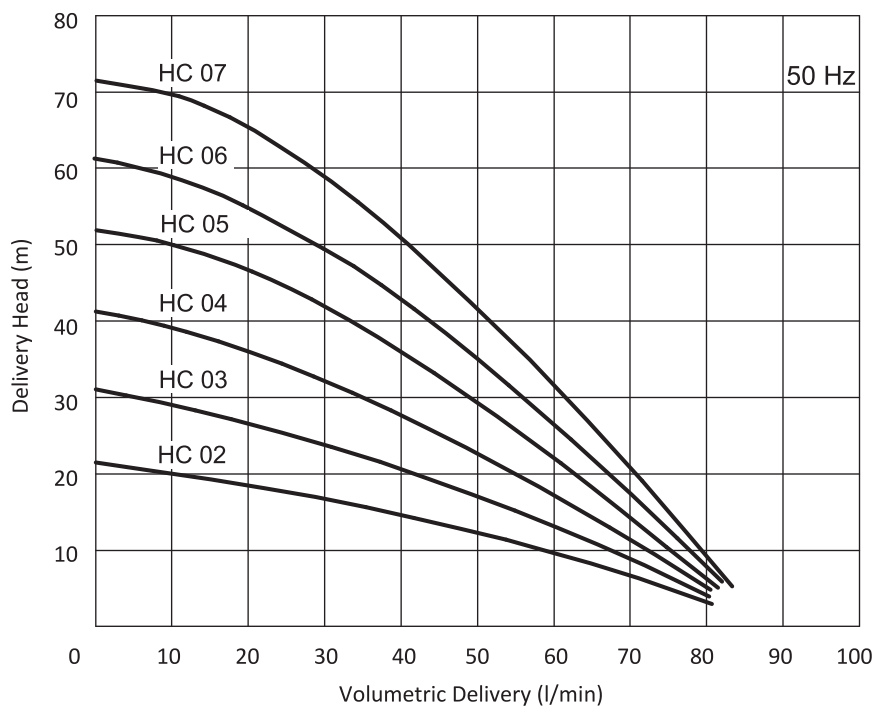


DIMENSIONS & NOMINAL VALUES

TYPE	L4	L3	L2	L1	Weight kg	Power kW	Voltage V(Δ/Y)	Frequency Hz	Rated current A	Speed rpm
	mm									
HC/02	137	116	106	356	11.8	0.37	230/400	50	1.84/1.05	2790
HC/03	158	137	127	377	13.1	0.55			2.25/1.3	2780
HC/04	179	158	148	398	15.0	0.75			3.12/1.8	2820
HC/05	200	179	169	419	15.1	1.10			4.85/2.8	2720
HC/06	221	200	190	440	15.3	1.10			4.85/2.8	2720
HC/07	242	221	211	461	15.5	1.10			4.85/2.8	2720

- * The performance curves are based on 1 mm²/s (cSt) kinematic viscosity values and 997 kg/m³ density
- ** Curve tolerance according to ISO 9906:2012 Grade 3B.
- *** HC/05, HC/06 and HC/07 pumps have IE2 motors. According to IEC 60034-30-1:2014 standard these pumps are excluded from efficiency class since their motors are completely integrated into the pump.

Performance Curve





HCA PUMP

Applications:

- Cutting, turning, milling, boring, grinding and similar applications of the machine tools,
- Cooling systems,
- Circulation systems. HCA Pumps are used for pumping of cutting / cooling fluids.

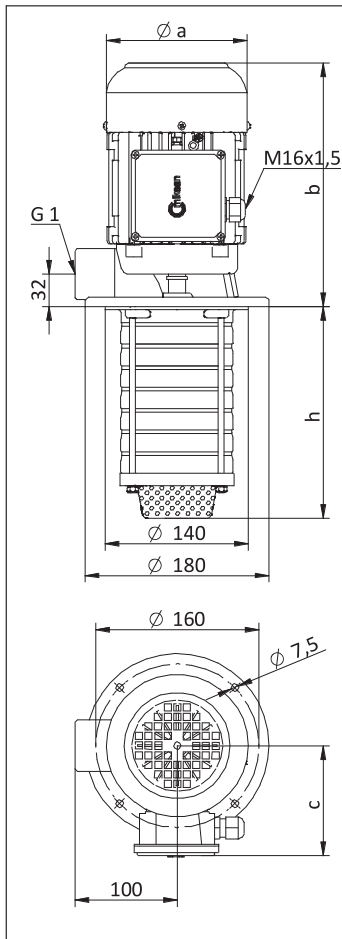
Fluid Specifications:

- Coolants,
- Cutting oils,
- Grinding oils,
- Water,
- Fluid temperature 0...80 °C
- Kinematic viscosity 1...30 mm²/s

Materials:

Pump body	: Cast iron - DIN GG 25
Bottom plate	: Sheet iron
Diffuser	: Stainless steel - DIN 4301 (AISI 304)
Impeller	: Stainless steel - DIN 4301 (AISI 304)
Strainer	: Stainless steel - DIN 4301 (AISI 304)
Pump shaft	: Stainless steel - DIN 4401 (AISI 316)
O-ring	: Viton
Mechanical seal	: C - SiC - Viton TC - TC - Viton (Optional)
Electric motor	: 3 phase induction motor - 2 pole, Protection degree IP 55

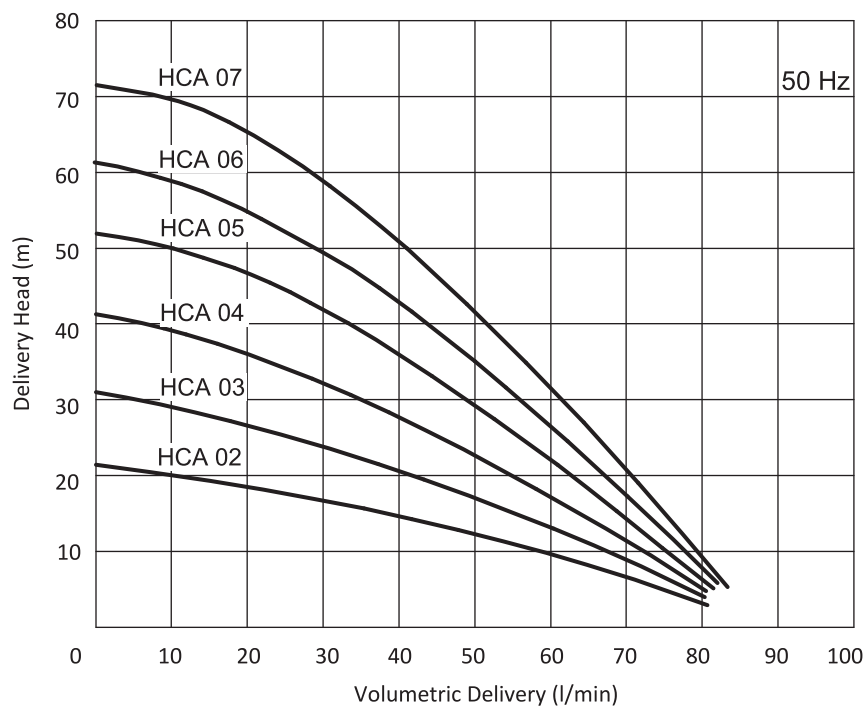
DIMENSIONS & NOMINAL VALUES



TYPE	Depth of immersion h (mm)	a	b	c	Weight kg	Power kW	Voltage V(Δ/Y)	Frequency Hz	Rated current A	Speed rpm
		mm								
HCA/02	143	138	240	111	10.1	0.37	230/400	50	1.84/1.05	2790
HCA/03	143				11.4	0.55			2.25/1.3	2780
HCA/04	164				13.3	0.75			3.12/1.8	2820
HCA/05	185				13.6	1.10			4.85/2.8	2720
HCA/06	206				13.8	1.10			4.85/2.8	2720
HCA/07	227				14.0	1.10			4.85/2.8	2720

* The performance curves are based on $1 \text{ mm}^2/\text{s}$ (cSt) kinematic viscosity values and 997 kg/m^3 density
 ** Curve tolerance according to ISO 9906:2012 Grade 3B.
 *** HCA/05, HCA/06 and HCA/07 pumps have IE2 motors. According to IEC 60034-30-1:2014 standard these pumps are excluded from efficiency class since their motors are completely integrated into the pump.

Performance Curve





HCB PUMP

Applications:

- Cutting, turning, milling, boring, grinding and similar applications of the machine tools,
- Especially used for deep hole boring operations due to supply 25 bar pressure,
- Circulation systems. HCB Pumps are used for pumping of cutting / cooling fluids.

Fluid Specifications:

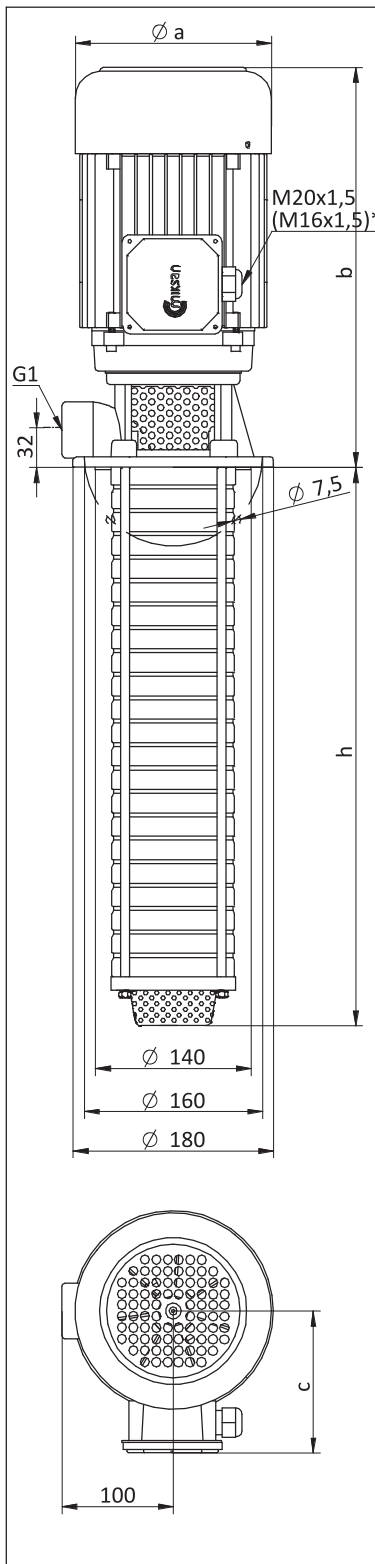
- Coolants,
- Cutting oils,
- Grinding oils,
- Water,
- Fluid temperature 0...80 °C
- Kinematic viscosity 1...30 mm²/s

Materials:

Pump body	: Cast iron - DIN GG 25
Bottom plate	: Sheet iron
Diffuser	: Stainless steel - DIN 4301 (AISI 304)
Impeller	: Stainless steel - DIN 4301 (AISI 304)
Strainer	: Stainless steel - DIN 4301 (AISI 304)
Pump shaft	: Stainless steel - DIN 4401 (AISI 316)
O-ring	: Viton
Mechanical seal	: C - SiC - Viton TC - TC - Viton (Optional)
Electric motor	: 3 phase induction motor IE3 - 2 pole, Protection degree IP 55

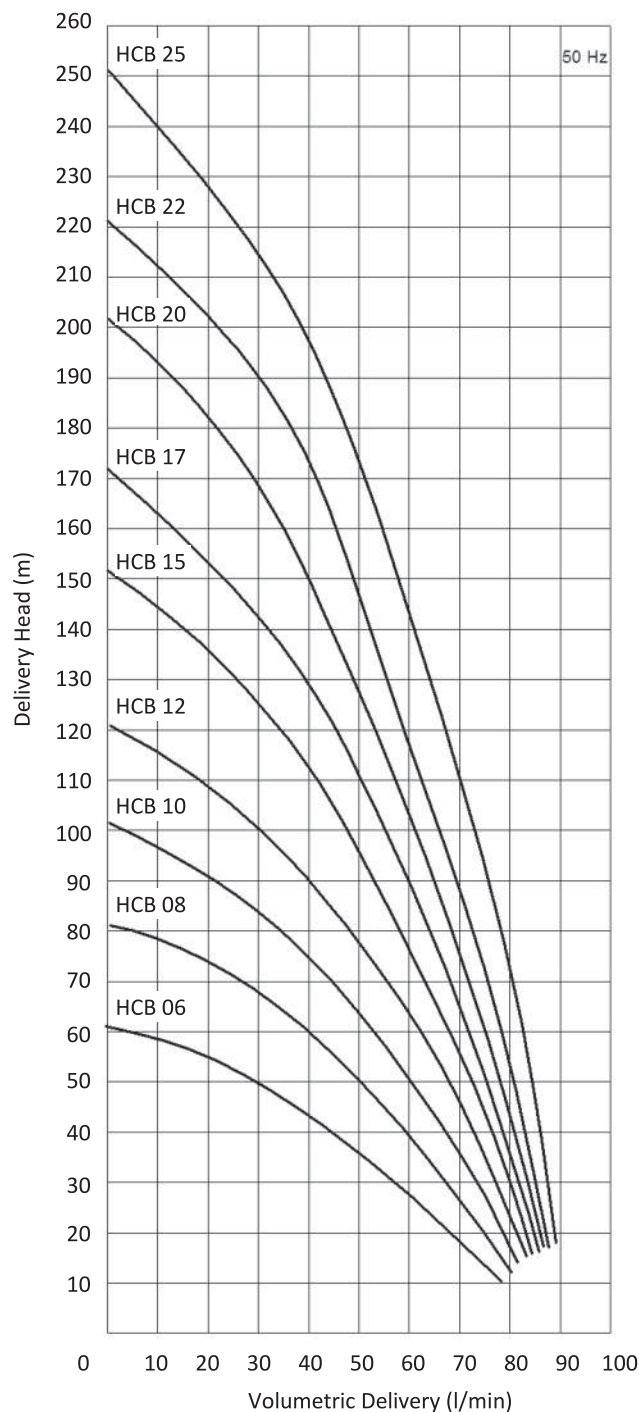
- * M16x1,5 cable gland is used on HCB/06 and HCB/08 pumps.
- ** The performance curves are based on 1 mm²/s (cSt) kinematic viscosity values and 997 kg/m³ density
- *** Curve tolerance according to ISO 9906:2012 Grade 3B.

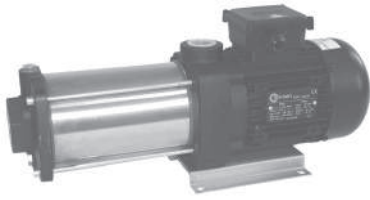
DIMENSIONS & NOMINAL VALUES



TYPE	Depth of immersion h (mm)	a	b	c	Weight kg	Power kW	Voltage V(Δ/Y)	Frequency Hz	Rated current A	Speed rpm
		mm								
HCB/06	206	157	319	118	17.0	1.1	230/400	50	4.16/2.4	2890
HCB/08	248	157	319	118	17.5	1.1	230/400		4.16/2.4	2890
HCB/10	291	176	365	139	25.0	2.2	230/400		7.79/4.5	2905
HCB/12	333	176	365	139	25.5	2.2	230/400		7.79/4.5	2905
HCB/15	396	194	397	150	33.0	3.0	230/400		10.39/6.0	2905
HCB/17	438	194	397	150	33.5	3.0	230/400		10.39/6.0	2905
HCB/20	501	194	397	150	37.0	4.0	230/400		13.68/7.9	2900
HCB/22	543	194	397	150	37.5	4.0	230/400		13.68/7.9	2900
HCB/25	606	194	397	150	39.5	4.0	230/400		13.68/7.9	2900

Performance Curve





HD PUMP

Applications:

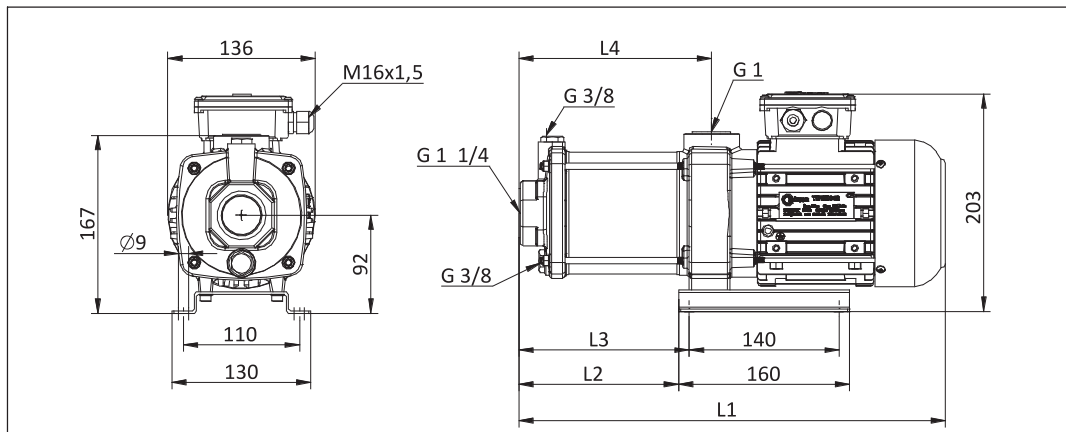
- Cutting, turning, milling, boring, grinding and similar applications of the machine tools,
- Erosion machines,
- Circulation systems. HD Pumps are used for pumping of cutting / cooling fluids.

Fluid Specifications:

- Coolants,
- Cutting oils,
- Grinding oils,
- Water,
- Fluid temperature 0...80 °C
- Kinematic viscosity 1...30 mm²/s

Materials:

Pump body	: Cast iron - DIN GG 25
Inlet body	: Cast iron - DIN GG 25
Diffuser	: Stainless steel - DIN 4301 (AISI 304)
Impeller	: Stainless steel - DIN 4301 (AISI 304)
Stage cover	: Stainless steel - DIN 4301 (AISI 304)
Pump shaft	: Stainless steel - DIN 4401 (AISI 316)
O-ring	: Viton
Mechanical seal	: C - SiC - Viton TC - TC - Viton (Optional)
Electric motor	: 3 phase induction motor - 2 pole, Protection degree IP 55

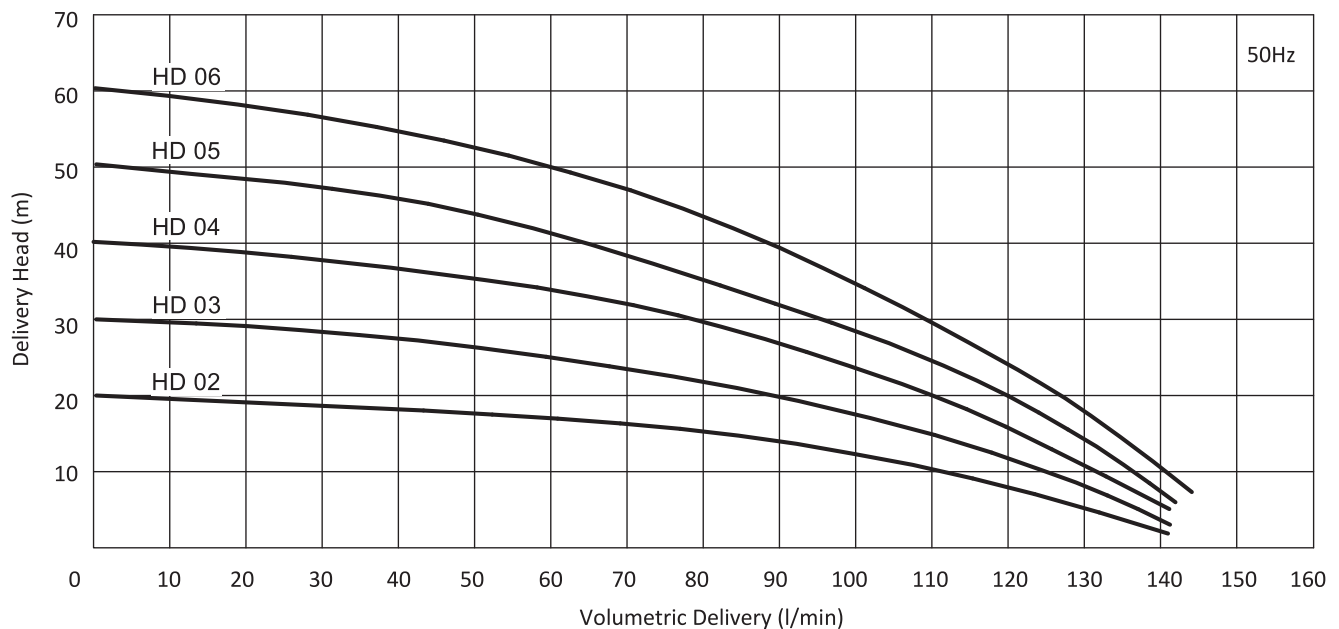


DIMENSIONS & NOMINAL VALUES

TYPE	L4	L3	L2	L1	Weight kg	Power kW	Voltage V(Δ/Y)	Frequency Hz	Rated current A	Speed rpm
	mm									
HD/02	137	116	106	356	12.9	0.55	230/400	50	2.25/1.3	2780
HD/03	158	137	127	377	13.1	0.55			2.25/1.3	2780
HD/04	179	158	148	398	14.9	1.1			4.85/2.8	2720
HD/05	200	179	169	419	15.1	1.1			4.85/2.8	2720
HD/06	221	200	190	440	15.3	1.1			4.85/2.8	2720

* The performance curves are based on 1 mm²/s (cSt) kinematic viscosity values and 997 kg/m³ density
 ** Curve tolerance according to ISO 9906:2012 Grade 3B.
 *** HD/04, HD/05 and HD/06 pumps have IE2 motors. According to IEC 60034-30-1:2014 standard these pumps are excluded from efficiency class since their motors are completely integrated into the pump.

Performance Curve



HDA PUMP



Applications:

- Cutting, turning, milling, boring, grinding and similar applications of the machine tools,
- Cooling systems,
- Circulation systems. HDA Pumps are used for pumping of cutting / cooling fluids.

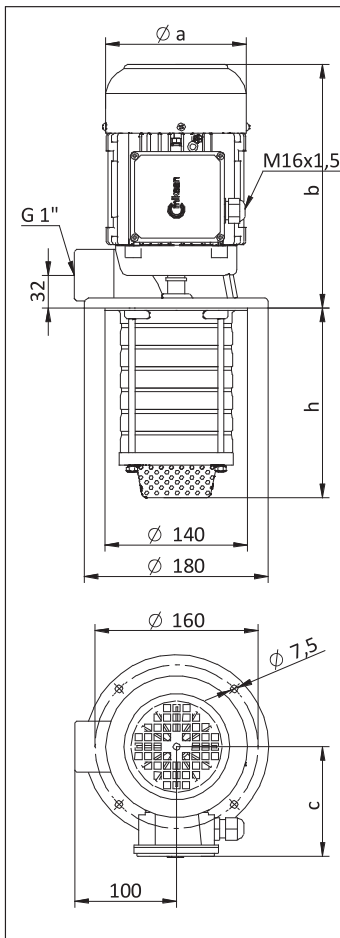
Fluid Specifications:

- Coolants,
- Cutting oils,
- Grinding oils,
- Water,
- Fluid temperature 0...80 °C
- Kinematic viscosity 1...30 mm²/s

Materials:

Pump body	: Cast iron - DIN GG 25
Bottom plate	: Sheet iron
Diffuser	: Stainless steel - DIN 4301 (AISI 304)
Impeller	: Stainless steel - DIN 4301 (AISI 304)
Strainer	: Stainless steel - DIN 4301 (AISI 304)
Pump shaft	: Stainless steel - DIN 4401 (AISI 316)
O-ring	: Viton
Mechanical seal	: C - SiC - Viton TC - TC - Viton (Optional)
Electric motor	: 3 phase induction motor IE3 - 2 pole, Protection degree IP 55

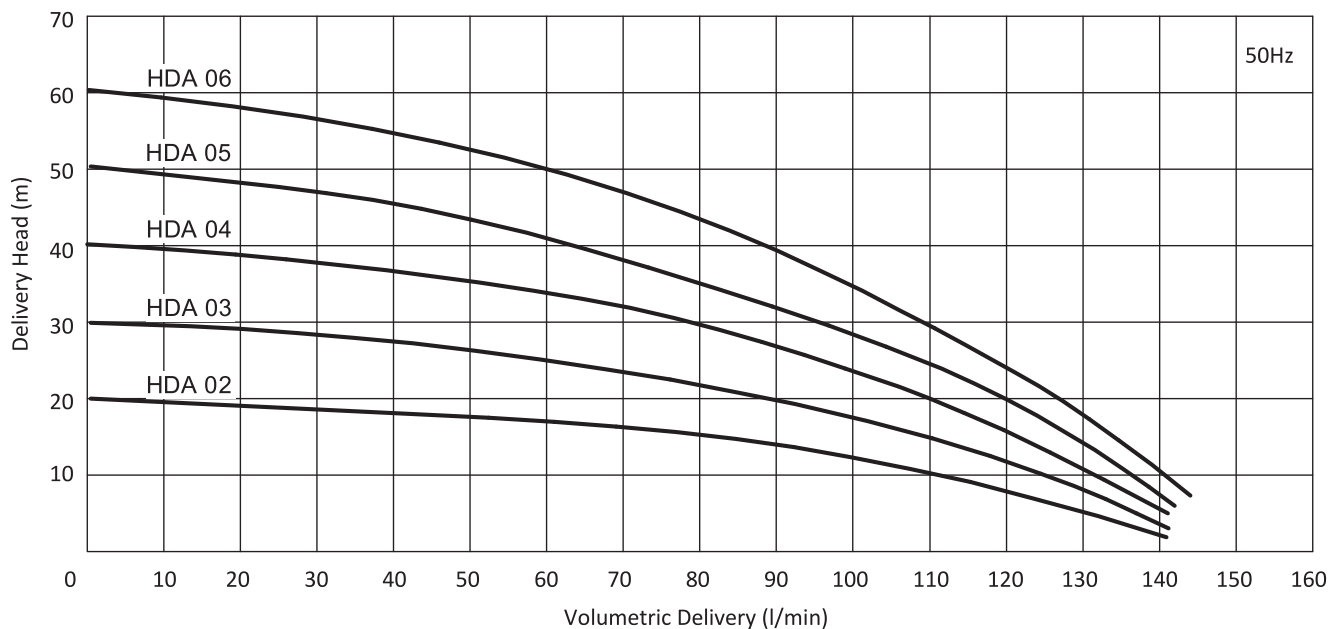
DIMENSIONS & NOMINAL VALUES



TYPE	Depth of immersion h (mm)	a	b	c	Weight kg	Power kW	Voltage V(Δ/Y)	Frequency Hz	Rated current A	Speed rpm
		mm								
HDA/02	143	138	240	111	11.2	0.55	230/400	50	2.25/1.3	2780
HDA/03	143				11.4	0.55	230/400		2.25/1.3	2780
HDA/04	164				13.4	1.1	230/400		4.85/2.8	2720
HDA/05	185				13.6	1.1	230/400		4.85/2.8	2720
HDA/06	206				13.8	1.1	230/400		4.85/2.8	2720

* The performance curves are based on $1 \text{ mm}^2/\text{s}$ (cSt) kinematic viscosity values and 997 kg/m^3 density
 ** Curve tolerance according to ISO 9906:2012 Grade 3B.
 *** HDA/04, HDA/05 and HDA/06 pumps have IE2 motors. According to IEC 60034-30-1:2014 standard these pumps are excluded from efficiency class since their motors are completely integrated into the pump.

Performance Curve





HDB PUMP

Applications:

- Cutting, turning, milling, boring, grinding and similar applications of the machine tools,
- Especially used for deep hole boring operations due to supply 25 bar pressure,
- Circulation systems. HDB Pumps are used for pumping of cutting / cooling fluids.

Fluid Specifications:

- Coolants,
- Cutting oils,
- Grinding oils,
- Water,
- Fluid temperature 0...80 °C
- Kinematic viscosity 1...30 mm²/s

Materials:

Pump body	: Cast iron - DIN GG 25
Bottom plate	: Sheet iron
Diffuser	: Stainless steel - DIN 4301 (AISI 304)
Impeller	: Stainless steel - DIN 4301 (AISI 304)
Strainer	: Stainless steel - DIN 4301 (AISI 304)
Pump shaft	: Stainless steel - DIN 4401 (AISI 316)
O-ring	: Viton
Mechanical seal	: C - SiC - Viton TC - TC - Viton (Optional)
Electric motor	: 3 phase induction motor IE3 - 2 pole, Protection degree IP 55

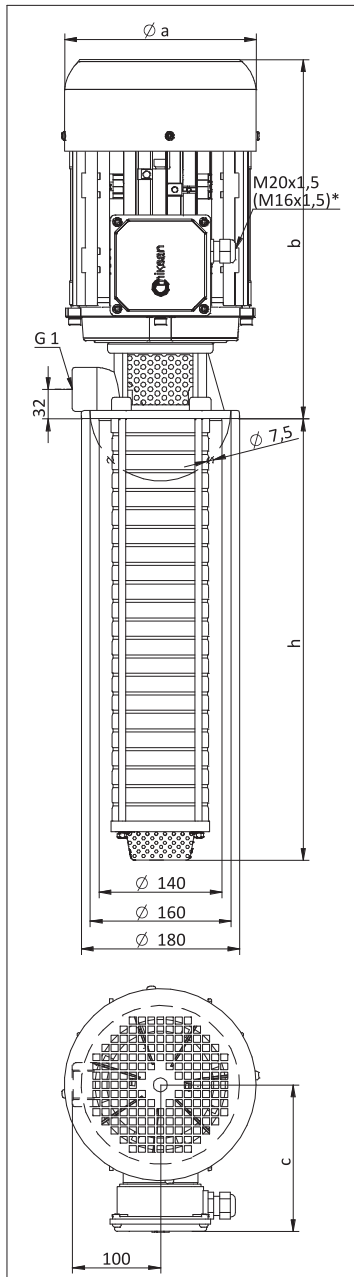
* M16x1,5 cable gland is used on HDB/06 pump.

** The performance curves are based on 1 mm²/s (cSt) kinematic viscosity values and 997 kg/m³ density

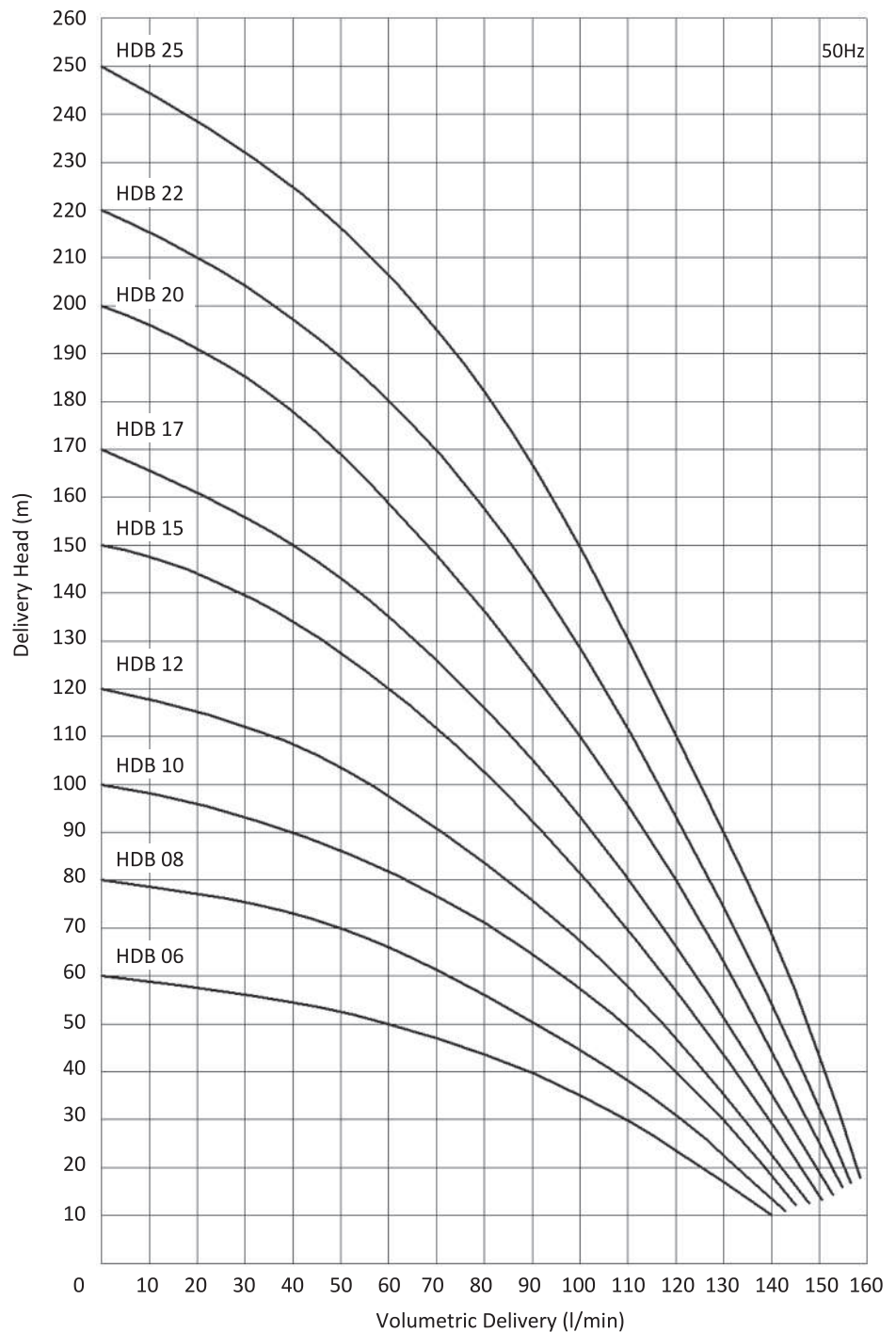
*** Curve tolerance according to ISO 9906:2012 Grade 3B.

DIMENSIONS & NOMINAL VALUES

TYPE	Depth of immersion h (mm)	a b c			Weight kg	Power kW	Voltage V(Δ/Y)	Frequency Hz	Rated current A	Speed rpm
		mm								
HDB/06	206	157	319	118	17.0	1.1	230/400	50	4.16/2.4	2890
HDB/08	248	176	340	139	21.5	1.5	230/400		5.72/3.3	2910
HDB/10	291	176	365	139	25.0	2.2	230/400		7.79/4.5	2905
HDB/12	333	194	397	150	32.0	3.0	230/400		10.39/6.0	2905
HDB/15	396	194	397	150	33.0	3.0	230/400		10.39/6.0	2905
HDB/17	438	194	397	150	36.0	4.0	230/400		13.68/7.9	2900
HDB/20	501	194	397	150	37.0	4.0	230/400		13.68/7.9	2900
HDB/22	543	218	406	163	41.5	5.5	230/400		17.15/9.9	2900
HDB/25	606	218	406	163	42.5	5.5	230/400		17.15/9.9	2900



Performance Curve





HEB PUMP

Applications:

- Cutting, turning, milling, boring, grinding and similar applications of the machine tools,
- Especially used for deep hole boring operations due to supply 23,5 bar pressure,
- Circulation systems. HEB Pumps are used for pumping of cutting / cooling fluids.

Fluid Specifications:

- Coolants,
- Cutting oils,
- Grinding oils,
- Water,
- Fluid temperature 0...80 °C
- Kinematic viscosity 1...30 mm²/s

Materials:

Pump body	: Cast iron - DIN GG 25
Bottom plate	: Cast iron - DIN GG 25
Diffuser	: Stainless steel - DIN 4301 (AISI 304)
Impeller	: Stainless steel - DIN 4301 (AISI 304)
Strainer	: Stainless steel - DIN 4301 (AISI 304)
Pump shaft	: Stainless steel - DIN 4401 (AISI 316)
O-ring	: Viton
Mechanical seal	: C - SiC - Viton TC - TC - Viton (Optional)
Electric motor	: 3 phase induction motor IE3 - 2 pole, Protection degree IP 55

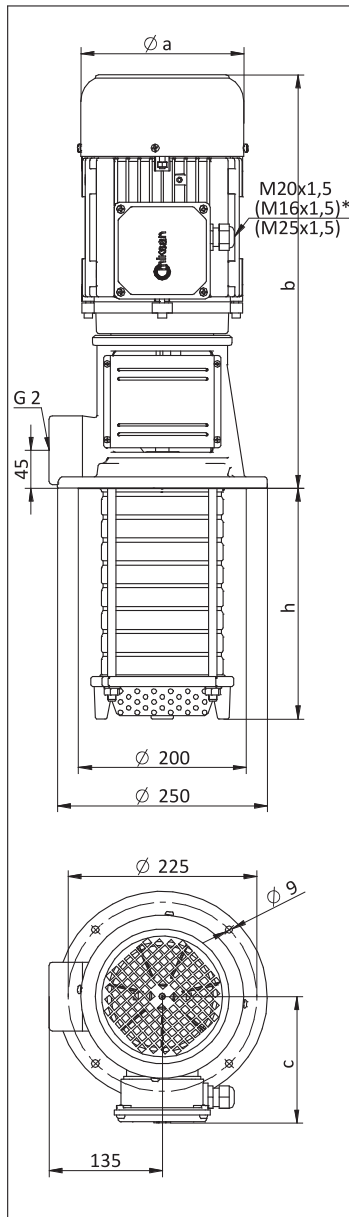
* M16x1,5 cable gland is used on HEB 02 pump.

** M25x1,5 cable gland is used on HEB 14 to HEB 20 pumps.

*** The performance curves are based on 1 mm²/s (cSt) kinematic viscosity values and 997 kg/m³ density

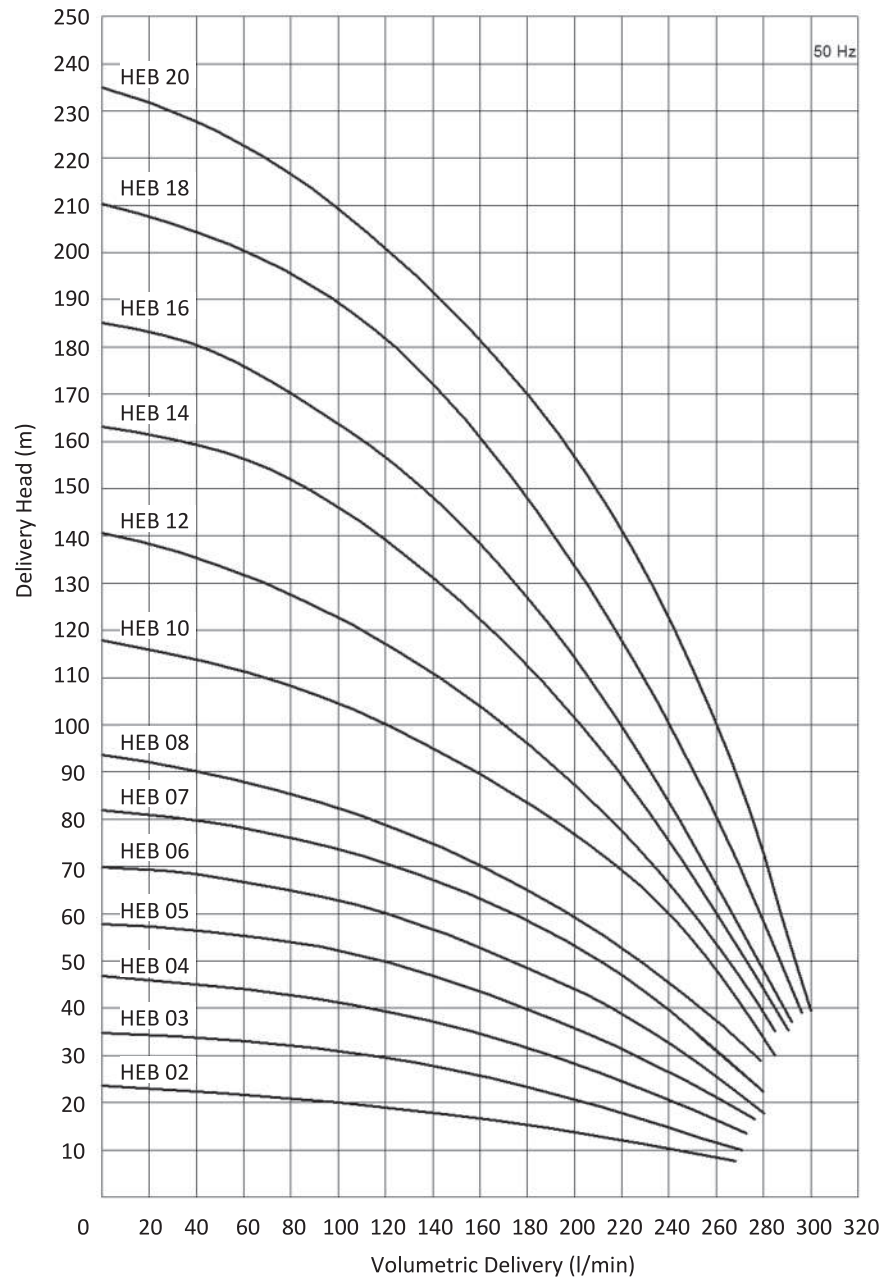
**** Curve tolerance according to ISO 9906:2012 GRADE 3B.

DIMENSIONS & NOMINAL VALUES



TYPE	Depth of immersion h (mm)	Dimensions (mm)			Weight (kg)	Power (kW)	Voltage V(Δ/Y)	Frequency (Hz)	Rated current (A)	Speed (rpm)
		a	b	c						
HEB 02	167	157	415	118	24.5	1.1	230/400	50	4.16/2.4	2890
HEB 03	167	176	437	139	28.5	1.5	230/400		5.72/3.3	2910
HEB 04	194	176	462	139	32.0	2.2	230/400		7.79/4.5	2905
HEB 05	221	194	489	150	38.5	3.0	230/400		10.39/6.0	2905
HEB 06	248	194	489	150	39.0	3.0	230/400		10.39/6.0	2905
HEB 07	275	194	489	150	39.5	3.0	230/400		10.39/6.0	2905
HEB 08	302	194	489	150	43.0	4.0	230/400		13.68/7.9	2900
HEB 10	356	218	502	163	49.5	5.5	230/400		17.15/9.9	2900
HEB 12	410	218	502	163	50.5	5.5	230/400		17.15/9.9	2900
HEB 14	464	258	618	177	79.0	7.5	400 Δ		14.0	2930
HEB 16	518	258	618	177	80.0	7.5	400 Δ		14.0	2930
HEB 18	572	258	618	177	81.0	7.5	400 Δ		14.0	2930
HEB 20	626	258	618	177	92.0	11.0	400 Δ		19.7	2930

Performance Curve





HCD PUMP

Applications:

- Cutting, turning, milling, boring, grinding and similar applications of the machine tools,
- Especially used for deep hole boring operations due to supply 25 bar pressure,
- Circulation systems. HCD Pumps are used for pumping of cutting / cooling fluids.

Fluid Specifications:

- Coolants,
- Cutting oils,
- Grinding oils,
- Water,
- Fluid temperature 0...80 °C
- Kinematic viscosity 1...30 mm²/s

Materials:

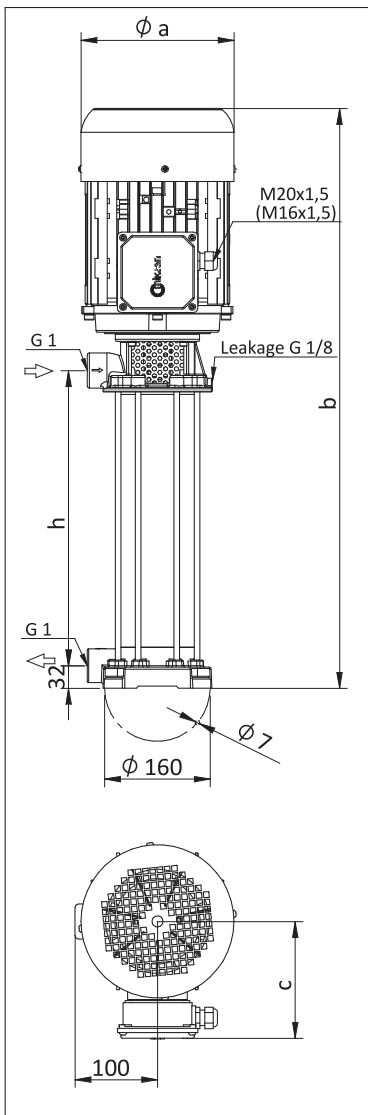
Pump body	: Cast iron - DIN GG 25
Cover	: Cast iron - DIN GG 25
Diffuser	: Stainless steel - DIN 4301 (AISI 304)
Impeller	: Stainless steel - DIN 4301 (AISI 304)
Strainer	: Stainless steel - DIN 4301 (AISI 304)
Pump shaft	: Stainless steel - DIN 4401 (AISI 316)
O-ring	: Viton
Mechanical seal	: C - SiC - Viton TC - TC - Viton (Optional)
Electric motor	: 3 phase induction motor IE3 - 2 pole, Protection degree IP 55

* M16x1,5 cable gland is used on HCD/08 pump.

** The performance curves are based on 1 mm²/s (cSt) kinematic viscosity values and 997 kg/m³ density

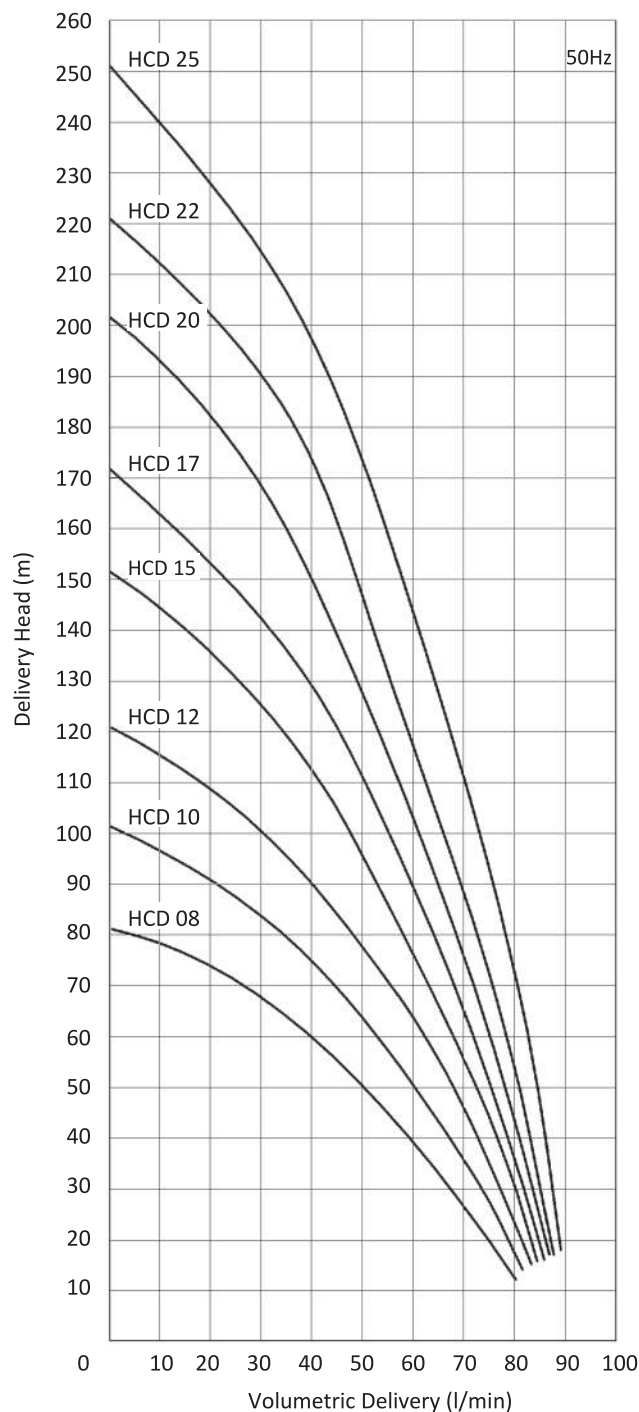
*** Curve tolerance according to ISO 9906:2012 Grade 3B.

DIMENSIONS & NOMINAL VALUES



TYPE	Length			Weight kg	Power kW	Voltage V(Δ/Y)	Frequency Hz	Rated current A	Speed rpm	
	h (mm)	a	b							c
HCD/08	316	157	634	118	22.0	1.1	230/400	50	4.16/2.4	2890
HCD/10	316	176	680	139	29.0	2.2	230/400		7.79/4.5	2905
HCD/12	420	176	784	139	31.0	2.2	230/400		7.79/4.5	2905
HCD/15	420	194	816	150	37.5	3.0	230/400		10.39/6.0	2905
HCD/17	524	194	920	150	39.5	3.0	230/400		10.39/6.0	2905
HCD/20	524	194	920	150	42.5	4.0	230/400		13.68/7.9	2900
HCD/22	628	194	1024	150	44.5	4.0	230/400		13.68/7.9	2900
HCD/25	628	194	1024	150	45.0	4.0	230/400		13.68/7.9	2900

Performance Curve





HDD PUMP

Applications:

- Cutting, turning, milling, boring, grinding and similar applications of the machine tools,
- Especially used for deep hole boring operations due to supply 25 bar pressure,
- Circulation systems. HDD Pumps are used for pumping of cutting / cooling fluids.

Fluid Specifications:

- Coolants,
- Cutting oils,
- Grinding oils,
- Water,
- Fluid temperature 0...80 °C
- Kinematic viscosity 1...30 mm²/s

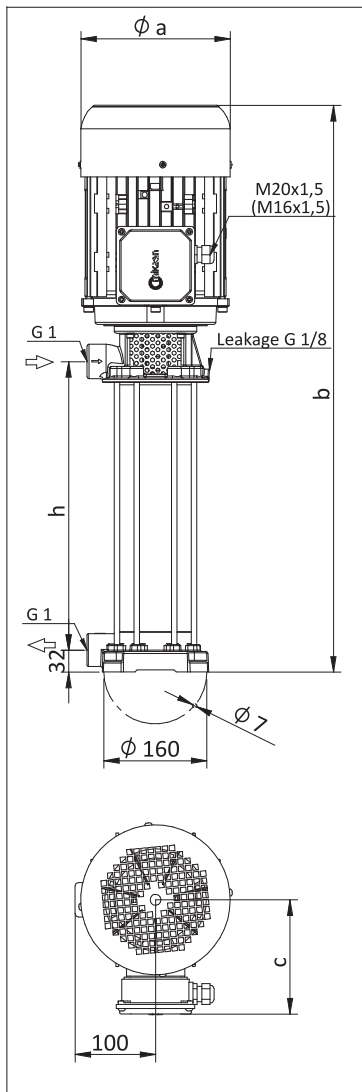
Materials:

Pump body	: Cast iron - DIN GG 25
Cover	: Cast iron - DIN GG 25
Diffuser	: Stainless steel - DIN 4301 (AISI 304)
Impeller	: Stainless steel - DIN 4301 (AISI 304)
Strainer	: Stainless steel - DIN 4301 (AISI 304)
Pump shaft	: Stainless steel - DIN 4401 (AISI 316)
O-ring	: Viton
Mechanical seal	: C - SiC - Viton TC - TC - Viton (Optional)
Electric motor	: 3 phase induction motor IE3 - 2 pole, Protection degree IP 55

* M16x1,5 cable gland is used on HDD/08 pump.

** The performance curves are based on 1 mm²/s (cSt) kinematic viscosity values and 997 kg/m³ density

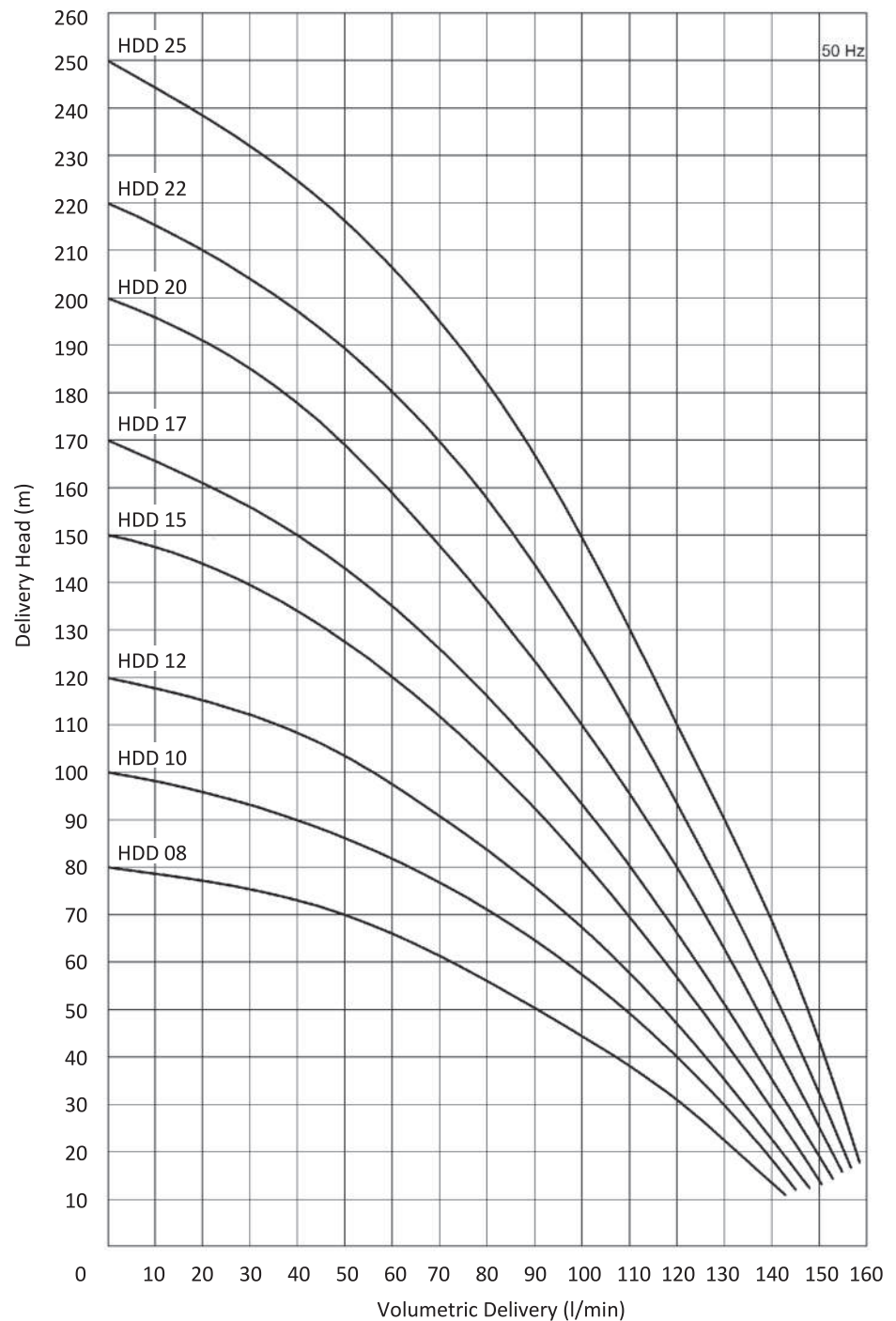
*** Curve tolerance according to ISO 9906:2012 Grade 3B.



DIMENSIONS & NOMINAL VALUES

TYPE	Length			Weight kg	Power kW	Voltage V(Δ/Y)	Frequency Hz	Rated current A	Speed rpm	
	h (mm)	a	b							c
HDD/08	316	176	655	139	26.0	1.5	230/400	50	5.72/3.3	2910
HDD/10	316	176	680	139	29.0	2.2	230/400		7.79/4.5	2905
HDD/12	420	194	816	150	37.5	3.0	230/400		10.39/6.0	2905
HDD/15	420	194	816	150	38.0	3.0	230/400		10.39/6.0	2905
HDD/17	524	194	920	150	42.0	4.0	230/400		13.68/7.9	2900
HDD/20	524	194	920	150	42.5	4.0	230/400		13.68/7.9	2900
HDD/22	628	218	1024	163	49.5	5.5	230/400		17.15/9.9	2900
HDD/25	628	218	1024	163	50.0	5.5	230/400		17.15/9.9	2900

Performance Curve





HED PUMP

Applications:

- Cutting, turning, milling, boring, grinding and similar applications of the machine tools,
- Especially used for deep hole boring operations due to supply 23,5 bar pressure,
- Circulation systems. HED Pumps are used for pumping of cutting / cooling fluids.

Fluid Specifications:

- Coolants,
- Cutting oils,
- Grinding oils,
- Water,
- Fluid temperature 0...80 °C
- Kinematic viscosity 1...30 mm²/s

Materials:

Pump body	: Cast iron - DIN GG 25
Cover	: Cast iron - DIN GG 25
Diffuser	: Stainless steel - DIN 4301 (AISI 304)
Impeller	: Stainless steel - DIN 4301 (AISI 304)
Strainer	: Stainless steel - DIN 4301 (AISI 304)
Pump shaft	: Stainless steel - DIN 4401 (AISI 316)
O-ring	: Viton
Mechanical seal	: C - SiC - Viton TC - TC - Viton (Optional)
Electric motor	: 3 phase induction motor IE3 - 2 pole, Protection degree IP 55

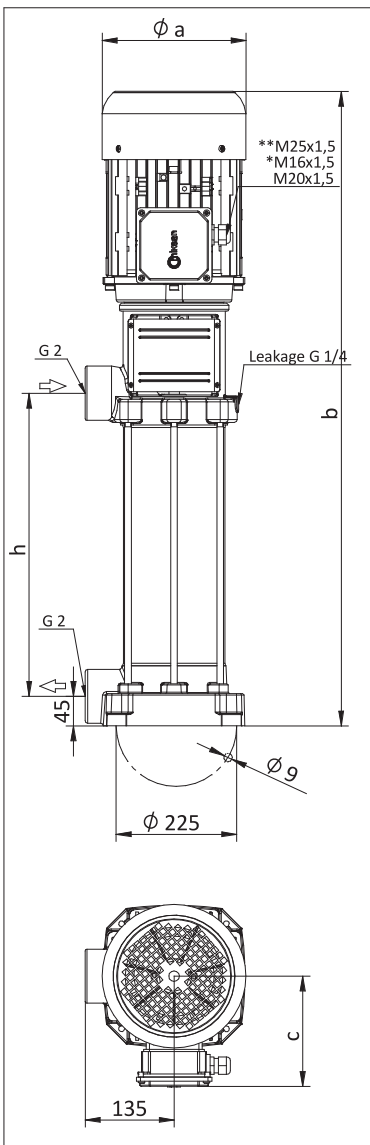
* M16x1,5 cable gland is used on HED 02 and HED 03 pumps.

** M25x1,5 cable gland is used on HED 16, HED 18 and HED 20 pumps.

*** The performance curves are based on 1 mm²/s (cSt) kinematic viscosity values and 997 kg/m³ density

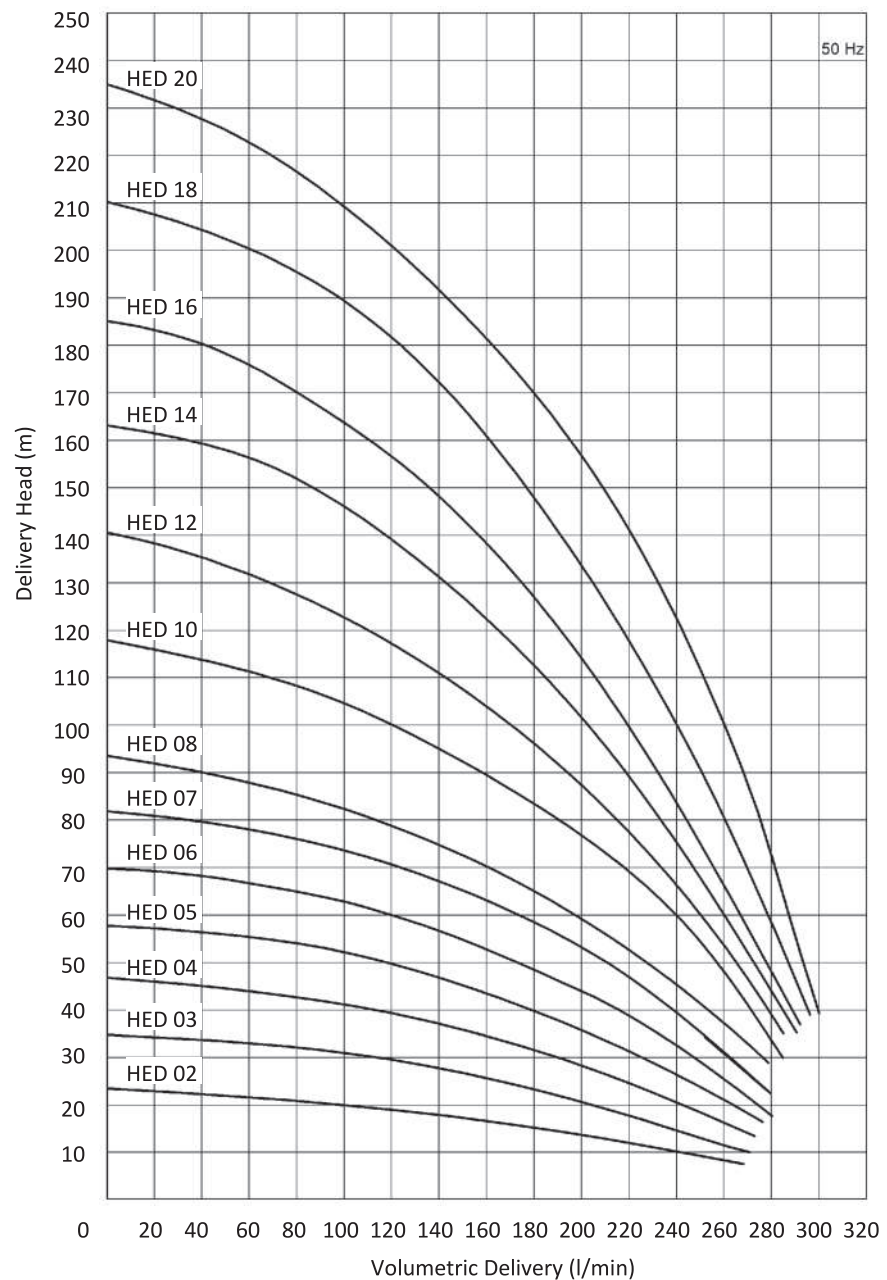
**** Curve tolerance according to ISO 9906:2012 Grade 3B.

DIMENSIONS & NOMINAL VALUES



TYPE	Length			Weight kg	Power kW	Voltage V(Δ/Y)	Frequency Hz	Rated current A	Speed rpm	
	h (mm)	a	b							c
HED 02	269	157	683	118	32.0	1.1	230/400	50	4.16/2.4	2890
HED 03	269	176	705	139	36.0	1.5	230/400		5.72/3.3	2910
HED 04	269	176	730	139	39.5	2.2	230/400		7.79/4.5	2905
HED 05	269	194	771	150	46.0	3.0	230/400		10.39/6.0	2905
HED 06	350	194	852	150	47.5	3.0	230/400		10.39/6.0	2905
HED 07	350	194	852	150	48.0	3.0	230/400		10.39/6.0	2905
HED 08	350	194	852	150	51.0	4.0	230/400		13.68/7.9	2900
HED 10	460	218	1074	163	59.0	5.5	230/400		17.15/9.9	2900
HED 12	460	218	1074	163	59.5	5.5	230/400		17.15/9.9	2900
HED 14	568	258	1186	177	89.5	7.5	400 Δ		14.0	2940
HED 16	568	258	1186	177	90.0	7.5	400 Δ		14.0	2940
HED 18	676	258	1294	177	93.0	7.5	400 Δ		14.0	2940
HED 20	676	258	1294	177	103.0	11.0	400 Δ		19.7	2930

Performance Curve



**60 Hz**

HC PUMP

Applications:

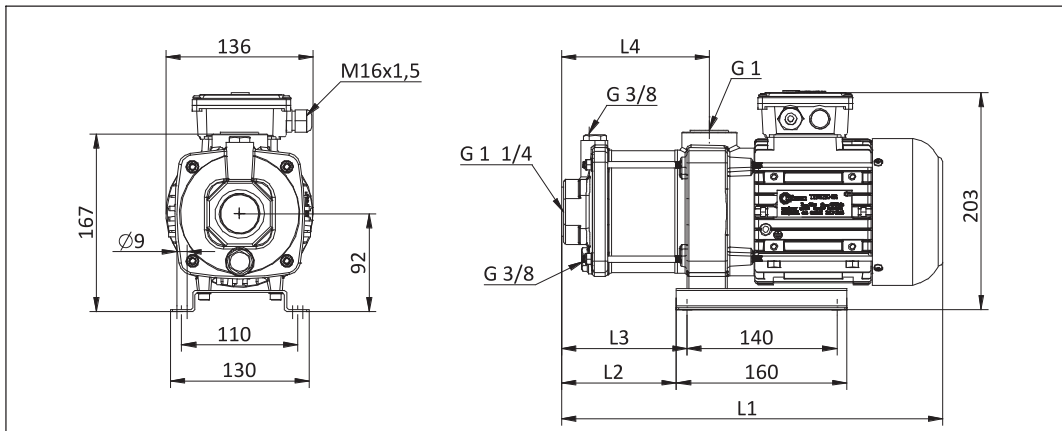
- Cutting, turning, milling, boring, grinding and similar applications of the machine tools,
- Erosion machines,
- Circulation systems. HC Pumps are used for pumping of cutting / cooling fluids.

Fluid Specifications:

- Coolants,
- Cutting oils,
- Grinding oils,
- Water,
- Fluid temperature 0...80 °C
- Kinematic viscosity 1...30 mm²/s

Materials:

Pump body	: Cast iron - DIN GG 25
Inlet body	: Cast iron - DIN GG 25
Diffuser	: Stainless steel - DIN 4301 (AISI 304)
Impeller	: Stainless steel - DIN 4301 (AISI 304)
Stage cover	: Stainless steel - DIN 4301 (AISI 304)
Pump shaft	: Stainless steel - DIN 4401 (AISI 316)
O-ring	: Viton
Mechanical seal	: C - SiC - Viton TC - TC - Viton (Optional)
Electric motor	: 3 phase induction motor - 2 pole, Protection degree IP 55

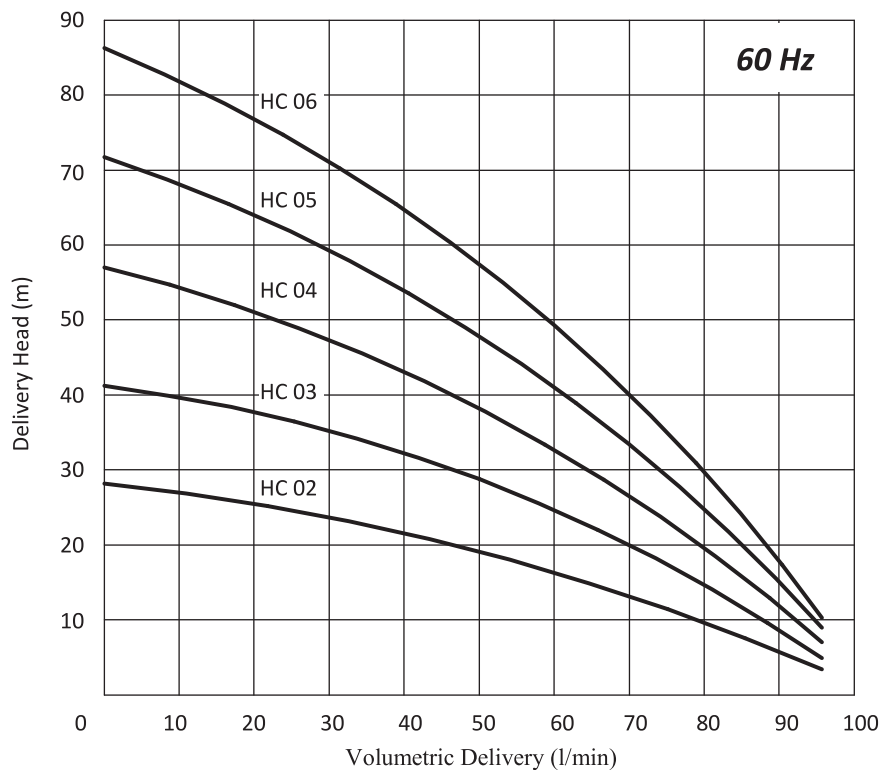


DIMENSIONS & NOMINAL VALUES

TYPE	L4	L3	L2	L1	Weight kg	Power kW	Voltage V(Δ/Y)	Frequency Hz	Rated current A	Speed rpm
	mm									
HC/02	137	116	106	356	11.8	0.44	265/460	60	1.82/1.05	3340
HC/03	158	137	127	377	13.1	0.66			2.25/1.3	3330
HC/04	179	158	148	398	15.0	0.90			3.12/1.8	3380
HC/05	200	179	169	419	15.1	1.3			4.85/2.8	3260
HC/06	221	200	190	440	15.3	1.3			4.85/2.8	3260

* The performance curves are based on 1 mm²/s (cSt) kinematic viscosity values and 997 kg/m³ density
 ** Curve tolerance according to ISO 9906:2012 Grade 3B.
 *** HC/05 and HC/06 pumps have IE2 motors. According to IEC 60034-30-1:2014 standard these pumps are excluded from efficiency class since their motors are completely integrated into the pump.

Performance Curve





60 Hz

HCA PUMP

Applications:

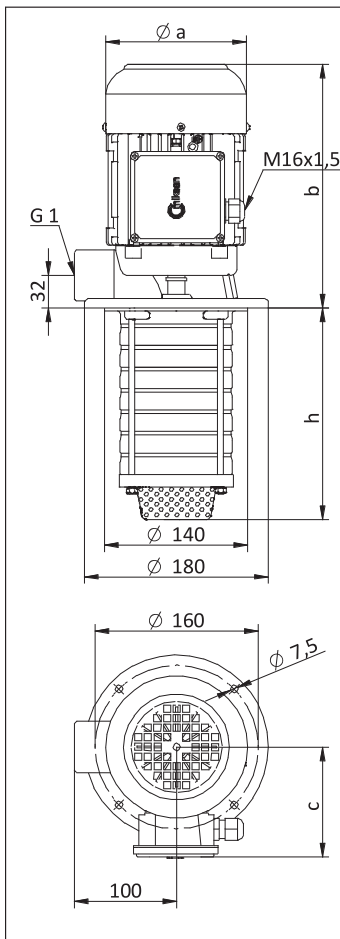
- Cutting, turning, milling, boring, grinding and similar applications of the machine tools,
- Cooling systems,
- Circulation systems. HCA Pumps are used for pumping of cutting / cooling fluids.

Fluid Specifications:

- Coolants,
- Cutting oils,
- Grinding oils,
- Water,
- Fluid temperature 0...80 °C
- Kinematic viscosity 1...30 mm²/s

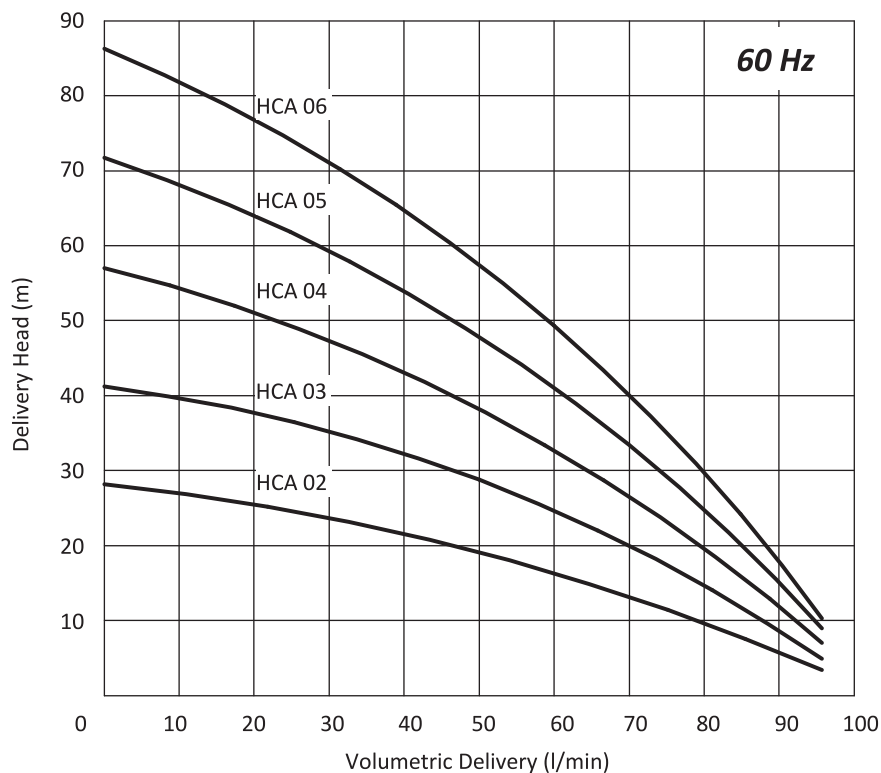
Materials:

Pump body	: Cast iron - DIN GG 25
Bottom plate	: Sheet iron
Diffuser	: Stainless steel - DIN 4301 (AISI 304)
Impeller	: Stainless steel - DIN 4301 (AISI 304)
Strainer	: Stainless steel - DIN 4301 (AISI 304)
Pump shaft	: Stainless steel - DIN 4401 (AISI 316)
O-ring	: Viton
Mechanical seal	: C - SiC - Viton TC - TC - Viton (Optional)
Electric motor	: 3 phase induction motor - 2 pole, Protection degree IP 55

DIMENSIONS & NOMINAL VALUES


TYPE	Depth of immersion h (mm)	mm			Weight kg	Power kW	Voltage V(Δ/Y)	Frequency Hz	Rated current A	Speed rpm
		a	b	c						
HCA/02	143	138	240	111	10.1	265/460	60	1.82/1.05	3340	
HCA/03	143				11.4			2.25/1.3	3330	
HCA/04	164				13.3			3.12/1.8	3380	
HCA/05	185				13.6			4.85/2.8	3260	
HCA/06	206				13.8			4.85/2.8	3260	

* The performance curves are based on 1 mm²/s (cSt) kinematic viscosity values and 997 kg/m³ density
 ** Curve tolerance according to ISO 9906:2012 Grade 3B.
 *** HCA/05 and HCA/06 pumps have IE2 motors. According to IEC 60034-30-1:2014 standard these pumps are excluded from efficiency class since their motors are completely integrated into the pump.

Performance Curve




HC B PUMP

Applications:

- Cutting, turning, milling, boring, grinding and similar applications of the machine tools,
- Especially used for deep hole boring operations due to supply 25 bar pressure,
- Circulation systems. HCB Pumps are used for pumping of cutting / cooling fluids.

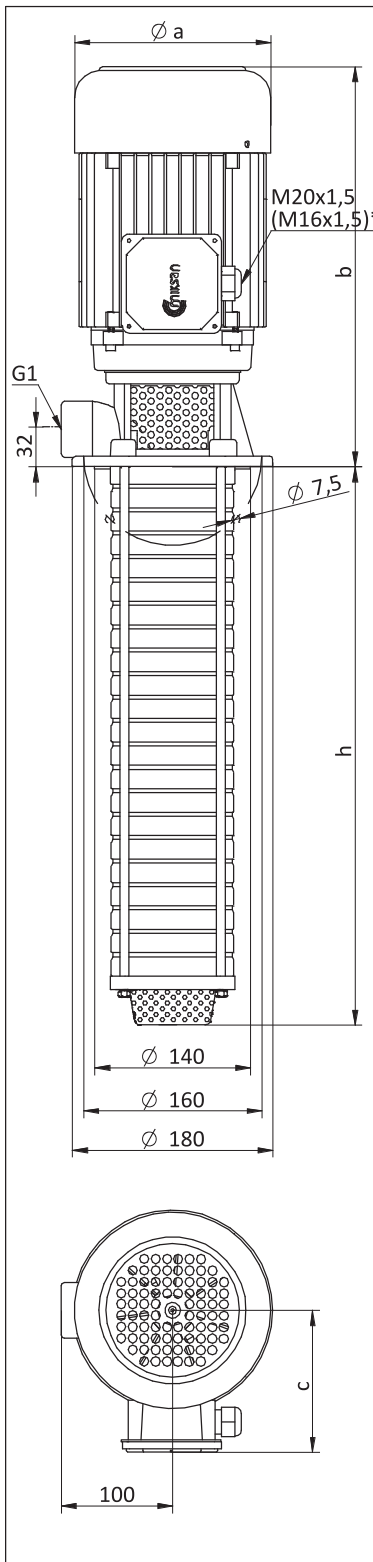
Fluid Specifications:

- Coolants,
- Cutting oils,
- Grinding oils,
- Water,
- Fluid temperature 0...80 °C
- Kinematic viscosity 1...30 mm²/s

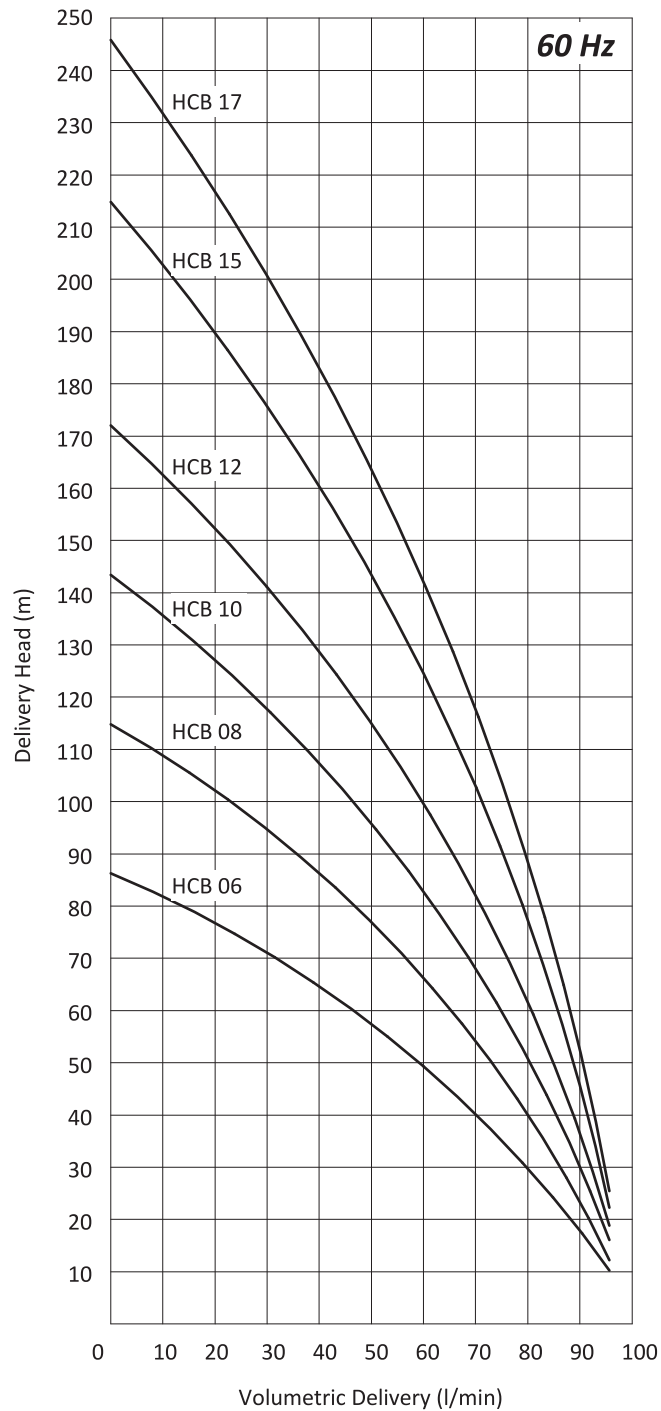
Materials:

Pump body	: Cast iron - DIN GG 25
Bottom plate	: Sheet iron
Diffuser	: Stainless steel - DIN 4301 (AISI 304)
Impeller	: Stainless steel - DIN 4301 (AISI 304)
Strainer	: Stainless steel - DIN 4301 (AISI 304)
Pump shaft	: Stainless steel - DIN 4401 (AISI 316)
O-ring	: Viton
Mechanical seal	: C - SiC - Viton TC - TC - Viton (Optional)
Electric motor	: 3 phase induction motor IE3 - 2 pole, Protection degree IP 55

- * M16x1,5 cable gland is used on HCB/06 and HCB/08 pumps.
- ** The performance curves are based on 1 mm²/s (cSt) kinematic viscosity values and 997 kg/m³ density
- *** Curve tolerance according to ISO 9906:2012 Grade 3B.

DIMENSIONS & NOMINAL VALUES


TYPE	Depth of immersion h (mm)	mm			Weight kg	Power kW	Voltage V(Δ/Y)	Frequency Hz	Rated current A	Speed rpm
		a	b	c						
HCB/06	206	157	319	118	17.0	1.3	265/460	60	4.35/2.5	3470
HCB/08	248	176	365	139	21.5	1.8			5.72/3.3	3490
HCB/10	291	176	365	139	25.0	2.65			7.79/4.5	3490
HCB/12	333	194	397	150	32.0	3.6			10.4/6.0	3495
HCB/15	396	194	397	150	33.0	3.6			10.4/6.0	3495
HCB/17	438	194	397	150	36.0	4.8			13.5/7.8	3485

Performance Curve




HD PUMP

60 Hz

Applications:

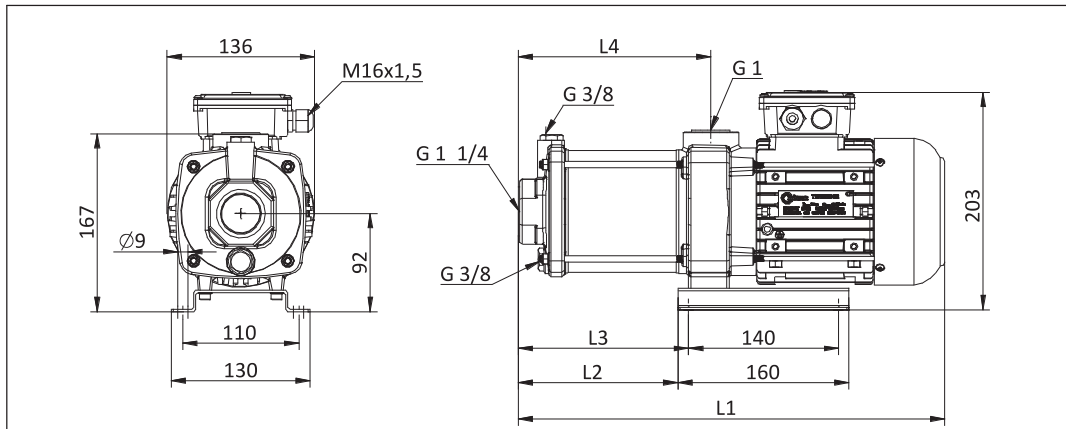
- Cutting, turning, milling, boring, grinding and similar applications of the machine tools,
- Erosion machines,
- Circulation systems. HD Pumps are used for pumping of cutting / cooling fluids.

Fluid Specifications:

- Coolants,
- Cutting oils,
- Grinding oils,
- Water,
- Fluid temperature 0...80 °C
- Kinematic viscosity 1...30 mm²/s

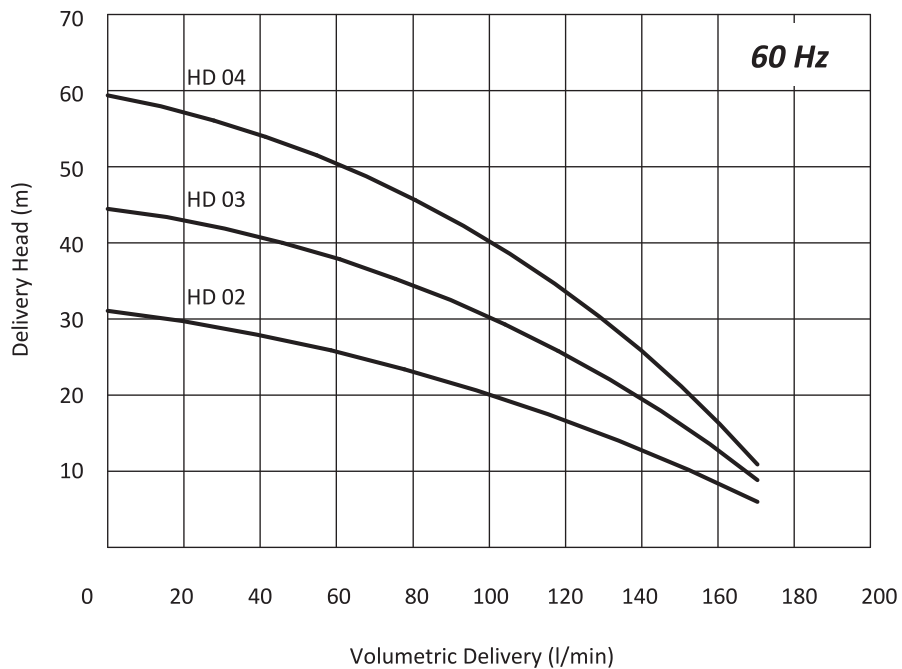
Materials:

Pump body	: Cast iron - DIN GG 25
Inlet body	: Cast iron - DIN GG 25
Diffuser	: Stainless steel - DIN 4301 (AISI 304)
Impeller	: Stainless steel - DIN 4301 (AISI 304)
Stage cover	: Stainless steel - DIN 4301 (AISI 304)
Pump shaft	: Stainless steel - DIN 4401 (AISI 316)
O-ring	: Viton
Mechanical seal	: C - SiC - Viton TC - TC - Viton (Optional)
Electric motor	: 3 phase induction motor - 2 pole, Protection degree IP 55


DIMENSIONS & NOMINAL VALUES

TYPE	L4	L3	L2	L1	Weight kg	Power kW	Voltage V(Δ/Y)	Frequency Hz	Rated current A	Speed rpm
	mm									
HD/02	137	116	106	356	13.5	0.66	265/460	60	2.25/1.3	3330
HD/03	158	137	127	377	14.5	1.32			4.85/2.8	3260
HD/04	179	158	148	398	14.9	1.32			4.85/2.8	3260

- * The performance curves are based on 1 mm²/s (cSt) kinematic viscosity values and 997 kg/m³ density
- ** Curve tolerance according to ISO 9906:2012 Grade 3B.
- *** HD/03 and HD/04 pumps have IE2 motors. According to IEC 60034-30-1:2014 standard these pumps are excluded from efficiency class since their motors are completely integrated into the pump.

Performance Curve




HDA PUMP

Applications:

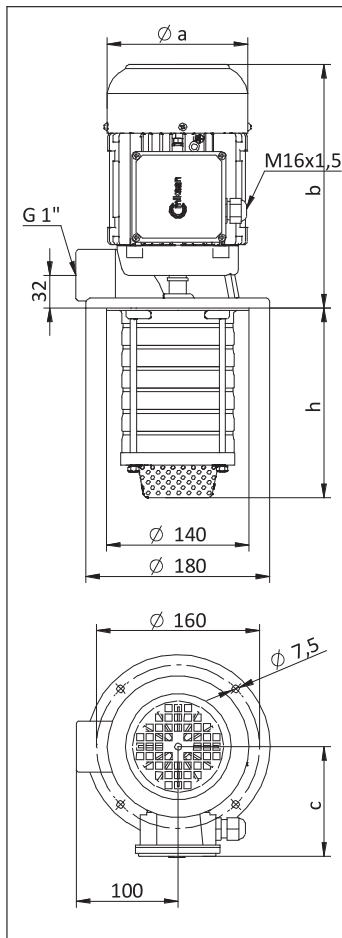
- Cutting, turning, milling, boring, grinding and similar applications of the machine tools,
- Cooling systems,
- Circulation systems. HDA Pumps are used for pumping of cutting / cooling fluids.

Fluid Specifications:

- Coolants,
- Cutting oils,
- Grinding oils,
- Water,
- Fluid temperature 0...80 °C
- Kinematic viscosity 1...30 mm²/s

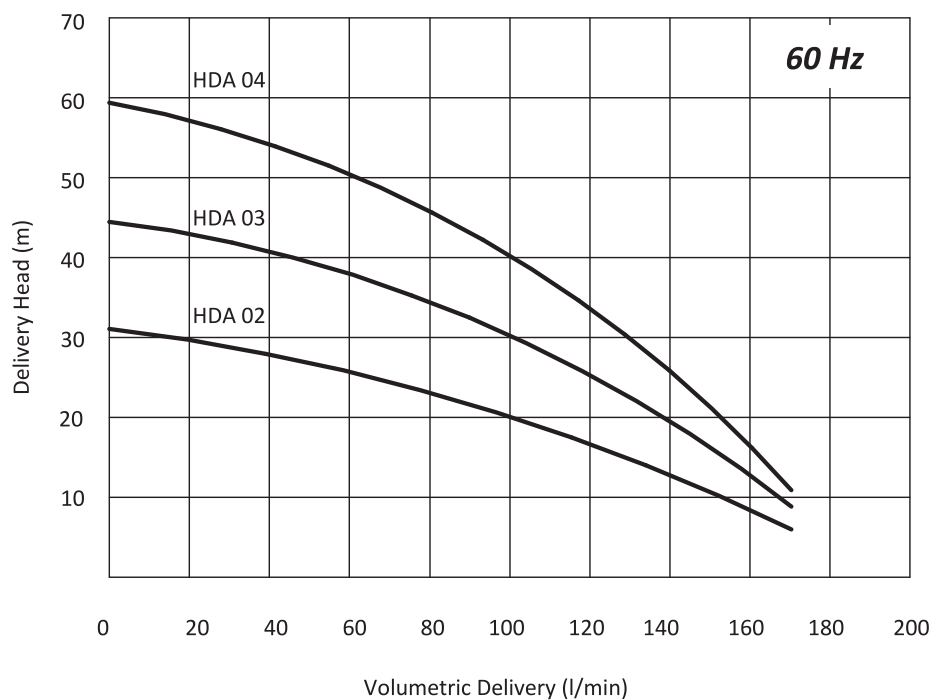
Materials:

Pump body	: Cast iron - DIN GG 25
Bottom plate	: Sheet iron
Diffuser	: Stainless steel - DIN 4301 (AISI 304)
Impeller	: Stainless steel - DIN 4301 (AISI 304)
Strainer	: Stainless steel - DIN 4301 (AISI 304)
Pump shaft	: Stainless steel - DIN 4401 (AISI 316)
O-ring	: Viton
Mechanical seal	: C - SiC - Viton TC - TC - Viton (Optional)
Electric motor	: 3 phase induction motor IE3 - 2 pole, Protection degree IP 55

DIMENSIONS & NOMINAL VALUES


TYPE	Depth of immersion h (mm)	a b c			Weight kg	Power kW	Voltage V(Δ/Y)	Frequency Hz	Rated current A	Speed rpm
		mm								
HDA/02	143	138	240	111	11.2	265/460	60	2.25/1.3	3330	
HDA/03	143				13.0	1.32		4.85/2.8	3260	
HDA/04	164				13.4	1.32		4.85/2.8	3260	

* The performance curves are based on 1 mm²/s (cSt) kinematic viscosity values and 997 kg/m³ density
 ** Curve tolerance according to ISO 9906:2012 Grade 3B.
 *** HDA/04, HDA/05 and HDA/06 pumps have IE2 motors. According to IEC 60034-30-1:2014 standard these pumps are excluded from efficiency class since their motors are completely integrated into the pump.

Performance Curve




HDB PUMP

Applications:

- Cutting, turning, milling, boring, grinding and similar applications of the machine tools,
- Especially used for deep hole boring operations due to supply 25 bar pressure,
- Circulation systems. HDB Pumps are used for pumping of cutting / cooling fluids.

Fluid Specifications:

- Coolants,
- Cutting oils,
- Grinding oils,
- Water,
- Fluid temperature 0...80 °C
- Kinematic viscosity 1...30 mm²/s

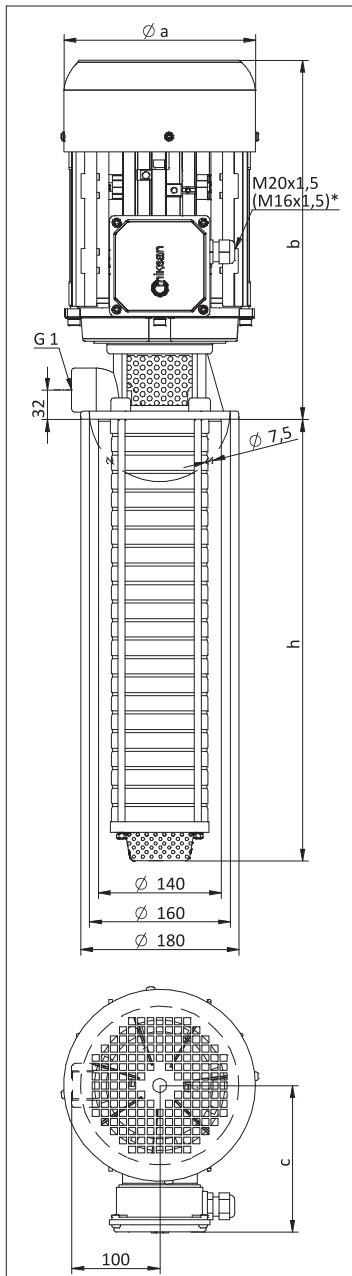
Materials:

Pump body	: Cast iron - DIN GG 25
Bottom plate	: Sheet iron
Diffuser	: Stainless steel - DIN 4301 (AISI 304)
Impeller	: Stainless steel - DIN 4301 (AISI 304)
Strainer	: Stainless steel - DIN 4301 (AISI 304)
Pump shaft	: Stainless steel - DIN 4401 (AISI 316)
O-ring	: Viton
Mechanical seal	: C - SiC - Viton TC - TC - Viton (Optional)
Electric motor	: 3 phase induction motor IE3 - 2 pole, Protection degree IP 55

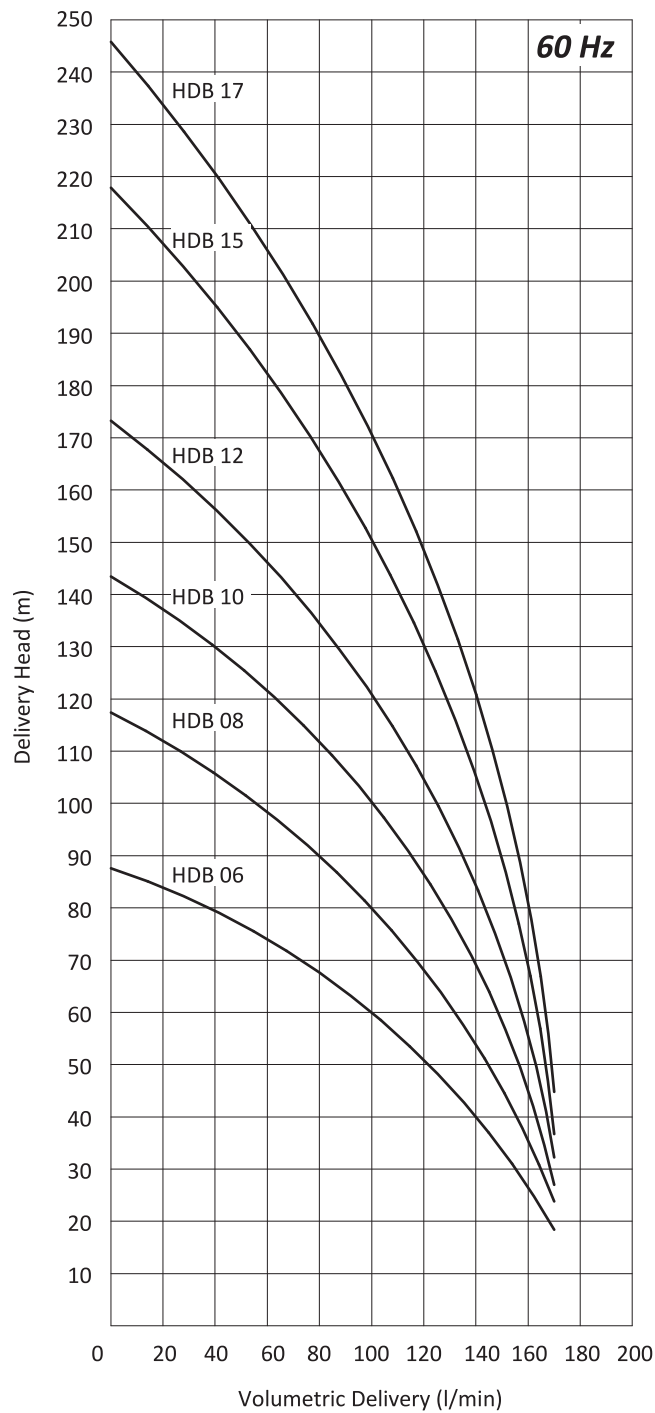
* M16x1,5 cable gland is used on HDB/06 pump.

** The performance curves are based on 1 mm²/s (cSt) kinematic viscosity values and 997 kg/m³ density

*** Curve tolerance according to ISO 9906:2012 Grade 3B.

DIMENSIONS & NOMINAL VALUES


TYPE	Depth of immersion h (mm)	Dimensions			Weight kg	Power kW	Voltage V(Δ/Y)	Frequency Hz	Performance	
		a	b	c					Rated current A	Speed rpm
HDB/06	206	176	340	139	24.5	265/460	60 Hz	7.79/4.5	3490	
HDB/08	248	176	340	139	25.0	265/460	60 Hz	7.79/4.5	3490	
HDB/10	291	194	397	150	31.5	265/460	60 Hz	10.4/6.0	3495	
HDB/12	333	194	397	150	35.5	265/460	60 Hz	13.5/7.8	3485	
HDB/15	396	194	397	150	36.0	265/460	60 Hz	13.5/7.8	3485	
HDB/17	438	218	410	163	42.0	265/460	60 Hz	18.4/10.6	3520	

Performance Curve




HEB PUMP

60 Hz

Applications:

- Cutting, turning, milling, boring, grinding and similar applications of the machine tools,
- Especially used for deep hole boring operations due to supply 23,5 bar pressure,
- Circulation systems. HEB Pumps are used for pumping of cutting / cooling fluids.

Fluid Specifications:

- Coolants,
- Cutting oils,
- Grinding oils,
- Water,
- Fluid temperature 0...80 °C
- Kinematic viscosity 1...30 mm²/s

Materials:

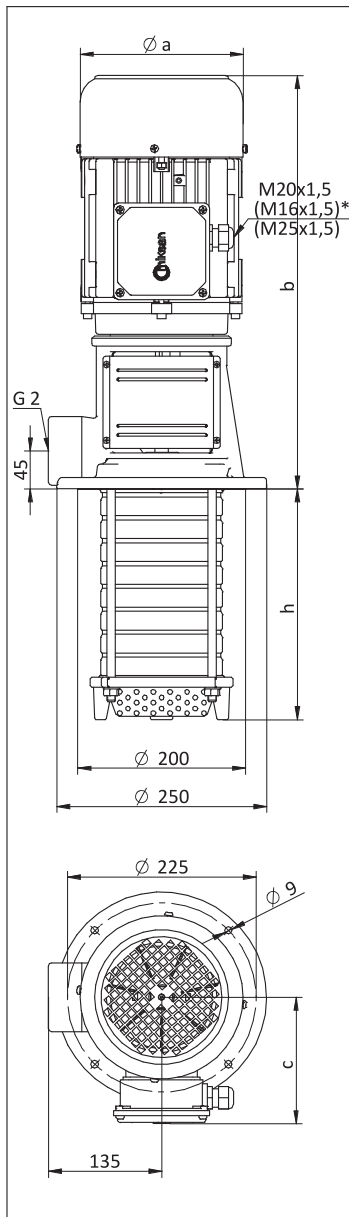
Pump body	: Cast iron - DIN GG 25
Bottom plate	: Cast iron - DIN GG 25
Diffuser	: Stainless steel - DIN 4301 (AISI 304)
Impeller	: Stainless steel - DIN 4301 (AISI 304)
Strainer	: Stainless steel - DIN 4301 (AISI 304)
Pump shaft	: Stainless steel - DIN 4401 (AISI 316)
O-ring	: Viton
Mechanical seal	: C - SiC - Viton TC - TC - Viton (Optional)
Electric motor	: 3 phase induction motor IE3 - 2 pole, Protection degree IP 55

* M16x1,5 cable gland is used on HEB 02 pump.

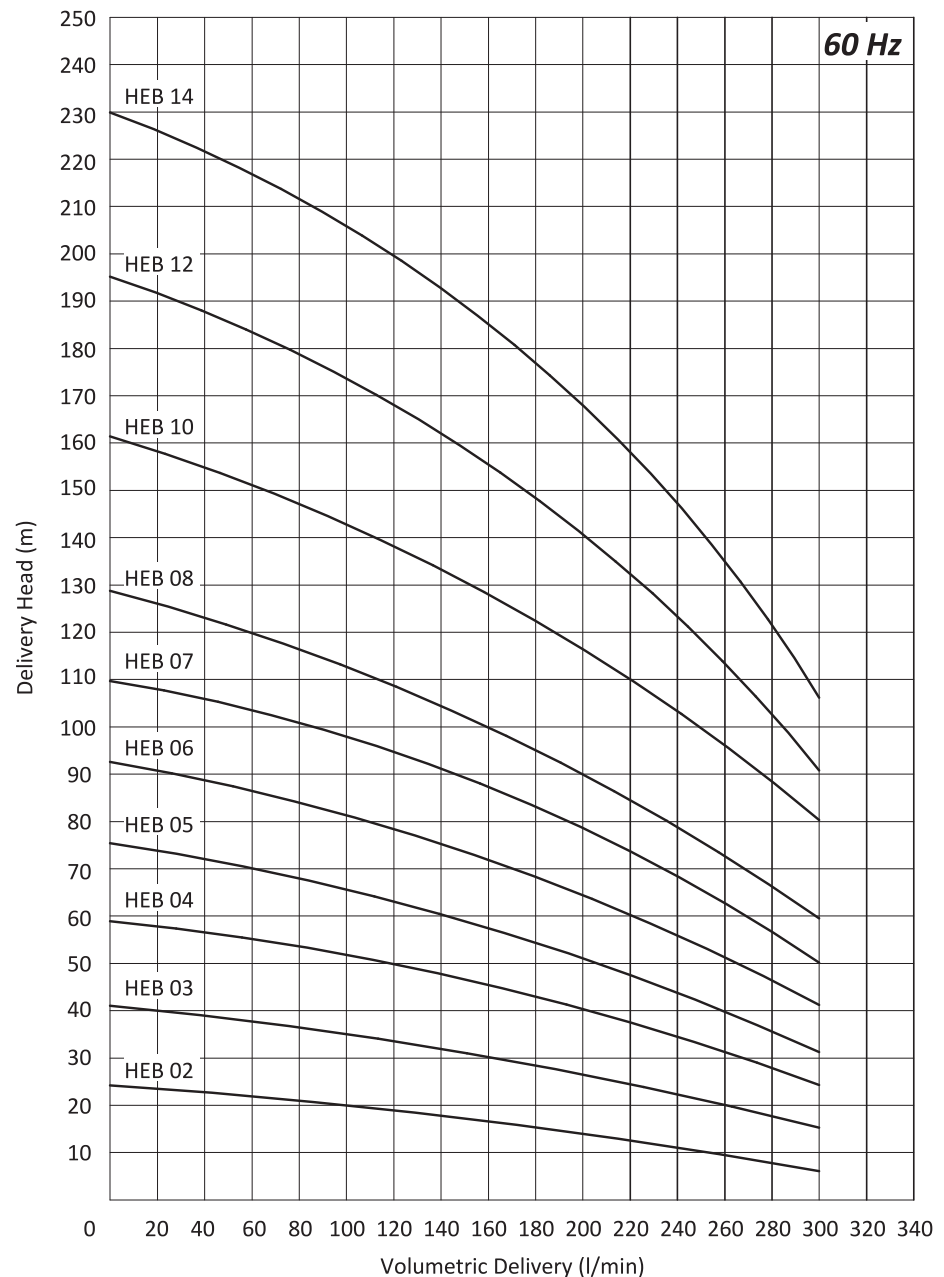
** M25x1,5 cable gland is used on HEB 14 to HEB 20 pumps.

*** The performance curves are based on 1 mm²/s (cSt) kinematic viscosity values and 997 kg/m³ density

**** Curve tolerance according to ISO 9906:2012 GRADE 3B.

DIMENSIONS & NOMINAL VALUES


TYPE	Depth of immersion h (mm)	a b c			Weight kg	Power kW	Voltage V(Δ/Y)	Frequency Hz	Rated current A	Speed rpm
		mm								
HEB 02	167	176	437	139	28.0	1.8	265/460	60 Hz	5.72/3.3	3490
HEB 03	167	176	462	139	31.5	2.65			7.79/4.5	3490
HEB 04	194	194	489	150	38.0	3.6			10.4/6.0	3495
HEB 05	221	194	489	150	38.5	3.6	10.4/6.0	3495		
HEB 06	248	194	489	150	42.0	4.8	13.5/7.8	3485		
HEB 07	275	218	502	163	48.5	6.6	18.4/10.6	3520		
HEB 08	302	218	502	163	49.0	6.6	18.4/10.6	3520		
HEB 10	356	258	589	177	74.0	9.0	460 Δ	14.0	3505	
HEB 12	410	258	589	177	74.5	9.0		14.0	3505	
HEB 14	464	258	618	177	85.0	13.2		19.7	3510	

Performance Curve




HCD PUMP

Applications:

- Cutting, turning, milling, boring, grinding and similar applications of the machine tools,
- Especially used for deep hole boring operations due to supply 25 bar pressure,
- Circulation systems. HCD Pumps are used for pumping of cutting / cooling fluids.

Fluid Specifications:

- Coolants,
- Cutting oils,
- Grinding oils,
- Water,
- Fluid temperature 0...80 °C
- Kinematic viscosity 1...30 mm²/s

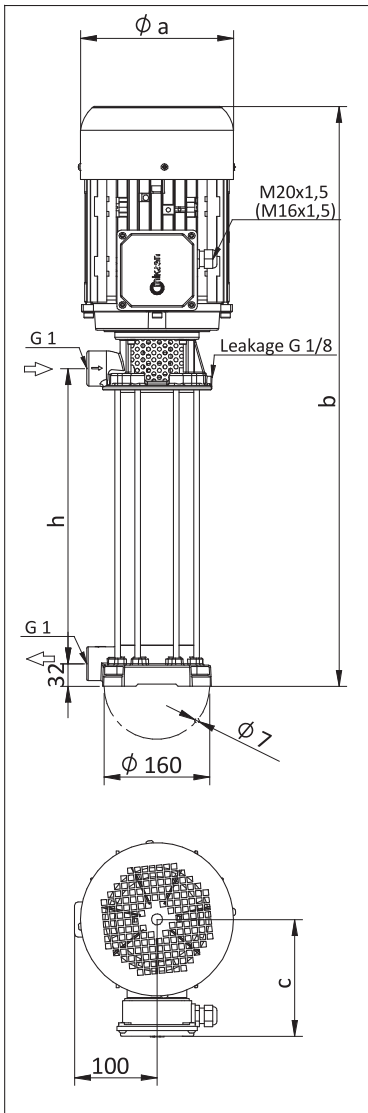
Materials:

Pump body	: Cast iron - DIN GG 25
Cover	: Cast iron - DIN GG 25
Diffuser	: Stainless steel - DIN 4301 (AISI 304)
Impeller	: Stainless steel - DIN 4301 (AISI 304)
Strainer	: Stainless steel - DIN 4301 (AISI 304)
Pump shaft	: Stainless steel - DIN 4401 (AISI 316)
O-ring	: Viton
Mechanical seal	: C - SiC - Viton TC - TC - Viton (Optional)
Electric motor	: 3 phase induction motor IE3 - 2 pole, Protection degree IP 55

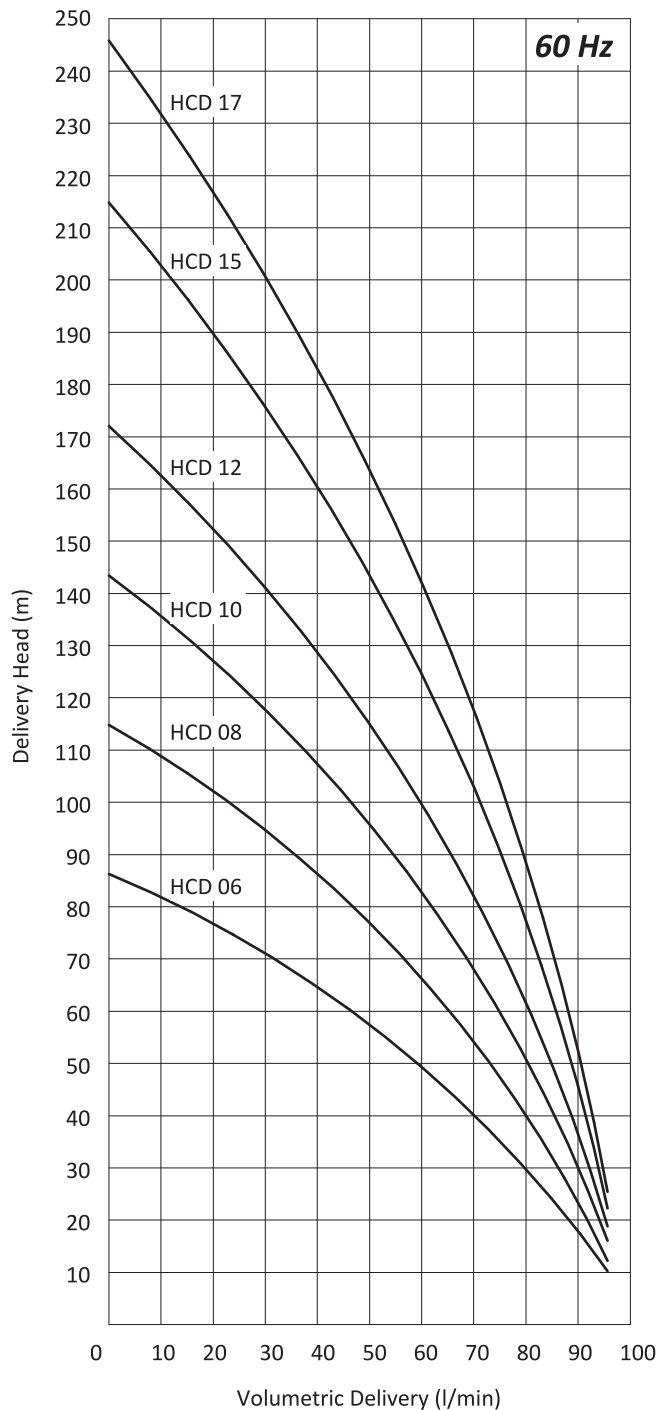
* M16x1,5 cable gland is used on HCD/08 pump.

** The performance curves are based on 1 mm²/s (cSt) kinematic viscosity values and 997 kg/m³ density

*** Curve tolerance according to ISO 9906:2012 Grade 3B.

DIMENSIONS & NOMINAL VALUES


TYPE	Length			Weight kg	Power kW	Voltage V(ΔY)	Frequency Hz	Rated current A	Speed rpm	
	h (mm)	a	b							c
HCD/08	316	157	655	118	27.0	1.8	265/460	60	5.72/3.3	3490
HCD/10	316	176	680	139	30.5	2.65			7.79/4.5	3490
HCD/12	420	176	816	139	37.0	3.6			10.4/6.0	3495
HCD/15	420	194	816	150	38.0	3.6			10.4/6.0	3495
HCD/17	524	194	920	150	41.0	4.8			13.5/7.8	3485

Performance Curve




HDD PUMP

Applications:

- Cutting, turning, milling, boring, grinding and similar applications of the machine tools,
- Especially used for deep hole boring operations due to supply 25 bar pressure,
- Circulation systems. HDD Pumps are used for pumping of cutting / cooling fluids.

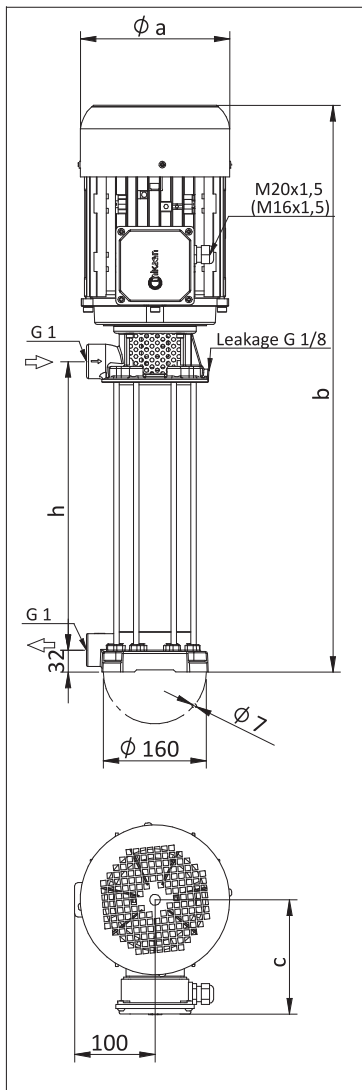
Fluid Specifications:

- Coolants,
- Cutting oils,
- Grinding oils,
- Water,
- Fluid temperature 0...80 °C
- Kinematic viscosity 1...30 mm²/s

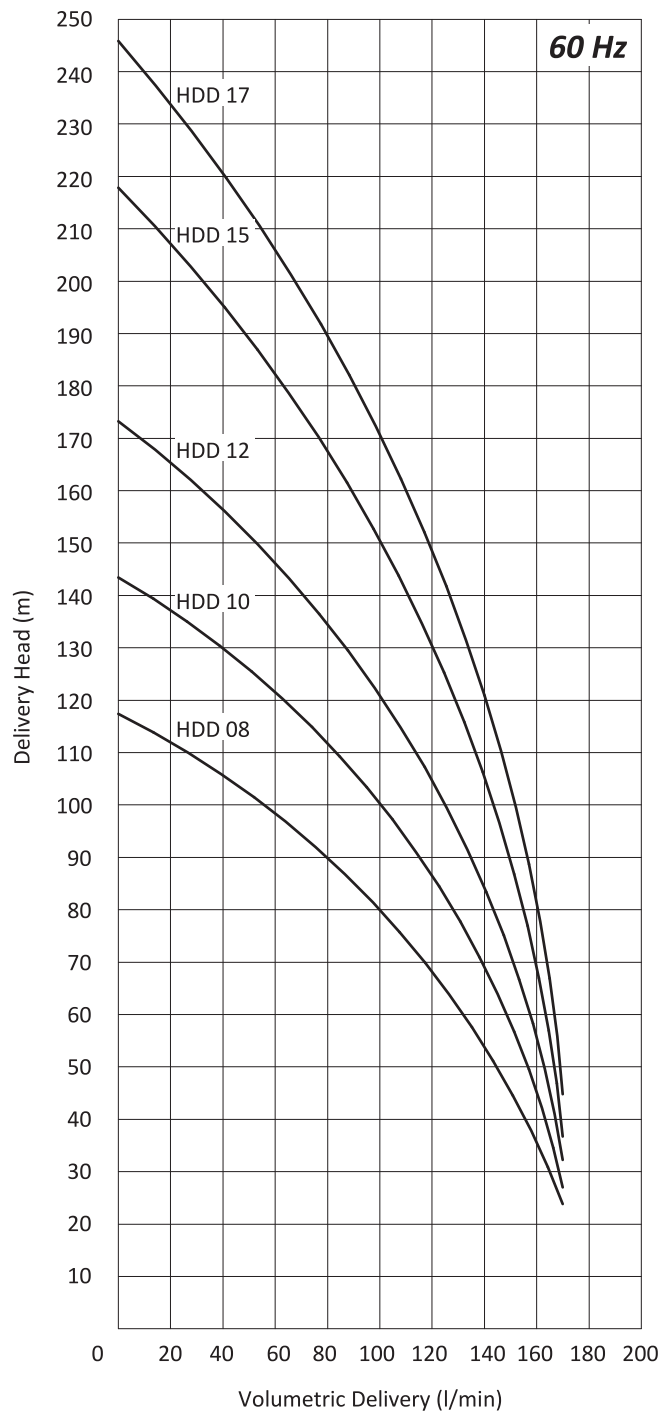
Materials:

Pump body	: Cast iron - DIN GG 25
Cover	: Cast iron - DIN GG 25
Diffuser	: Stainless steel - DIN 4301 (AISI 304)
Impeller	: Stainless steel - DIN 4301 (AISI 304)
Strainer	: Stainless steel - DIN 4301 (AISI 304)
Pump shaft	: Stainless steel - DIN 4401 (AISI 316)
O-ring	: Viton
Mechanical seal	: C - SiC - Viton TC - TC - Viton (Optional)
Electric motor	: 3 phase induction motor IE3 - 2 pole, Protection degree IP 55

- * M16x1,5 cable gland is used on HDD/08 pump.
- ** The performance curves are based on 1 mm²/s (cSt) kinematic viscosity values and 997 kg/m³ density
- *** Curve tolerance according to ISO 9906:2012 Grade 3B.

DIMENSIONS & NOMINAL VALUES


TYPE	Length			Weight kg	Power kW	Voltage V(Δ/Y)	Frequency Hz	Rated current A	Speed rpm
	h (mm)	a	b						
HDD/08	316	176	680	139	30.0	265/460	60 Hz	7.79/4.5	3490
HDD/10	316	194	712	150	36.5	3.6		10.4/6.0	3495
HDD/12	420	194	816	150	41.0	4.8		13.5/7.8	3485
HDD/15	420	194	816	150	41.5	4.8		13.5/7.8	3485
HDD/17	524	218	933	163	47.0	6.6		18.4/10.6	3520

Performance Curve




HED PUMP

Applications:

- Cutting, turning, milling, boring, grinding and similar applications of the machine tools,
- Especially used for deep hole boring operations due to supply 23,5 bar pressure,
- Circulation systems. HED Pumps are used for pumping of cutting / cooling fluids.

Fluid Specifications:

- Coolants,
- Cutting oils,
- Grinding oils,
- Water,
- Fluid temperature 0...80 °C
- Kinematic viscosity 1...30 mm²/s

Materials:

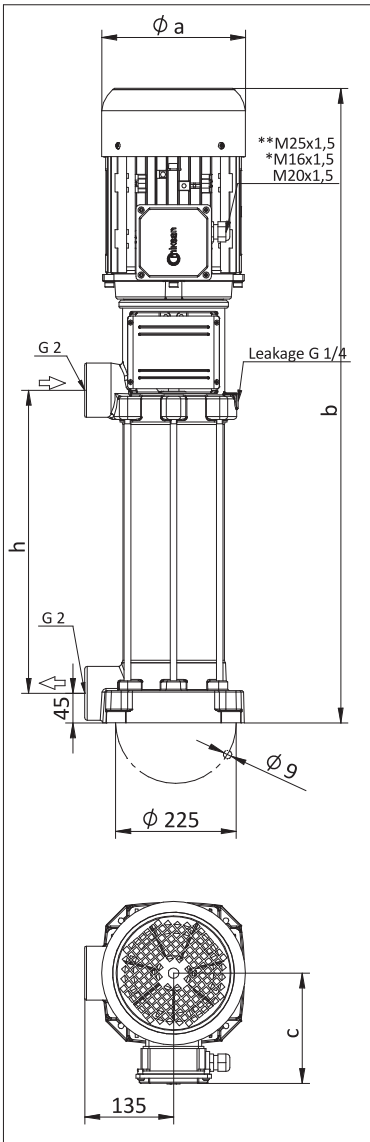
Pump body	: Cast iron - DIN GG 25
Cover	: Cast iron - DIN GG 25
Diffuser	: Stainless steel - DIN 4301 (AISI 304)
Impeller	: Stainless steel - DIN 4301 (AISI 304)
Strainer	: Stainless steel - DIN 4301 (AISI 304)
Pump shaft	: Stainless steel - DIN 4401 (AISI 316)
O-ring	: Viton
Mechanical seal	: C - SiC - Viton TC - TC - Viton (Optional)
Electric motor	: 3 phase induction motor IE3 - 2 pole, Protection degree IP 55

* M16x1,5 cable gland is used on HED 02 and HED 03 pumps.

** M25x1,5 cable gland is used on HED 16, HED 18 and HED 20 pumps.

*** The performance curves are based on 1 mm²/s (cSt) kinematic viscosity values and 997 kg/m³ density

**** Curve tolerance according to ISO 9906:2012 Grade 3B.

DIMENSIONS & NOMINAL VALUES


TYPE	Length			Weight kg	Power kW	Voltage V(Δ/Y)	Frequency Hz	Rated current A	Speed rpm	
	h (mm)	a	b							c
HED 02	269	176	705	139	38.0	1.8	265/460	60 Hz	5.72/3.3	3490
HED 03	269	176	730	139	41.5	2.65			7.79/4.5	3490
HED 04	269	194	762	150	48.0	3.6			10.4/6.0	3495
HED 05	269	194	762	150	48.5	3.6			10.4/6.0	3495
HED 06	350	194	843	150	52.0	4.8			13.5/7.8	3485
HED 07	350	218	856	163	58.5	6.6			18.4/10.6	3520
HED 08	350	218	856	163	59.0	6.6			18.4/10.6	3520
HED 10	460	258	1021	177	84.0	9.0	460 Δ		14.0	3505
HED 12	460	258	1021	177	84.5	9.0			14.0	3505
HED 14	568	258	1159	177	95.0	13.2			19.7	3510

Performance Curve
