

Centrifugal Pumps

Self-priming in ring-section type

TKH 8001 ... 15006
TLH 15101 ... 15105



Technical Data

Flow rate:	max. 350 m ³ /h
Head:	max. 185 m
Speed:	max. 1700 rpm
Temperature:	0 °C up to max. +120 °C
Casing pressure:	max. PN 16
Shaft seal:	Mechanical seal
Flange connection dimension:	DIN EN 1092-2 Optional: ASME B 16.5
Direction of rotation:	clockwise, when viewed from drive end
Certificate:	ATEX 94/9/EG. Ex II 2 G c T3-T5



Application

Self-priming centrifugal pumps of the TKH/TLH range are used for pumping pure or turbid liquids containing no solid matter. Due to their self-priming ability and the possible material combinations the pumps can be used in a wide variety of applications such as:

- fuel handling in places of trans-shipment and on large tank farms
- industrial and municipal potable water and service water supply
- fire fighting equipment
- manufacture of cooling equipment
- in the shipbuilding industry as bilge and ballast pumps
- chemical and petrochemical industries

Design

The horizontal ring-section type centrifugal pumps have closed impellers and a priming stage. The priming stage is located on the suction side parallel to the first liquid stage is used during suction operation or according to the mixture separation principle. If the liquid handled contains a lot of gas. The gas is separated and largely removed before the liquid enters the first impeller. Finally distributed quantities of gas pose no problem to pumping performance. When during suction there is 0.5 bar back-pressure on the delivery side the gas sucked is pumped into the delivery line. If the back-pressure value is higher a separate gas discharge is necessary.

Design details

Casing pressure:

Permissible max. casing pressures as a function of size and number of stages in bar:

TKH 8000 - 15000	16 bar
TLH 15101 - 15105	16 bar

Please note:

Technical rules and safety rules.

Casing pressure = zero delivery head + pos. suction pressure

Nozzle position:

TKH 8000 to 15000 Suction and delivery nozzles radially upwards.
and TLH 15100:

Flanges:

Flanges according to DIN EN 1092-2 / PN 16.
Flange design according to ASME is possible.

Hydraulic:

Centrifugal hydraulic with special NPSH-impeller and gas priming stage. Gas priming stage designed to side channel or liquid ring vacuum principle.

Bearing:

The TKH 8000 to 15000 are equipped with a plain bearing and a deep groove ball bearing. TLH 15100 has a double-row angular contact ball bearing according to DIN 628 and a deep groove ball bearing. All deep groove ball bearings conform to DIN 625. All anti-friction bearings are grease-lubricated. Pumps are provided with the initial supply of grease.

Direction of rotation:

Clockwise, when viewed from drive end.

Shaft seal:

The shaft sealing consist of mechanical seals.

Shaft seal in detail:

Designation 135: Roten. EBVG. self-flushed. uncooled. unbalanced single-acting mechanical seal temperature range from 0 °C to 120 °C

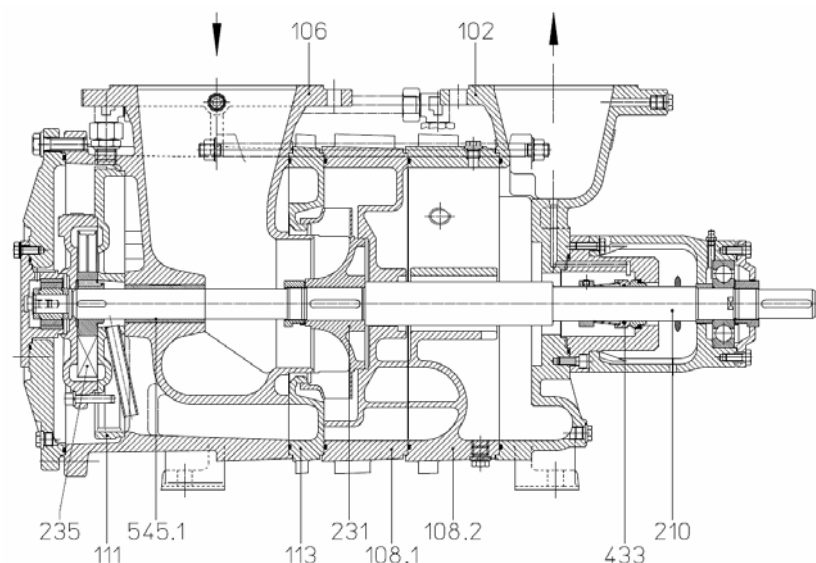
Designation 136: Roten. EBVG. self-flushed. uncooled. unbalanced single-acting mechanical seal temperature range from 0 °C to 120 °C

Designation XAG: Roten. EBXGG. self-flushed. uncooled. balanced single-acting mechanical seal temperature range from 0 °C to 120 °C

Designation X0G: Burgmann 2xM7N. BSKGG. uncooled. unbalanced double-acting mechanical seal. tandem arrangement temperature range from 0 °C to 80 °C

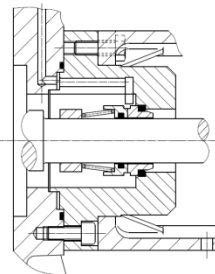
Sectional drawing and list of components

TKH 8000 ... 15000

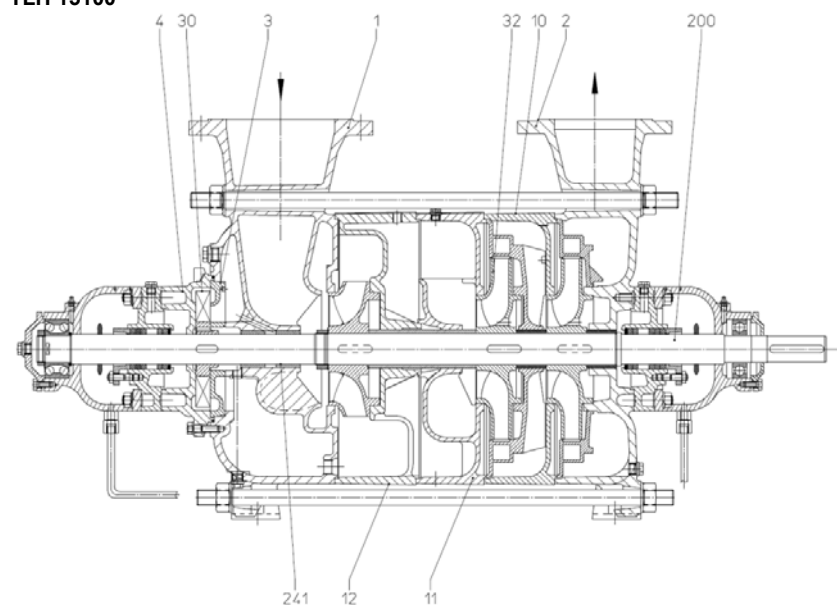


102	Volute casing	111	Priming stage	235	Side channel impeller
106	Suction casing	113	Intermediate casing	433	Mechanical seal
108.1	Stage casing	210	Shaft	545.1	Bearing bush
108.2	Stage casing	231	Impeller		

Shaft seal
Designation 135

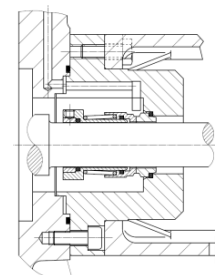


TLH 15100



1	Suction cover	10. 11. 12. 13	Intermediate piece	241	Bearing bush
2	Discharge cover	30	Side channel impeller	500	Mechanical seal
3	Venting casing	31. 32	Impeller		
4	Venting cover	200	Shaft		

Shaft seal
Designation 136



Material design:

TKH 8000 ... 15000

Item	Components	Material design	
		1B	1C
106	Suction casing	EN-JS1030-EN 1563 (0.7040)	
102	Volute casing	EN-JS1030-EN 1563 (0.7040)	
111	Priming stage	EN-JL1040 - EN 1561 (0.6025)	
114	Casing with transfer passages	EN-JL1040 - EN 1561 (0.6025)	
113	Intermediate casing	EN-JS1030-EN 1563 (0.7040)	
108.1 – 108.5	Stage casing	EN-JS1030-EN 1563 (0.7040)	
235	Side channel impeller	GX20Cr14 (1.4027.05)	CC483K-GS - EN 1982 (2.1052.01)
231	Impeller first stage	EN-JL1040 - EN 1561 (0.6025)	Bronze
230	Impeller other stages	EN-JL2030 - EN 1561 (0.6022)	
210	Shaft	1.4122+QT - EN 10088-3	
545.1	Bearing bush	Carbon / Plastic	CC496K-GS - EN 1982 (2.1182.01)
433	Mechanical seal	Please shaft seal in details	

TLH 15100

EN JS1030

Item	Components	Material design	
		1A	1B
1	Suction cover	EN-JS1030 - EN 1563 (0.7040)	
2	Volute casing / discharge cover	EN-JS1030 - EN 1563 (0.7040)	
3	Intermediate piece or venting casing	EN-JS1030 - EN 1563 (0.7040)	
4	Intermediate piece or venting casing	EN-JL1040 - EN 1561 (0.6025)	
10. 11. 12. 13	Intermediate piece	EN-JL1040 - EN 1561 (0.6025)	
19	Port plate	EN-JL1040 - EN 1561 (0.6025)	
22	Central body	EN-JL1040 - EN 1561 (0.6025)	
30	Side channel impeller	CC483K-GS - EN 1982 (2.1052.01)	1.4027+QT - SEW 410 (G-X20Cr14)
31	Impeller first stage		
32	Impeller other stage	EN-JL1040 - EN 1561 (0.6025)	
200	Shaft	1.4122+QT - EN 10088-3	
241	Bearing bush	Lead bronze	Carbon / Plastic
500	Mechanical seal	X 22 Cr Ni17 / Carbon / Viton	

Casing seal:

The TKH 8000 to 15000 pump range uses O-rings. The casing seal of ranges TLH 15100 consists of a special paper gasket.

Drive / Speed:

Customary IM B 3 electric motors.

Data regarding size

TLH 15100

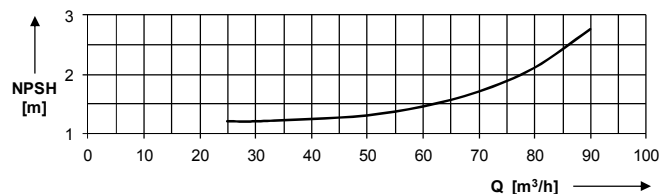
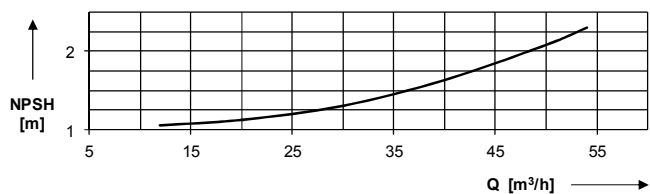
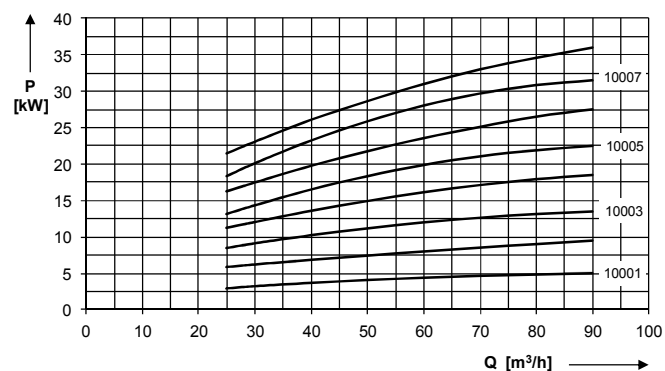
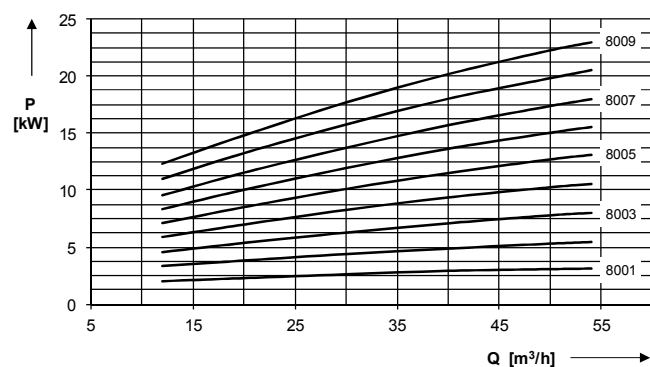
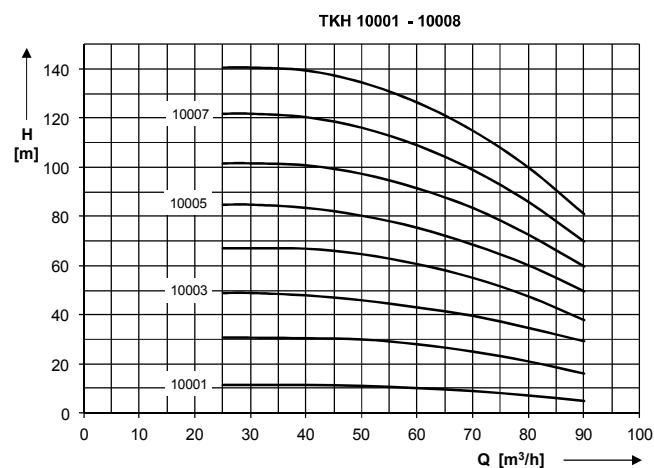
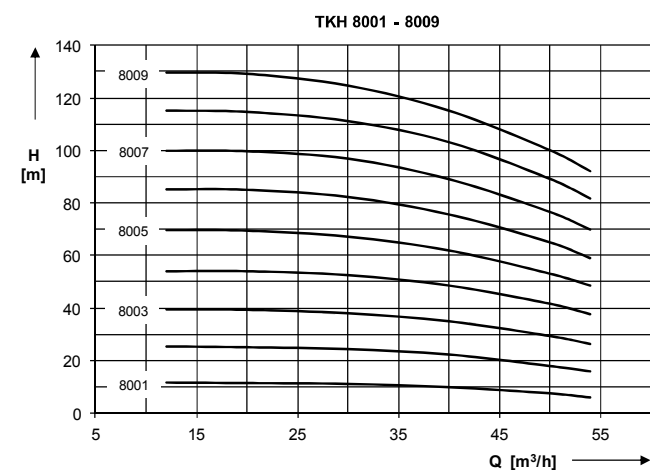
Series / Size	Hydraulic + Bearing	Shaft sealing	Material design	Casing seal
TLH 15101 to 15106	B• two grease-lubricated deep groove ball bearings •N direction of rotation: clockwise. when viewed from drive end	136 balanced single-acting mechanical seal	1A SG iron 1B as 1A. but without non-ferrous metal	2 Gasket

TKH 8000 ... 15000

Series / Size	Hydraulic + Bearing	Shaft sealing	Material design	Casing seal
TKH 8001 to 15006	A• a plain bearing and a deep groove ball bearing •A Hydraulics	135 Roten. EBVGG single-acting mechanical seal. unbalanced 136 Roten. EBVGG single-acting mechanical seal. balanced XAG Roten. EBVGG single-acting mechanical seal. balanced X0G Burgmann. 2xM7N. BSKGG double-acting mechanical seal. tandem design	1B SG iron 1C as 1B. but without non-ferrous metal	1 O-ring

Characteristic curves

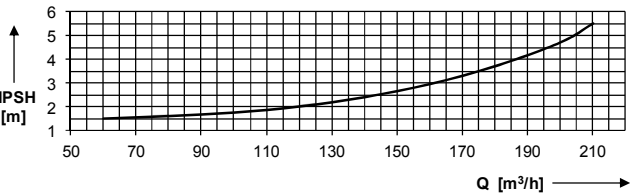
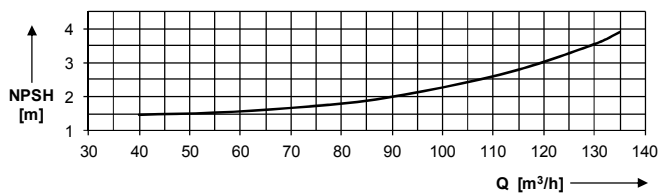
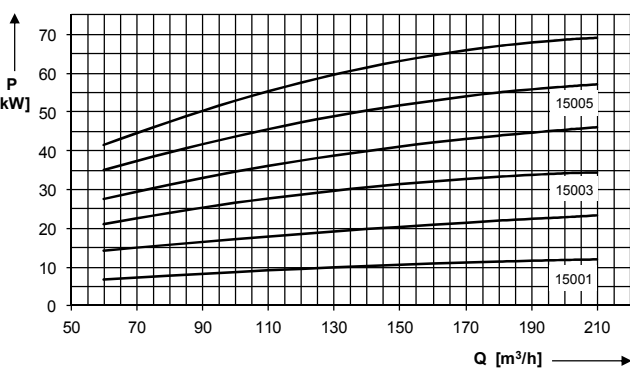
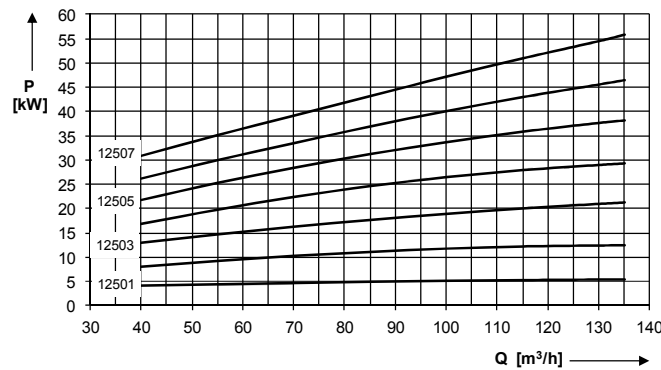
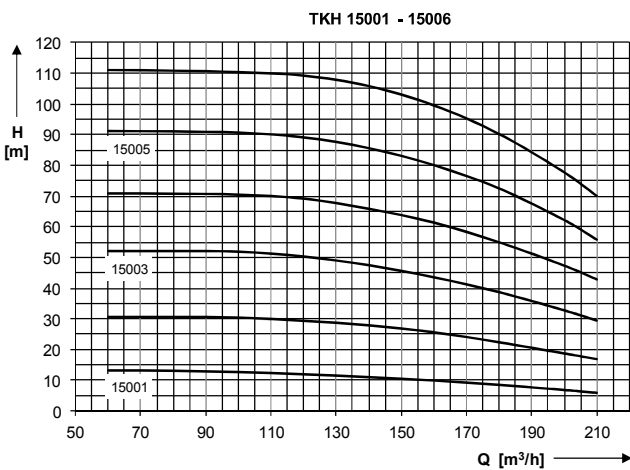
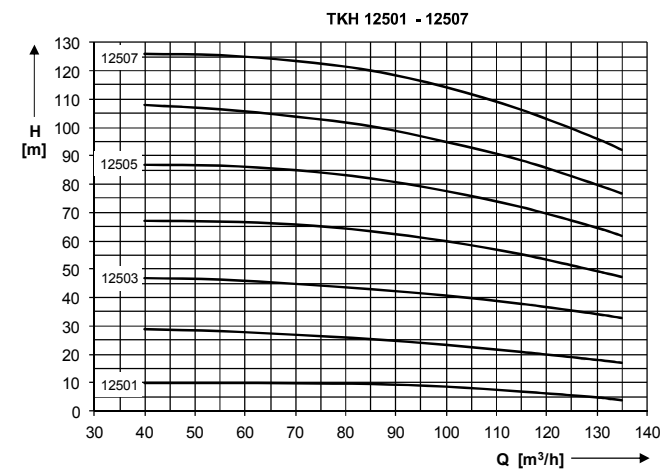
50 Hz

 $\rho = 1.0 \text{ kg/dm}^3$


Characteristic curves

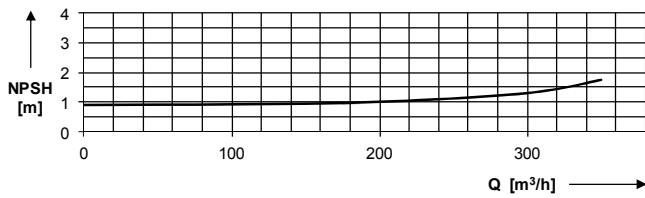
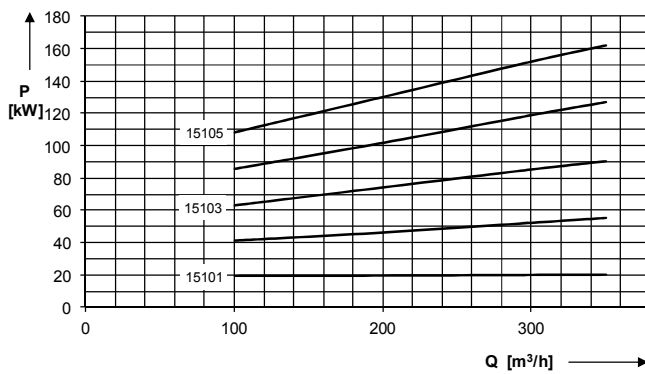
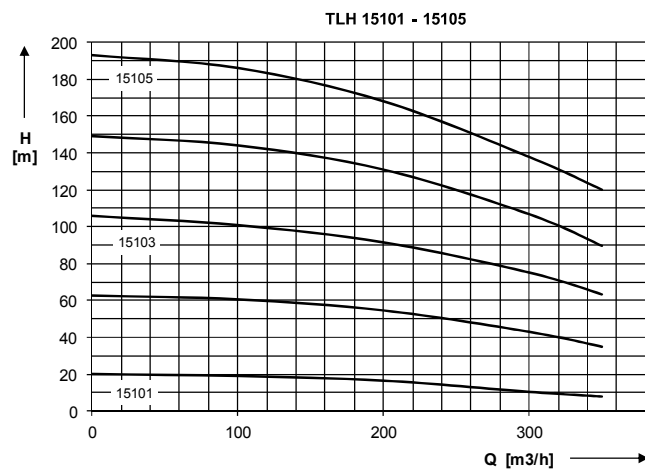
50 Hz

$\rho = 1.0 \text{ kg/dm}^3$



Characteristic curves

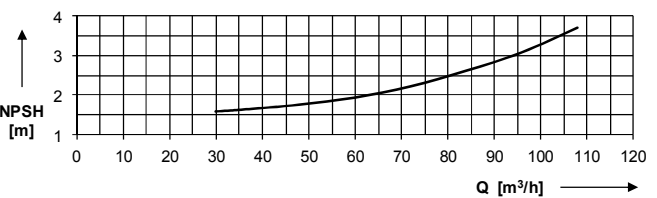
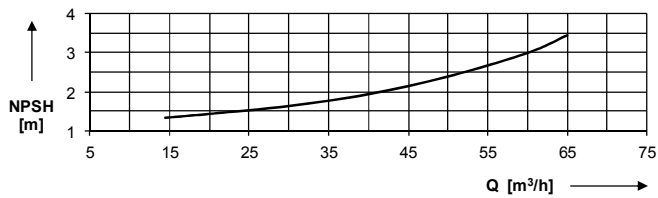
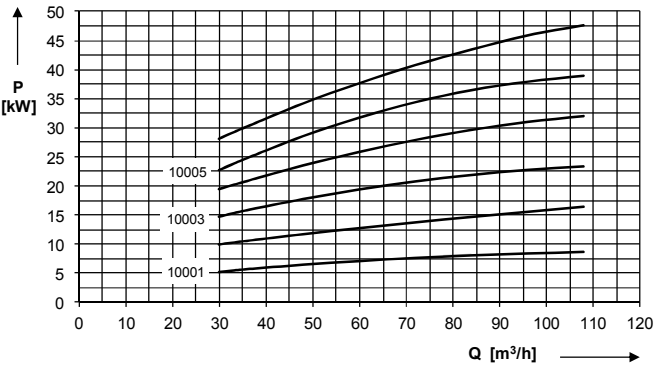
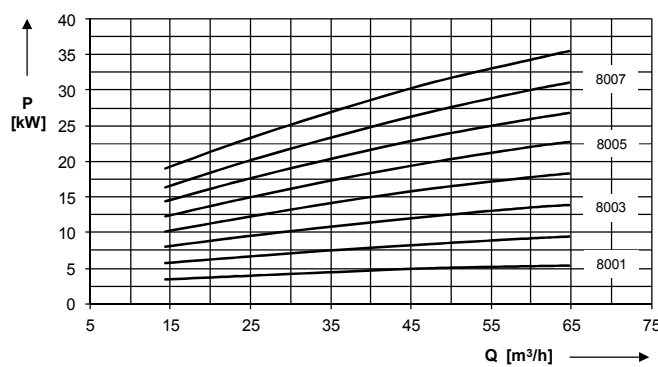
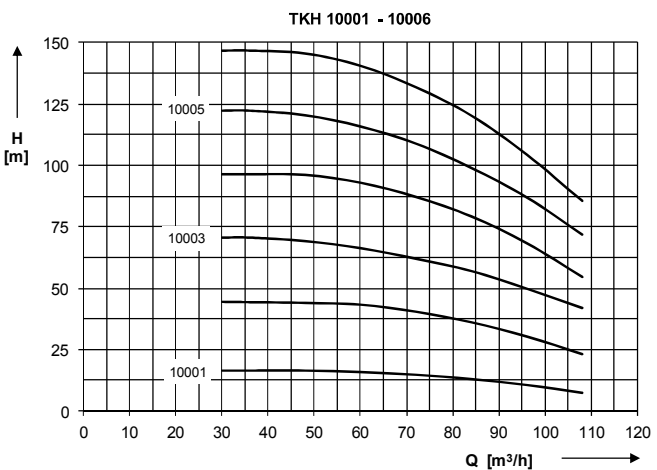
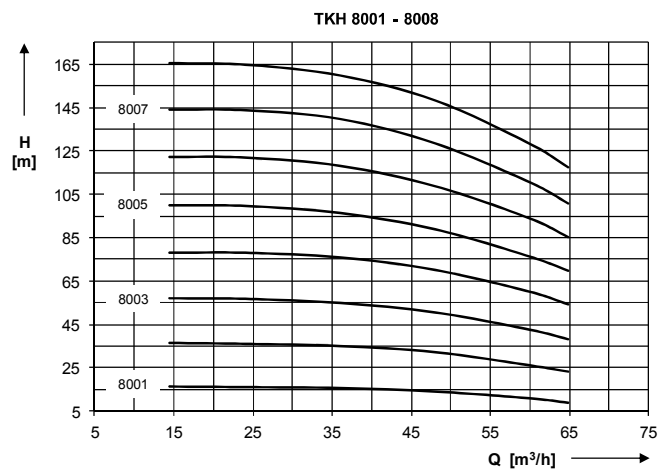
50 Hz

 $\rho = 1.0 \text{ kg/dm}^3$


Characteristic curves

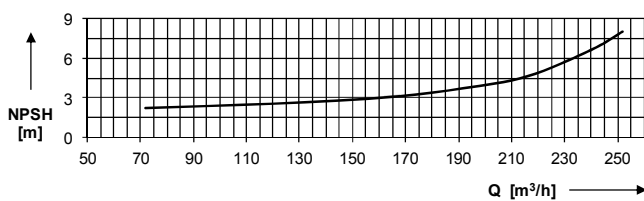
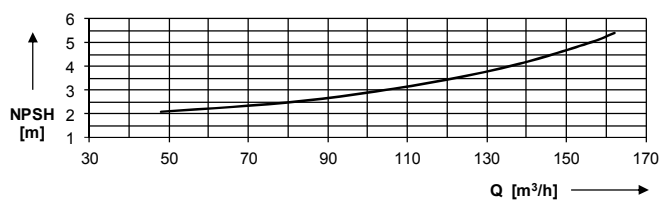
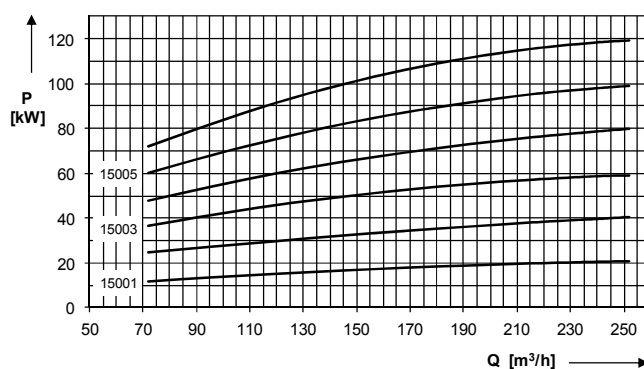
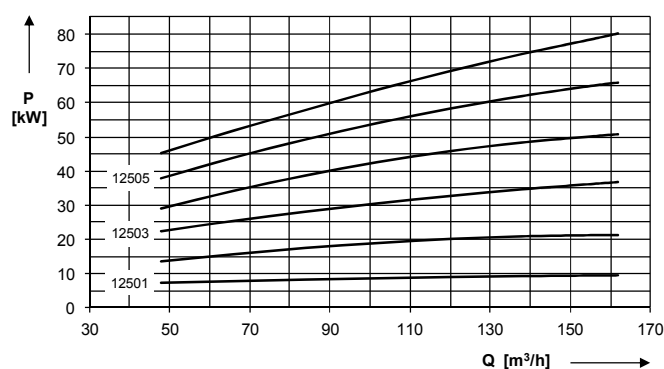
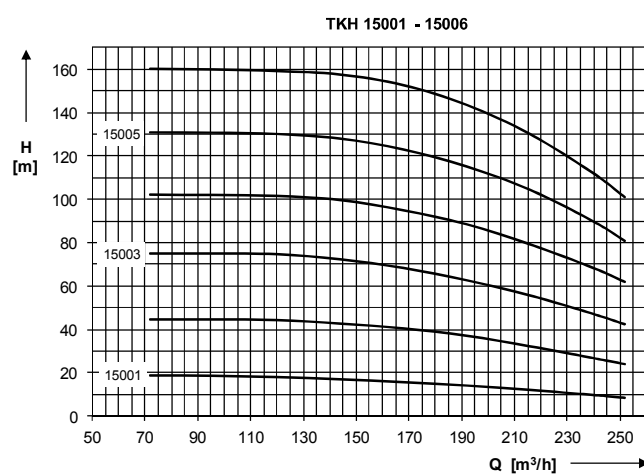
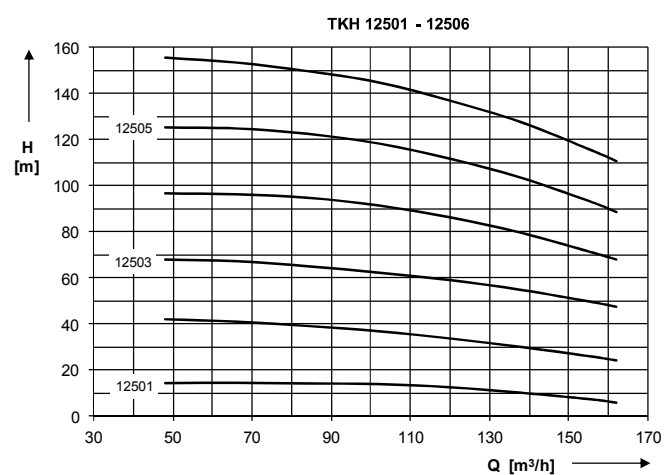
60 Hz

$\rho = 1.0 \text{ kg/dm}^3$



Characteristic curves

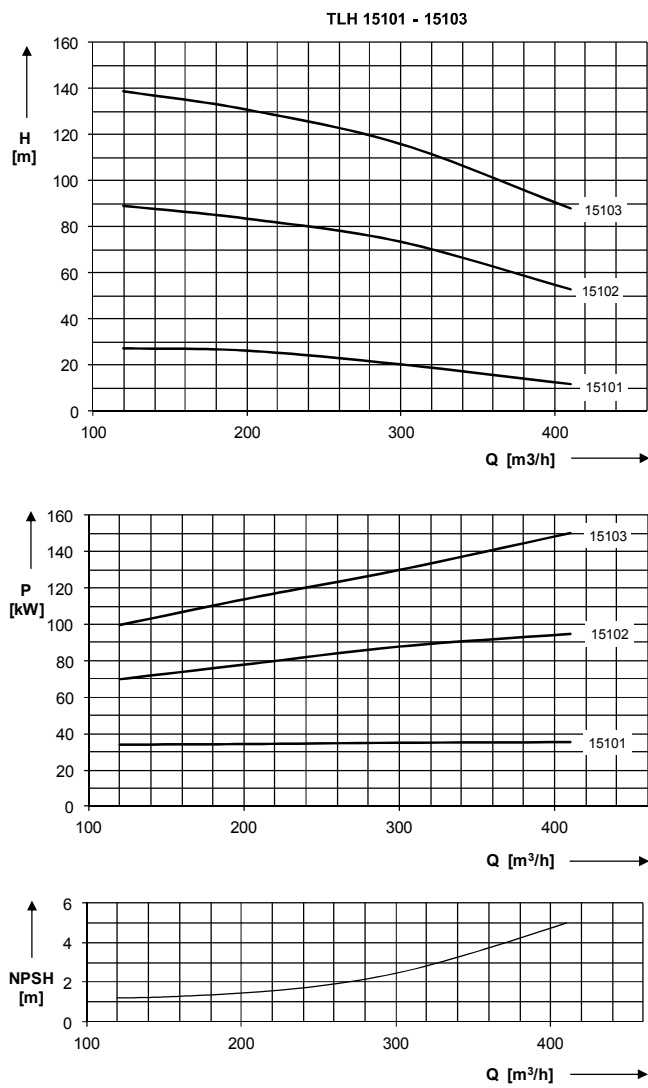
60 Hz

 $\rho = 1.0 \text{ kg/dm}^3$


Characteristic curves

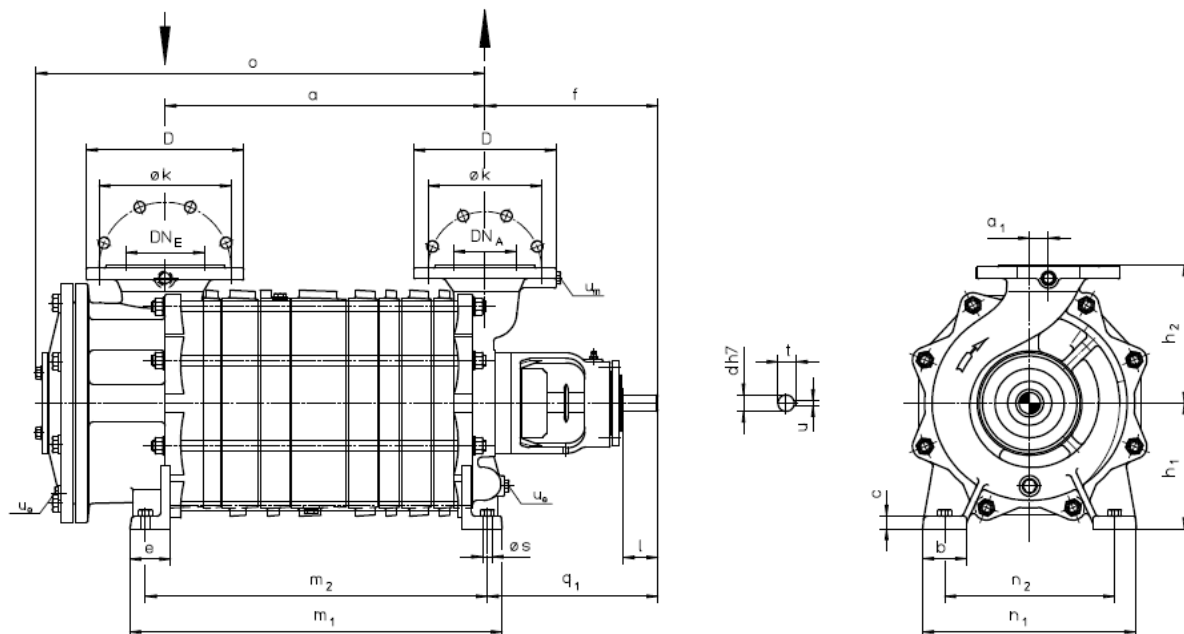
60 Hz

$\rho = 1.0 \text{ kg/dm}^3$



Dimension table

TKH

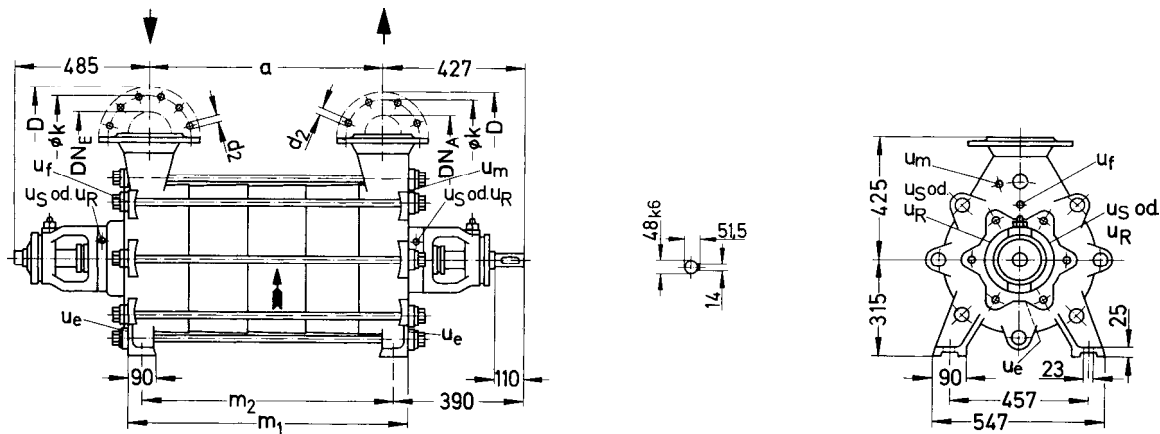

 u_e = drain connection G^{3/8}
 u_m = pressure gauge connection G^{3/8}

Dimensions in mm

Size	DN _A	DN _E	a	a ₁	b	c	e	f	h ₁	h ₂	m ₁	m ₂	n ₁	n ₂	o	q ₁	s	d	l	t	u													
08001	80	100	247	30	50	20	65	282	180	200	337	281	250	200	450	280	15	26	55	29	8													
08002			337								427	371			530																			
08003			417								507	451			610																			
08004			497								587	531			690																			
08005			577								667	611			770																			
08006			657								747	691			850																			
08007			737								827	771			930																			
08008			817								907	851			1010																			
08009			897					987			931	1090			317	32		70	35.5	10														
10001	100	125	248	30	70	20	65	275	200	220	333	283	340	270	459	272	15	26	55	29	8													
10002			338								423	373			544																			
10003			423								508	458			629																			
10004			508								593	543			714																			
10005			593								678	628			799																			
10006			678								763	713			884																			
10007			763					848			798	969																						
10008			848					933			883	1054			294	32		70	35.5	10														
12501	342	422	372	567																														
12502	462	542	492	682	308	36	80	45.5	12																									
12503	577	657	607	797																														
12504	692	772	722	912	346					18	42	80	45.5	12																				
12505	807	887	837	1027																														
12506	922	1002	952	1142	356										42		80				45.5	12												
12507	1037	1117	1067	1257																														
15001	150	200	423	55	80											25		80	328	235			275	252	465	400	320	679	326	18	36	80	45.5	12
15002			573																					675	615			829						
15003			723			825	765	979																										
15004			873			975	915	1129																										
15005			1023			1125	1065	1279	356	42	80	45.5	12																					
15006			1173			1275	1215	1429																										

Dimension table

TLH



u_e = drain connection G 3/8
u_f = filling connection G 3/4
u_m = pressure gauge connection G 1/2
u_R = flushing liquid connection G 3/8
u_S = sealing liquid connection G 3/8

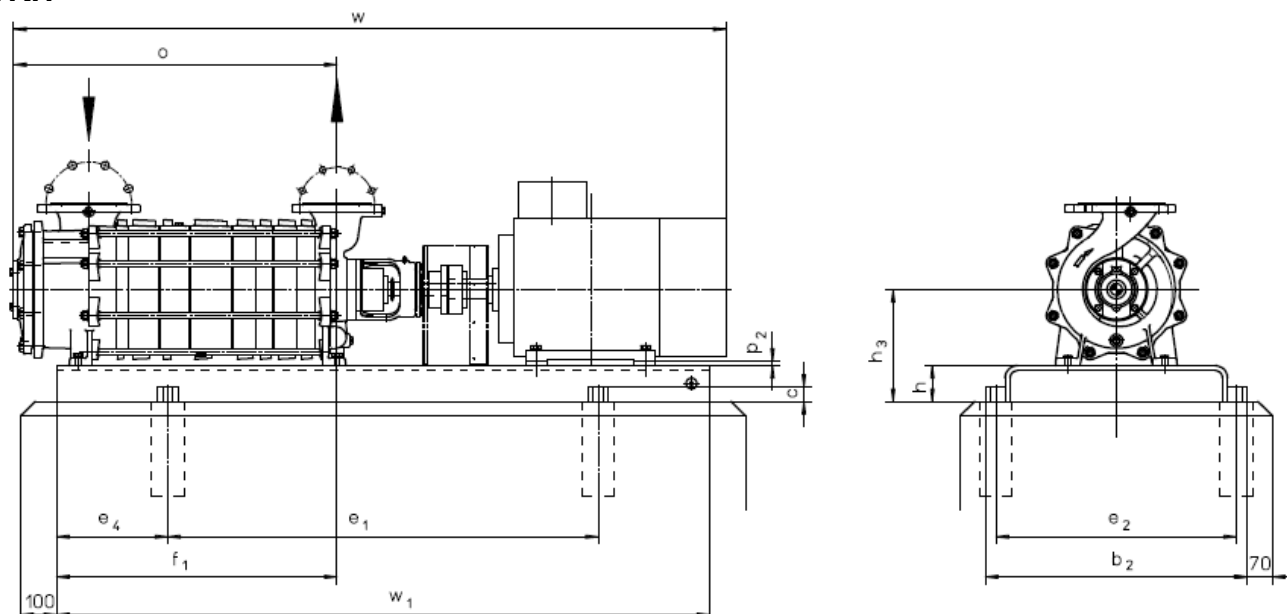
Dimensions in mm

size	DN _A	DN _E	a	m ₁	m ₂
15101	150	200	365	541	445
15102			450	626	530
15103			580	756	660
15104			710	886	790
15105			840	1016	920

Flange connection dimensions acc. to DIN EN 1092-2		
DN _{A,E}	150	200
D	285	340
k	240	295
d ₂ x no.	23 x 8	23 x 8

Foundation plan

TKH



Dimension in mm

Dimension in mm																				
Size	Motor Size	kW	Weight Pump **kg		Set kg	Base plate	Coupling	b ₂	c	e ₁	e ₂	e ₄	f ₁	h	h ₃	o	p ₂	w*	w ₁	Stone bolt EN ISO 898-1
8001	112 M	4	155	200	S344	BDS 76	450	30	660	400	180	341	80	180	439	68	1120	1000	4x FM20X 250	
8002	132 M	7.5	176	240	S385	BDS 88	490	36	740	440	200	431			260	530	48	1275		1140
8003	132 M	7.5	197	274	S436		540	30	840	490	215	1055			610	610	1350	1270		
8004	160 M	11	218	326	S487	BDS 103	610	35	940	550	240	581	100	280	689	20	1565	1400	4x FM24X 400	
8005	160 L	15	239	333	S388		540	40	1060	490	270	671			769		1645	1600		
8006	160 L	15	260	354							751	849			1725					
8007	180 M	18.5	281	387	S389	BDS 118	540	40	1200	300	831	929		1935	1800					
8008	180 L	22	302	408							911	1009		2015						
8009	200 L	30	323	525	S610	BDS 135	740		700	690		991		305	1089		2145	2000	6x FM24X 400	
10001	132 S	5.5	174	231,2	S434	BDS 88	540	40	660	490	170	338	100	280	453	68	1196	1000	4x FM20X 250	
10002	160 M	11	200	270,2	S436	BDS 103		30	840		215	433	80		543	0	1412	1250	4x FM24X 400	
10003	160 L	15	226	310	S387		510		940	456	230	518	110	310	628		1550	1400		
10004	180 M	18.5	252	348	S388	BDS 118	540	40	1060	490	270	100	300	713	20	1715	1600			
10005	180 L	22	278	374										688	798	1800				
10006	200 L	30	304	467	S609	BDS 135	730		40	1200	670		310	305	883	5	1935	1800		
10007	200 L	30	330	493											858	968	2020			
10008	225 S	37	356	558	S610		740		700	690	300	943		330	1053		2165	2000	6x FM24X 400	
12501	132 M	7.5	223	231	S436	BDS 88	540	30	840	490	215	432	80	292	561	80	1330	1250	4x FM24X 400	
12502	160 L	15	254	269	S487	BDS 103	610	35	940	550	240	552	100	312	681	52	1585	1400		
12503	180 L	22	286	308	S538	BDS 118	660			1060	600	280			667	796	32	1825		1600
12504	200 L	30	317	347	S609	BDS 135	730	40	1200	670	310	782			911	12	1995	1800		
12505	225 M	45	348,5	394	S610		740		700		300	897		332	1026	7	2175	2000	6x FM24X 400	
12506	225 M	45	380	425	-	BDS 152			750	690		1012			1141		2290	2100		
12507	250 M	55	412	467	S612				750		370	1127		355	1256	5	2500	2240		
15001	160 L	15	328	343	S487	BDS 103	610	35	940	550	240	545	100	335	679	75	1615	1340	4x FM24X 400	
15002	180 L	22	371	393	S538	BDS 118	660			1060	600	280			670	829	55	1885		1620
15003	225 S	37	414	451	-	BDS 135	550	-	1050	490	400	820	165	395	979	5	2115	1850		
15004	250 M	55	457	512		BDS 152	640		1250	580		970	160	415	1129		2390	2050		
15005	250 M	55	500	555					700			1125		1279	2540		2200	6x FM24X 400		
15006	280 S	75	543	618		BDS 194	650			850		590		1275	445	1429			2720	2500

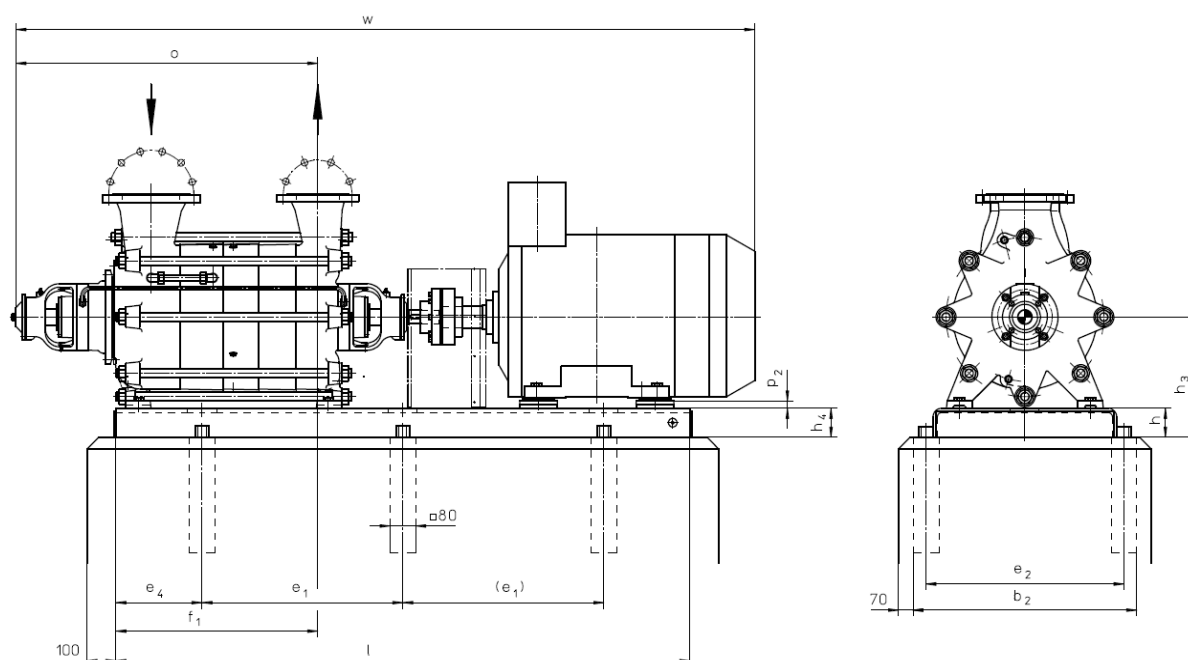
60Hz on request

* Motor - system of protection IP 54, dimensions depend on make of motor.

** Base frame dimensions pump side / motor side

Foundation plan

TLH



Dimension in mm

Size	Motor Size	Motor kW	Pump kg	Set kg	b ₂	e ₁	e ₂	e ₄	f ₁	h	h ₃	h ₃	l	o	p ₁	p ₂	w*	Stone-bolt DIN 529
15101	180 L	22	389	714		800		350	508		475	295	1500	850	-		2020	M 16 x 200
15102	250 M	55		1080							500				25		2308	
/1	225 M	45	459	1000		900			568			250	1700	935			2200	
/2	225 S	37		943													2175	
15103	280 M	90		1411	670		610	400									2627	M 20 x 200
/1	280 S	75		1332													2676	
/1	280 M	90	514	1411		1150			703			195	1950	1065			2627	
/2	250 M	55		1137											30		2438	
/2	280 S	75		1332													2576	
	280 M	90		1466		1080			828				2080				2757	
	315 S	110		1613	720	1200	660		843			160	2200				2825	
	315 M1	132		1703													2876	
/1	280 M	90		1466	670	1080	610		828	160	475	195	2080				2757	
/1	315 S	110		1613	720	1200	660		843			160	2200	1195			2825	
/2	280 M	90		1466	670	1080	610		828			195	2080				2757	
/2	315 S	110		1613	720	1200	660		843			160	2200				2825	
/3	280 S	75		1386	670	1080	610					195	2080				2706	
	280 M	90		1466				500	828								2757	
15105	315 M1	132		1753													3006	M 20 x 200
	315 M2	160		1848													3006	
/1	315 S	110		1663													2955	
/1	315 M1	132		1753	720	1300	660		953			160	2300	1325			3006	
/1	315 M2	160		1848													3006	
/2	315 S	110		1663													2955	
/2	315 M1	132		1753													3006	
/2	315 S	110		1663													2955	
/3	315 S	110		1663													2955	
																	2955	

* Motor - system of protection IP 54, dimensions depend on make of motor.

Additional innovative solutions from SIHI

SIHI^{detect}



Condition based monitoring

Detect wear before damage occurs

- + Cavitation and process turbulence
- + Simple to connect
- + LED display
- + Available Ex
- + All rotating machinery
- + DCS integration and continual monitoring

Noise and Vibration analysis allows this compact device to diagnose the (often hidden) symptoms of longer term damage even before vibration occurs.

