SPCO®

makes life easier

TS

Horizontal Single-stage
Centrifugal Pump, 50Hz

Approvals

CB TEST CERTIFICATE

Ref. Certificate No.
CH-5876

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

Issued by: Electrosuisse

Product: Horizontal and vertical multistage pumps

Applicant: Swiss Pump Company AG, Moosweg 36, CH-3645 Gwatt (Thun), Switzerland

Manufacturer: Swiss Pump Company AG, Moosweg 36, CH-3645 Gwatt (Thun), Switzerland

Factory: Swiss Pump Company AG, Moosweg 36, CH-3645 Gwatt (Thun), Switzerland

Rating and principal characteristics: 3 x 200 - 277/346 - 480V~, 50/60Hz; 229-230V~, 50/60Hz; 127-220-240V~, 60Hz; class I, IP55

Trade mark (if any): Swiss Pump Company AG (SPCO)

Model/Type reference: HM..., CHL..., VM..., CDL..., ND..., CC..., PD..., MB..., GB..., SMF..., CCP..., SCP... see appendix type list in test report

Additional information: ---

Sample of product tested to be in conformity with IEC: 60335-1(ed.4)/am1;am2; 60335-2-41(ed.3)/am1;am2

National differences: EU Group Differences; EU Special National Conditions; EU A-Deviations

Test Report Ref. No.: 06-HG-0218.01 + .02 + .03 + .05

This CB Test Certificate is issued by the National Certification Body:

Electrosuisse
Lupmenstrasse 1,
CH-8320 Fehraltorf

Signed by: Erich Obrist
2010-07-27

electrosuisse

page 1 of 1

CERTIFIED IQNet MANAGEMENT SYSTEM

IEC

IECEE CB SCHEME

CE

General Data

Technical Data

Application

TS Stainless steel horizontal stage centrifugal is assort of multifunction product with wide application.
It may transmit various mediums including water or industrial liquid and is suitable for different temperature, flow rate and range of pressure. Its typical application mainly includes the following aspects:

- Water supply: filtration in water works, transportation and sub area water carriage, pressurization of main duct.
- Industrial pressurization: flow wetting system, cleaning system.
- Transportation of industrial liquid: water supply of boiler, condensed system, cooling and air conditioning system, machine tool support, light acid and alkali transportation
- Water treatment: distilled water system or separator, swimming pool, etc.
- Farm land irrigation, medicine and sanitation, etc.

Installation requirements

Shaft connection type of TS pump is direct connection. the pump is composed of pump, shaft and standard motor:

- The pump shall be installed on the ventilating and anti-freezing place.
- The installation of the pump shall ensure that the pump will not be influenced by the tension of the pipe line.
- If the pump is installed outdoor, suitable outer cover must be configured to prevent electric elements from water inflow or coagulating dew.
- To facilitate inspection and maintenance, enough space must be left around the machine group.
- Electric wiring device shall guarantee that the pump will not be damaged by lack of phase, unstable voltage, current leakage and overload.
- The pump shall be installed on the pedestal horizontally. Horizontal direction is the suction port for the pump, and vertical direction is the discharge port for the pump.

Operation conditions

Liquid temperature: -20°C to +100°C.

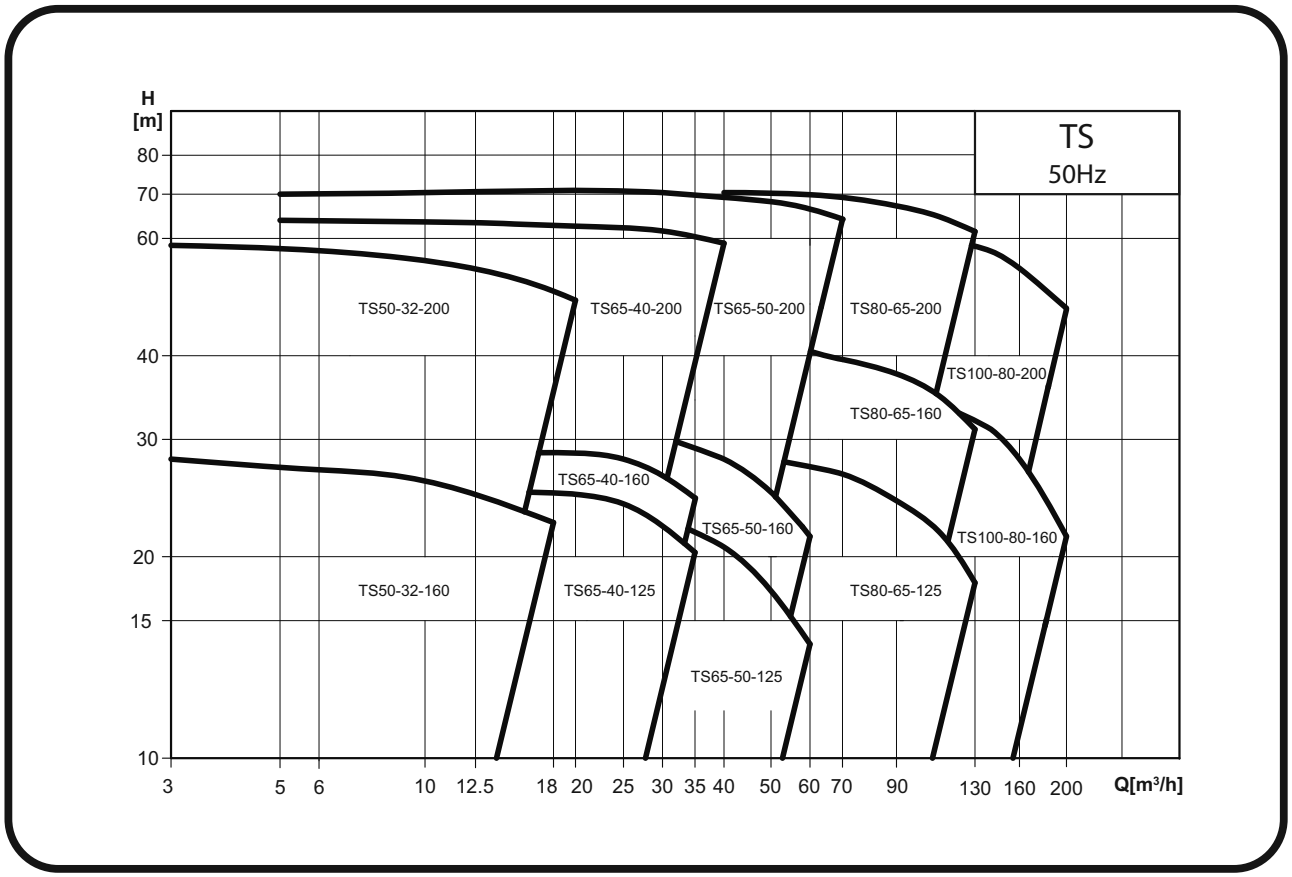
- Highest ambient temperature: up to +40°C.
- Max. operation pressure: 10 bar.
- Altitude: up to 1000m.

Electric Motor

The pump is fitted with a totally enclosed, fan-cooled (TEFC) squirrel-cage 2 pole motor

- Protection class: IP55
- Insulation class: F
- Standard voltage: 50Hz 1x220V
  3x380V

Performance ranges



Curve conditions

Following conditions are suitable for the performance curves shown above:

- All the performance curves are based on the measured values of a motor 3 x 380V - 50Hz at a constant speed of 2900 rpm or 2950 rpm.
- Curve tolerance in conformity with ISO9906, appendix A.
- Measurement is done with 20°C Water, Without any solid impurity.
- The operation of pump shall refer to the performance region described by the thickened curve to prevent overheating due to too small flow rate or overload of motor due to too large flow rate.

Definition of model

TS 65 - 50 - 200 / 6 11.0

- 11.0 — Motor power kW
- 6 — Frequency 60Hz (for 50Hz omitted)
- 200 — Impeller diameter mm
- 50 — Outlet diameter mm
- 65 — Inlet diameter mm

TS Stainless steel horizontal single-stage centrifugal pump

Product ranges

Model	Q [m³/h]	H [m]	n [r/min]	Voltage [V]	
				1 X 220V	3 X 380V
				P2 [kW]	P2 [kW]
TS 50-32-160/1.1	6.3	18	2900	1.1	1.1
TS 50-32-160/1.5	12.5	20		1.5	1.5
TS 50-32-160/2.2	12.5	25		2.2	2.2
TS 50-32-200/3.0	12.5	32			3
TS 50-32-200/4.0	12.5	42			4
TS 50-32-200/5.5	12.5	54			5.5
TS 65-40-125/1.5	25	13	2900	1.5	1.5
TS 65-40-125/2.2	25	18		2.2	2.2
TS 65-40-125/3.0	25	24			3
TS 65-40-160/4.0	25	28			4
TS 65-40-200/5.5	25	36			5.5
TS 65-40-200/7.5	25	46			7.5
TS 65-40-200/11.0	25	62	2950		11
TS 65-50-125/3.0	50	13	2900		3
TS 65-50-125/4.0	50	18			4
TS 65-50-160/5.5	50	25			5.5
TS 65-50-200/7.5	50	32			7.5
TS 65-50-200/9.2	50	40			9.2
TS 65-50-200/11.0	50	48	2950		11
TS 65-50-200/15.0	50	58			15
TS 65-50-200/18.5	50	68			18.5
TS 80-65-125/5.5	16	12	2900		5.5
TS80-65-125/7.5	20	15			7.5
TS 80-65-125/9.2	25	18			9.2
TS 80-65-160/11.0	25	24	2950		11
TS 80-65-160/15.0	30	28			15
TS 80-65-200/18.5	30	35			18.5
TS 80-65-200/22.0	35	40			22
TS 80-65-200/30.0	40	50			30
TS 100-80-160/11.0	30	15	2950		11
TS 100-80-160/15.0	30	19			15
TS 100-80-160/18.5	40	22			18.5
TS 100-80-200/22.0	40	30			22
TS 100-80-200/30.0	50	34			30
TS 100-80-200/37.0	55	40			37

NPSH

The following formula can be used for calculation of minimum inlet pressure:

$$H = Pb \times 10.2 - NPSH - Hf - Hv - Hs$$

H - maximum suction head (m)
Pb - atmosphere pressure (bar)
In a closed system, Pb means system pressure (bar)

NPSH - Net positive suction head (m)
It can be read out from the point of possible max. flow rat shown on NPSH curve.

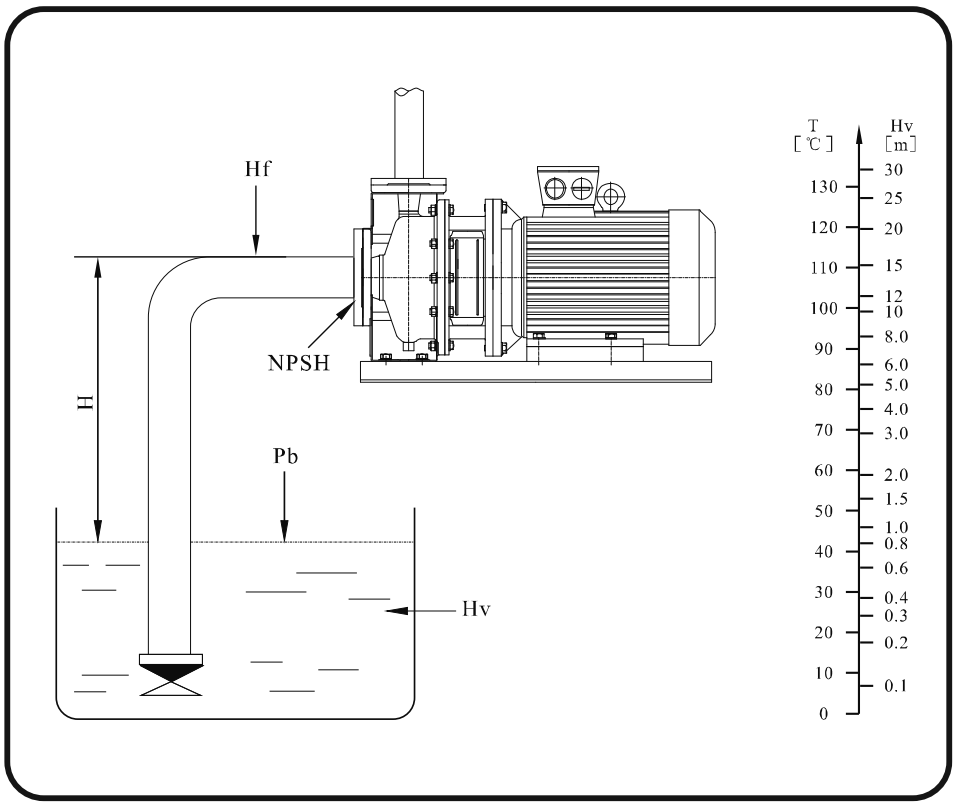
Hf - Pipeline loss at the inlet (m)
it is in accordance with pipeline possible max. flow.

Hv - Steam pressure (m)
It depends on liquid temperature and steam pressure value.

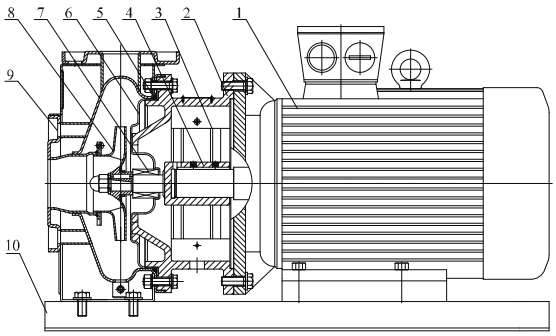
Hs - Safety margin (m)
Minimum 0.5m delivery head.
If the calculated result H is negative, a delivery head of Min. inlet pressure is necessary.

Note: Normally, the above calculation will not be done. H is calculated in the following conditions:

1. The liquid temperature is comparatively higher.
2. Liquid flow exceeds rated value.
3. Suction stroke is comparatively large or inlet pipeline long.
4. System pressure is too low.
5. Bad inlet condition.

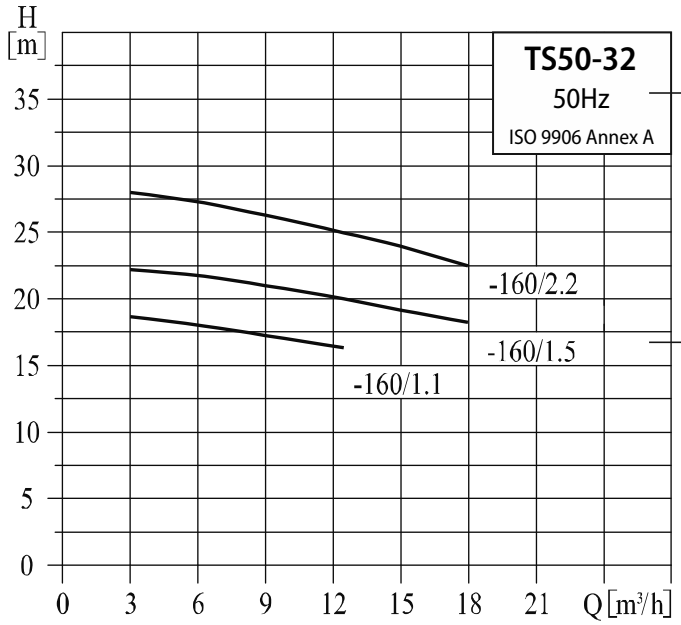


Section drawing and material list



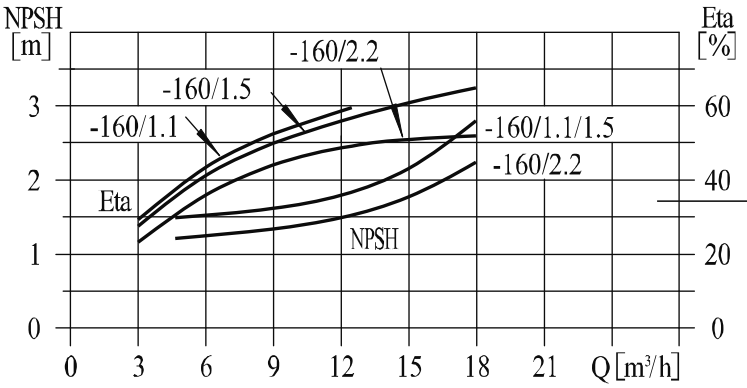
No.	Name	Material	AISI / ASTM
1	Motor		
2	Pump head	Cast Iron	ASTM25B
3	Guard plate	Stainless steel	AISI 304
4	Shaft	Stainless steel	AISI 304 AISI 420
5	O-ring	NBR	
6	Lining of pump head	Stainless steel	AISI 304
7	Mechanical seal	Carbon / Silicon carbide	
8	Impeller	Stainless steel	AISI 304
9	Casing	Stainless steel	AISI 304
10	Base plate	Cast Iron	ASTMA570

Curve instruction

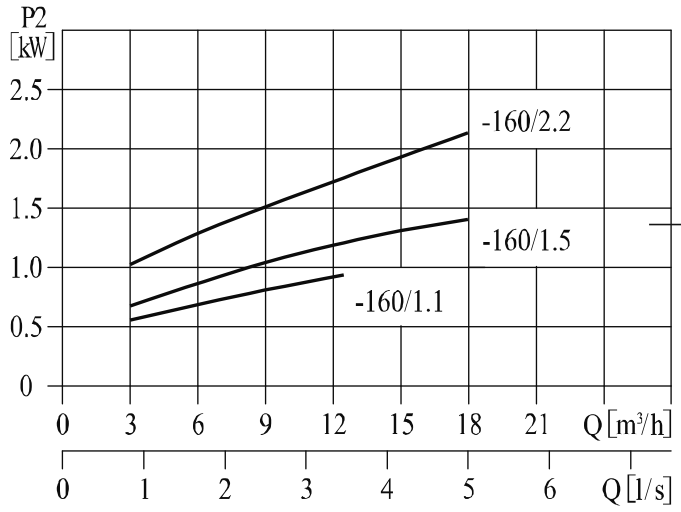


Pump model and power frequency

Q-H curve

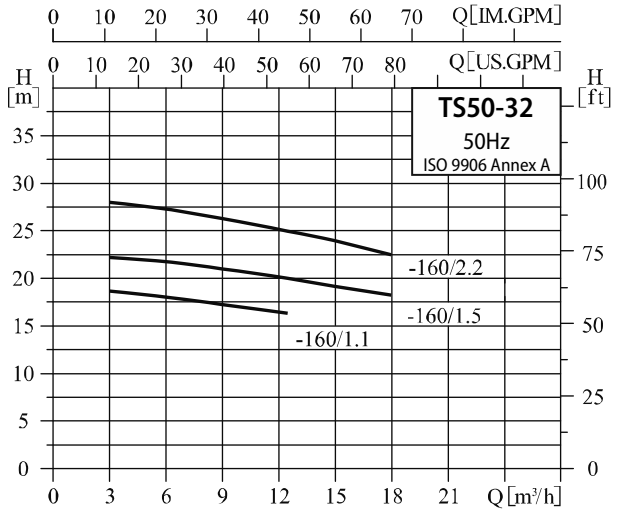


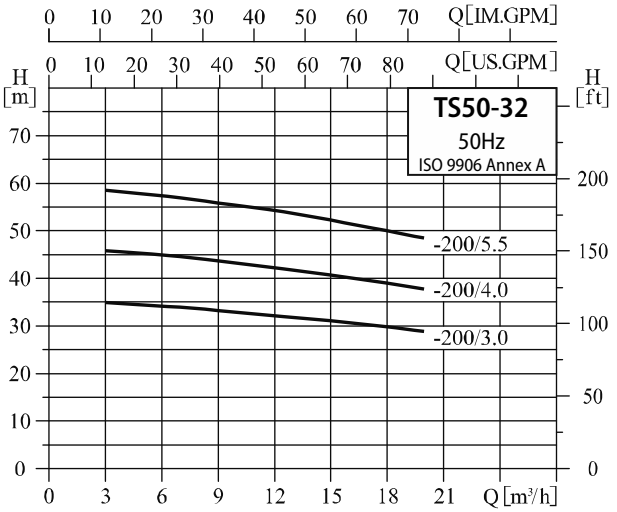
NPSH and Efficiency curve

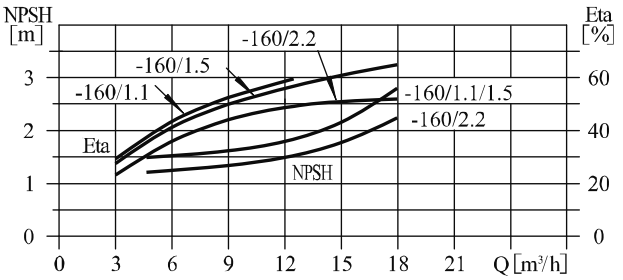


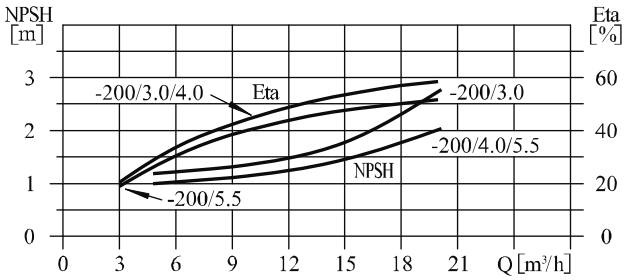
Input power curve

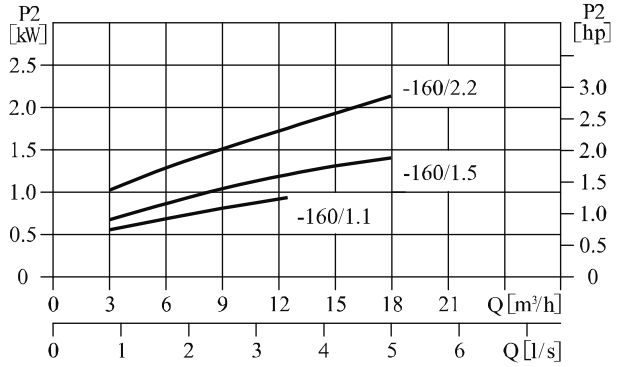
TS50-32-**/**

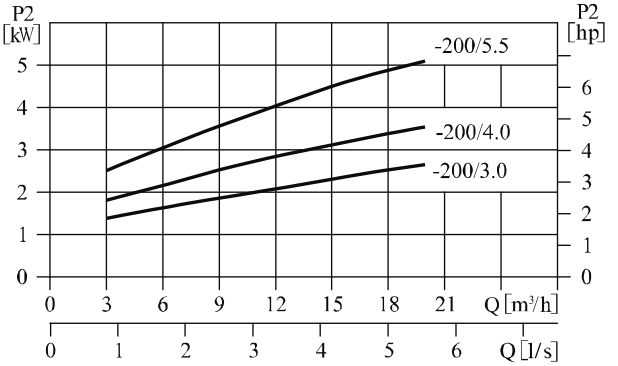

Q[IM.GPM]
Q[US.GPM]
H [m]
H [ft]
TS50-32
50Hz
ISO 9906 Annex A
-160/2.2
-160/1.5
-160/1.1
Q [m³/h]


Q[IM.GPM]
Q[US.GPM]
H [m]
H [ft]
TS50-32
50Hz
ISO 9906 Annex A
-200/5.5
-200/4.0
-200/3.0
Q [m³/h]

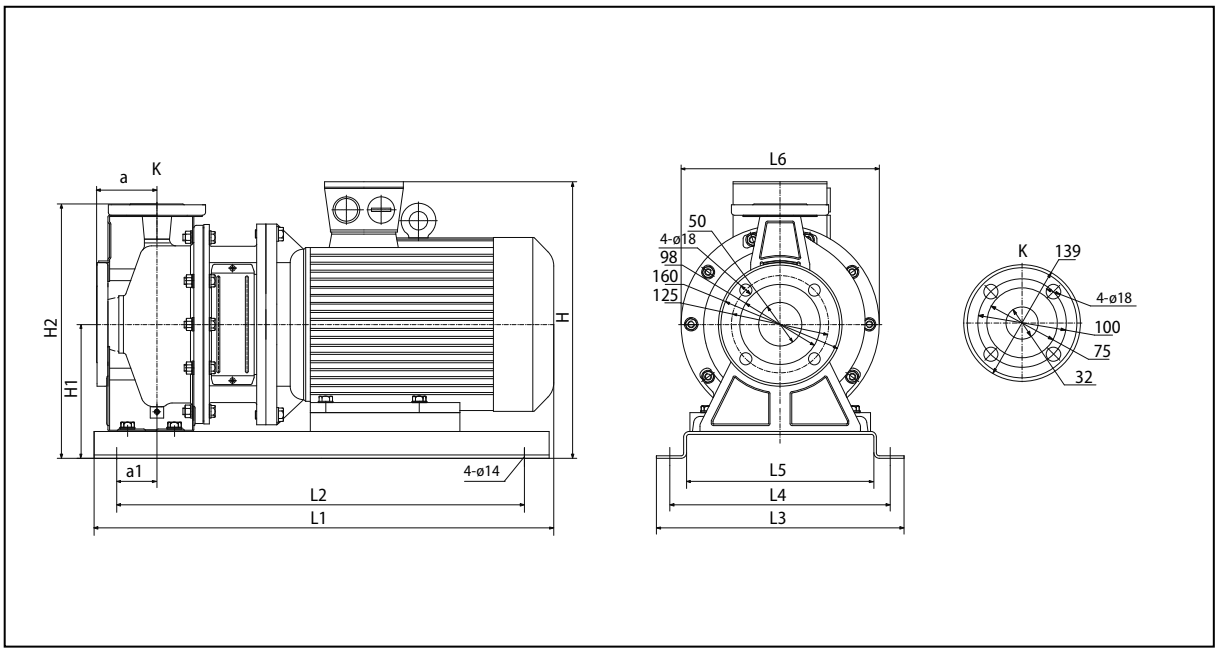

NPSH [m]
Eta [%]
-160/2.2
-160/1.5
-160/1.1
-160/1.1/1.5
-160/2.2
Eta
NPSH
Q [m³/h]


NPSH [m]
Eta [%]
-200/3.0/4.0
Eta
-200/3.0
-200/4.0/5.5
NPSH
-200/5.5
Q [m³/h]


P2 [kW]
P2 [hp]
-160/2.2
-160/1.5
-160/1.1
Q [m³/h]
Q [l/s]


P2 [kW]
P2 [hp]
-200/5.5
-200/4.0
-200/3.0
Q [m³/h]
Q [l/s]

TS50-32-**/**



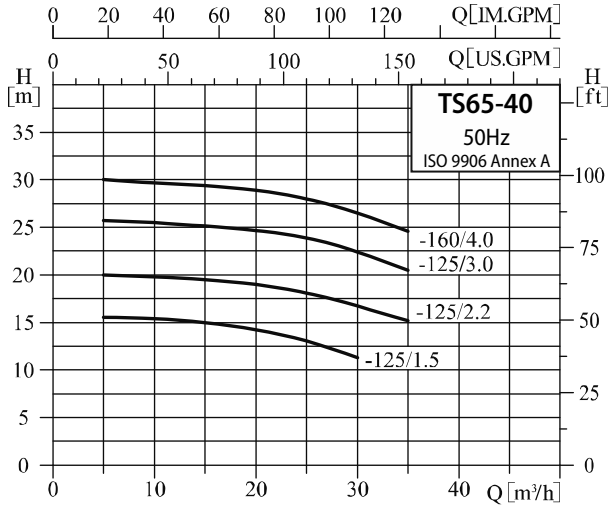
Size, weight, and volume for transportation

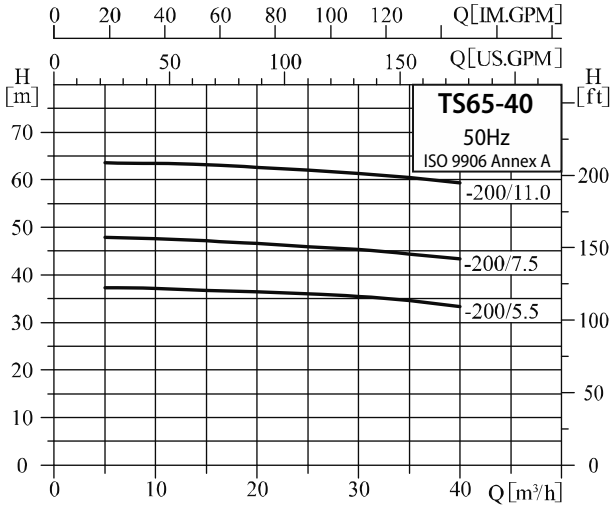
Model	Size [mm]											Weight [kg]
	a	a1	H	H1	H2	L1	L2	L3	L4	L5	L6	
TS 50-32-160-/1.1	80	32	290	152	296	470	370	280	240	192	210	31
TS 50-32-160/1.5	80	46	307	152	296	500	430	280	240	192	210	37
TS 50-32-160/2.2	80	46	307	152	296	500	430	280	240	192	210	39
TS 50-32-200/3.0	84	42	370	200	386	550	460	330	290	242	300	53
TS 50-32-200/4.0	84	47	393	200	386	560	480	330	290	242	300	58
TS 50-32-200/5.5	84	50	413	200	386	660	580	370	330	280	300	77

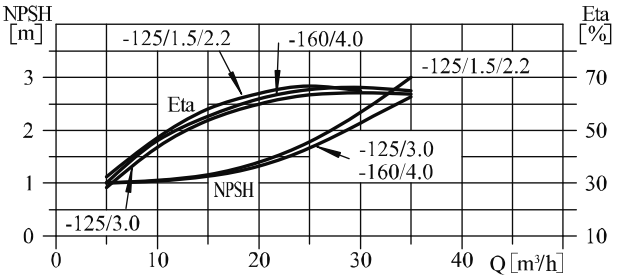
Performance Table

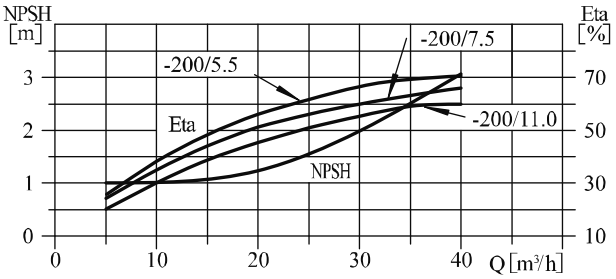
Model	Motor		Q [m^3/h]	3	6.3	9	12.5	15	18	20	21
	[kW]	[HP]									
TS 50-32-160-/1.1	1.1	1.5	H [m]	18.7	18	17.9	16.4				
TS 50-32-160/1.5	1.5	2		22.5	22	21	20	19	18		
TS 50-32-160/2.2	2.2	3		28	27	26.3	25	24	22.5		
TS 50-32-200/3.0	3	4		34.9	34.1	33.3	32	31	29.8	28.9	
TS 50-32-200/4.0	4	5.5		45.7	44.8	43.7	42	40.7	39	37.7	
TS 50-32-200/5.5	5.5	7.5		58.5	57.2	56	54	52.5	50	48.5	

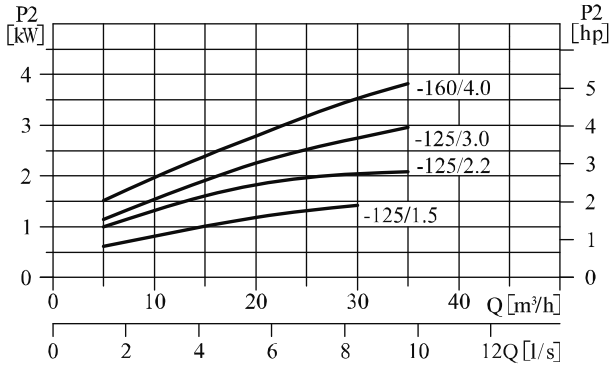
TS65-40-**/**

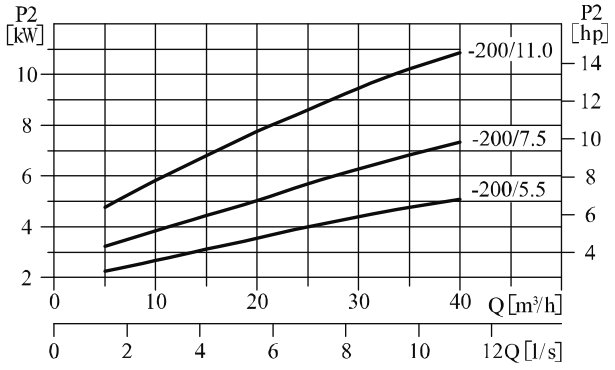

Q[IM.GPM]
Q[US.GPM]
H [m]
H [ft]
TS65-40
50Hz
ISO 9906 Annex A
-160/4.0
-125/3.0
-125/2.2
-125/1.5
Q [m³/h]


Q[IM.GPM]
Q[US.GPM]
H [m]
H [ft]
TS65-40
50Hz
ISO 9906 Annex A
-200/11.0
-200/7.5
-200/5.5
Q [m³/h]

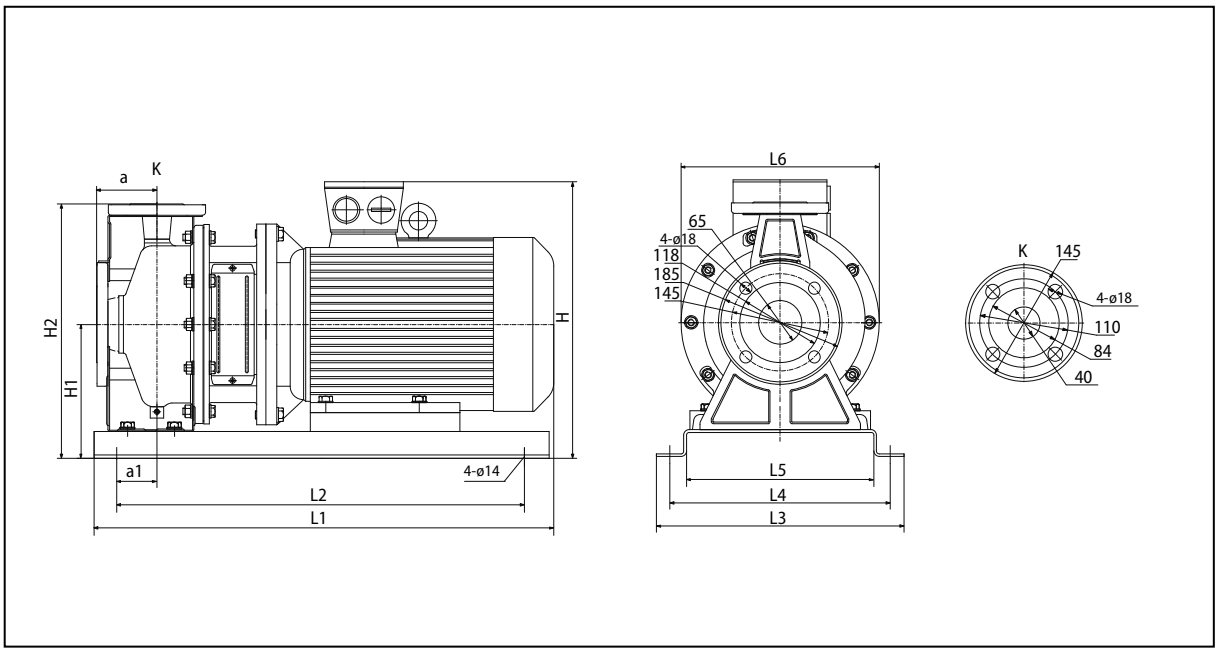

NPSH [m]
Eta [%]
-125/1.5/2.2
-160/4.0
-125/1.5/2.2
Eta
-125/3.0
-160/4.0
NPSH
-125/3.0
Q [m³/h]


NPSH [m]
Eta [%]
-200/7.5
-200/5.5
Eta
-200/11.0
NPSH
Q [m³/h]


P2 [kW]
P2 [hp]
-160/4.0
-125/3.0
-125/2.2
-125/1.5
Q [m³/h]
12Q [l/s]


P2 [kW]
P2 [hp]
-200/11.0
-200/7.5
-200/5.5
Q [m³/h]
12Q [l/s]

TS65-40-**/**



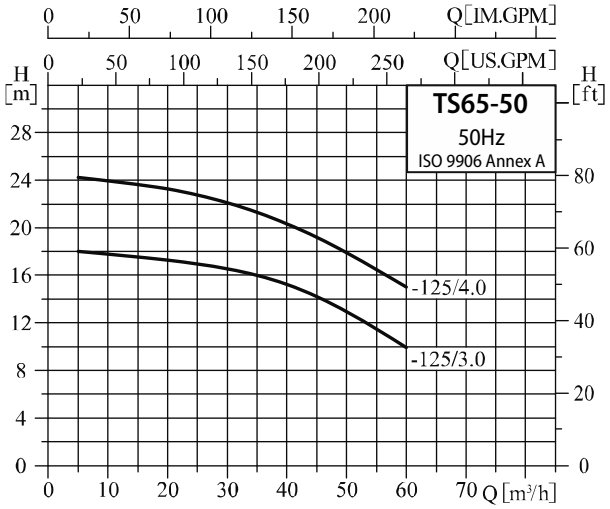
Size, weight, and volume for transportation

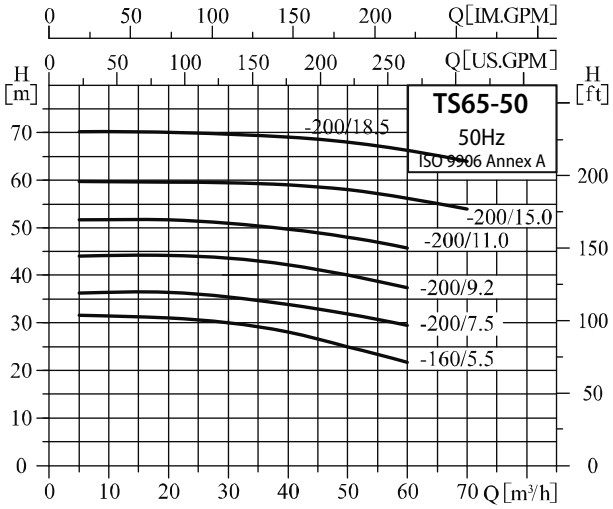
Model	Size [mm]											Weight [kg]
	a	a1	H	H1	H2	L1	L2	L3	L4	L5	L6	
TS 65-40-125/1.5	80	45	307	152	294	502	430	280	240	192	210	33
TS 65-40-125/2.2	80	45	307	152	294	502	430	280	240	192	210	35
TS 65-40-125/3.0	80	45	322	152	294	532	460	300	260	212	250	47
TS 65-40-160/4.0	80	45	345	152	294	557	480	330	290	242	250	52
TS 65-40-200/5.5	100	50	413	200	380	680	580	370	330	280	300	78
TS 65-40-200/7.5	100	50	413	200	380	680	580	370	330	280	300	82
TS 65-40-200/11.0	100	50	456	200	380	790	690	420	380	330	350	161

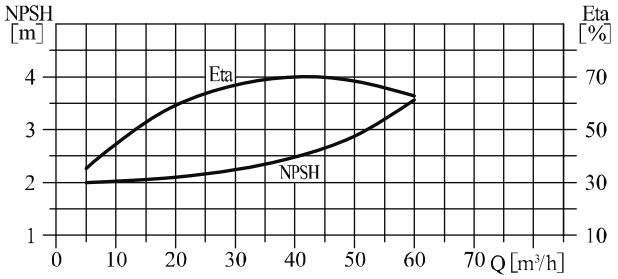
Performance Table

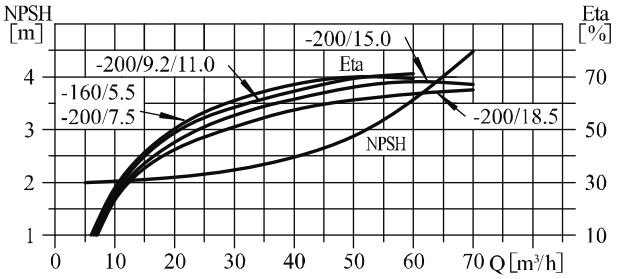
Model	Motor		Q [m^3/h]	5	10	15	20	25	30	35	40
	[kW]	[HP]									
TS 65-40-125/1.5	1.5	2	H [m]	15.5	15.4	15	14.4	13	11.3		
TS 65-40-125/2.2	2.2	3		20	19.7	19.5	19	18	16.7	15.2	
TS 65-40-125/3.0	3	4		25.7	25.3	25.1	24.8	24	22.3	20.3	
TS 65-40-160/4.0	4	5.5		30	29.7	29.3	28.9	28	26.5	24.5	
TS 65-40-200/5.5	5.5	7.5		37.4	37.2	36.7	36.4	36	35.5	34.6	33.3
TS 65-40-200/7.5	7.5	10		48	47.5	47	46.6	46	45.2	44.5	43.3
TS 65-40-200/11.0	11	15		64	63.5	63	62.6	62	61.5	60.5	59

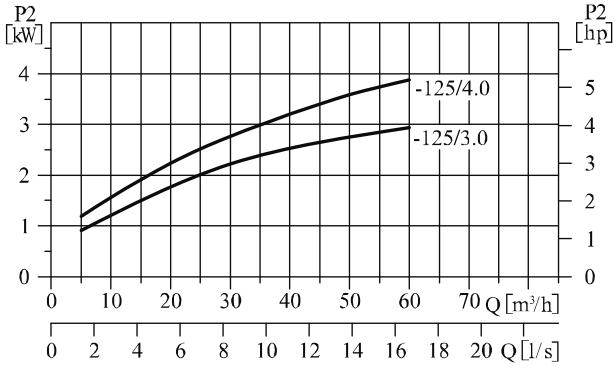
TS65-50-**/**

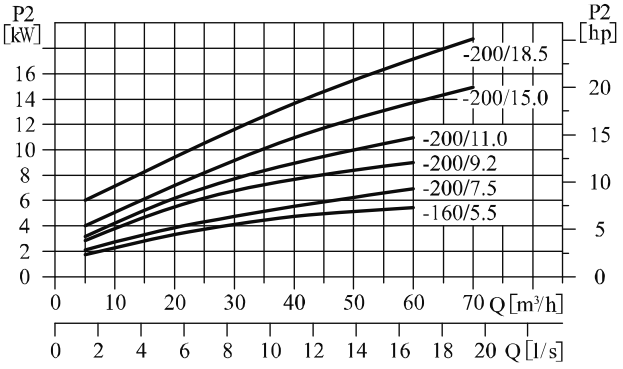

Q[IM.GPM]
Q[US.GPM]
H [m]
H [ft]
TS65-50
50Hz
ISO 9906 Annex A
-125/4.0
-125/3.0
Q [m³/h]


Q[IM.GPM]
Q[US.GPM]
H [m]
H [ft]
TS65-50
50Hz
ISO 9906 Annex A
-200/18.5
-200/15.0
-200/11.0
-200/9.2
-200/7.5
-160/5.5
Q [m³/h]

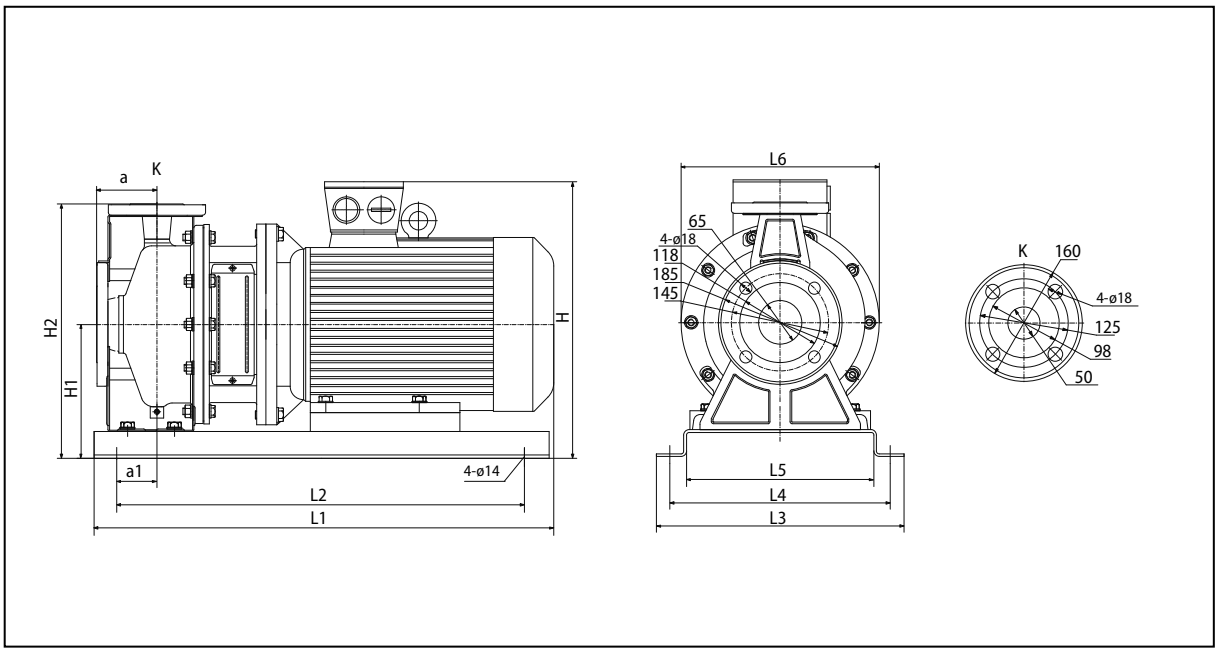

NPSH [m]
Eta [%]
Eta
NPSH
Q [m³/h]


NPSH [m]
Eta [%]
-200/15.0
-200/9.2/11.0
Eta
-160/5.5
-200/7.5
-200/18.5
NPSH
Q [m³/h]


P2 [kW]
P2 [hp]
-125/4.0
-125/3.0
Q [m³/h]
Q [l/s]


P2 [kW]
P2 [hp]
-200/18.5
-200/15.0
-200/11.0
-200/9.2
-200/7.5
-160/5.5
Q [m³/h]
Q [l/s]

TS65-50-**/**



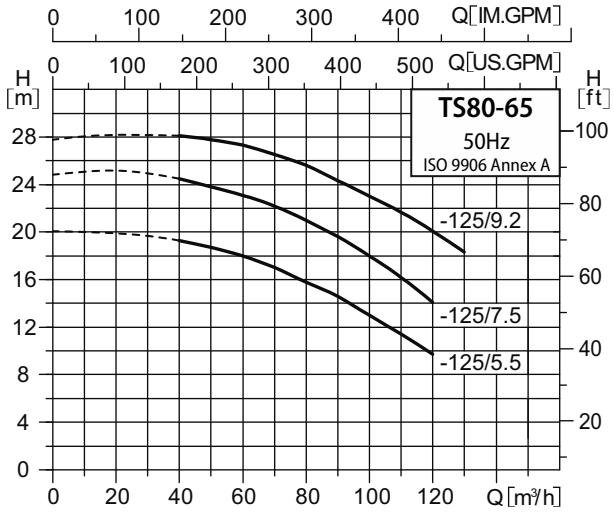
Size, weight, and volume for transportation

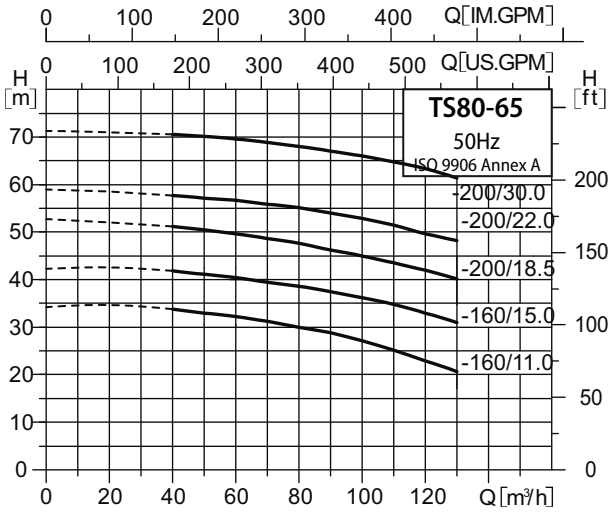
Model	Size [mm]											Weight [kg]
	a	a1	H	H1	H2	L1	L2	L3	L4	L5	L6	
TS 65-50-125/3.0	86	45	342	172	338	548	468	330	290	242	250	49
TS 65-50-125/4.0	86	45	365	172	338	570	490	330	290	242	250	54
TS 65-50-160/5.5	100	50	413	200	380	680	580	370	330	280	300	78
TS 65-50-200/7.5	100	50	413	200	380	680	580	370	330	280	300	82
TS 65-50-200/9.2	100	50	413	200	380	680	580	370	330	280	300	85
TS 65-50-200/11.0	100	50	456	200	380	790	690	420	380	330	350	161
TS 65-50-200/15.0	100	50	456	200	380	790	690	420	380	330	350	171
TS 65-50-200/18.5	100	50	456	200	380	830	730	420	380	330	350	188

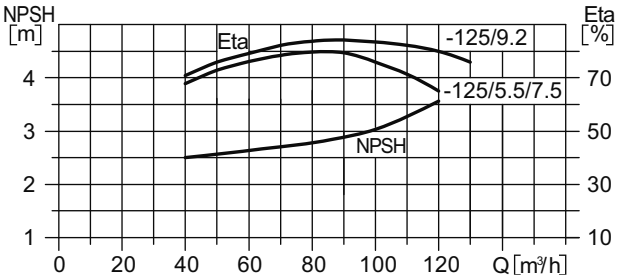
Performance Table

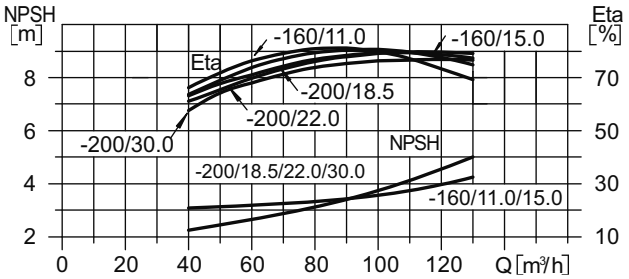
Model	Motor		Q [m^3/h]	5	10	20	30	40	50	60	70
	[kW]	[HP]									
TS 65-50-125/3.0	3	4	H [m]	18	17.8	17.2	16.4	15.1	13	10	
TS 65-50-125/4.0	4	5.5		24.2	24.2	23.6	22.6	20.7	18	14.8	
TS 65-50-160/5.5	5.5	7.5		31.6	31.5	31	30	28	25	21.5	
TS 65-50-200/7.5	7.5	10		36.3	36.6	36.4	35.6	34.1	32	29.6	
TS 65-50-200/9.2	9.2	12.5		43.5	43.5	43.5	43	42	40	37.5	
TS 65-50-200/11.0	11	15		51.5	51.5	51	50	49.3	48	45.6	
TS 65-50-200/15.0	15	20		59.7	59.7	59.6	59.5	59	58	56.2	53
TS 65-50-200/18.5	18.5	25		70.2	70.2	70.1	70	69.1	68	66.4	64

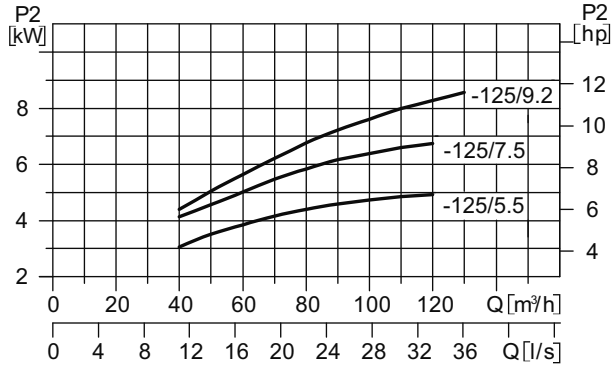
TS80-65-**/**

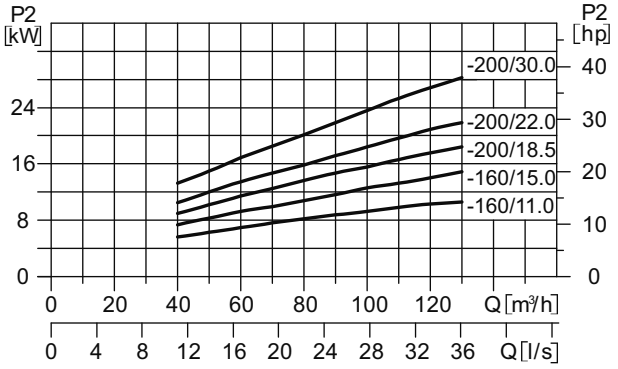

Q[IM.GPM]
Q[US.GPM]
H [m]
H [ft]
TS80-65
50Hz
ISO 9906 Annex A
-125/9.2
-125/7.5
-125/5.5
Q[m³/h]


Q[IM.GPM]
Q[US.GPM]
H [m]
H [ft]
TS80-65
50Hz
ISO 9906 Annex A
-200/30.0
-200/22.0
-200/18.5
-160/15.0
-160/11.0
Q[m³/h]

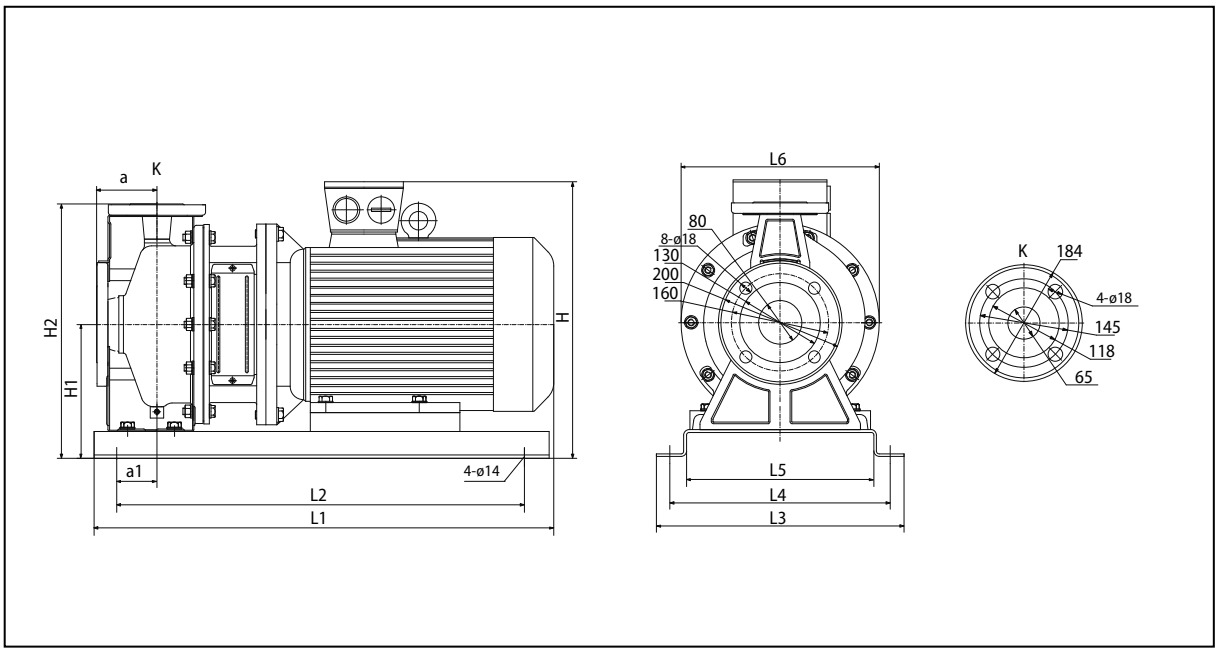

NPSH [m]
Eta [%]
Eta
-125/9.2
-125/5.5/7.5
NPSH
Q[m³/h]


NPSH [m]
Eta [%]
-160/11.0
-160/15.0
Eta
-200/18.5
-200/22.0
-200/30.0
NPSH
-200/18.5/22.0/30.0
-160/11.0/15.0
Q[m³/h]


P2 [kW]
P2 [hp]
-125/9.2
-125/7.5
-125/5.5
Q[m³/h]
Q[l/s]


P2 [kW]
P2 [hp]
-200/30.0
-200/22.0
-200/18.5
-160/15.0
-160/11.0
Q[m³/h]
Q[l/s]

TS80-65-**/**



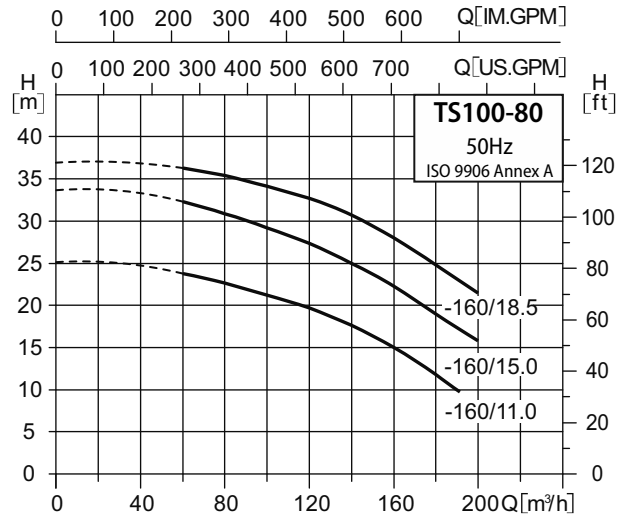
Size, weight, and volume for transportation

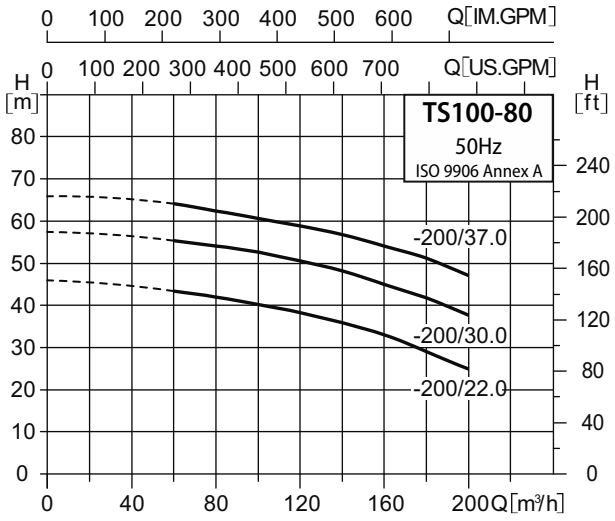
Model	Size [mm]											Weight [kg]
	a	a1	H	H1	H2	L1	L2	L3	L4	L5	L6	
TS 80-65-125/5.5	100	50	413	200	380	690	590	370	330	280	300	79
TS80-65-125/7.5	100	50	413	200	380	690	590	370	330	280	300	83
TS 80-65-125/9.2	100	50	413	200	380	690	590	370	330	280	300	87
TS 80-65-160/11.0	100	50	456	200	400	790	690	420	380	330	350	163
TS 80-65-160/15.0	100	50	456	200	400	790	690	420	380	330	350	173
TS 80-65-200/18.5	100	50	476	200	445	830	730	420	380	330	350	190
TS 80-65-200/22.0	100	50	500	200	445	880	780	455	415	365	350	220
TS 80-65-200/30.0	100	50	550	240	465	950	850	495	455	405	400	292

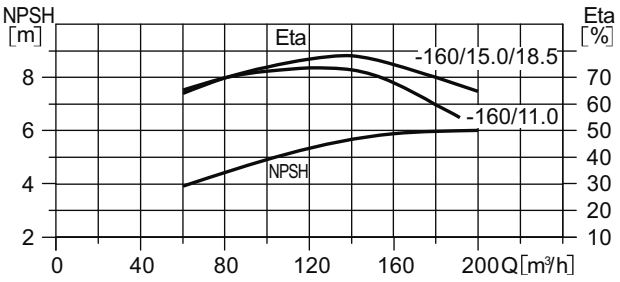
Performance Table

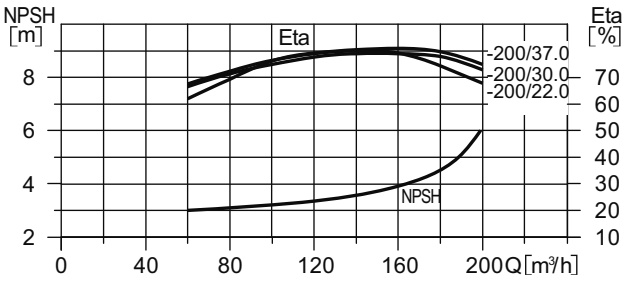
Model	Motor		Q [m^3/h]	50	60	70	80	90	100	110	120
	[kW]	[HP]									
TS 80-65-125/5.5	5.5	7.5	H [m]	18.7	18	17.0	15.8	14.8	13	11.4	9.7
TS80-65-125/7.5	7.5	10		23.8	23.1	22.2	21.0	19.6	18	16.2	14.1
TS 80-65-125/9.2	9.2	12.5		27.8	27.3	26.6	25.7	24.3	23	21.8	20.1
TS 80-65-160/11.0	11	15		33.0	32.2	31.3	29.9	28.8	27	25.1	22.9
TS 80-65-160/15.0	15	20		41.1	40.4	39.5	38.6	37.6	36	34.8	33
TS 80-65-200/18.5	18.5	25		50.5	49.6	48.7	47.6	46.3	45	43.5	42.2
TS 80-65-200/22.0	22	30		57.2	56.8	55.9	55.1	54	53	51.6	49.7
TS 80-65-200/30.0	30	40		70.2	69.6	68.9	68.2	67.1	66	64.6	63.3

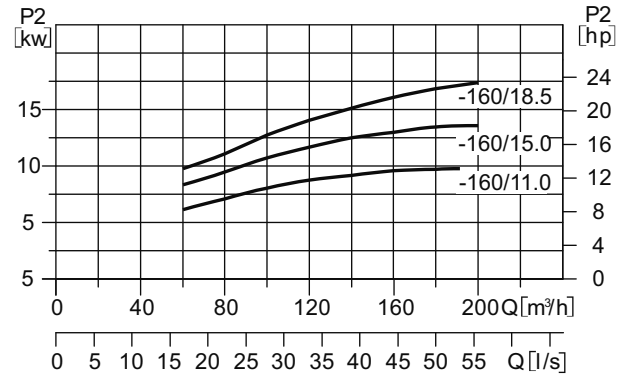
TS100-80-**/**

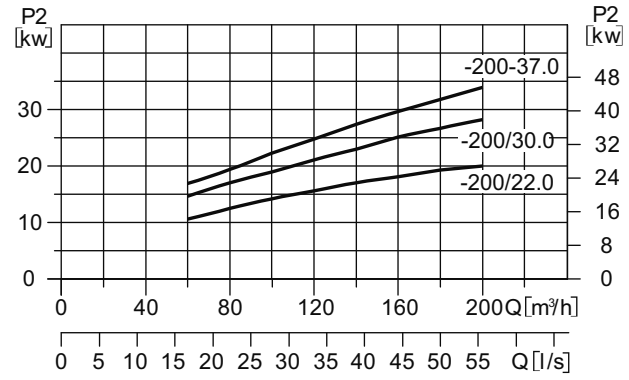

Q[IM.GPM]
Q[US.GPM]
H [m]
H [ft]
TS100-80
50Hz
ISO 9906 Annex A
-160/18.5
-160/15.0
-160/11.0
Q[m³/h]


Q[IM.GPM]
Q[US.GPM]
H [m]
H [ft]
TS100-80
50Hz
ISO 9906 Annex A
-200/37.0
-200/30.0
-200/22.0
Q[m³/h]

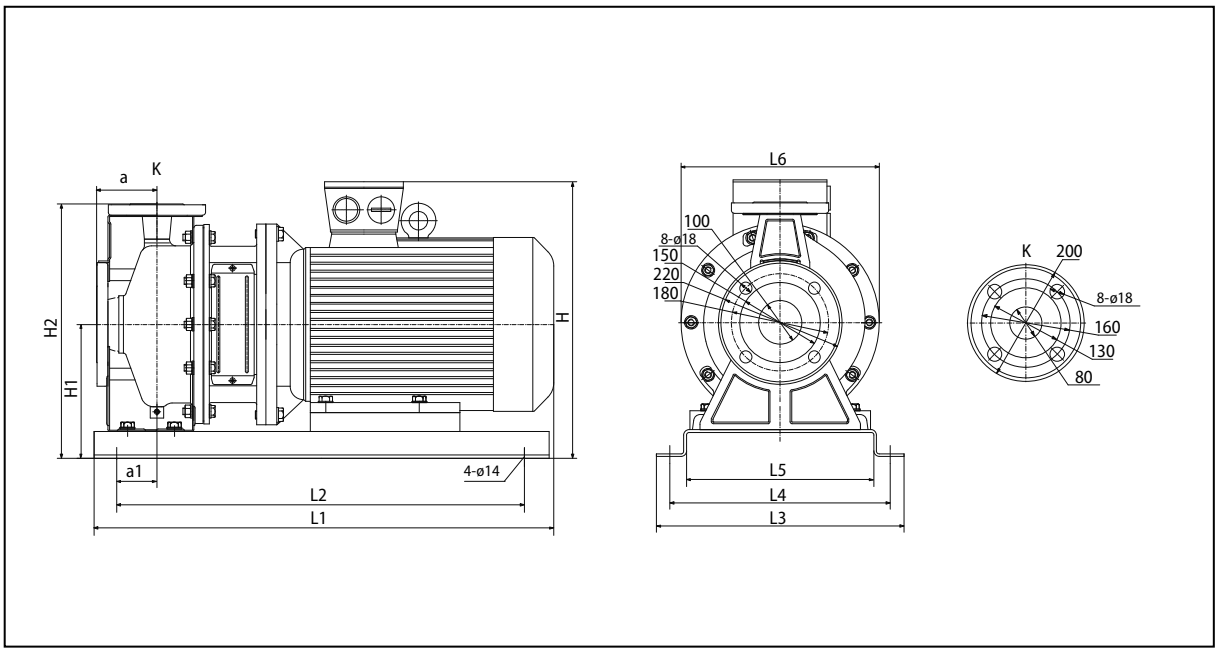

NPSH [m]
Eta [%]
Eta
-160/15.0/18.5
-160/11.0
NPSH
Q[m³/h]


NPSH [m]
Eta [%]
Eta
-200/37.0
-200/30.0
-200/22.0
NPSH
Q[m³/h]


P2 [kw]
P2 [hp]
-160/18.5
-160/15.0
-160/11.0
Q[m³/h]
Q[l/s]


P2 [kw]
P2 [kw]
-200-37.0
-200/30.0
-200/22.0
Q[m³/h]
Q[l/s]

TS100-80-**/**

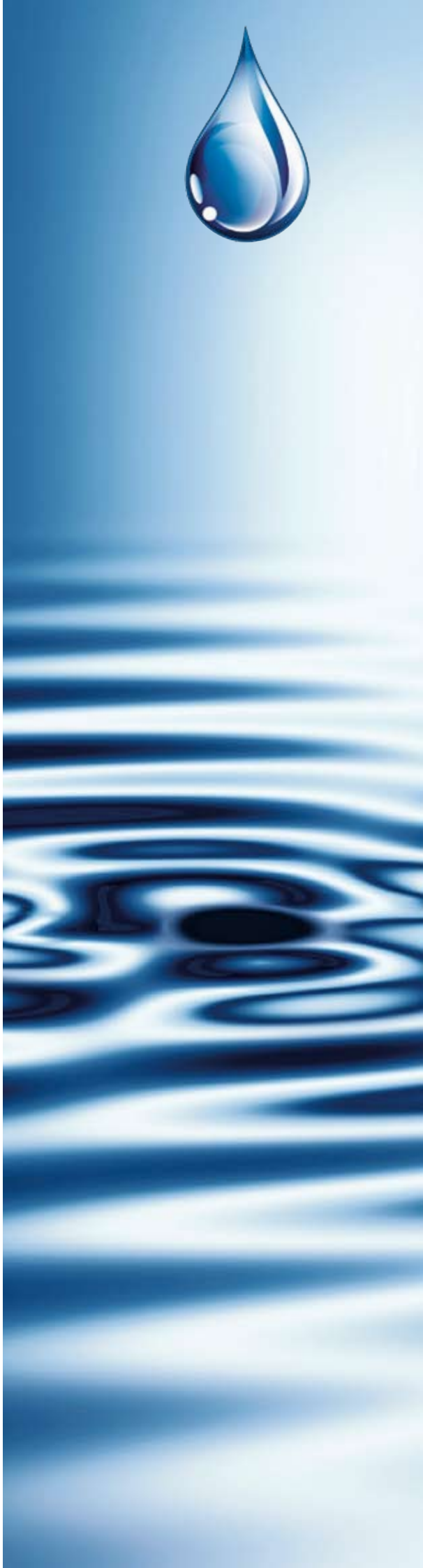


Size, weight, and volume for transportation

Model	Size [mm]											Weight [kg]
	a	a1	H	H1	H2	L1	L2	L3	L4	L5	L6	
TS 100-80-160/11.0	125	75	476	220	445	830	730	420	380	330	350	163
TS 100-80-160/15.0	125	75	476	220	445	830	730	420	380	330	350	173
TS 100-80-160/18.5	125	75	476	220	445	870	770	420	380	330	350	185
TS 100-80-200/22.0	125	75	500	220	470	915	810	455	415	365	350	223
TS 100-80-200/30.0	125	75	550	240	490	985	880	495	455	405	400	295
TS 100-80-200/37.0	125	75	550	240	490	985	880	495	455	405	400	315

Performance Table

Model	Motor		Q [m^3/h]	60	80	100	120	140	160	180	200
	[kW]	[HP]									
TS 100-80-160/11.0	11	15	H [m]	23.8	22.7	21.1	19.7	17.6	15	11.8	
TS 100-80-160/15.0	15	20		32.3	30.8	29.1	27.2	25.1	22	18.8	16.1
TS 100-80-160/18.5	18.5	25		36.2	35.2	33.8	32.7	31	28	24.8	21.5
TS 100-80-200/22.0	22	30		43.5	42	39.7	38.3	35.9	33	29	24.9
TS 100-80-200/30.0	30	40		55.4	54.1	52.6	50.5	48.2	45	41.9	34.6
TS 100-80-200/37.0	37	50		64.1	62.5	61	59	57.4	54	51.2	47.1



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