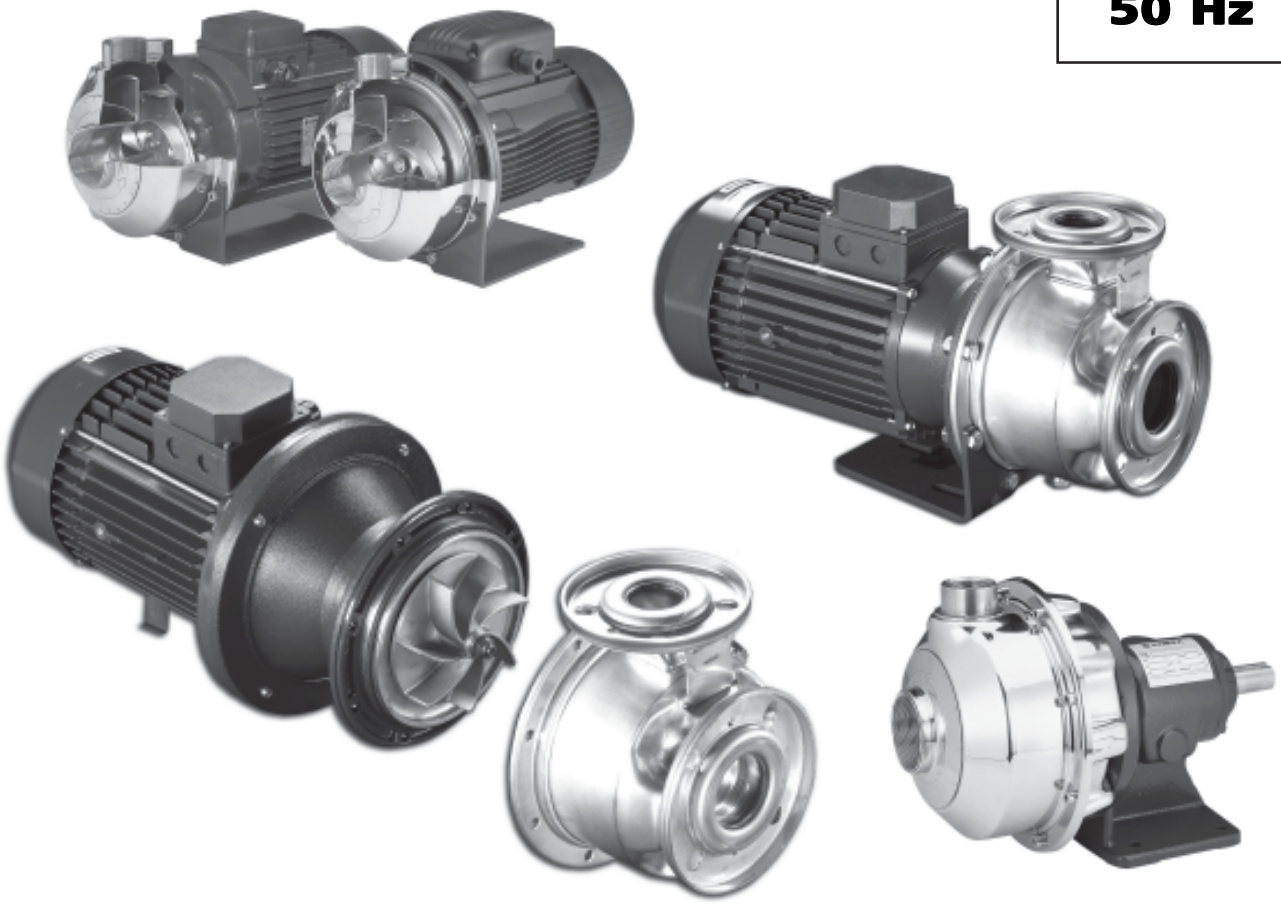
50 Hz



CO-SHO Series

CENTRIFUGAL PUMPS WITH OPEN IMPELLER EQUIPPED WITH
IE2/IE3 MOTORS COMPLYING WITH REGULATION (EC) no. 640/2009

COF-CEF Series

CENTRIFUGAL PUMPS BARE SHAFT

Cod. 191003901 Rev.C Ed.06/2012

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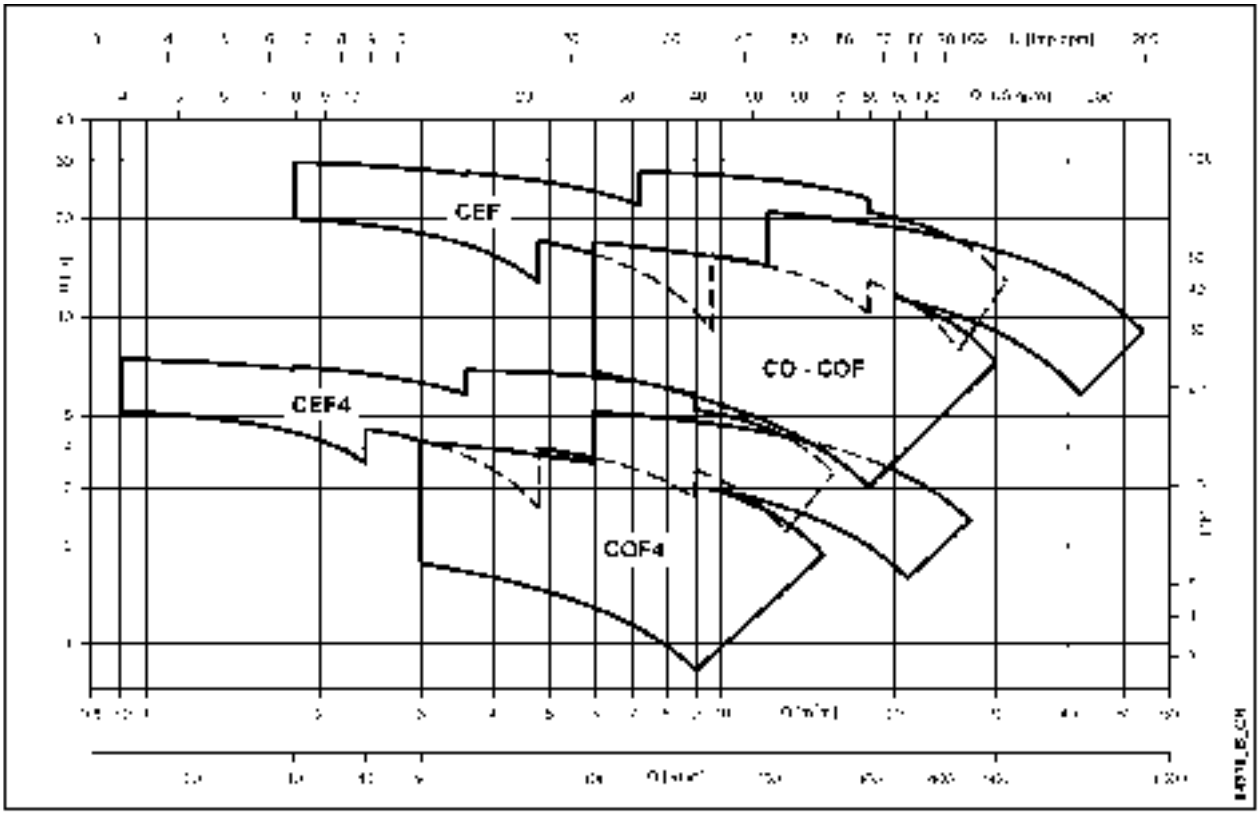
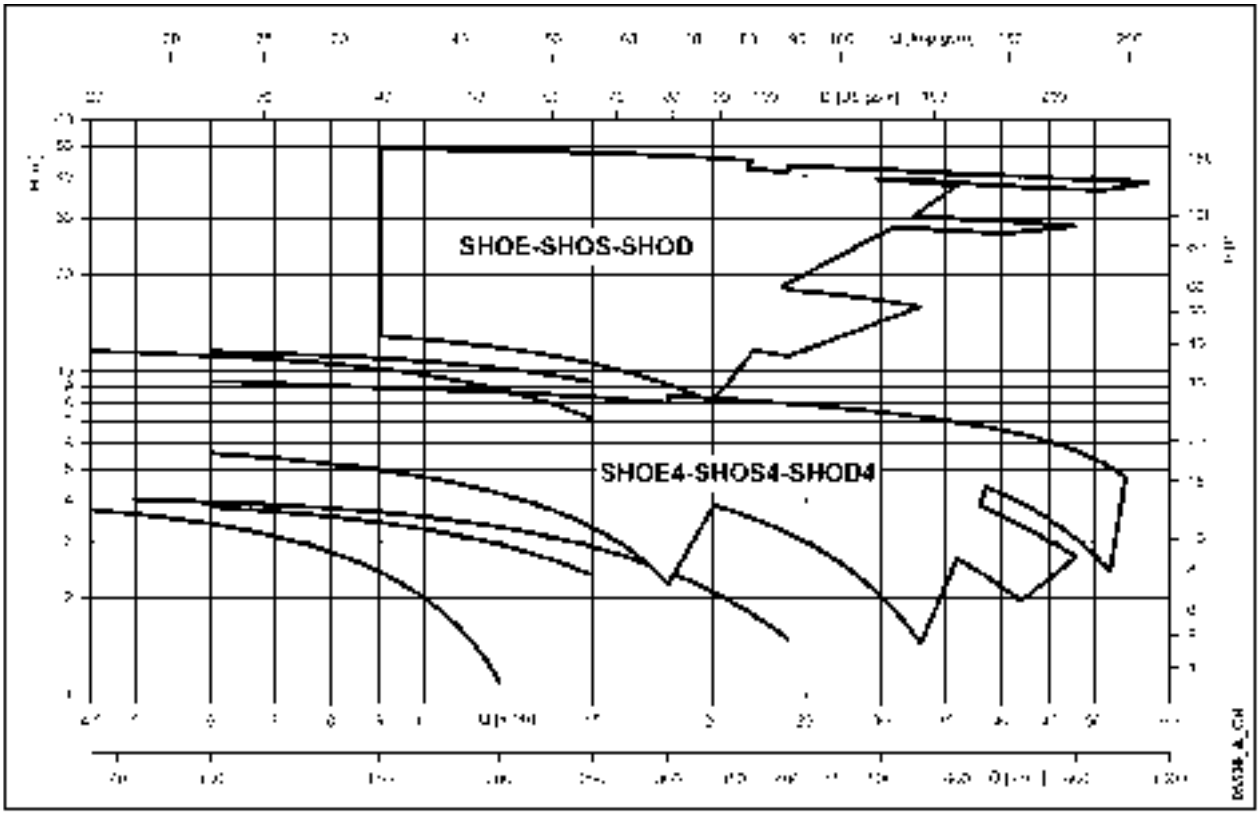
CO - COF - CEF SERIES
HYDRAULIC PERFORMANCE RANGE AT 50 Hz



SHO SERIES
HYDRAULIC PERFORMANCE RANGE AT 50 Hz



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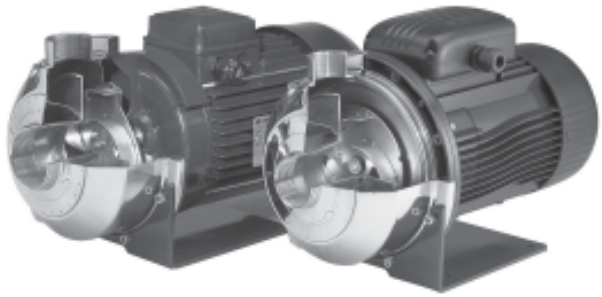
CONTENTS

Open impeller centrifugal electric pumps and threaded connections

CO-COM Series

MARKET SECTORS
CIVIL, INDUSTRIAL.

APPLICATIONS
- Washing of metal parts and/or surface treatment.
- Washing of produce in the packaging industry.
- Food industry washing equipment and syatems.
- Dyeing plant and textile industry.
- Plants for the circulation and transfer of moderately viscous liquids, with light chemical aggressiveness.
- Industrial washing machines and commercial dishwashers.



❑ All components in contact with pumped liquid are made of AISI 316L stainless steel

❑ Mechanical seal made of Silicon carbide/tungsten carbide/FPM in the "K" version

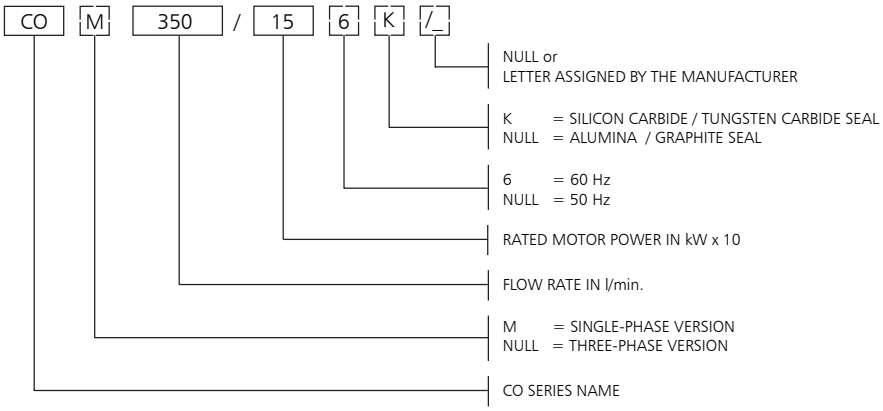
SPECIFICATIONS
PUMP
- **Delivery** up to 900 l/min (54 m^3/h).
- **Head** up to 24 m.
- **Temperature** of pumped liquid: -10°C to +110°C for standard version.
- Maximum working **pressure** : 8 bar (PN 8).
- **Suspended solids** handled up to: CO350: 11 mm. CO500: 20 mm.

MOTOR
- Asynchronous, squirrel cage rotor, enclosed construction in aluminium casing, external ventilation.
- **Protection**: IP55.
- Class 155 (F) **insulation**.
- Performances according to EN 60034-1.
- Maximum ambient **temperature**: 40°C.
- **Standard voltage**:
  - **Single-phase** version: 220-240 V 50 Hz, 2 poles with built-in automatic reset overload protection up to 1,5 kW. For higher powers the protection must be provided by the user.
  - **Three-phase** version: 220-240/380-415 V 50 Hz, 2 poles; overload protection to be provided by the user.
- Condensate drain plugs on all motors.

CONSTRUCTION FEATURES
- Close-coupled, single-impeller centrifugal pump with axial suction and radial delivery.
- Threaded suction and delivery ports (Rp ISO 7).
- Compact construction; adaptor for motor/pump coupling; the impeller is keyed directly to the motor shaft extension.
- Back pull-out design; no need to disconnect the pump body from the system pipes.
- **AISI 316L** stainless steel open **impeller** with four pressed vanes welded onto base disk.
- Impeller's front **wear surface** consists of a study **AISI 316L** stainless steel plate welded onto the suction port.
- **AISI 316L** stainless steel **pump body and seal housing disk**, with no diffusers or cavities for easier cleaning and maintenance.
- Pump body tightened by 8 screws allowing rotation of the discharge head.
- **Mechanical seal**:
  Standard version: **Carbon**/**Ceramica** faces, **FPM** elastomers. The other parts are made of AISI 316L stainless steel.
  "**K**" **version** : faces are made of **Silicon Carbide and Tungsten Carbide**. **FPM** Elastomers. The other parts are made of AISI 316L stainless steel.
- **FPM O-Rings**.

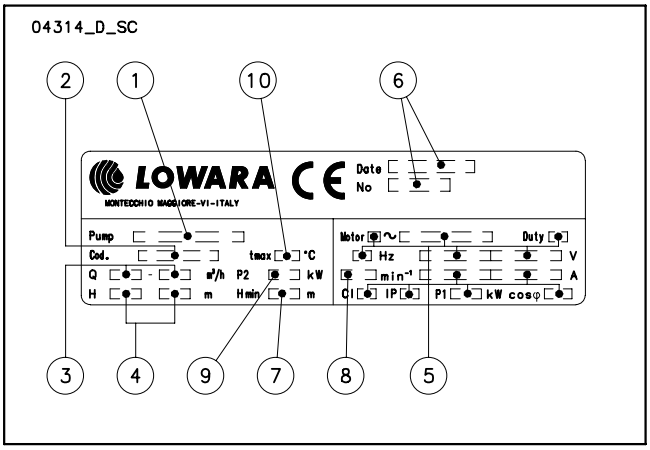
OPTIONAL FEATURES
- Different voltages and frequencies.
- Different materials for the mechanical seal and O-rings.

CO - COM SERIES
IDENTIFICATION CODE



EXAMPLE : COM 350/156K
CO series electric pump, single-phase, flow rate 350 l/min,
rated power 1,5 kW, 60 Hz version, Silicon Carbide / Tungsten Carbide seal.

RATING PLATE

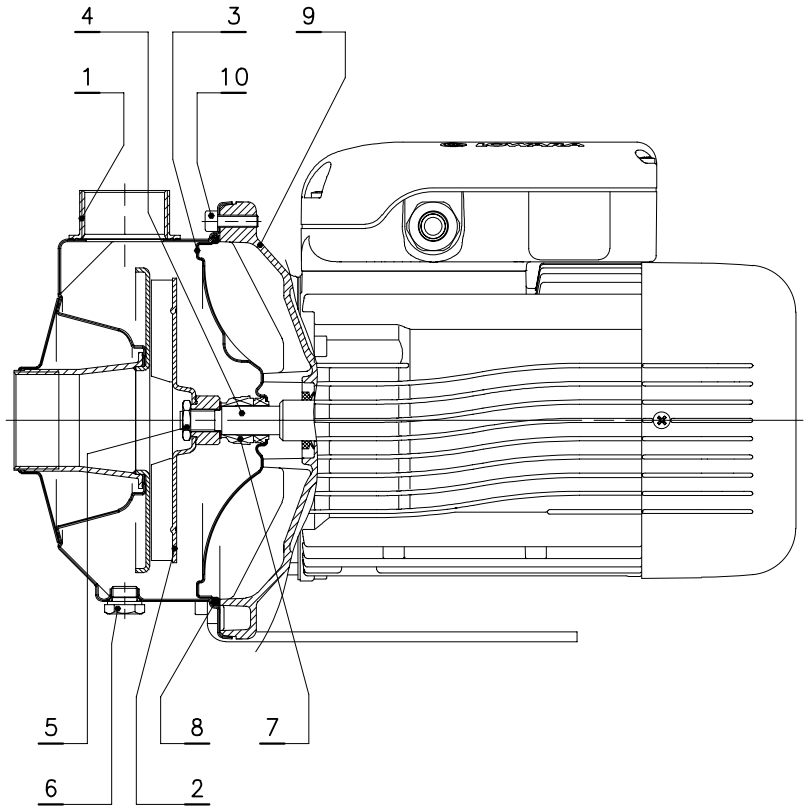


LEGEND

1 - Electric pump type
2 - Code
3 - Delivery range
4 - Head range
5 - Motor type
6 - Date of manufacture and serial number
7 - Minimum head
8 - Speed
9 - Rated output
10 - Maximum operating temperature

CO - COM SERIES
LIST OF MODELS AND TABLE OF MATERIALS

04309_A_DS



VERSIONS	
SINGLE-PHASE	**THREE-PHASE**
COM 350/03	CO 350/03
COM 350/05	CO 350/05
COM 350/07	CO 350/07
COM 350/09	CO 350/09
COM 350/11	CO 350/11
COM 350/15	CO 350/15
COM 500/15	CO 500/15
COM 500/22	CO 500/22
	CO 500/30

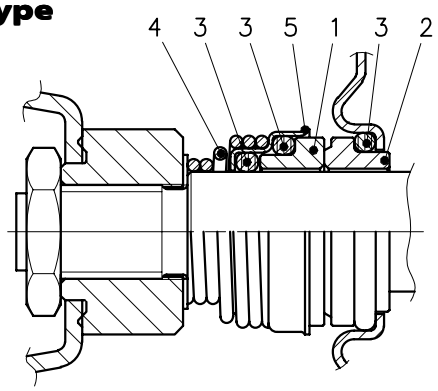
co-en_a_mo

REF. N.	NAME	MATERIAL	REFERENCE STANDARDS	
			EUROPE	USA
1	Pump body	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
2	Impeller	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
3	Seal housing	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
4	Shaft extension	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
5	Impeller locknut and washer	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
6	Fill/drain plugs	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
7	Mechanical seal	Ceramic / resin impregnated Carbon / FPM (standard version)		
8	Elastomers	FPM (standard version)		
9	Adapter	Aluminium	EN 1706-AC-AlSi11Cu2(Fe)DF	ASTM Class 25
10	Pump body fastening bolts & screws	Galvanized steel		

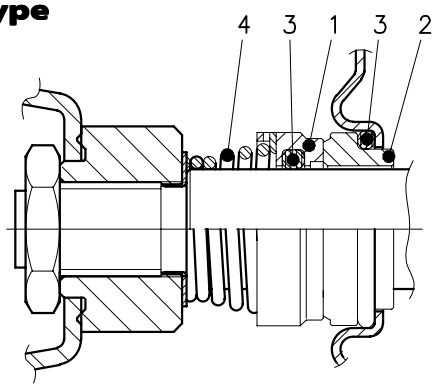
co-en_a_tm

CO - COM SERIES
MECHANICAL SEAL

3K Type



2K Type



04318_A_DS

LIST OF MATERIALS

POSITION 1 - 2	POSITION 3	POSITION 4 - 5
B : Resin impregnated carbon	E : EPDM	G : AISI 316
C : Special resin impregnated carbon	V : FPM	
V : Ceramic		
Q_1 : Silicon Carbide		
U_3 : Tungsten Carbide		

co_ten-mec-3-en_a_tm

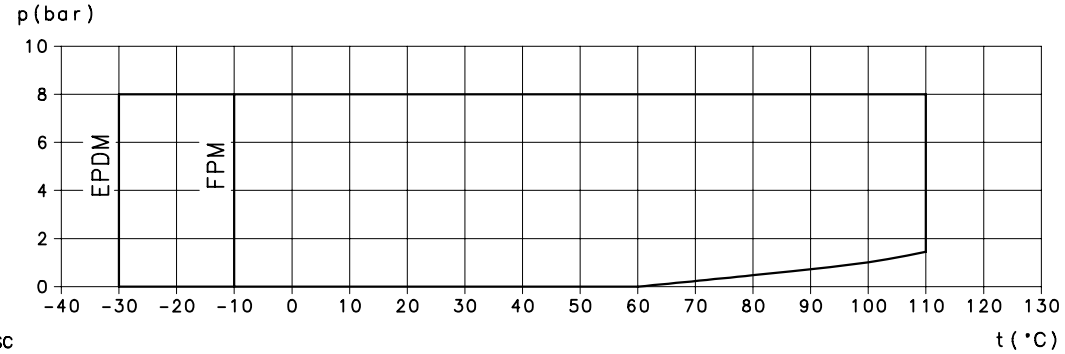
SEAL TYPES

TYPE	POSITION 1 ROTATING ASSEMBLY	POSITION 2 FIXED ASSEMBLY	POSITION 3 ELASTOMERS	POSITION 4 SPRINGS	POSITION 5 OTHER COMPONENTS	TEMPERATURE (°C)
STANDARD MECHANICAL SEAL						
3K - V B V G G	V	B	V	G	G	-10 +110
OTHER MECHANICAL SEAL TYPES						
3K - V C V G G	V	C	V	G	G	-10 +110
3K - Q_1CVGG	Q_1	C	V	G	G	-10 +110
3K - Q_1Q_1VGG	Q_1	Q_1	V	G	G	-10 +110
2K - U_3Q_1VGG	U_3	Q_1	V	G	G	-10 +110
2K - U_3U_3VGG *	U_3	U_3	V	G	G	-10 +110
3K - VBEGG	V	B	E	G	G	-30 +110
3K - VCEGG	V	C	E	G	G	-30 +110
3K - Q_1CEGG	Q_1	C	E	G	G	-30 +110
3K - Q_1Q_1EGG	Q_1	Q_1	E	G	G	-30 +110
2K - U_3Q_1EGG	U_3	Q_1	E	G	G	-30 +110
2K - U_3U_3EGG *	U_3	U_3	E	G	G	-30 +110

* Version with anti-rotation lockpin available on request.

co_tipi-ten-mec-3-en_b_tc

COMPLETE PUMP PRESSURE / TEMPERATURE OPERATING LIMITS (WITH ANY OF THE SEALS LISTED ABOVE)



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CO - COM SERIES
HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 2 POLES

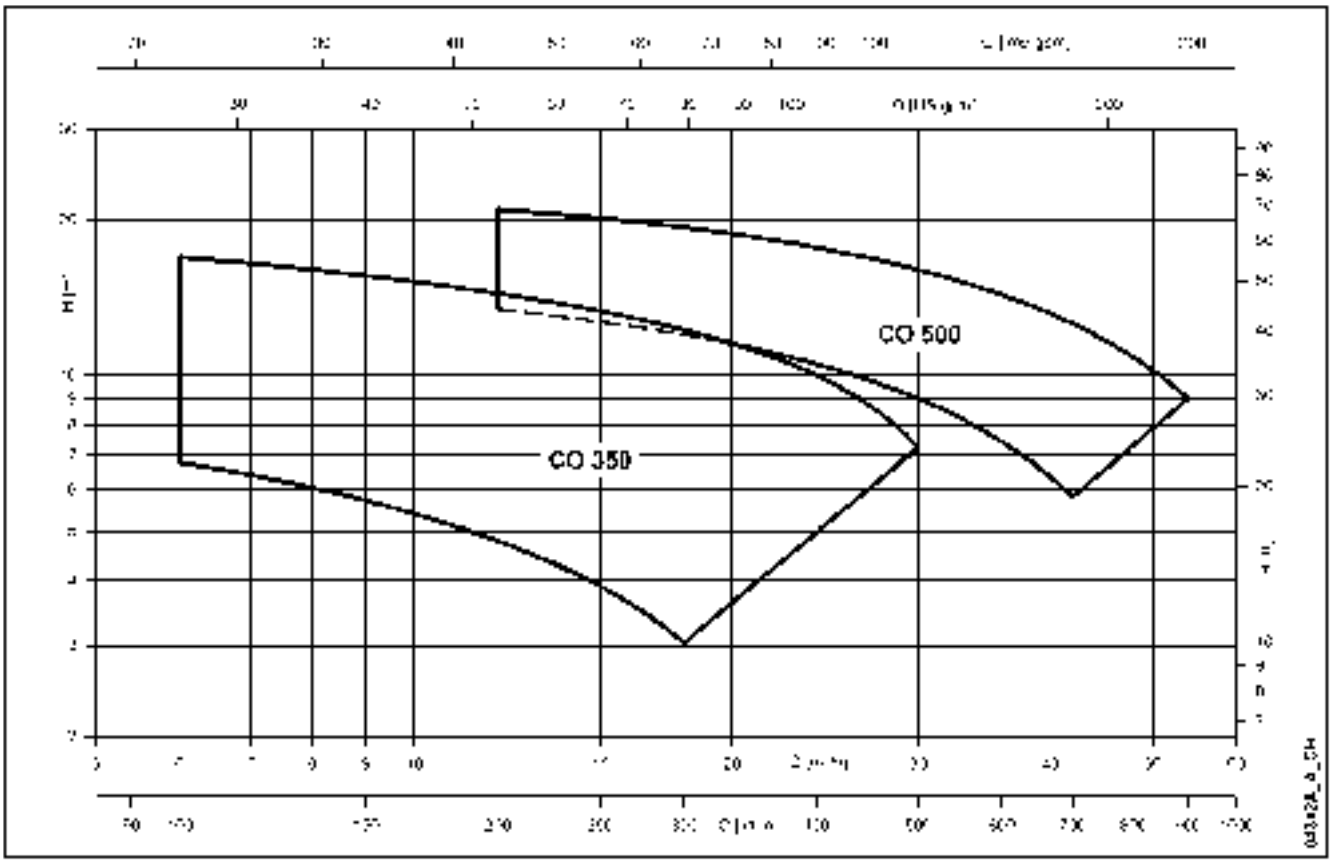

TABLE OF HYDRAULIC PERFORMANCES AT 50 Hz, 2 POLES

ELECTRIC PUMP TYPE	RATED POWER		Q = DELIVERY																	
			l/min 0	100	120	160	200	240	280	300	350	375	400	450	500	600	650	700	800	900
			m^3/h 0	6	7,2	9,6	12	14,4	16,8	18	21	22,5	24	27	30	36	39	42	48	54
	kW	HP	H = TOTAL HEAD METRES COLUMN OF WATER																	
CO(M) 350/03	0,37	0,5	9,5	6,8	6,3	5,5	4,8	4,1	3,4	3,0										
CO(M) 350/05	0,55	0,75	12,0	9,2	8,8	7,9	7,1	6,3	5,5	5,1	4,0									
CO(M) 350/07	0,75	1	13,7	11,2	10,8	9,9	9,1	8,2	7,4	6,9	5,8	5,3								
CO(M) 350/09	0,9	1,2	15,7	12,7	12,2	11,3	10,5	9,6	8,8	8,3	7,2	6,6	5,9							
CO(M) 350/11	1,1	1,5	17,3	14,3	13,8	12,9	12,0	11,2	10,5	10,1	9,1	8,6	8,0	6,8						
CO(M) 350/15	1,5	2	20,3	16,9	16,4	15,3	14,4	13,5	12,7	12,2	11,2	10,6	10,0	8,7	7,2					
CO(M) 500/15	1,5	2	16,0				13,4	12,8	12,3	12,0	11,3	10,9	10,5	9,8	9,0	7,4	6,6	5,8		
CO(M) 500/22	2,2	3	19,6				17,3	16,7	16,2	15,9	15,2	14,9	14,5	13,7	13,0	11,3	10,4	9,6	7,7	
CO 500/30	3	4	24,1				20,9	20,3	19,7	19,3	18,5	18,1	17,7	16,9	16,0	14,3	13,5	12,6	10,8	9,0

co-2p50-en_d_th

PUMP TYPE 1 ~	MOTOR TYPE	INPUT POWER* kW	INPUT CURRENT* 220-240 V A	CAPACIT. µF / 450 V
COM350/03	SM63BG/1045	0,63	2,82	14
COM350/05	SM71BG/1055	0,88	4,25	16
COM350/07	SM71BG/1075	1,02	4,67	20
COM350/09	SM71BG/1095	1,21	5,46	25
COM350/11	SM80BG/1115	1,75	7,85	30
COM350/15	SM80BG/1155	2,04	9,21	40
COM500/15	SM80BG/1155	2,02	9,12	40
COM500/22	PLM90BG/1225	2,72	12,7	70
-	-	-	-	-

PUMP TYPE 3 ~	MOTOR TYPE	INPUT POWER* kW	INPUT CURRENT* 220-240 V A	INPUT CURRENT* 380-415 V A
C0350/03	SM63BG/304	0,64	2,53	1,46
CO350/05	SM71BG/305	0,79	2,70	1,56
C0350/07	SM80BG/307PE	0,92	2,96	1,71
CO350/09	SM80BG/311PE	1,08	3,72	2,15
C0350/11	SM80BG/311PE	1,61	4,87	2,81
CO350/15	SM80BG/315PE	1,87	5,75	3,32
C0500/15	SM80BG/315PE	1,84	5,70	3,29
CO500/22	PLM90BG/322	2,66	8,27	4,78
C0500/30	PLM90BG/330	3,80	11,4	6,57

*Maximum value in specified range.

co-2p50-en_f_te

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MOTORS FOR CO SERIES

Standard supplied IE2/IE3 three-phase surface motors ≥ 0,75 kW are compliant with Regulation (EC) no. 640/2009 and IEC 60034-30.

Electrical performances according to EN 60034-1.
Insulation class 155 (F). IP55 protection. Condensate drain plugs on standard version.
Cooling by fan according to EN 60034-6.
Cable gland metric size according to EN 50262. Standard voltage:

- **Single-phase** version: 220-240 V 50 Hz (incorporated automatic-reset overload protection).
- **Three-phase** version: 220-240/380-415 V 50 Hz (overload protection to be provided by the user).

SINGLE-PHASE MOTORS AT 50 Hz, 2 POLES

P_N kW	MOTOR TYPE	IEC SIZE	Construction Design	INPUT CURRENT In (A) 220-240 V	CAPACITOR µF	CAPACITOR V	DATA FOR 230 V 50 Hz VOLTAGE min^{-1}	Is / In	η %	cosφ	Tn Nm	Ts/Tn	Tm/Tn
0,4	SM63BG/1045	63	SPECIAL	2,79-2,85	14	450	2745	2,64	65,1	0,96	1,39	0,68	1,63
0,55	SM71BG/1055	71		3,76-3,99	16	450	2820	3,72	68,9	0,91	1,86	0,61	2,00
0,75	SM71BG/1075	71		4,90-4,85	20	450	2765	3,42	70,1	0,96	2,59	0,58	1,75
0,95	SM71BG/1095	71		6,25-5,89	25	450	2740	3,39	71,1	0,98	3,31	0,58	1,66
1,1	SM80BG/1115	80		6,88-6,65	30	450	2800	3,89	74,7	0,96	3,75	0,46	1,72
1,5	SM80BG/1155	80		9,21-8,58	40	450	2810	4,00	76,1	0,98	5,09	0,39	1,74
2,2	PLM80BG/1225	90		12,5-11,6	70	450	2825	4,47	82,4	0,97	7,43	0,53	1,87

THREE-PHASE MOTORS AT 50 Hz, 2 POLES

co-motm-2p50-en_a_te

P_N kW	Efficiency η_N % Δ 220 V Y 380 V 4/4	3/4	2/4	Δ 230 V Y 400 V 4/4	3/4	2/4	Δ 240 V Y 415 V 4/4	3/4	2/4	Δ 380 V Y 660 V 4/4	3/4	2/4	Δ 400 V Y 690 V 4/4	3/4	2/4	Δ 415 V 4/4	3/4	2/4	IE	Year of manufacture
0,4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	By June 2011
0,55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
0,75	82,5	83,1	81,3	82,8	82,7	80,1	82,6	82,0	78,9	82,5	82,0	78,9	82,5	82,0	78,9	82,5	82,0	78,9	3	
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3	85,5	86,8	85,6	86,1	86,8	85,6	86,3	86,8	85,6	85,5	86,8	85,6	85,5	86,8	85,6	85,5	86,8	85,6		

P_N kW	Manufacturer: Lowara srl Unipersonale, Reg. No. 341820260, Montecchio Maggiore Vicenza - Italia; Model	IEC SIZE	Construction Design	N. of Poles	f_N Hz	Data for 400 V / 50 Hz Voltage cosφ	Is / I_N	T_N Nm	Ts/T_N	Tm/Tn
0,4	SM63BG/304	63	SPECIAL	2	50	0,66	4,32	1,38	4,14	3,13
0,55	SM71BG/305	71				0,74	5,97	1,85	3,74	3,56
0,75	SM80BG/307PE	80				0,78	7,38	2,48	3,57	3,75
0,9	SM80BG/311PE	80				0,79	8,31	3,63	3,95	3,95
1,1	SM80BG/311PE	80				0,79	8,31	3,63	3,95	3,95
1,5	SM80BG/315PE	80				0,80	8,80	4,96	4,31	4,10
2,2	PLM90BG/322	90				0,80	8,63	7,25	3,74	3,71
3	PLM90BG/330	90				0,82	8,39	9,96	3,50	3,32

P_N kW	Voltage U_N V Δ 220 V	230 V	240 V	Y 380 V	400 V	415 V	Δ 380 V	400 V	415 V	Y 660 V	690 V	I_N (A)	n_N min^{-1}	See note.	Operating conditions ** Altitude Above Sea Level (m)	T. amb min/max °C	ATEX
0,4	2,20	2,34	2,51	1,27	1,35	1,45	-	-	-	-	-		2740 ÷ 2790		≤ 1000	-15 / 40	No
0,55	2,56	2,56	2,62	1,48	1,48	1,51	-	-	-	-	-		2825 ÷ 2850				
0,75	2,96	2,94	2,96	1,71	1,70	1,71	1,70	1,69	1,70	0,98	0,98		2875 ÷ 2895				
0,9	4,19	4,14	4,16	2,42	2,39	2,40	2,41	2,38	2,38	1,39	1,37		2870 ÷ 2900				
1,1	4,19	4,14	4,16	2,42	2,39	2,40	2,41	2,38	2,38	1,39	1,37		2870 ÷ 2900				
1,5	5,56	5,49	5,51	3,21	3,17	3,18	3,21	3,18	3,19	1,85	1,84		2870 ÷ 2895				
2,2	8,05	8,04	8,09	4,65	4,64	4,67	4,62	4,61	4,63	2,67	2,66		2885 ÷ 2900				
3	10,8	10,6	10,6	6,23	6,14	6,12	6,18	6,10	6,06	3,57	3,52		2850 ÷ 2885				

Note: Observe the regulations and codes locally in force regarding sorted waste disposal.

co-ie2-mott-2p50-en_b_te

** Operating conditions to be referred to motor only. About electric pump, refer to limits in user's manual.

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AVAILABLE VOLTAGES MOTORS FOR CO SERIES

P_N kW	IEC SIZE	SINGLE-PHASE 50 Hz 1 x 220-240	50 Hz 1 x 100	50 Hz 1 x 110-120	60 Hz 1 x 220-230	60 Hz 1 x 100	60 Hz 1x 110-115	60 Hz 1 x 120-127	60 Hz 1 x 200-210
0,4	63	s	o	o	s	-	o	-	-
0,55	71	s	o	o	s	o	o	o	o
0,75	71	s	o	o	s	o	o	o	o
0,95	71	s	o	o	s	o	o	o	o
1,1	80	s	-	o	s	-	o	-	o
1,5	80	s	-	-	s	-	o	-	o
2,2	90	s	-	-	s	-	-	-	-

P_N kW	THREE-PHASE - 2 POLES 50 Hz 3 x 220-230-240/380-400-415	50 Hz 3 x 380-400-415/660-690	50 Hz 3 x 200-208/346-360	50 Hz 3 x 255-265/440-460	50 Hz 3 x 290-300/500-525	50 Hz 3 x 440-460/-	50 Hz 3 x 500-525/-	60 Hz 3 x 220-230/380-400	60 Hz 3 x 255-265-277/440-460-480	60 Hz 3 x 380-400/660-690	60 Hz 3 x 440-460-480/-	60 Hz 3 x 110-115/190-200	60 Hz 3 x 200-208/346-360	60 Hz 3 x 330-346/575-600	60 Hz 3 x 575/-	50/60 Hz 3 x 230/400 50 Hz 3 x 265/460 60 Hz	50/60 Hz 3 x 400/690 50 Hz 3 x 460/- 60 Hz
0,4	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o	o
0,55	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o	o
0,75	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o	o
0,95	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o	o
1,1	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o	o
1,5	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o	o
2,2	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o	o
3	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o	o

s = Standard voltage o = Optional voltage - = Not available

co-volt-lowa-en_a_te

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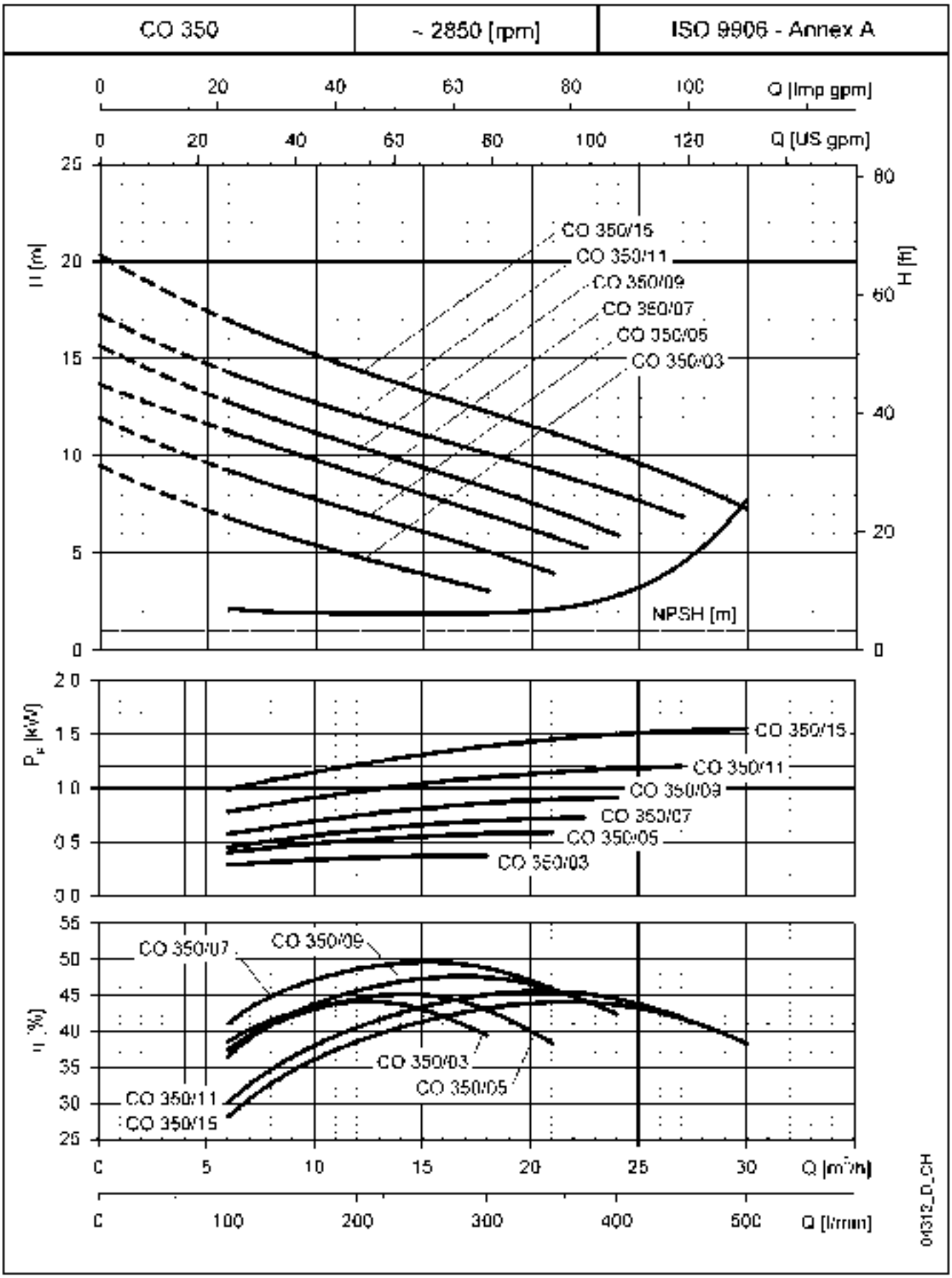
CO350 SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density $\rho = 1.0$ Kg/dm^3 and kinematic viscosity $\nu = 1$ mm^2/sec.

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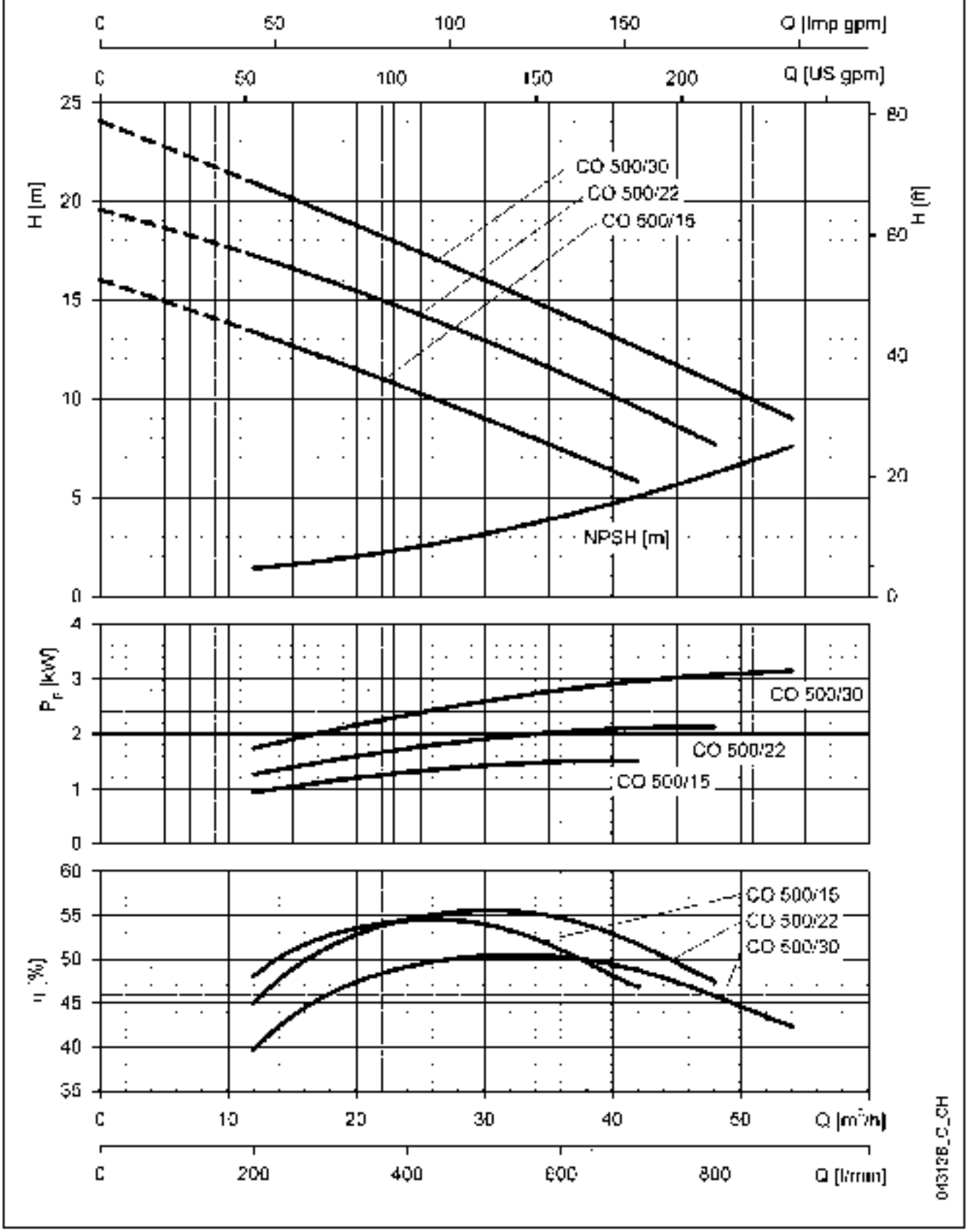
CO500 SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES

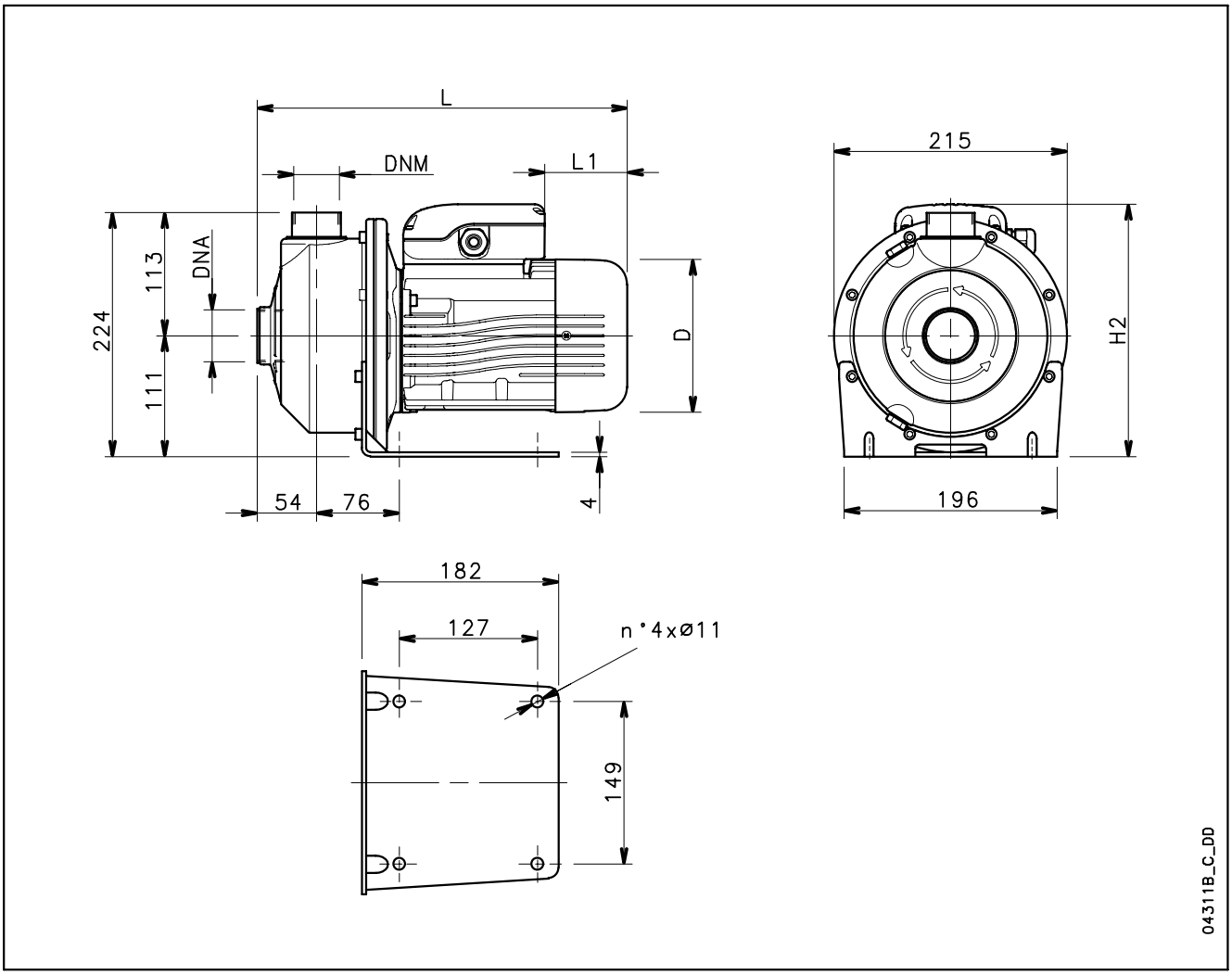
CO 500	~ 2850 [rpm]	ISO 9906 - Annex A



The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density ρ = 1.0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.

LOWARA
a xylem brand

CO SERIES
DIMENSIONS AND WEIGHTS AT 50 Hz, 2 POLES



PUMP TYPE	DIMENSIONS (mm)				DNA	DNM	WEIGHT
	D	H2	L	L1			kg
COM 350/03/A	120	222	325	62	Rp 1½	Rp 1¼	10
COM 350/05/A	140	232	339	76	Rp 1½	Rp 1¼	11,9
COM 350/07/A	140	232	339	76	Rp 1½	Rp 1¼	12,6
COM 350/09/A	140	241	339	31	Rp 1½	Rp 1¼	13,2
COM 350/11/A	156	248	385	69	Rp 1½	Rp 1¼	14,5
COM 350/15/A	156	248	385	69	Rp 1½	Rp 1¼	16,2
COM 500/15/A	156	248	385	69	Rp 2	Rp 1½	16,2
COM 500/22/P	174	262	429	84	Rp 2	Rp 1½	20
CO 350/03/A	120	222	325	62	Rp 1½	Rp 1¼	10
CO 350/05/A	140	232	339	76	Rp 1½	Rp 1¼	11,9
CO 350/07/D	155	240	385	114	Rp 1½	Rp 1¼	14,1
CO 350/09/D	155	240	385	114	Rp 1½	Rp 1¼	16
CO 350/11/D	155	240	385	114	Rp 1½	Rp 1¼	16,3
CO 350/15/D	155	240	385	114	Rp 1½	Rp 1¼	17,8
CO 500/15/D	155	240	385	114	Rp 2	Rp 1½	17,8
CO 500/22/C	174	245	429	172	Rp 2	Rp 1½	23
CO 500/30/P	174	245	429	172	Rp 2	Rp 1½	25

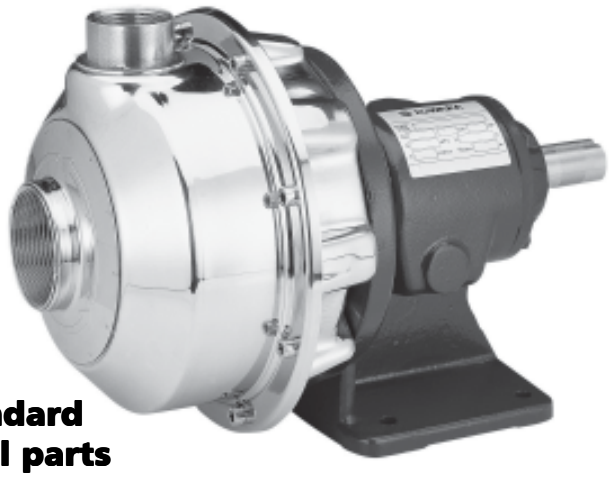
Bare shaft centrifugal pumps with closed impeller (CEF series) and open impeller (COF series)

CEF-COF Series

MARKET SECTORS
CIVIL, AGRICULTURAL, INDUSTRIAL.

APPLICATIONS
- Pumping of moderately viscous water and liquids (COF series) with moderate chemical aggressiveness (CEF, COF series).
- Water supply.
- Irrigation.
- Water circulation (cold, hot, refrigerated).
- Washing in the packaging, textile and food industries (COF series).

* For aggressive liquids, please contact our sales network.



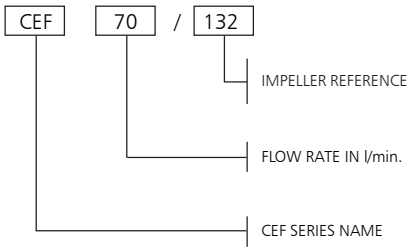
- ❑ **In the standard version, all parts in contact with pumped liquid are made of AISI 316 stainless steel**
- ❑ **Suspended solids handled up to 11 mm (COF350) and 20 mm (COF500) in the open impeller version (COF)**
- ❑ **Sturdy support with permanently lubricated bearings**
- ❑ **Flexible couplings available for connection to motor shaft of various sizes**

SPECIFICATIONS
POMP
- **Delivery** up to 500 l/min (30 m³/h) at 2900 rpm (CEF series).
- **Delivery** up to 900 l/min (54 m³/h) at 2900 rpm (COF series).
- **Head** up to 29 m at 2900 rpm (CEF series).
- **Head** up to 24,5 m at 2900 rpm (COF series).
- **Temperature** of pumped liquid: -10°C to +110°C standard version.
- Maximum operating **pressure** : 8 bar (PN 8).
- Counterclockwise rotation facing the pump from the suction port.
- **Standard supplied IE2/IE3 motors are compliant with Regulation (EC) no. 640/2009 and IEC 60034-30**.

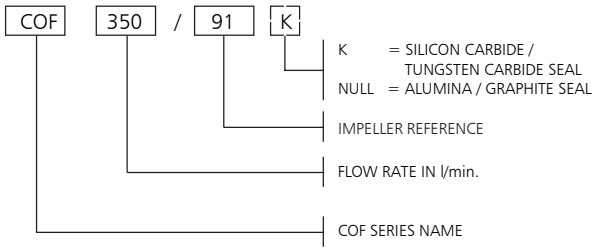
CONSTRUCTION FEATURES
- Close-coupled, single-impeller centrifugal pump featuring axial intake and radial discharge.
- Pump coupled by adapter to the bare shaft support; special shaft extension in common with pump are supported bby ball bearing.
- Back pull-out design; no need to disconnect the pump body from the system pipes.
- Threaded suction and delivery ports (Rp ISO 7).
- High performance closed **impeller** made of **AISI 316** stainless steel (CEF series).
- High performance open **impeller** made of **AISI 316** stainless steel (COF series).
- **Mechanical seal** with **Ceramic/Carbon** faces, **FPM** elastomers, other parts are made of **AISI 316** stainless steel (CEF series).
- **Mechanical seal** with **Ceramic/Carbon** faces (**Silicon Carbide** and **Tungsten Carbide** in the "**K**" **version**), **FPM** elastomers, other parts are made of **AISI 316** stainless steel (COF series).
- **FPM O-rings**.

OPTIONAL FEATURES
- Different materials for the mechanical seal and O-rings.
- Electric pump unit (pump, motor, coupling, base).

CEF - COF SERIES
IDENTIFICATION CODE (PUMP)

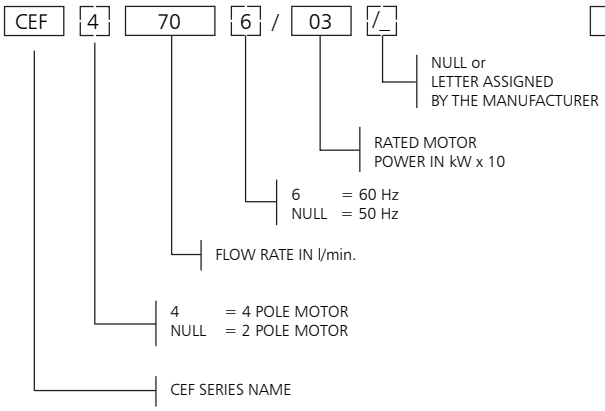


EXAMPLE : CEF 70/132
CEF pump series, flow rate 70 l/min,
impeller reference 132.

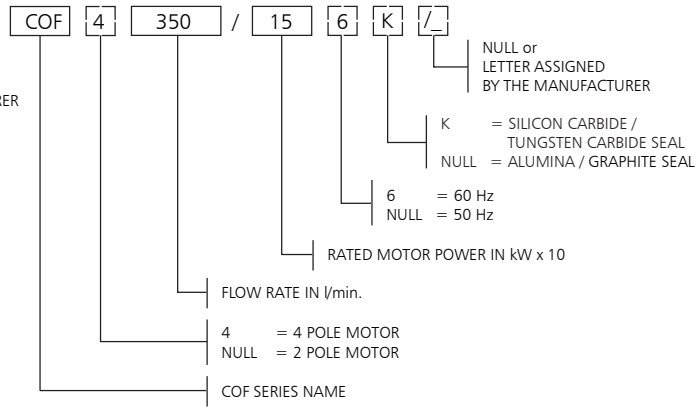


EXAMPLE : COF 350/91K
COF pump series, flow rate 350 l/min,
impeller reference 91, Silicon Carbide / Tungsten Carbide seal.

IDENTIFICATION CODE (ELECTRIC PUMP)

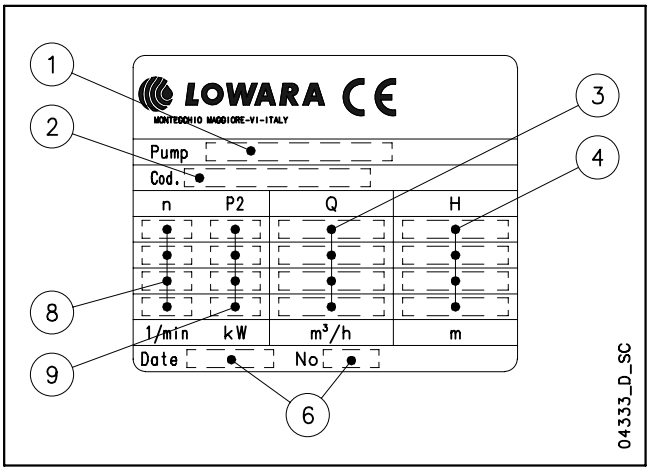


EXAMPLE : CEF 70/03
CEF electric pump series, flow rate 70 l/min,
0,37 kW rated motor power, 50 Hz version.

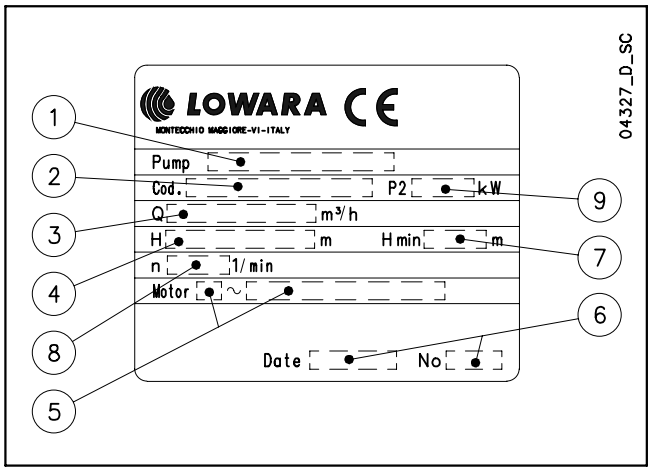


EXAMPLE : COF 350/15K
COF electric pump series, flow rate 350 l/min, 1,5 kW rated
motor power, 50 Hz version, Silicon Carbide / Tungsten Carbide seal.

RATING PLATE (PUMP)



(ELECTRIC PUMP)

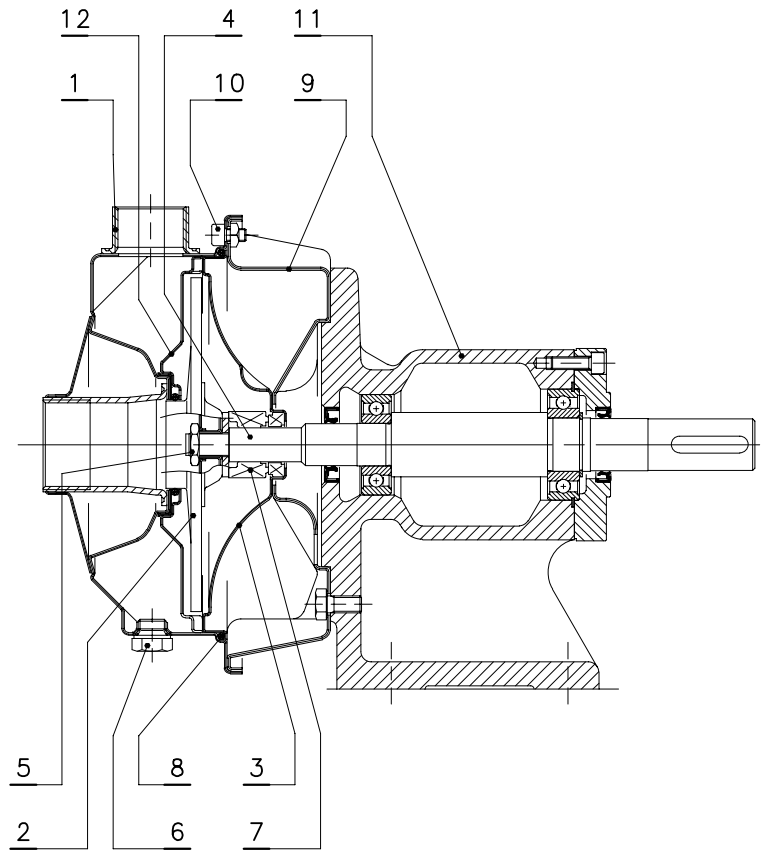


LEGEND

1 - Electric pump type
2 - Code
3 - Delivery range
4 - Head range
5 - Motor type
6 - Date of manufacture and serial number
7 - Minimum head
8 - Speed
9 - Rated output
10 - Maximum operating temperature

CEF SERIES
LIST OF MODELS AND TABLE OF MATERIALS

04329_A_DS



VERSIONS
CEF 70
CEF 80
CEF 120
CEF 210
CEF 370

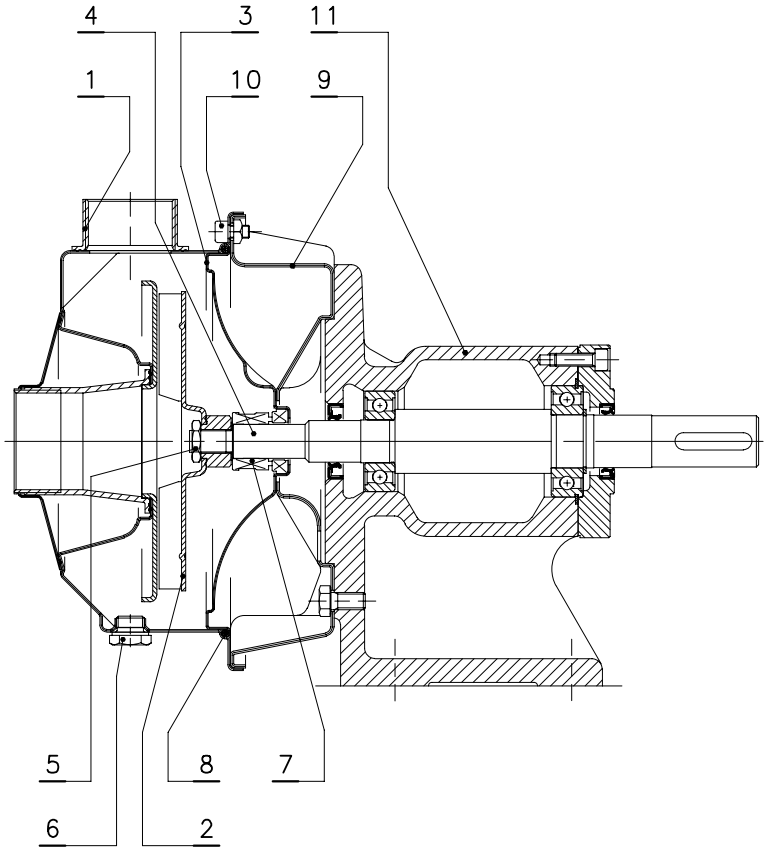
cef-en_a_mo

REF. N.	NAME	MATERIAL	REFERENCE STANDARDS	
			EUROPE	USA
1	Pump body	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
2	Impeller	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
3	Seal housing	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
4	Shaft extension	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
5	Impeller locknut and washer	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
6	Fill/drain plugs	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
7	Mechanical seal	Ceramic / resin impregnated Carbon / FPM (standard version)		
8	Elastomers	FPM (standard version)		
9	Motor pump bracket	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI 304
10	Pump body fastening bolts & screws	Galvanized steel		
11	Bracket casing	Cast iron	EN 1561-GJL-250 (JL1040)	ASTM Class 35
12	Diffuser	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L

cef-en_a_tm

COF SERIES
LIST OF MODELS AND TABLE OF MATERIALS

04323_A_DS



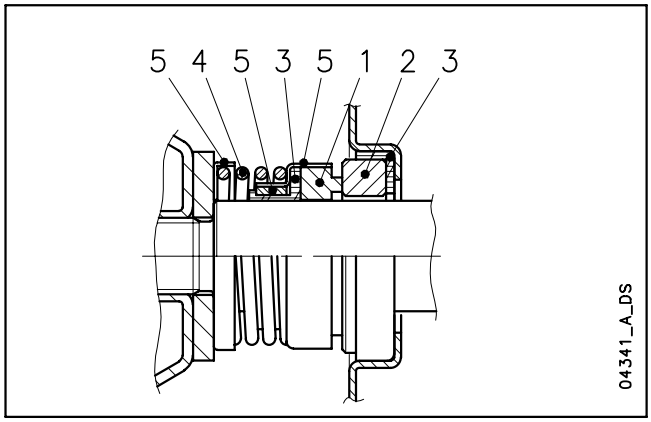
VERSIONS
COF 350
COF 500

cof-en_a_mo

REF. N.	NAME	MATERIAL	REFERENCE STANDARDS	
			EUROPE	USA
1	Pump body	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
2	Impeller	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
3	Seal housing	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
4	Shaft extension	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
5	Impeller locknut and washer	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
6	Fill/drain plugs	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
7	Mechanical seal	Ceramic / resin impregnated Carbon / FPM (standard version)		
8	Elastomers	FPM (standard version)		
9	Motor pump bracket	Stainless steel	EN 10088-1-X5CrNi18-10 (1.4301)	AISI 304
10	Pump body fastening bolts & screws	Galvanized steel		
11	Bracket casing	Cast iron	EN 1561-GJL-250 (JL1040)	ASTM Class 35

cof-en_a_tm

CEF - COF SERIES
MECHANICAL SEAL



LIST OF MATERIALS

POSITION 1 - 2	POSITION 3	POSITION 4 - 5
B : Resin impregnated carbon	E : EPDM	G : AISI 316
V : Ceramic	V : FPM	
Q_1 : Silicon Carbide		
U_3 : Tungsten Carbide		

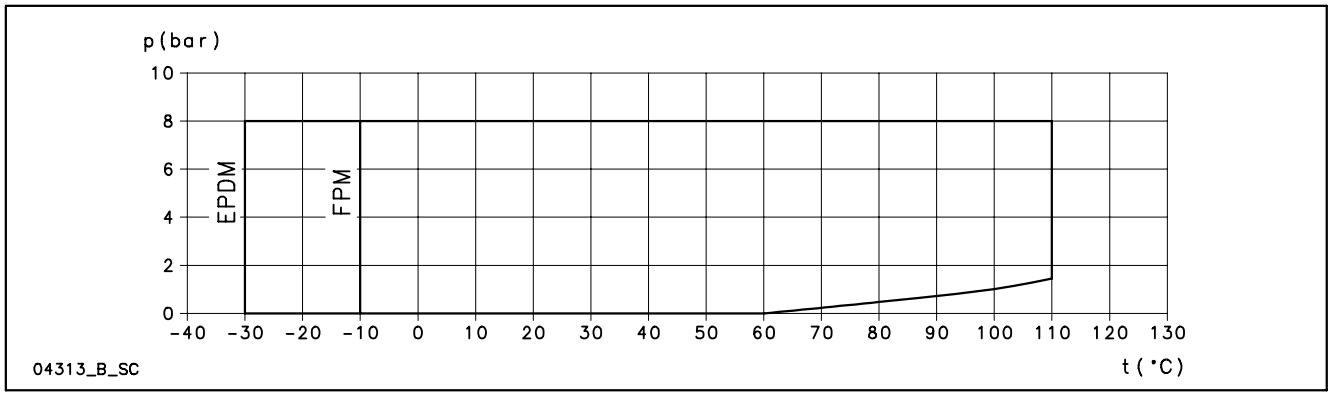
cof_ten-mec-j-c-21-en_a_tm

SEAL TYPES

TYPE	POSITION					TEMPERATURE (°C)
	1	2	3	4	5	
	ROTATING ASSEMBLY	FIXED ASSEMBLY	ELASTOMERS	SPRINGS	OTHER COMPONENTS	
STANDARD MECHANICAL SEAL						
V B V G G	V	B	V	G	G	-10 +110
OTHER MECHANICAL SEAL TYPES						
Q_1BEGG	Q_1	B	E	G	G	-30 +110
Q_1Q_1EGG	Q_1	Q_1	E	G	G	-30 +110
U_3Q_1VGG	U_3	Q_1	V	G	G	-10 +110

cof_tipi-ten-mec-j-c-21-en_c_tc

COMPLETE PUMP PRESSURE / TEMPERATURE OPERATING LIMITS (WITH ANY OF THE SEALS LISTED ABOVE)



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MOTORS FOR CEF - COF SERIES

Standard supplied IE2/IE3 three-phase surface motors ≥ 0,75 kW are compliant with Regulation (EC) no. 640/2009 and IEC 60034-30.

Enclosed short circuit squirrel cage motor (TEFC), with external ventilation.
Electrical performances according to EN 60034-1.
Insulation class 155 (F).
IP55 protection.
Condensate drain plugs on standard version.
Cooling by fan according to EN 60034-6.
Cable gland metric size according to EN 50262.
Standard voltage:

- **Three-phase** version: 220-240/380-415 V 50 Hz for powers up to 3 kW. 380-415/660-690 V 50 Hz for powers above 3 kW. Overload protection to be provided by the user.

THREE-PHASE MOTORS AT 50 Hz, 2 POLES

	Efficiency η_N %																		Year of manufacture
	Δ 220 V Y 380 V			Δ 230 V Y 400 V			Δ 240 V Y 415 V			Δ 380 V Y 660 V			Δ 400 V Y 690 V			Δ 415 V			IE	
P_N kW	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4		
0,37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	By June 2011
0,55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
0,75	82,5	83,1	81,3	82,8	82,7	80,1	82,6	82,0	78,9	82,5	82,0	78,9	82,5	82,0	78,9	82,5	82,0	78,9		
0,9	84,0	84,7	83,4	84,4	84,5	82,5	84,3	84,0	81,4	84,0	84,0	81,4	84,0	84,0	81,4	84,0	84,0	81,4	3	
1,1	84,0	84,7	83,4	84,4	84,5	82,5	84,3	84,0	81,4	84,0	84,0	81,4	84,0	84,0	81,4	84,0	84,0	81,4		
1,5	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8	81,8		
1,85	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	2	
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3	85,1	85,1	85,1	85,1	85,1	85,1	85,1	85,1	85,1	85,1	85,1	85,1	85,1	85,1	85,1	85,1	85,1	85,1		

	Manufacturer: Lowara srl Unipersonale Reg. No. 341820260 Montecchio Maggiore Vicenza - Italia					Data for 400 V / 50 Hz Voltage				
P_N kW	Model	IEC SIZE	Construction Design	N. of Poles	f_N Hz	cosφ	Is / I_N	T_N Nm	Ts/T_N	Tm/Tn
0,37	SM71B3/304	71	B3	2	50	0,59	-	1,22	-	-
0,55	SM71B3/305	71				0,74	5,97	1,85	3,74	3,56
0,75	SM80B3/307 PE	80				0,78	7,38	2,48	3,57	3,75
0,9	SM80B3/311 PE	80				0,79	8,31	3,63	3,95	3,95
1,1	SM80B3/311 PE	80				0,79	8,31	3,63	3,95	3,95
1,5	PLM90B3/315	90				0,86	7,86	4,96	3,34	3,27
1,85	PLM90B3/322	90				0,80	8,63	7,25	3,74	3,71
2,2	PLM90B3/322	90				0,80	8,63	7,25	3,74	3,71
3	PLM100B3/330	100				0,84	9,45	9,83	3,59	4,27

	Voltage U_N V												Condizioni operative **		
	Δ			Y			Δ			Y					
P_N kW	220 V	230 V	240 V	380 V	400 V	415 V	380 V	400 V	415 V	660 V	690 V	n_N min^{-1}	See note.	Altitude Above Sea Level (m)	T. amb min/max °C	ATEX
	I_N (A)															
0,37	2,10	2,13	2,30	1,21	1,23	1,33	-	-	-	-	-	2885 ÷ 2900				
0,55	2,56	2,56	2,62	1,48	1,48	1,51	-	-	-	-	-	2825 ÷ 2850				
0,75	2,96	2,94	2,96	1,71	1,70	1,71	1,70	1,69	1,70	0,98	0,98	2875 ÷ 2895				
0,9	4,19	4,14	4,16	2,42	2,39	2,40	2,41	2,38	2,38	1,39	1,37	2870 ÷ 2900				
1,1	4,19	4,14	4,16	2,42	2,39	2,40	2,41	2,38	2,38	1,39	1,37	2870 ÷ 2900		≤ 1000	-15 / 40	No
1,5	5,53	5,23	5,13	3,19	3,02	2,96	3,19	3,03	2,96	1,84	1,75	2865 ÷ 2895				
1,85	8,05	8,04	8,09	4,65	4,64	4,67	4,62	4,61	4,63	2,67	2,66	2885 ÷ 2900				
2,2	8,05	8,04	8,09	4,65	4,64	4,67	4,62	4,61	4,63	2,67	2,66	2885 ÷ 2900				
3	10,4	10,2	10,3	5,98	5,91	5,92	6,01	5,95	5,96	3,47	3,44	2905 ÷ 2920				

Note: Observe the regulations and codes locally in force regarding sorted waste disposal.

cef-cof-ie2-mott-2p50-en_c_te

** Operating conditions to be referred to motor only. About electric pump, refer to limits in user's manual.

MOTOR NOISE

The tables below show the mean sound pressure levels (Lp) measured at 1 meter's distance in a free field according to the A curve (ISO 1680 standard).
The noise values are measured with idling 50 Hz motor with a tolerance of 3 dB (A).

CEF - COF MOTORS 2-POLES 50 Hz

POWER kW	MOTOR TYPE IEC SIZE	NOISE LpA dB
0,37	71	<70
0,55	71	<70
0,75	80	<70
0,9	80	<70
1,1	80	<70
1,5	90	<70
1,85	90	<70
2,2	90	<70
3	100	<70

cef-cof_mott-en_a_tr

AVAILABLE VOLTAGES MOTORS FOR CEF - COF SERIES

	THREE-PHASE - 2 POLES																
	50 Hz							60 Hz								50/60 Hz	
P_N kW	3 x 220-230-240/380-400-415	3 x 380-400-415/660-690	3 x 200-208/346-360	3 x 255-265/440-460	3 x 290-300/500-525	3 x 440-460/-	3 x 500-525/-	3 x 220-230/380-400	3 x 255-265-277/440-460-480	3 x 380-400/660-690	3 x 440-460-480/-	3 x 110-115/190-200	3 x 200-208/346-360	3 x 330-346/575-600	3 x 575/-	3 x 230/400 50 Hz 3 x 265/460 60 Hz	3 x 400/690 50 Hz 3 x 460/- 60 Hz
0,37	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o	o
0,55	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o	o
0,75	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o	o
0,95	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o	o
1,1	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o	o
1,5	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o	o
2,2	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o	o
3	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o	o

s = Standard voltage o = Optional voltage - = Not available

cef-volt-lowa-en_a_te

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

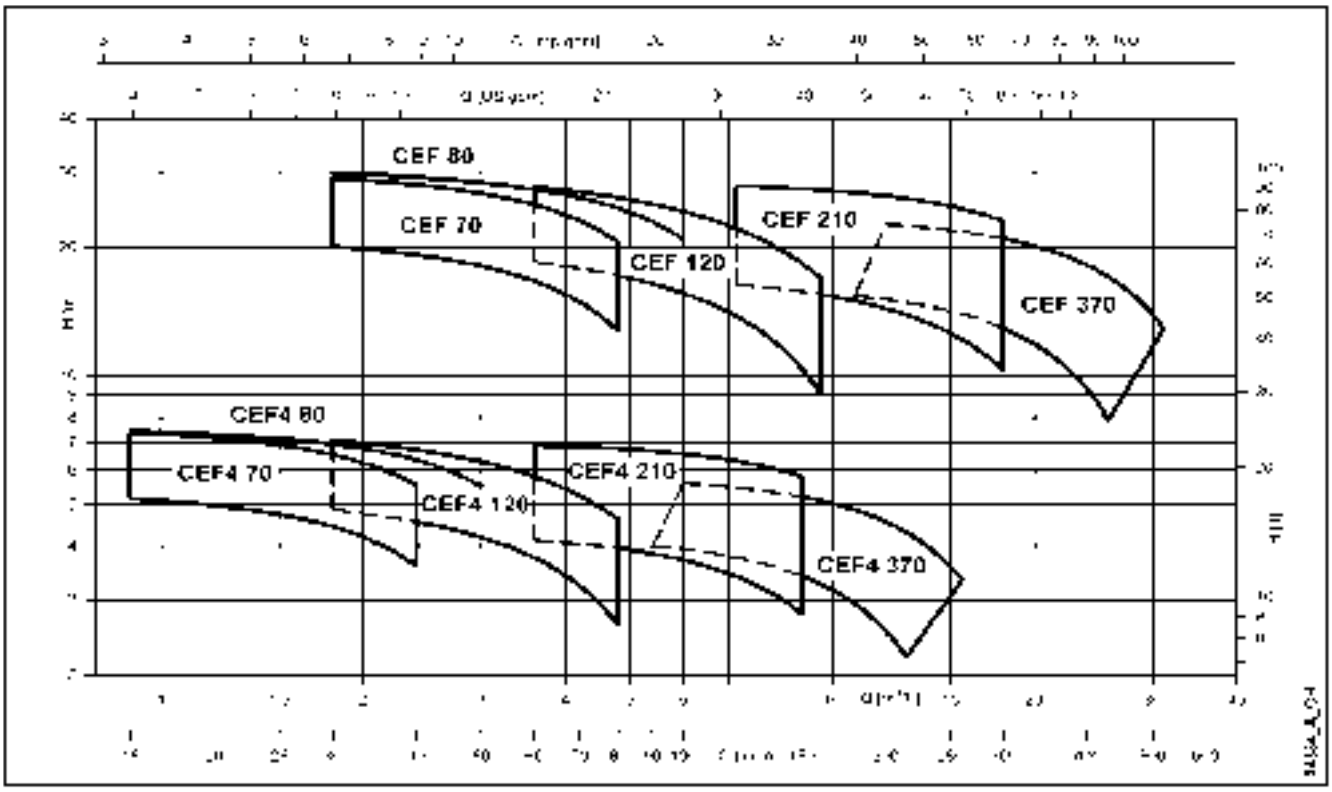

TABLE OF HYDRAULIC PERFORMANCES AT 50 Hz, 2 and 4 POLES

ELECTRIC PUMP TYPE	RATED POWER		Q = DELIVERY																	
			l/min 0	30	40	60	80	100	120	140	160	180	200	250	300	350	400	430	480	520
			m^3/h 0	1,8	2,4	3,6	4,8	6	7,2	8,4	9,6	10,8	12	15	18	21	24	26	29	31
	kW	HP	H = TOTAL HEAD METRES COLUMN OF WATER																	
CEF 70/03	0,37	0,5	21,9	20,0	19,2	16,6	12,7													
CEF 70/05	0,55	0,75	30,9	28,9	28,0	25,1	20,5													
CEF 80/07	0,75	1	31,4	29,8	29,1	27,3	24,6	20,8												
CEF 120/05	0,55	0,75	21,6			18,4	17,1	15,6	13,8	11,6	9,1									
CEF 120/09	0,9	1,2	31,0			27,7	26,1	24,2	22,1	19,6	16,9									
CEF 210/07	0,75	1	17,3						16,3	15,9	15,5	15,0	14,4	12,6	10,3					
CEF 210/11	1,1	1,5	20,3						19,4	19,1	18,7	18,3	17,8	16,3	14,2					
CEF 210/15	1,5	2,2	24,9						24,4	24,1	23,7	23,2	22,7	21,0	18,8					
CEF 210/18	1,85	2,5	28,4						27,8	27,5	27,2	26,8	26,3	24,9	23,0					
CEF 370/11	1,1	1,5	15,9									15,3	15,1	14,1	12,9	11,3	9,3	7,9		
CEF 370/15	1,5	2,2	19,9										18,8	18,0	16,9	15,6	13,9	12,7	10,5	
CEF 370/22	1,85	2,5	23,9										22,6	21,9	20,9	19,7	18,1	17,0	14,9	12,9

cef-2p50-en_d_th

PUMP TYPE	PUMP MAX INPUT POWER kW	Q = DELIVERY																		
		l/min 0	15	20	25	30	40	50	60	70	80	90	100	130	150	190	215	240	260
		m^3/h 0	0,9	1,2	1,5	1,8	2,4	3	3,6	4,2	4,8	5,4	6	7,8	9	11,4	13	14	16
		H = TOTAL HEAD METRES COLUMN OF WATER																		
CEF4 70/132	0,05	5,5	5,2	5,0	4,7	4,4	3,6													
CEF4 70/156	0,09	7,8	7,4	7,2	6,9	6,5	5,5													
CEF4 80/156	0,10	7,8	7,4	7,3	7,1	6,9	6,4	5,5												
CEF4 120/132	0,08	5,6				4,9	4,6	4,2	3,8	3,2	2,6									
CEF4 120/156	0,13	7,8				7,1	6,7	6,3	5,8	5,2	4,6									
CEF4 210/121	0,11	4,3							4,1	4,0	3,9	3,8	3,7	3,2	2,8					
CEF4 210/130	0,14	5,0							4,9	4,8	4,7	4,6	4,5	4,1	3,7					
CEF4 210/148	0,19	6,1							6,1	6,0	5,9	5,8	5,7	5,2	4,8					
CEF4 210/156	0,23	7,0							6,9	6,8	6,8	6,7	6,6	6,2	5,8					
CEF4 370/121	0,15	4,0										4,0	3,9	3,7	3,4	2,7	2,2	1,6		
CEF4 370/130	0,21	5,0											4,8	4,6	4,4	3,8	3,4	2,9		
CEF4 370/134	0,26	5,8											5,6	5,4	5,2	4,7	4,3	3,8	3,3	

cef4-4p50-en_c_th

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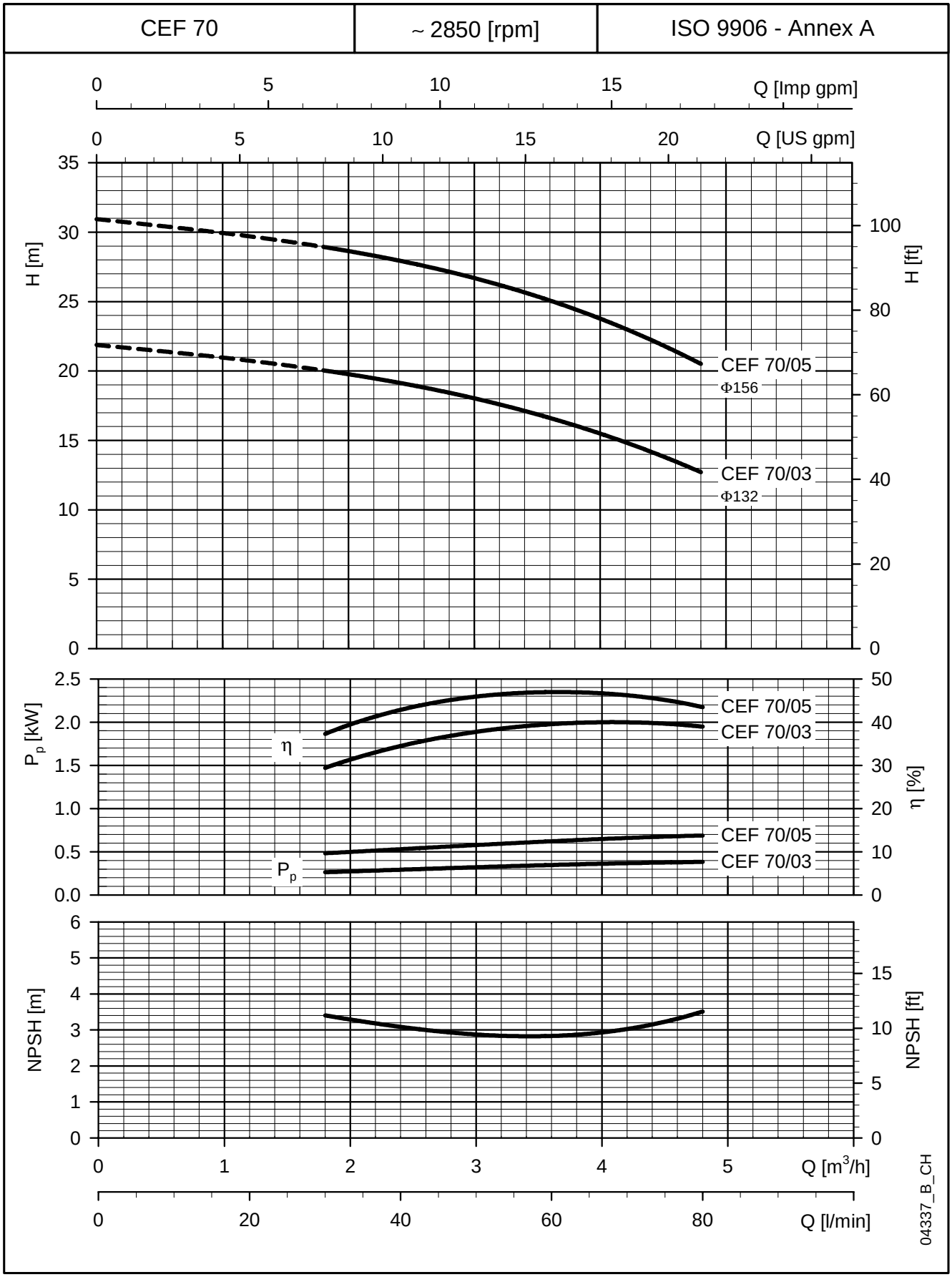
CEF SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES

CEF 70	~ 2850 [rpm]	ISO 9906 - Annex A



The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density ρ = 1.0 Kg/dm^3 and kinematic viscosity ν = 1 mm^2/sec.

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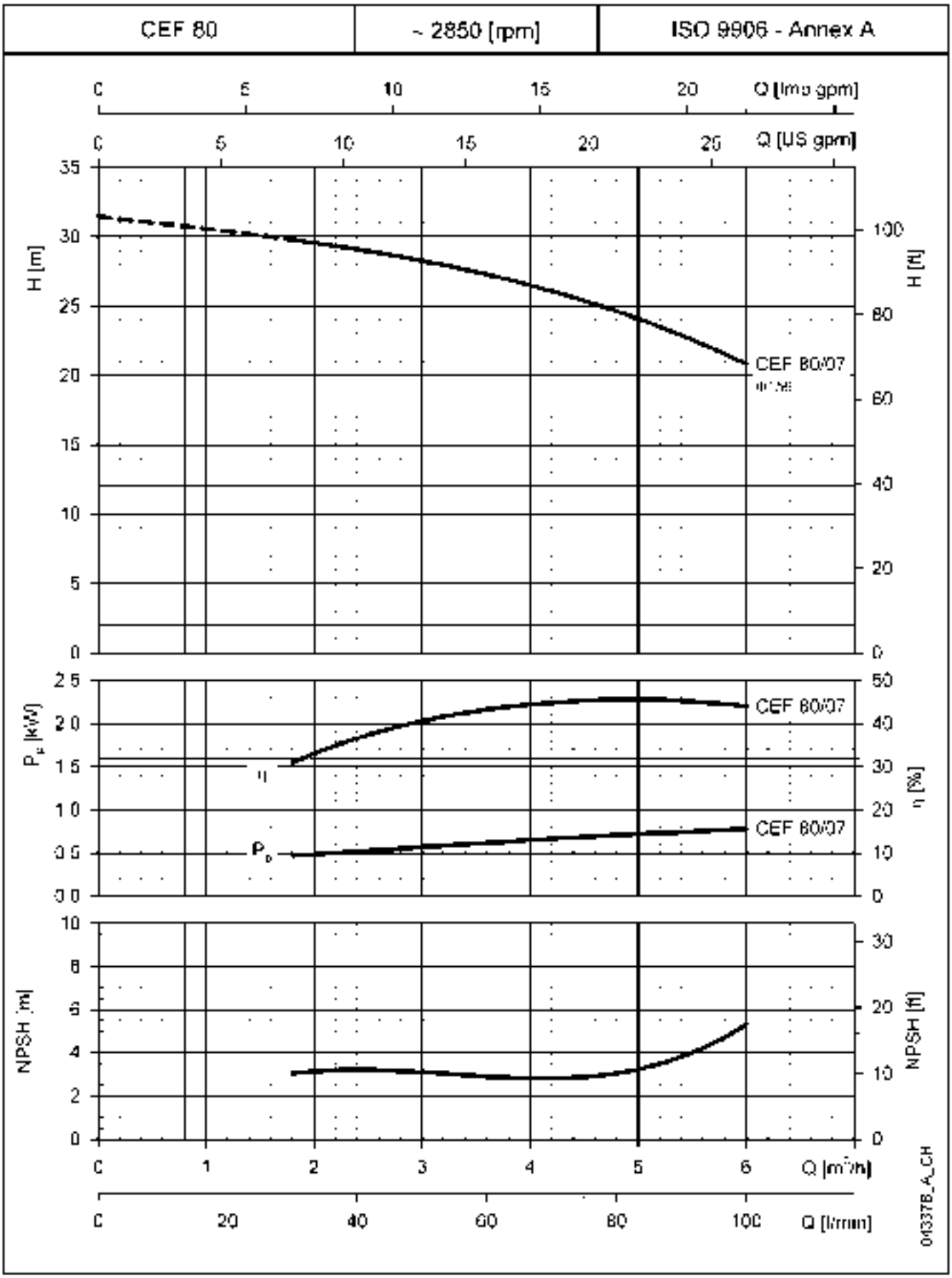
CEF SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES

CEF 80	~ 2850 [rpm]	ISO 9906 - Annex A



The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density ρ = 1.0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.

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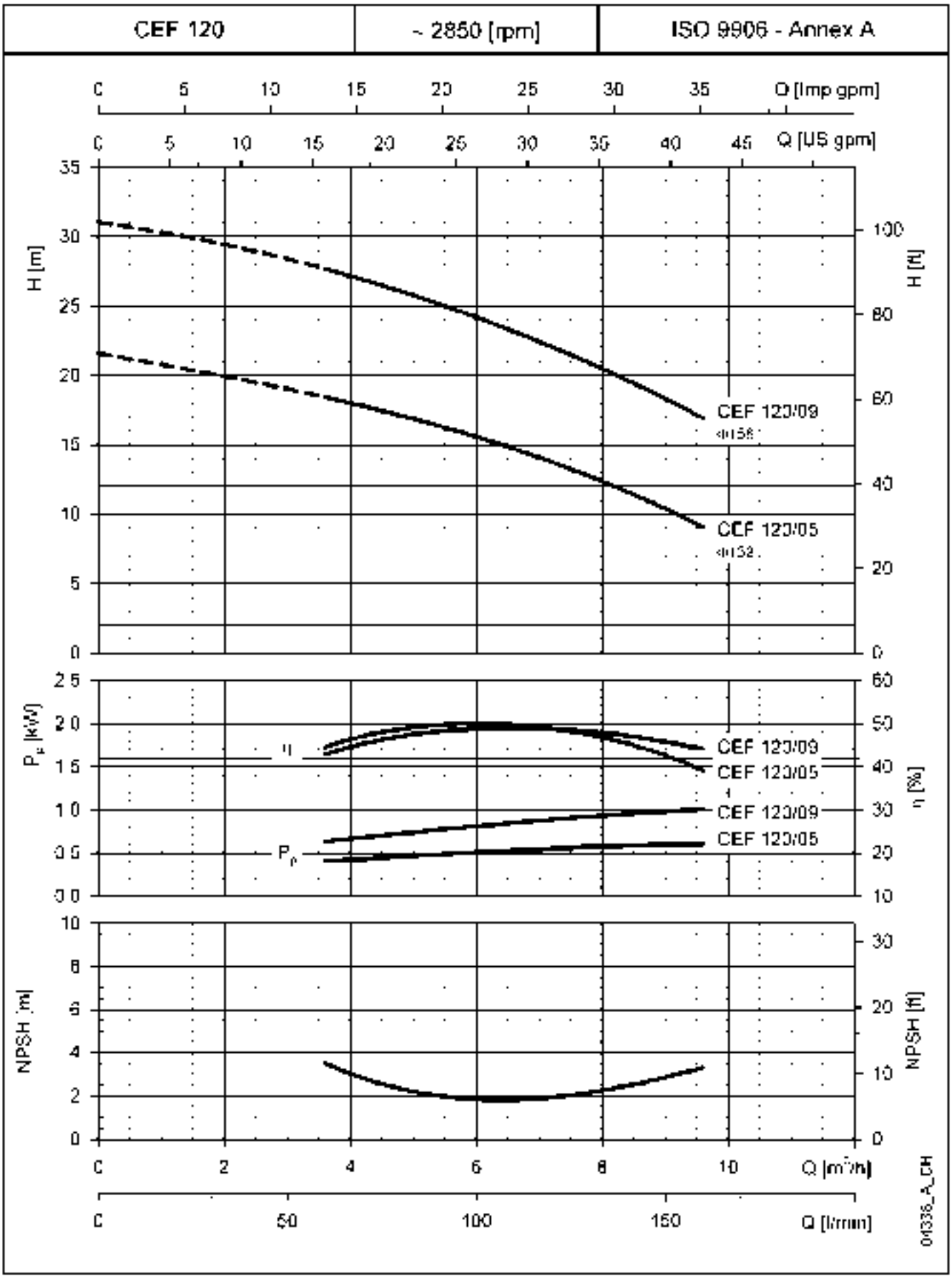
CEF SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density ρ = 1.0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.

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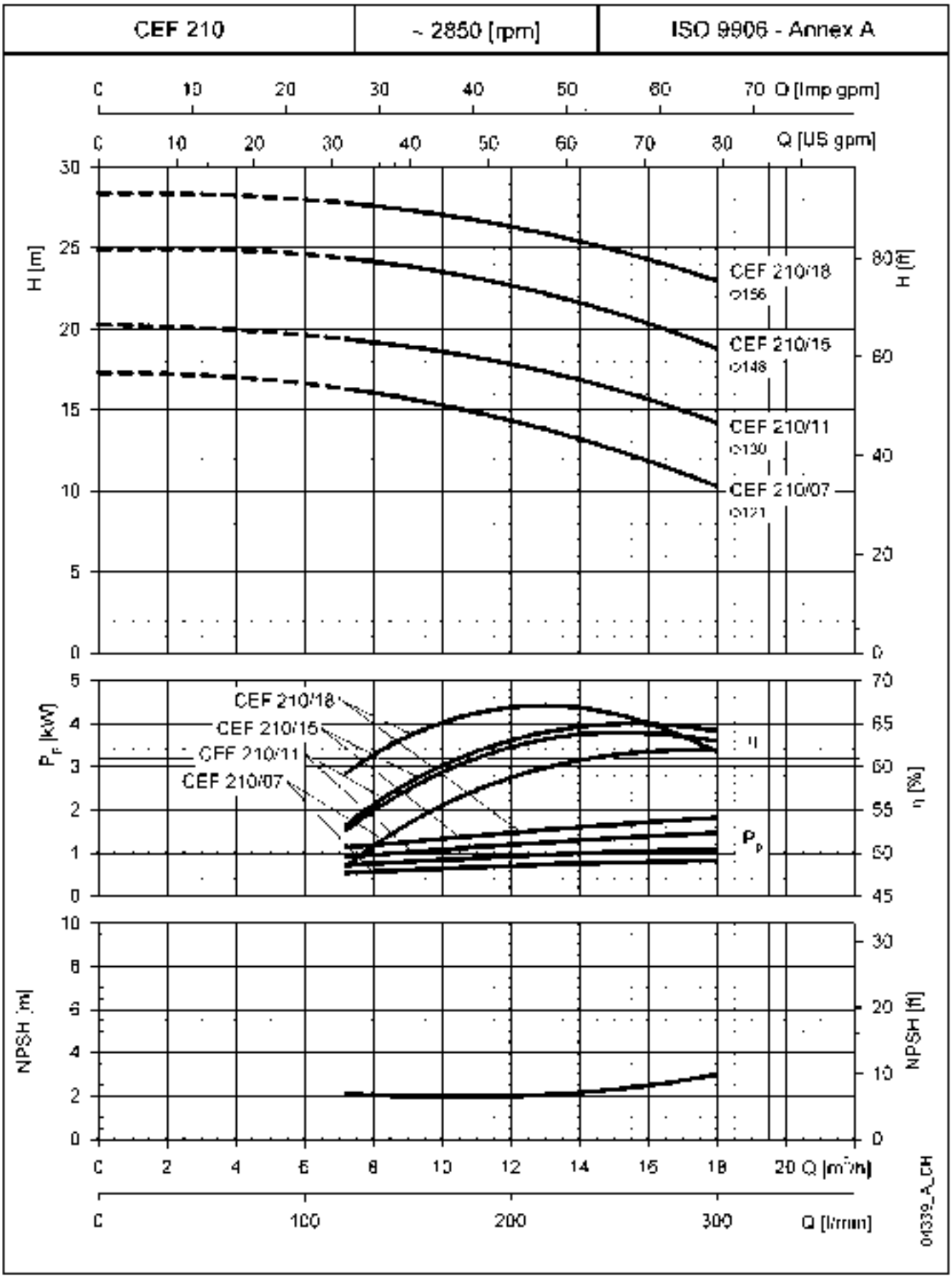
a xylem brand

CEF SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density ρ = 1.0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.

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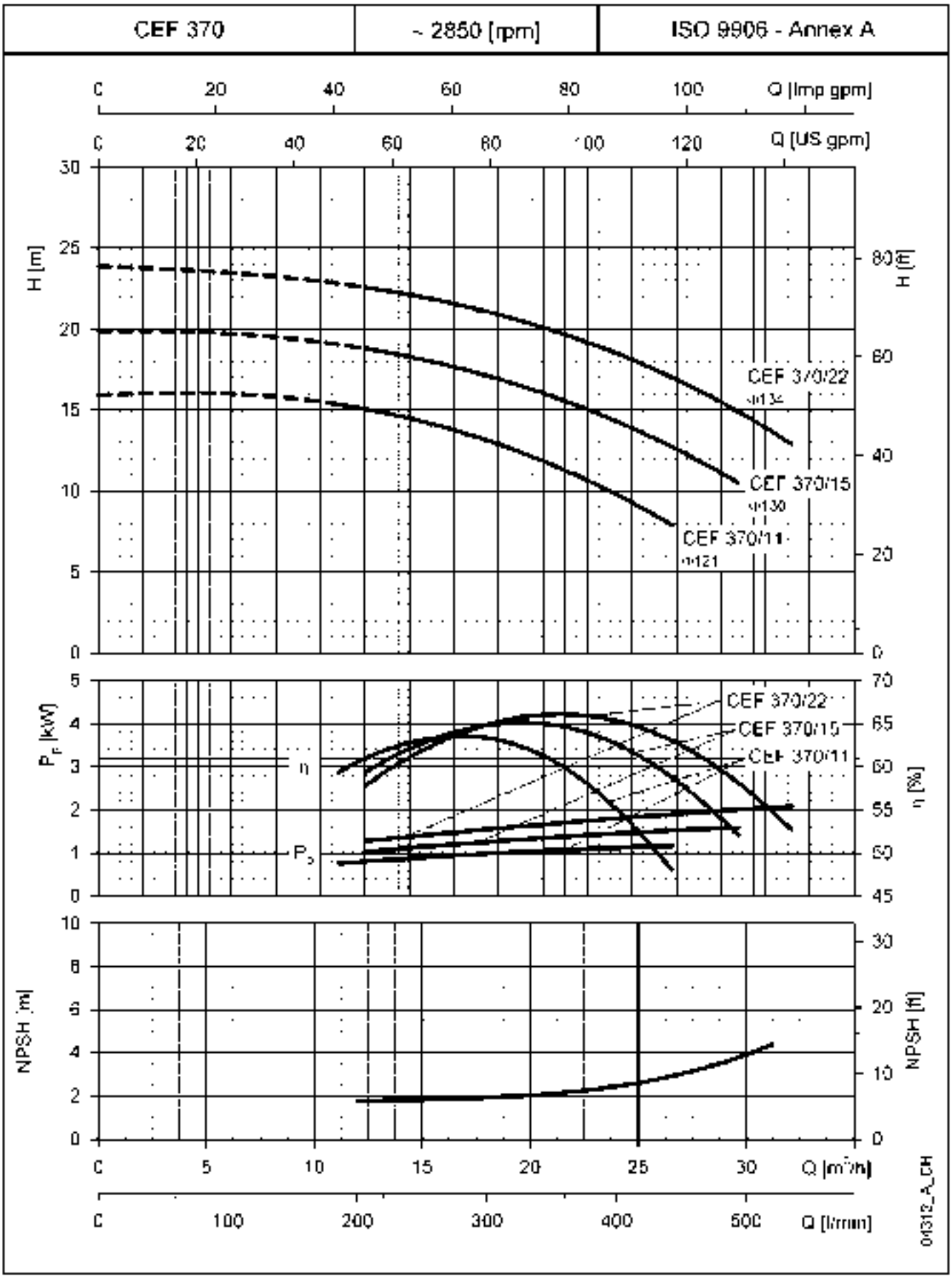
CEF SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES

CEF 370	~ 2850 [rpm]	ISO 9906 - Annex A



The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density ρ = 1.0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.

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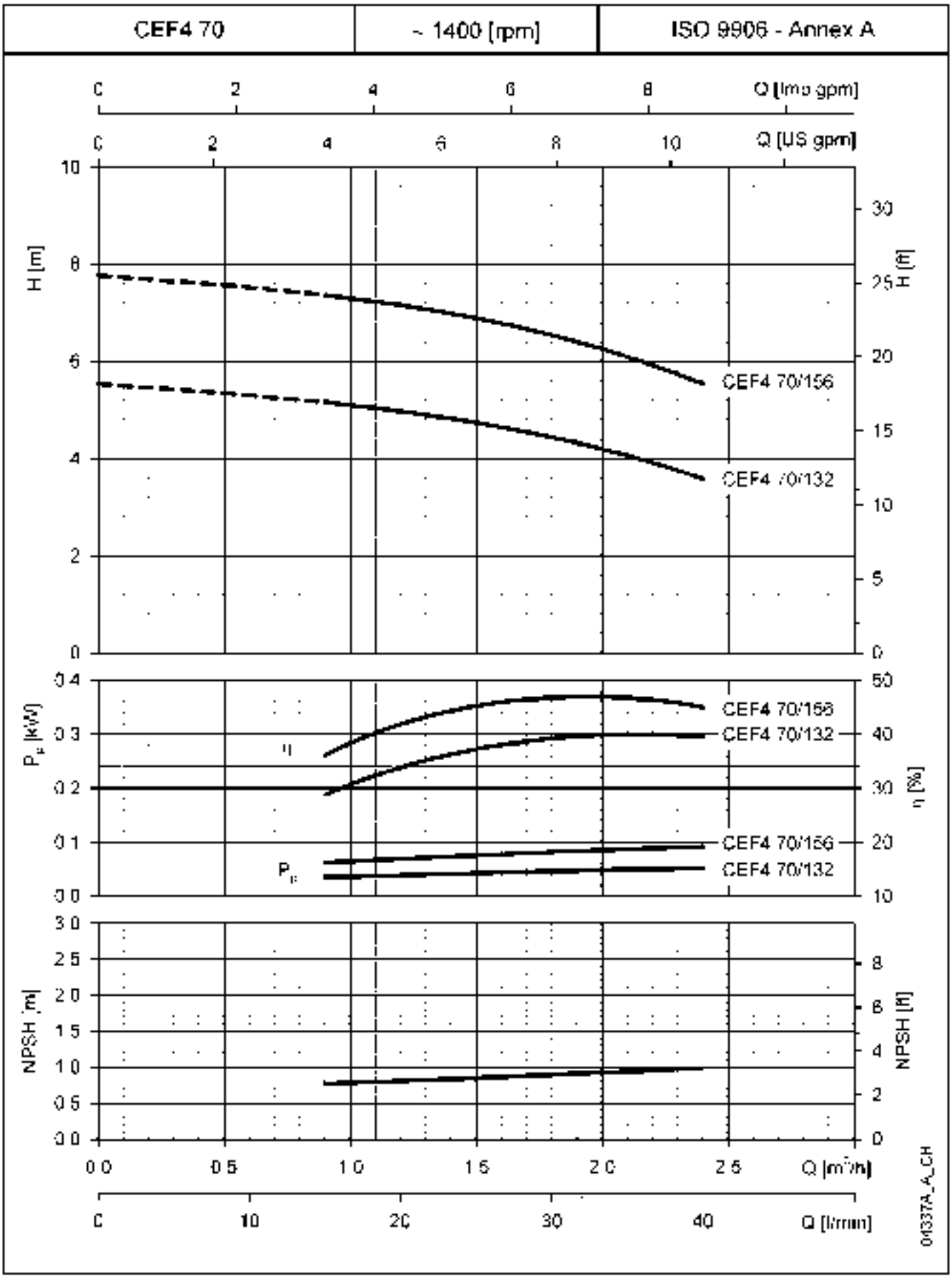
a xylem brand

CEF4 SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density ρ = 1.0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.

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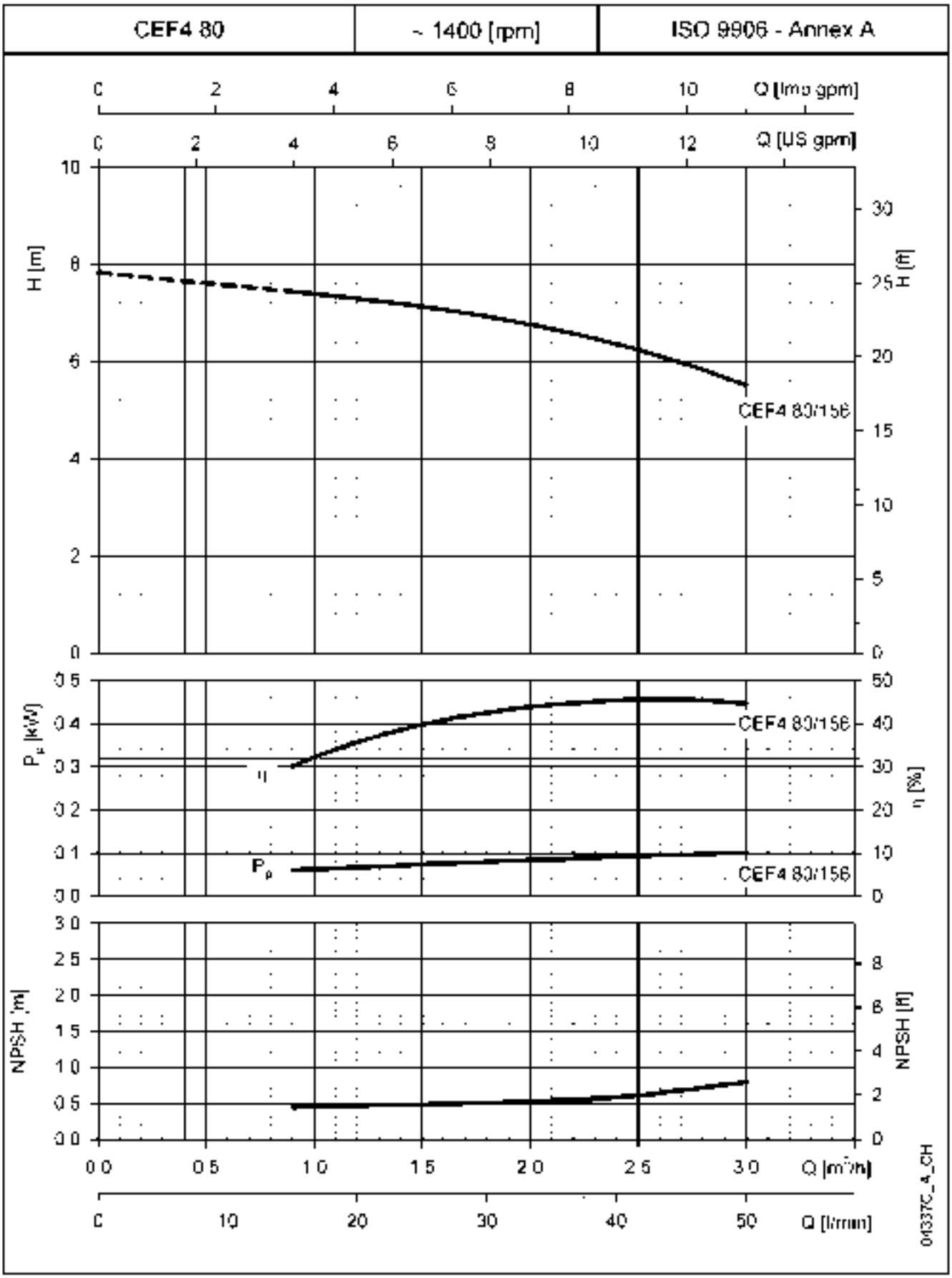
a xylem brand

CEF4 SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density ρ = 1.0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.

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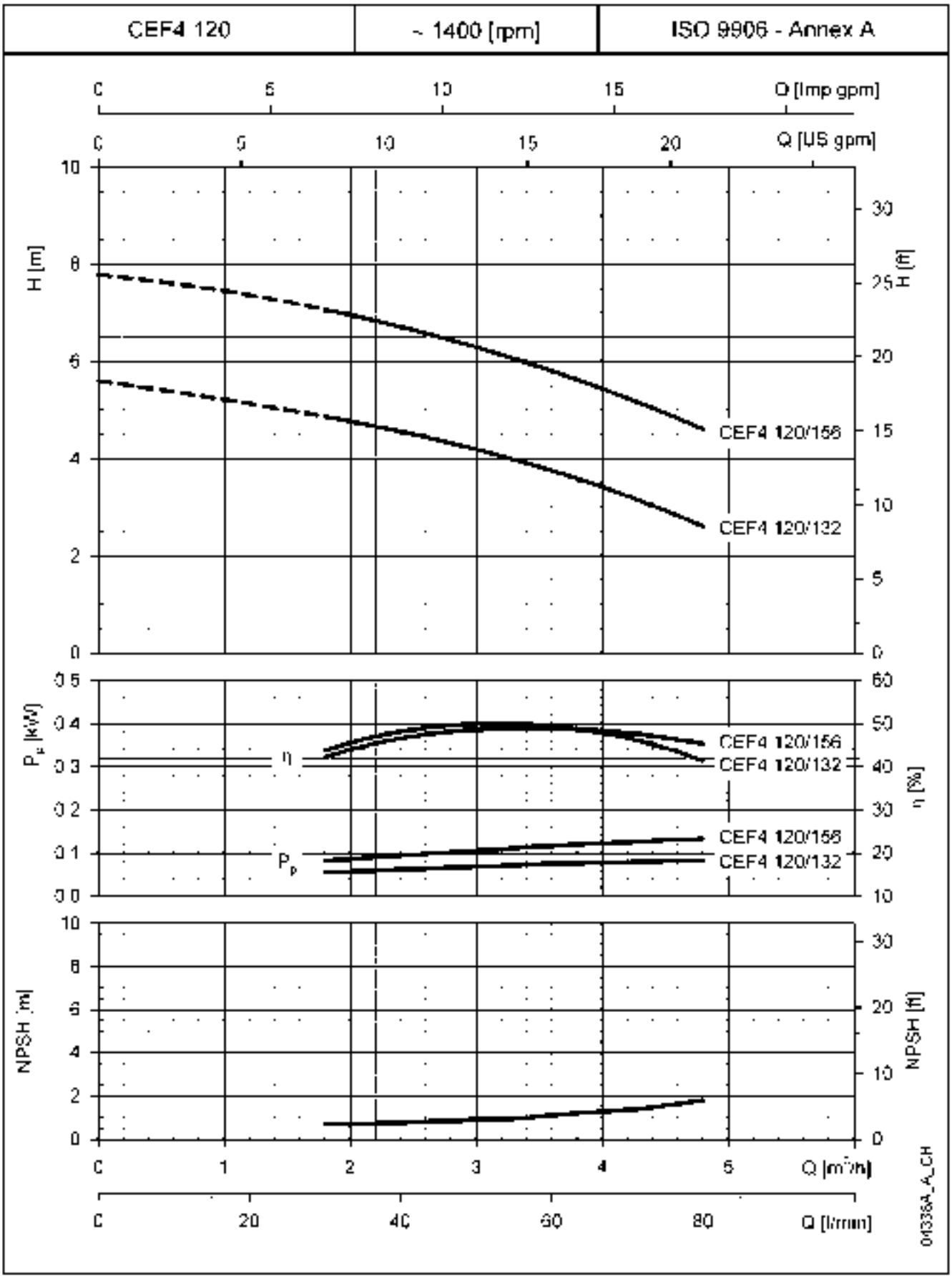
CEF4 SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES

CEF4 120	~ 1400 [rpm]	ISO 9906 - Annex A



The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density ρ = 1.0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.

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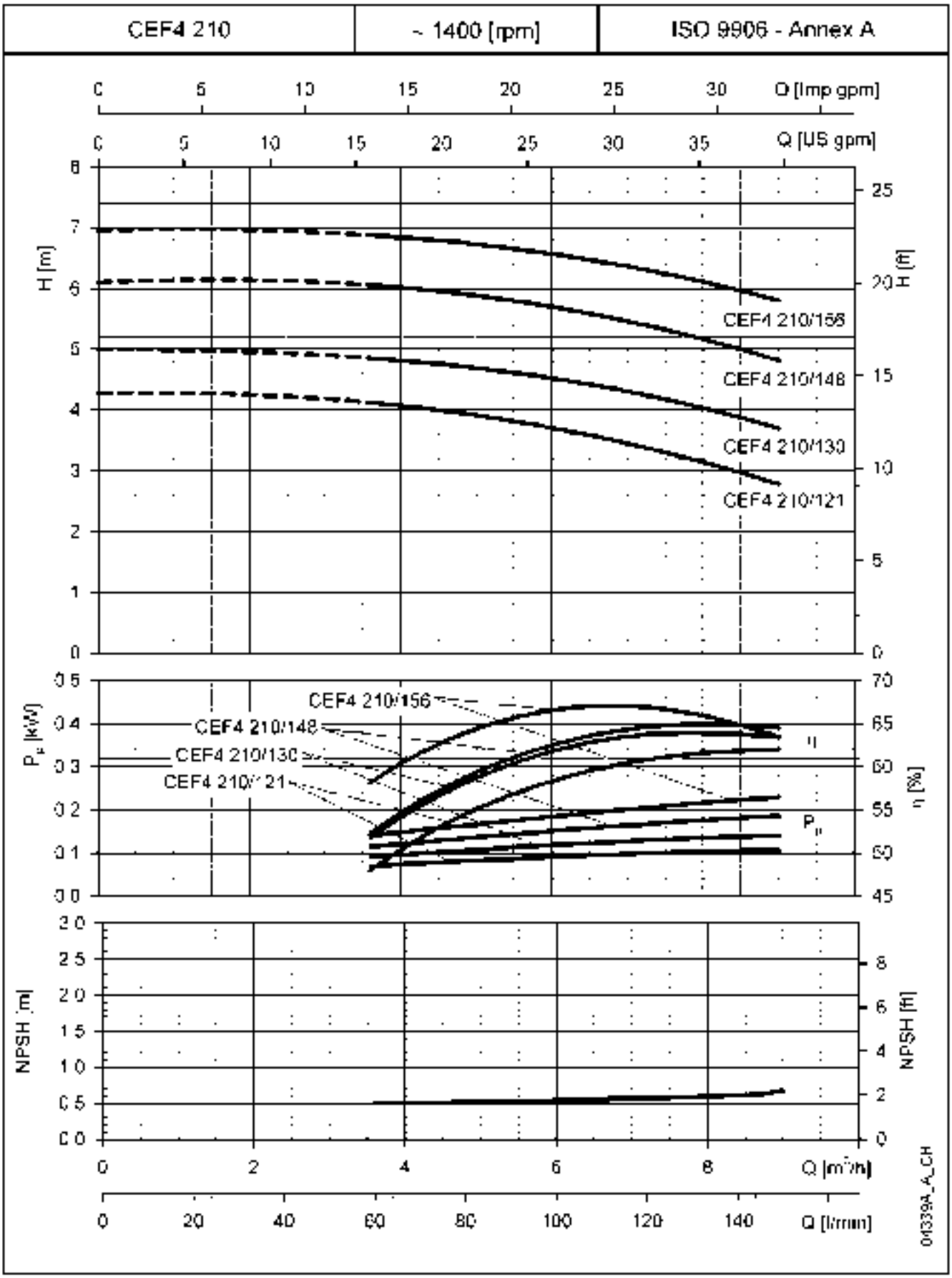
a xylem brand

CEF4 SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density ρ = 1.0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.

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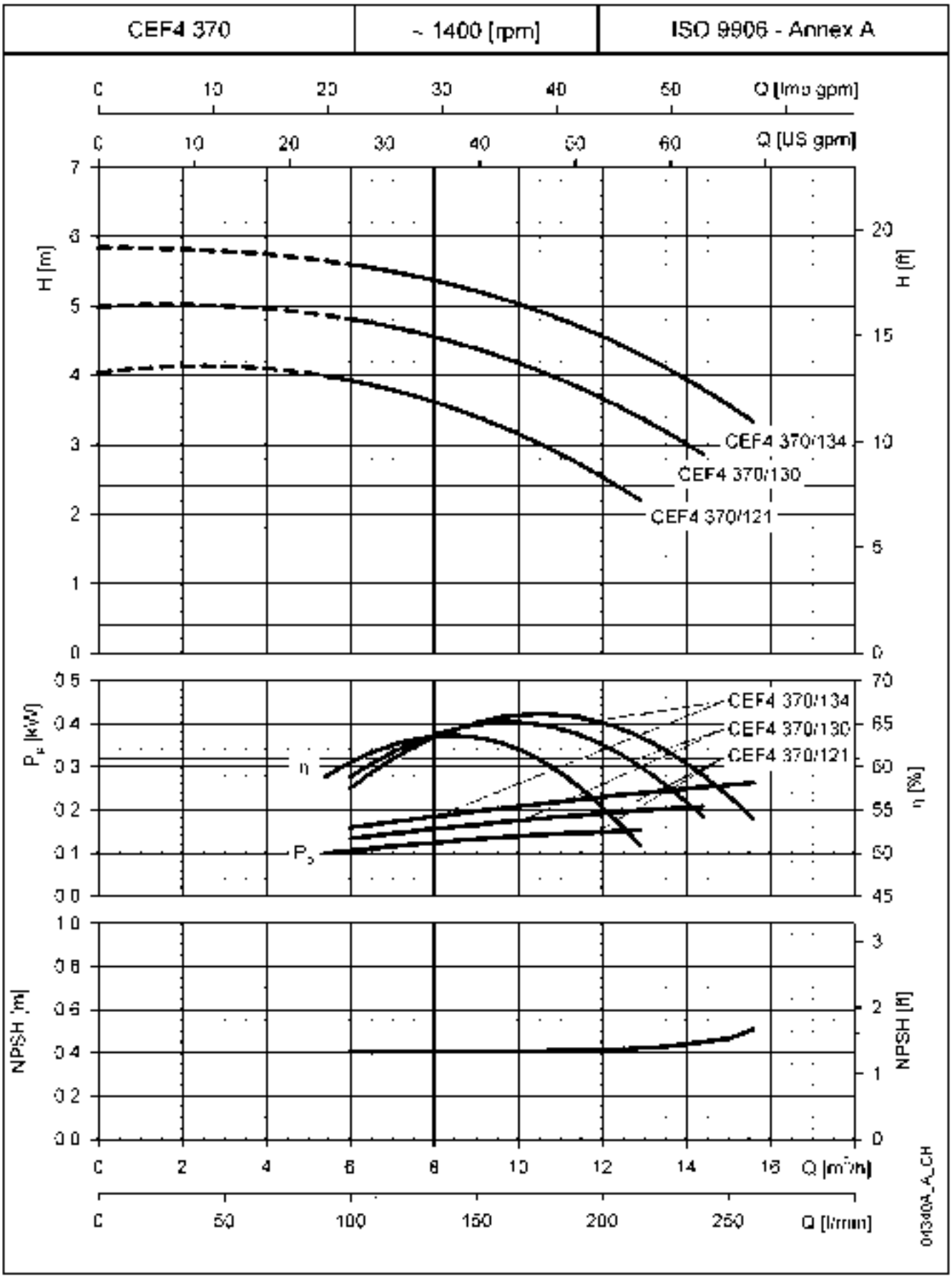
a xylem brand

CEF4 SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES



The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density ρ = 1.0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.

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a xylem brand

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

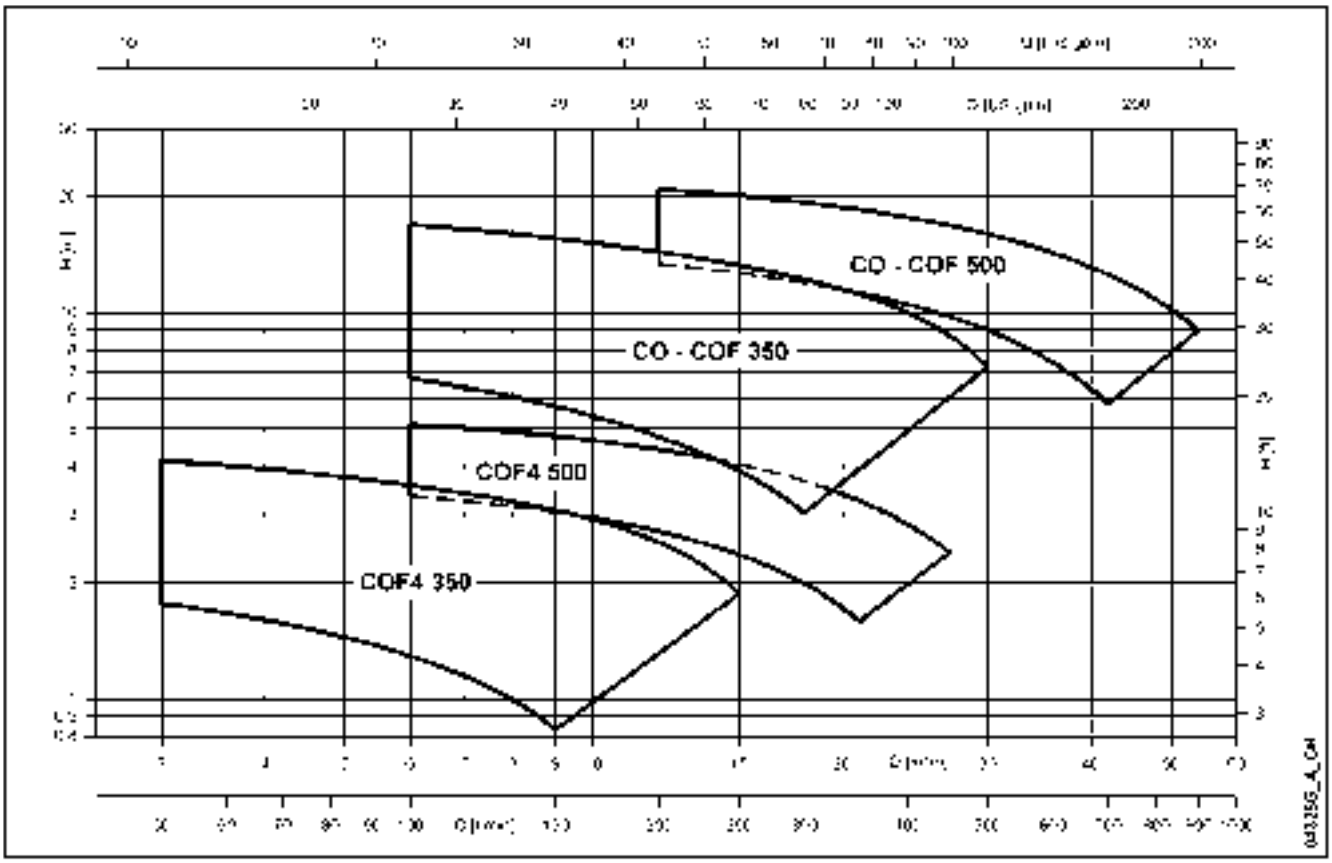


TABLE OF HYDRAULIC PERFORMANCES AT 50 Hz, 2 POLES

ELECTRIC PUMP TYPE	RATED POWER		Q = DELIVERY																	
			l/min 0	100	120	160	200	240	280	300	350	375	400	450	500	600	650	700	800	900
			m^3/h 0	6	7,2	9,6	12	14,4	16,8	18	21	22,5	24	27	30	36	39	42	48	54
	kW	HP	H = TOTAL HEAD METRES COLUMN OF WATER																	
COF 350/03	0,37	0,5	9,4	7,0	6,6	5,8	5,1	4,4	3,7	3,4										
COF 350/05	0,55	0,75	11,6	9,1	8,6	7,8	7,0	6,3	5,5	5,0	3,9									
COF 350/07	0,75	1	13,4	11,1	10,7	9,8	9,0	8,2	7,3	6,9	5,8	5,2								
COF 350/09	0,9	1,2	15,3	12,6	12,1	11,2	10,3	9,5	8,7	8,2	7,1	6,4	5,8							
COF 350/11	1,1	1,5	17,1	14,2	13,7	12,8	12,0	11,2	10,5	10,1	9,1	8,6	8,0	6,7						
COF 350/15	1,5	2	19,9	16,7	16,1	15,1	14,2	13,4	12,5	12,1	11,0	10,5	9,9	8,6	7,1					
COF 500/15	1,5	2	15,9				13,5	13,0	12,4	12,2	11,5	11,1	10,8	10,0	9,3	7,7	6,9	6,1		
COF 500/22	2,2	3	19,1				17,0	16,5	16,0	15,7	15,1	14,7	14,4	13,6	12,8	11,2	10,3	9,4	7,6	
COF 500/30	3	4	23,5				20,6	20,0	19,4	19,1	18,3	17,9	17,5	16,7	15,9	14,2	13,3	12,5	10,7	8,9

TABLE OF HYDRAULIC PERFORMANCES AT 50 Hz, 4 POLES

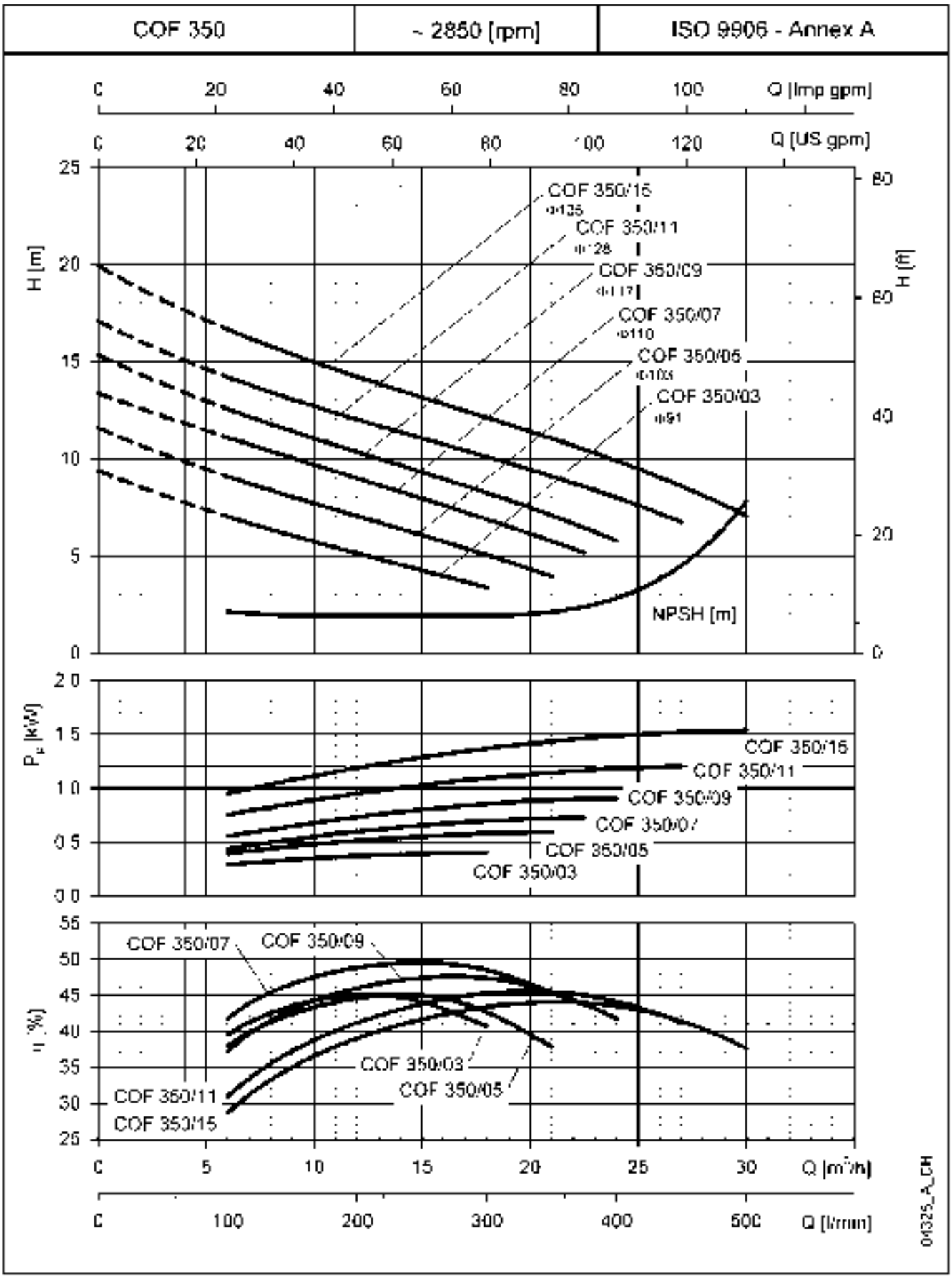
cof_2p50-en_c_th

PUMP TYPE	PUMP MAX INPUT POWER kW	Q = DELIVERY														
		l/min 0	50	75	100	125	150	175	187	200	225	250	300	350	400	450
		m^3/h 0	3	4,5	6	7,5	9	10,5	11,22	12	13,5	15	18	21	24	27
		H = TOTAL HEAD METRES COLUMN OF WATER														
COF4 350/91	0,05	2,4	1,8	1,5	1,3	1,1	0,8									
COF4 350/103	0,08	2,9	2,3	2,1	1,9	1,6	1,4	1,1								
COF4 350/110	0,09	3,3	2,8	2,5	2,3	2,0	1,8	1,5	1,4							
COF4 350/117	0,12	3,8	3,1	2,9	2,6	2,4	2,1	1,8	1,7	1,5						
COF4 350/128	0,17	4,6	3,8	3,6	3,3	3,1	2,8	2,6	2,4	2,3	2,0					
COF4 350/135	0,20	4,9	4,2	3,8	3,6	3,3	3,1	2,8	2,7	2,5	2,2	1,9				
COF4 500/113	0,19	3,9			3,4	3,2	3,0	2,9	2,8	2,7	2,5	2,4	2,0	1,6		
COF4 500/125	0,27	4,7			4,2	4,1	3,9	3,8	3,7	3,6	3,5	3,3	2,9	2,5	2,0	
COF4 500/138	0,41	5,8			5,1	5,0	4,8	4,6	4,5	4,4	4,2	4,1	3,7	3,3	2,8	2,4

cof4_4p50-en_c_th

LOWARA
a xylem brand

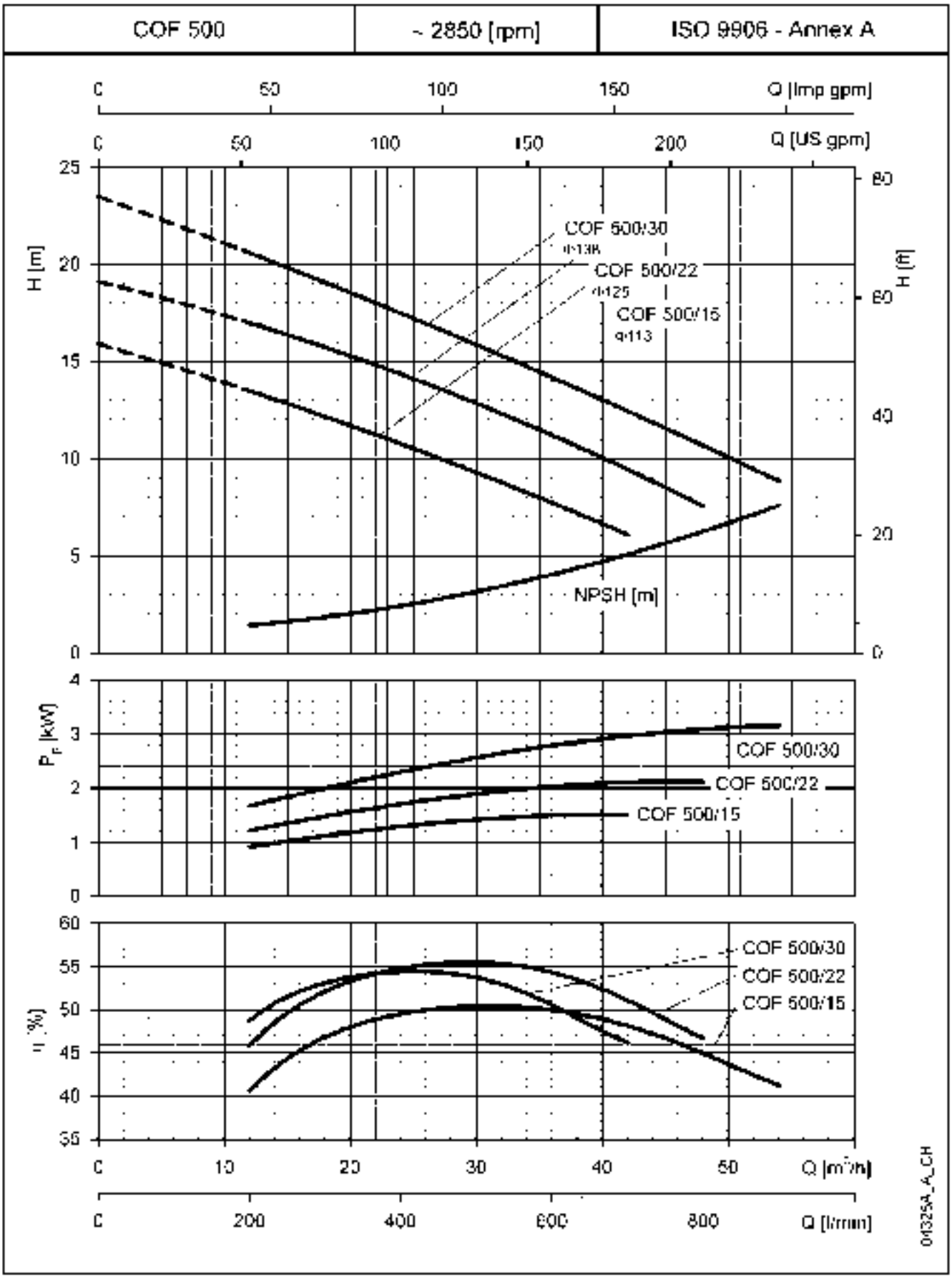
COF SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES



The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density $\rho = 1.0$ Kg/dm^3 and kinematic viscosity $\nu = 1$ mm^2/sec.

COF SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES

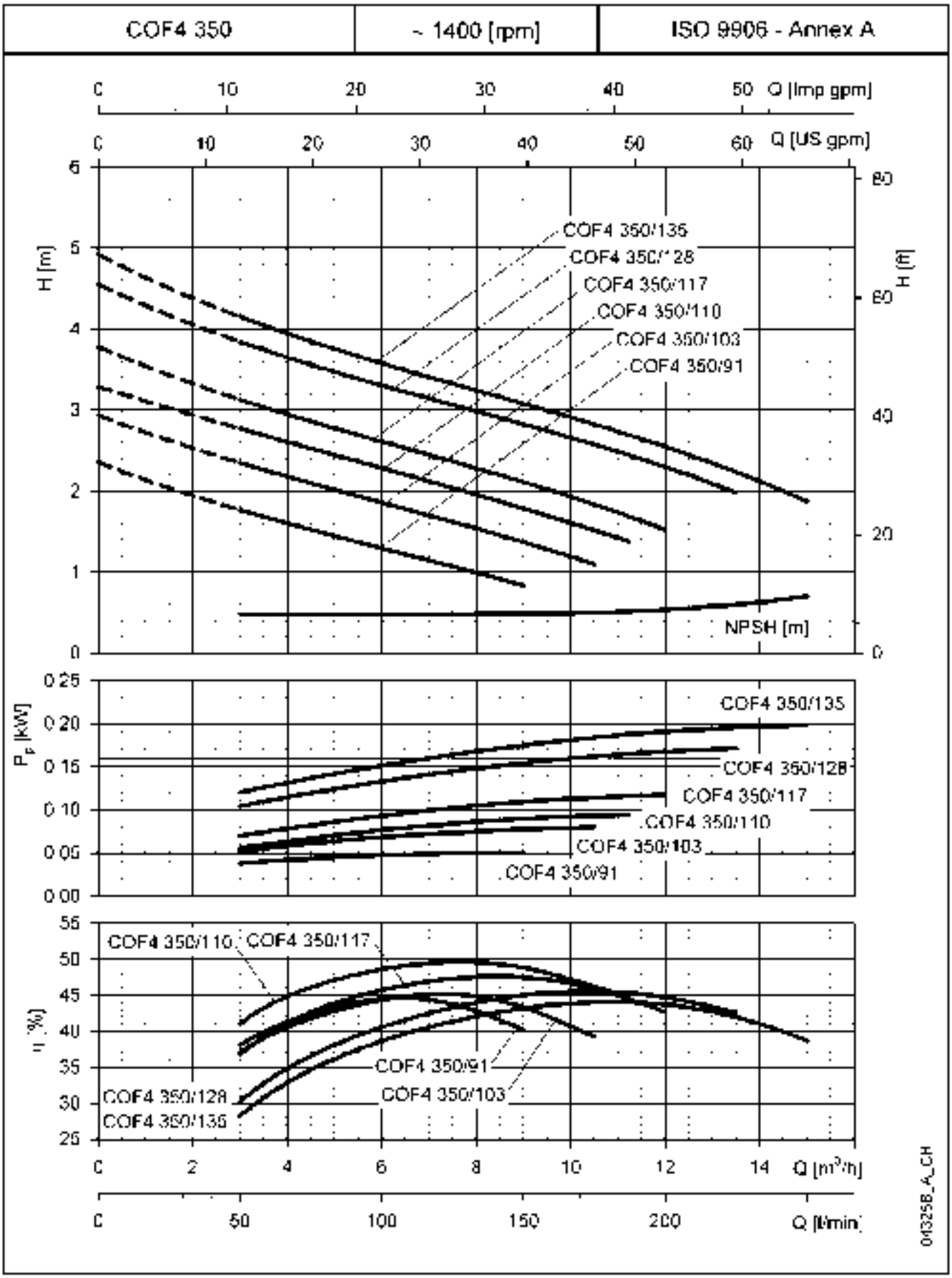
COF 500	~ 2850 [rpm]	ISO 9906 - Annex A



IThe NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density ρ = 1.0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.

COF4 SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES

COF4 350	~ 1400 [rpm]	ISO 9906 - Annex A

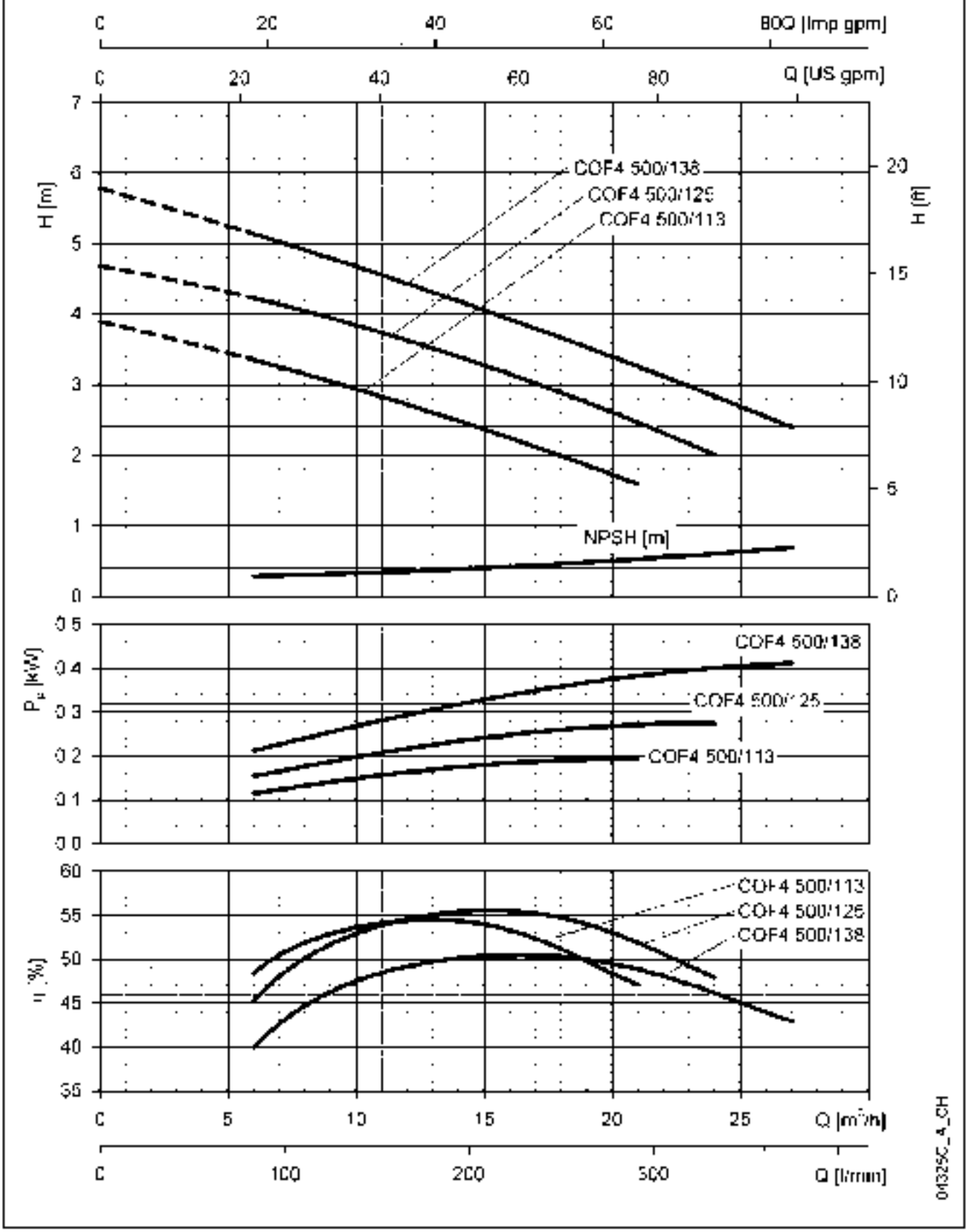


The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density $\rho = 1.0$ Kg/dm^3 and kinematic viscosity $\nu = 1$ mm^2/sec.

LOWARA
a xylem brand

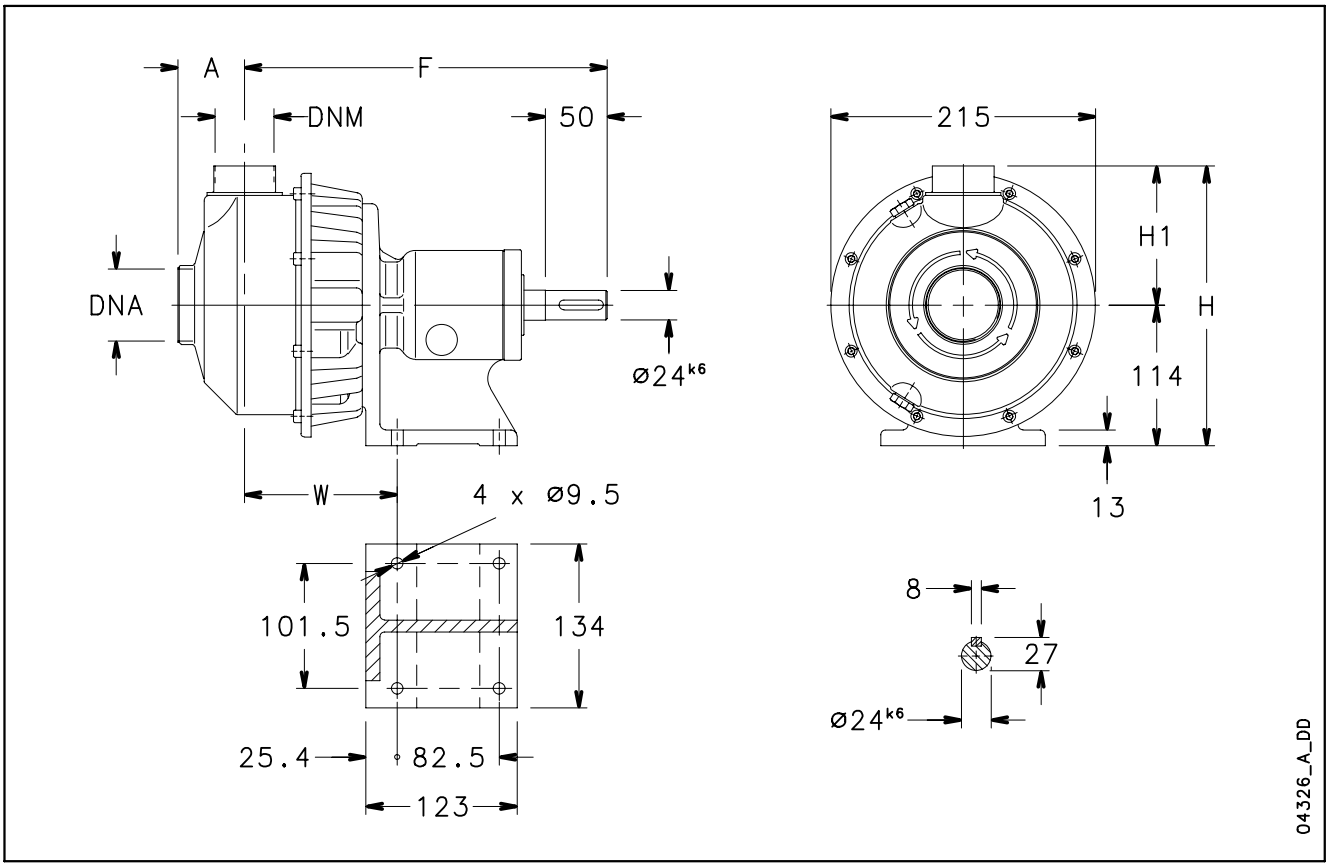
COF4 SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES

COF4 500	~ 1400 [rpm]	ISO 9906 - Annex A



The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density $\rho = 1.0$ Kg/dm^3 and kinematic viscosity $\nu = 1$ mm^2/sec.

CEF - COF BARE SHAFT SERIES
DIMENSIONS AND WEIGHTS AT 50 Hz



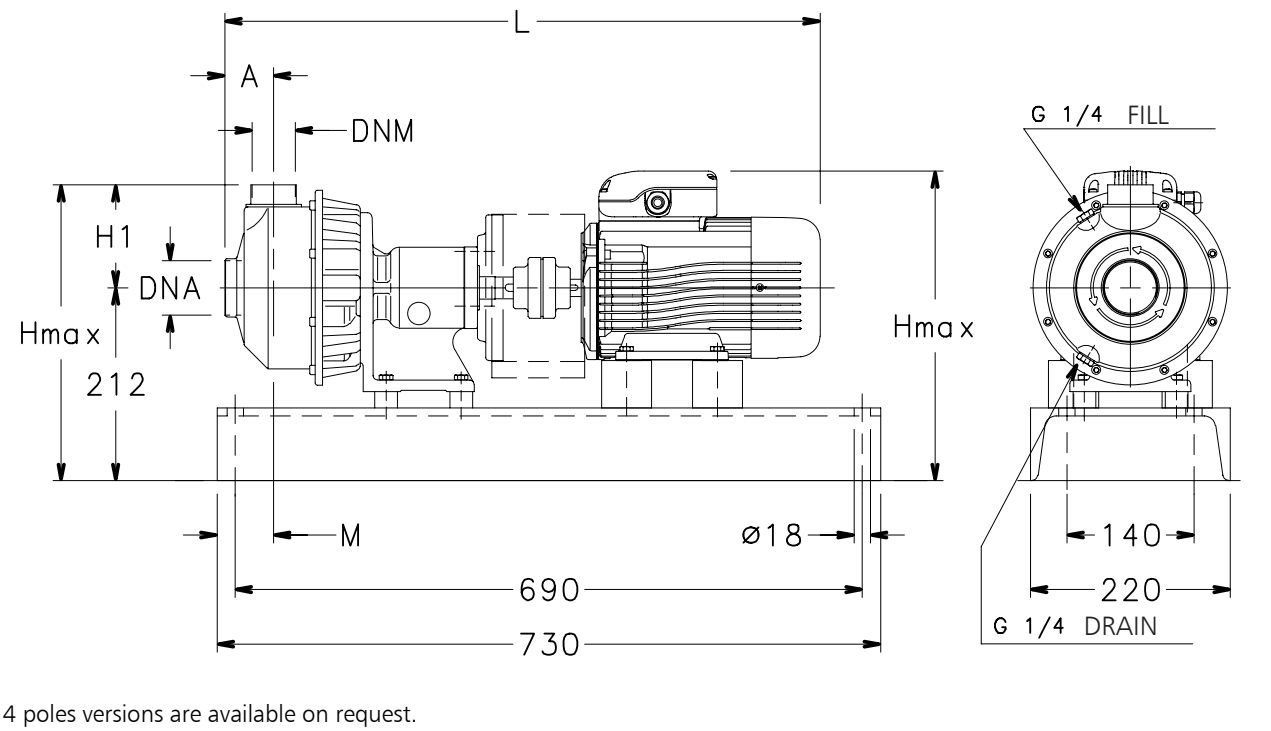
PUMP TYPE	DIMENSIONS (mm) A	F	H	H1	W	DNA	DNM	WEIGHT kg
CEF 70/132	51	282	225	111	112,5	Rp 1¼	Rp 1	11,5
CEF 70/156	51	282	225	111	112,5	Rp 1¼	Rp 1	11,5
CEF 80/156	51	282	225	111	112,5	Rp 1¼	Rp 1	11,5
CEF 120/132	51	282	225	111	112,5	Rp 1¼	Rp 1	11,5
CEF 120/156	51	282	225	111	112,5	Rp 1¼	Rp 1	11,5
CEF 210/121	54	293	227	113	123,7	Rp 1½	Rp 1¼	12
CEF 210/130	54	293	227	113	123,7	Rp 1½	Rp 1¼	12
CEF 210/148	54	293	227	113	123,7	Rp 1½	Rp 1¼	12
CEF 210/156	54	293	227	113	123,7	Rp 1½	Rp 1¼	12
CEF 370/121	54	293	227	113	123,7	Rp 2	Rp 1¼	12
CEF 370/130	54	293	227	113	123,7	Rp 2	Rp 1¼	12
CEF 370/134	54	293	227	113	123,7	Rp 2	Rp 1¼	12

cef-pompa-en_a_td

PUMP TYPE	DIMENSIONS (mm) A	F	H	H1	W	DNA	DNM	WEIGHT kg
COF 350/91	54	293	227	113	124	Rp 1½	Rp 1¼	11
COF 350/103	54	293	227	113	124	Rp 1½	Rp 1¼	11
COF 350/110	54	293	227	113	124	Rp 1½	Rp 1¼	11
COF 350/117	54	293	227	113	124	Rp 1½	Rp 1¼	11
COF 350/128	54	293	227	113	124	Rp 1½	Rp 1¼	11
COF 350/135	54	293	227	113	124	Rp 1½	Rp 1¼	11
COF 500/113	54	293	227	113	124	Rp 2	Rp 1½	11,5
COF 500/125	54	293	227	113	124	Rp 2	Rp 1½	11,5
COF 500/138	54	293	227	113	124	Rp 2	Rp 1½	11,5

cof-pompa-en_a_td

CEF - COF BASE-MOUNTED SERIES
DIMENSIONS AND WEIGHTS AT 50 Hz, 2 POLES



4 poles versions are available on request.

ELECTRIC PUMP	DIMENSIONS (mm)					DNA	DNM	WEIGHT
TYPE	A	H max	H1	L	M			kg
CEF 70/03/A	51	333	111	600	73	Rp 1¼	Rp 1	41
CEF 70/05/A	51	333	111	600	73	Rp 1¼	Rp 1	42
CEF 80/07/D	51	341	111	642	73	Rp 1¼	Rp 1	46
CEF 120/05/A	51	333	111	600	73	Rp 1¼	Rp 1	42
CEF 120/09/D	51	341	111	642	73	Rp 1¼	Rp 1	47
CEF 210/07/D	54	341	113	656	62	Rp 1½	Rp 1¼	46
CEF 210/11/D	54	341	113	656	62	Rp 1½	Rp 1¼	48
CEF 210/15/P	54	346	113	700	62	Rp 1½	Rp 1¼	53
CEF 210/18/P	54	346	113	700	62	Rp 1½	Rp 1¼	54
CEF 370/11/D	54	341	113	656	62	Rp 2	Rp 1¼	48
CEF 370/15/P	54	346	113	700	62	Rp 2	Rp 1¼	53
CEF 370/22/P	54	346	113	700	62	Rp 2	Rp 1¼	54

cef-elp-2p50-en_e_td

ELECTRIC PUMP	DIMENSIONS (mm)					DNA	DNM	WEIGHT
TYPE	A	H max	H1	L	M			kg
COF 350/03/A	54	333	113	612	62	Rp 1½	Rp 1¼	57
COF 350/05/A	54	333	113	612	62	Rp 1½	Rp 1¼	58
COF 350/07/D	54	341	113	654	62	Rp 1½	Rp 1¼	61
COF 350/09/D	54	341	113	654	62	Rp 1½	Rp 1¼	62
COF 350/11/D	54	341	113	654	62	Rp 1½	Rp 1¼	62
COF 350/15/P	54	346	113	700	62	Rp 1½	Rp 1¼	69
COF 500/15/P	54	346	113	700	62	Rp 2	Rp 1½	71
COF 500/22/P	54	346	113	700	62	Rp 2	Rp 1½	72
COF 500/30/P	54	366	113	731	62	Rp 2	Rp 1½	73

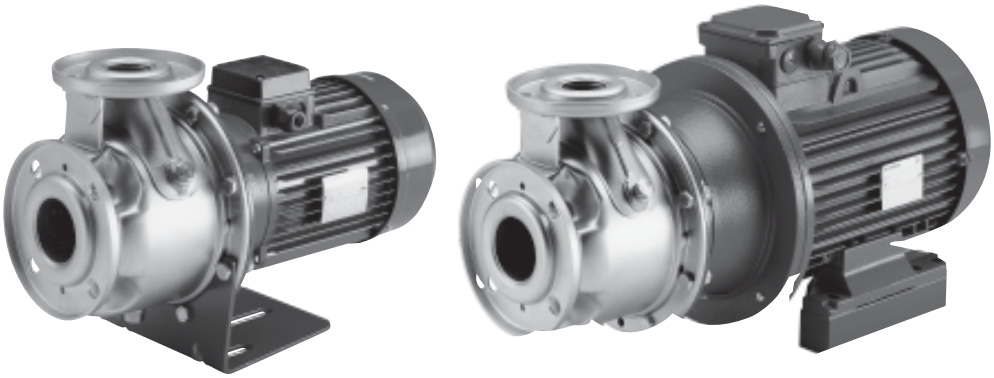
cof-elp-2p50-en_d_td

Centrifugal pumps with open impeller and flanged connections

SHO Series

MARKET SECTORS
CIVIL, INDUSTRIAL.

APPLICATIONS
- Industrial washing machines.
- Commercial dishwashers.
- Washing of metal parts, surface treatment.
- Food industry washing equipment and systems.
- Dyeing plants and textile industry.
- Plants for the circulation and transfer of moderately viscous liquids, with light chemical aggressiveness.



SPECIFICATIONS

PUMP and
APPLICATION RANGE

- The SHO series consists of single stage centrifugal pumps made of pressed AISI 316 stainless steel with **open and recessed impeller made of AISI CF8M stainless steel (casted AISI 316)**.
- **Delivery** up to 56 m^3/h 2 poles and up to 54 m^3/h 4 poles.
- **Head** up to 50 m, 2 poles and up to 12 m, 4 poles.
- **Temperature** of pumped liquid: -10°C to +120°C for standard version.
- Maximum working **pressure**: 12 bar (PN 12).
- Available sizes: DN25 to DN50.
- **SHOD** execution with **double mechanical seal**.
- **Suspended solids** handled up to:
  - Ø **20-22 mm**. for models in DN25 and DN32 nominal sizes.
  - Ø **30 mm**. for models in DN40 nominal sizes.
  - Ø **40 mm**. for models in DN50 nominal sizes.

MOTOR

- Three-phase asynchronous, squirrel cage rotor, enclosed construction, external ventilation.
- Performances according to EN 60034-1.
- Lowara motors with condensation drain plugs.
- **Standard supplied IE2/IE3 motors are compliant with Regulation (EC) no. 640/2009 and IEC 60034-30**.
- IP55 **Protection**.
- Class 155 (F) **insulation**.
- Max. ambient **temperature** : 40°C. For different environmental conditions check the power.
- Overload protection to be provided by user.
- Standard voltage, three-phase version: 220-240/380-415 V, 50 Hz, for powers up to 3 kW; 380-415/660-690 V, 50 Hz, for powers above 3 kW;

CONSTRUCTION CHARACTERISTICS

- Stainless steel centrifugal pump with end suction and radial discharge ports.
- Pump body made of AISI 316L stainless steel.
- Open and recessed impeller in AISI CF8M stainless steel.
- Mechanical seal according to EN 12756 (ex DIN 24960).
- AISI 316L stainless steel fill & drain plugs.
- Flanges in compliance with EN 1092-1 (ex UNI 2236) and DIN 2532.

MOTOR-PUMP COUPLING

- **SHOE**: close-coupled by means of a bracket with impeller keyed directly to the motor shaft extension.
- **SHOS**: with a bracket, adaptor and rigid coupling keyed to the standard motor shaft extension.
- **SHOD**: execution with double mechanical seal. Bracket, adaptor and rigid coupling keyed to the standard motor shaft extension.

ACCESSORIES ON REQUEST

- AISI 316 stainless steel or galvanized iron counter-flanges.
- Intermediate flange with pressure gauge connection.
- Pump and motor shims.

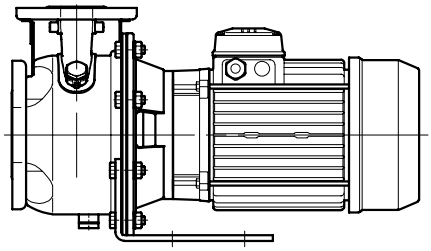
DIMENSIONS OF DISPLACED SOLIDS

TYPE	SIZE	ø SOLIDS (mm)
SHOE SHOS SHOD	25-32 / 200	20
	25-32 / 125 - 160	22
	40 / 125 - 160	30
	50 / 125 - 160	40

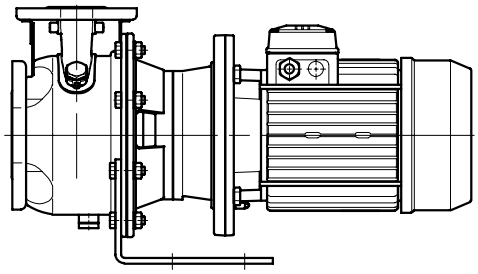
sho-pas-sol-en_a_ps

The SHO pumps are not drainage pumps, so can not be used for applications like waste water disposal or black waters. The SHO series can be used in washing systems or for clean water with small solid particles included.
The recessed position of the impeller allows the pumping of liquids with small solid particles reducing the risk of clogging the pump.
The dimensions of the solids are indicated in the table.

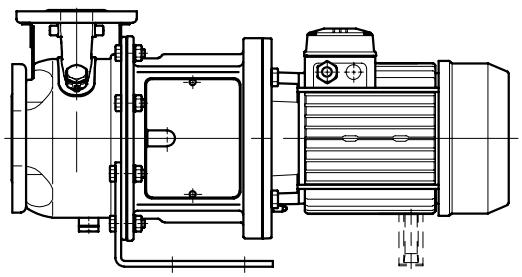
SHOE – SHOE4



SHOS – SHOS4



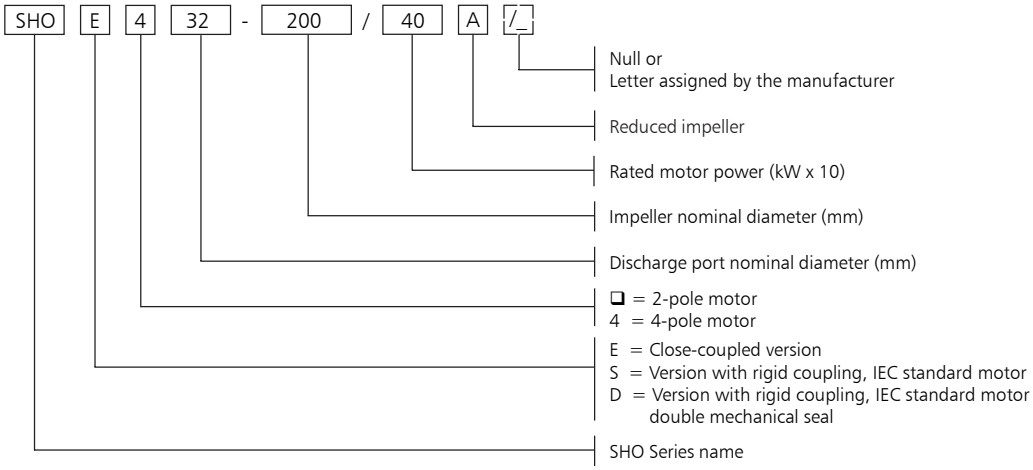
SHOD – SHOD4



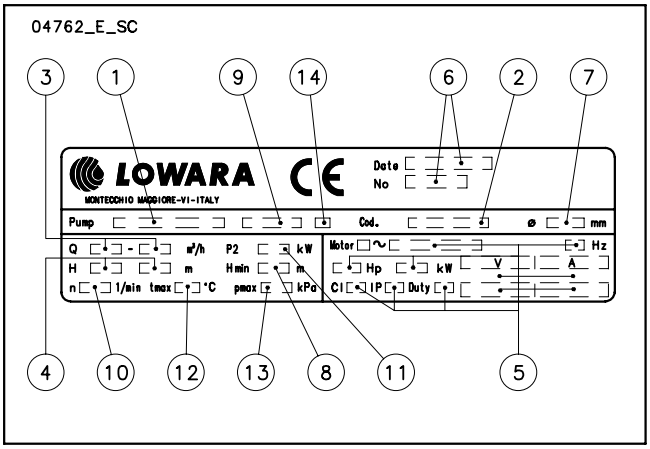
05502_A_SC

LOWARA
a xylem brand

SHO SERIES
IDENTIFICATION CODE



RATING PLATE



LEGEND

1 - Electric pump type
2 - Code
3 - Delivery range
4 - Head range
5 - Motor type
6 - Date of manufacture and serial number
7 - Impeller diameter
8 - Minimum head
9 - Mechanical seal material identification code
10 - Speed
11 - Rated output
12 - Maximum operating temperature
13 - Maximum operating pressure
14 - O-ring material identification code

LIST OF MODELS SHO SERIES 50 Hz

2 POLES

SIZE	kW	VERSIONS		
		SHOE	SHOS	SHOD
25-125/11	1,1	•	•	•
25-125/15	1,5	•	•	•
25-125/22	2,2	•	•	•
25-160/30	3	•	•	•
25-160/40	4	•	•	•
25-160/55	5,5	•	•	•
25-200/30	3	•	•	•
25-200/40	4	•	•	•
25-200/55	5,5	•	•	•
32-125/11	1,1	•	•	•
32-125/15	1,5	•	•	•
32-125/22	2,2	•	•	•
32-160/30	3	•	•	•
32-160/40	4	•	•	•
32-160/55	5,5	•	•	•
32-200/30	3	•	•	•
32-200/40	4	•	•	•
32-200/55	5,5	•	•	•
40-125/15	1,5	•	•	•
40-125/22	2,2	•	•	•
40-125/30	3	•	•	•
40-160/40	4	•	•	•
40-160/55	5,5	•	•	•
40-160/75	7,5	•	•	•
50-125/55	5,5	•	•	•
50-125/75	7,5	•	•	•
50-160/92	9,2	•	-	-
50-160/110A	11	-	•	•
50-160/110	11	•	•	•

• = Available

sho_2p50-en_a_tem

4 POLES

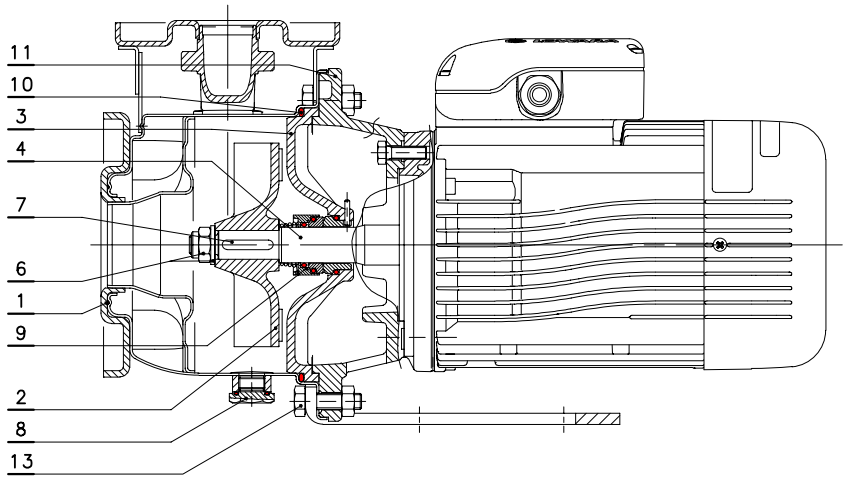
SIZE	kW	VERSIONS		
		SHOE4	SHOS4	SHOD4
25-125/03	0,37	•	•	•
25-160/03	0,37	•	•	•
25-160/05	0,55	•	•	•
25-160/07	0,75	•	•	•
25-200/07	0,75	•	•	•
32-125/03	0,37	•	•	•
32-160/03	0,37	•	•	•
32-160/05	0,55	•	•	•
32-160/07	0,75	•	•	•
32-200/07	0,75	•	•	•
40-125/03	0,37	•	•	•
40-160/05	0,55	•	•	•
40-160/07	0,75	•	•	•
40-160/11	1,1	•	•	•
50-125/07	0,75	•	•	•
50-125/11	1,1	•	•	•
50-160/11	1,1	•	•	•
50-160/15	1,5	•	•	•

• = Available

sho4_4p50_a_tem

SHOE - SHOE4 SERIES
LIST OF MODELS AND TABLE OF MATERIALS

05505_A_DS



VERSIONS	
2 POLES	4 POLES
SHOE 25-125/11	SHOE4 25-160/05
SHOE 25-125/15	SHOE4 25-160/07
SHOE 25-125/22	SHOE4 25-200/07
SHOE 25-160/30	SHOE4 32-160/05
SHOE 25-160/40	SHOE4 32-160/07
SHOE 25-160/55	SHOE4 32-200/07
SHOE 25-200/30	SHOE4 40-160/05
SHOE 25-200/40	SHOE4 40-160/07
SHOE 25-200/55	SHOE4 40-160/11
SHOE 32-125/11	SHOE4 50-125/07
SHOE 32-125/15	SHOE4 50-125/11
SHOE 32-125/22	SHOE4 50-160/11
SHOE 32-160/30	SHOE4 50-160/15
SHOE 32-160/40	
SHOE 32-160/55	
SHOE 32-200/30	
SHOE 32-200/40	
SHOE 32-200/55	
SHOE 40-125/15	
SHOE 40-125/22	
SHOE 40-125/30	
SHOE 40-160/40	
SHOE 40-160/55	
SHOE 40-160/75	
SHOE 50-125/55	
SHOE 50-125/75	
SHOE 50-160/92	
SHOE 50-160/110	

shoe-shoe4-p-en_a_mo

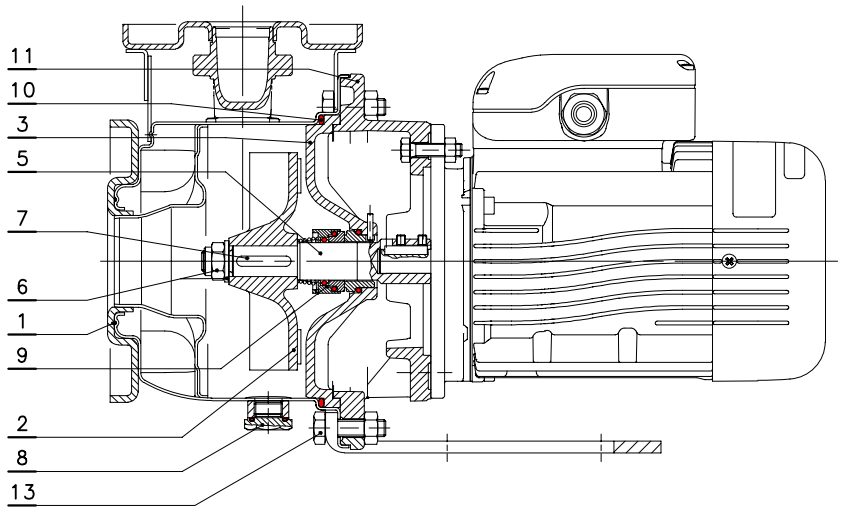
REF. N.	NAME	MATERIAL	REFERENCE STANDARDS	
			EUROPE	USA
1	Pump body	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
2	Impeller	Stainless steel	EN 10213-4-GX5CrNiMo19-11-2 (1.4408)	ASTM CF8M (cast AISI 316)
3	Seal housing	Stainless steel	EN 10213-4-GX5CrNiMo19-11-2 (1.4408)	ASTM CF8M (cast AISI 316)
4	Shaft extension	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
5	Rigid shaft coupling	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
6	Impeller locknut and washer	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
7	Tab	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
8	Fill/drain plugs	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
9	Mechanical seal	Silicon Carbide / Silicon Carbide / FPM (standard version)		
10	Elastomers	FPM (standard version)		
11	Adapter	Cast iron	EN 1561-GJL-200 (JL1030)	ASTM Class 25
13	Pump body fastening bold & screws	Galvanized steel		

shoe-en_a_tm

LOWARA
a xylem brand

SHOE4 SERIES
LIST OF MODELS AND TABLE OF MATERIALS

05506_A_DS



VERSIONS 4 POLES
SHOE4 25-125/03
SHOE4 25-160/03
SHOE4 25-200/03
SHOE4 32-125/03
SHOE4 32-160/03
SHOE4 40-125/03

shoe4-p-en_a_mo

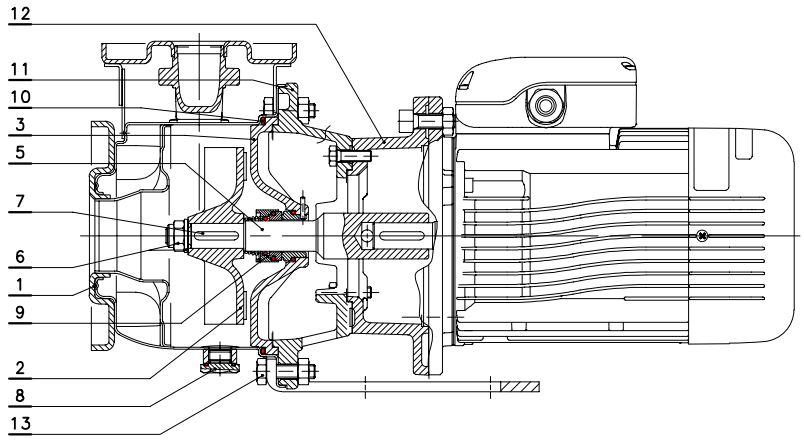
REF. N.	NAME	MATERIAL	REFERENCE STANDARDS	
			EUROPE	USA
1	Pump body	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
2	Impeller	Stainless steel	EN 10213-4-GX5CrNiMo19-11-2 (1.4408)	ASTM CF8M (cast AISI 316)
3	Seal housing	Stainless steel	EN 10213-4-GX5CrNiMo19-11-2 (1.4408)	ASTM CF8M (cast AISI 316)
4	Shaft extension	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
5	Rigid shaft coupling	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
6	Impeller locknut and washer	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
7	Tab	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
8	Fill/drain plugs	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
9	Mechanical seal	Silicon Carbide / Silicon Carbide / FPM (standard version)		
10	Elastomers	FPM (standard version)		
11	Adapter	Cast iron	EN 1561-GJL-200 (JL1030)	ASTM Class 25
13	Pump body fastening bold & screws	Galvanized steel		

shoe-en_a_tm

LOWARA
a xylem brand

SHOS - SHOS4 SERIES
LIST OF MODELS AND TABLE OF MATERIALS

05555_A_DS



VERSIONS	
2 POLES	4 POLES
SHOS 25-125/11	SHOS4 25-125/03
SHOS 25-125/15	SHOS4 25-160/03
SHOS 25-125/22	SHOS4 25-160/05
SHOS 25-160/30	SHOS4 25-160/07
SHOS 25-160/40	SHOS4 25-200/07
SHOS 25-160/55	SHOS4 32-125/03
SHOS 25-200/30	SHOS4 32-160/03
SHOS 25-200/40	SHOS4 32-160/05
SHOS 25-200/55	SHOS4 32-160/07
SHOS 32-125/11	SHOS4 32-200/07
SHOS 32-125/15	SHOS4 40-125/03
SHOS 32-125/22	SHOS4 40-160/05
SHOS 32-160/30	SHOS4 40-160/07
SHOS 32-160/40	SHOS4 40-160/11
SHOS 32-160/55	SHOS4 50-125/07
SHOS 32-200/30	SHOS4 50-125/11
SHOS 32-200/40	SHOS4 50-160/11
SHOS 32-200/55	SHOS4 50-160/15
SHOS 40-125/15	
SHOS 40-125/22	
SHOS 40-125/30	
SHOS 40-160/40	
SHOS 40-160/55	
SHOS 40-160/75	
SHOS 50-125/55	
SHOS 50-125/75	

shos-shos4-p-en_a_mo

REF. N.	NAME	MATERIAL	REFERENCE STANDARDS	
			EUROPE	USA
1	Pump body	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
2	Impeller 25-32-40-50-65(160)	Stainless steel	EN 10213-4-GX5CrNiMo19-11-2 (1.4408)	ASTM CF8M (cast AISI 316)
3	Seal housing	Stainless steel	EN 10213-4-GX5CrNiMo19-11-2 (1.4408)	ASTM CF8M (cast AISI 316)
5	Rigid shaft coupling	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
6	Impeller locknut and washer	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
7	Tab	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
8	Fill/drain plugs	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
9	Mechanical seal	Silicon Carbide / Silicon Carbide / FPM (standard version)		
10	Elastomers	FPM (standard version)		
11	Adapter	Cast iron	EN 1561-GJL-200 (JL1030)	ASTM Class 25
12	Adapter-motor coupling	Cast iron	EN 1561-GJL-200 (JL1030)	ASTM Class 25
13	Pump body fastening bolts & screws	Galvanized steel		

shos-en_a_tm

LOWARA
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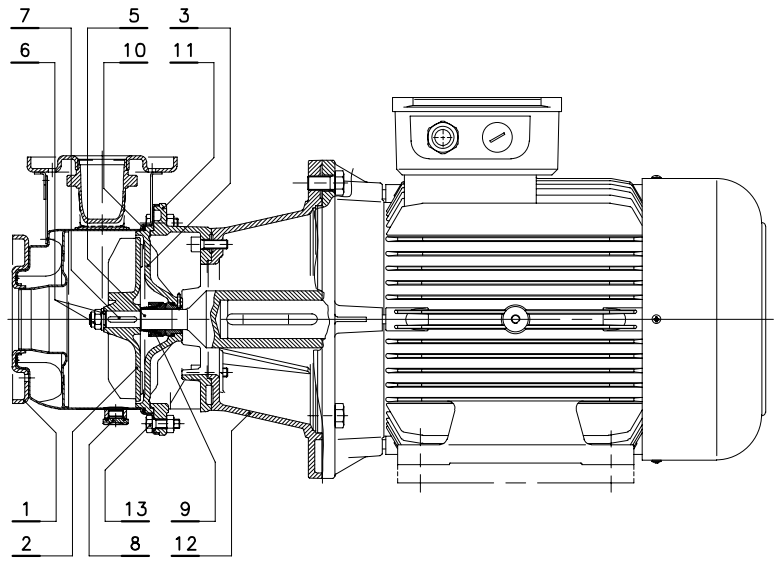
SHOS SERIES
LIST OF MODELS AND TABLE OF MATERIALS

05556_A_DS



VERSIONS
2 POLES
SHOS 50-160/110A
SHOS 50-160/110

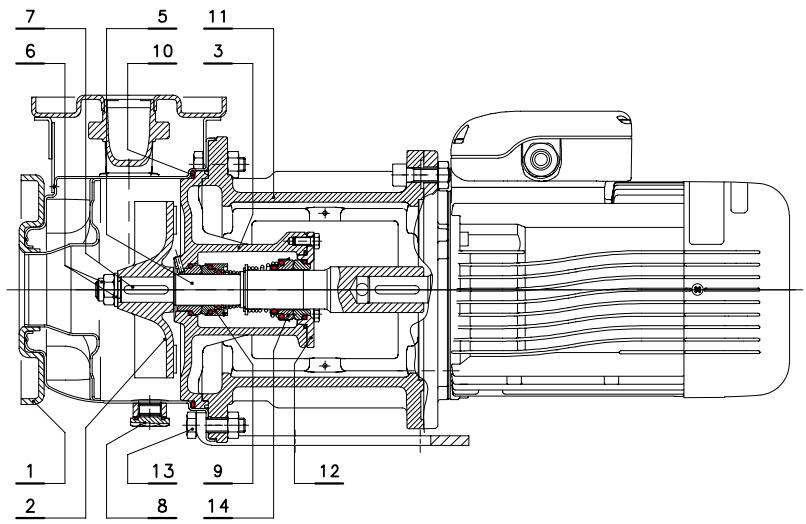
shos-s-en_a_mo

REF. N.	NAME	MATERIAL	REFERENCE STANDARDS	
			EUROPE	USA
1	Pump body	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
2	Impeller 25-32-40-50-65(160)	Stainless steel	EN 10213-4-GX5CrNiMo19-11-2 (1.4408)	ASTM CF8M (cast AISI 316)
3	Seal housing	Stainless steel	EN 10213-4-GX5CrNiMo19-11-2 (1.4408)	ASTM CF8M (cast AISI 316)
5	Rigid shaft coupling	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
6	Impeller locknut and washer	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
7	Tab	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
8	Fill/drain plugs	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
9	Mechanical seal	Silicon Carbide / Silicon Carbide / FPM (standard version)		
10	Elastomers	FPM (standard version)		
11	Adapter	Cast iron	EN 1561-GJL-200 (JL1030)	ASTM Class 25
12	Adapter-motor coupling	Cast iron	EN 1561-GJL-200 (JL1030)	ASTM Class 25
13	Pump body fastening bolts & screws	Galvanized steel		

shos-en_a_tm

SHOD - SHOD4 SERIES (DOUBLE MECHANICAL SEAL)
LIST OF MODELS AND TABLE OF MATERIALS

05575_A_DS



VERSIONS	
2 POLES	4 POLES
SHOD 25-125/11	SHOD4 25-125/03
SHOD 25-125/15	SHOD4 25-160/03
SHOD 25-125/22	SHOD4 25-160/05
SHOD 25-160/30	SHOD4 25-160/07
SHOD 25-160/40	SHOD4 25-200/07
SHOD 25-160/55	SHOD4 32-125/03
SHOD 25-200/30	SHOD4 32-160/03
SHOD 25-200/40	SHOD4 32-160/05
SHOD 25-200/55	SHOD4 32-160/07
SHOD 32-125/11	SHOD4 32-200/07
SHOD 32-125/15	SHOD4 40-125/03
SHOD 32-125/22	SHOD4 40-160/05
SHOD 32-160/30	SHOD4 40-160/07
SHOD 32-160/40	SHOD4 40-160/11
SHOD 32-160/55	SHOD4 50-125/07
SHOD 32-200/30	SHOD4 50-125/11
SHOD 32-200/40	SHOD4 50-160/11
SHOD 32-200/55	SHOD4 50-160/15
SHOD 40-125/15	
SHOD 40-125/22	
SHOD 40-125/30	
SHOD 40-160/40	
SHOD 40-160/55	
SHOD 40-160/75	
SHOD 50-125/55	
SHOD 50-125/75	

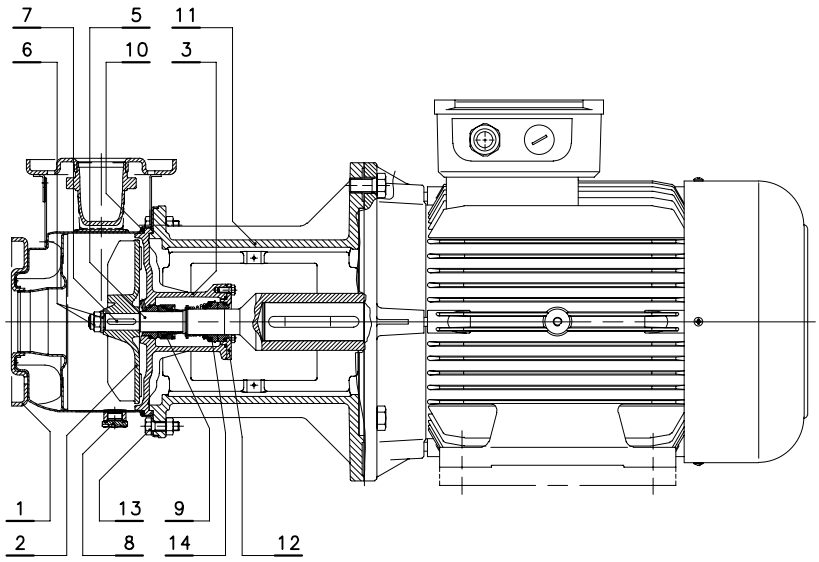
shod-shod4-p-en_a_mo

REF. N.	NAME	MATERIAL	REFERENCE STANDARDS	
			EUROPE	USA
1	Pump body	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
2	Impeller	Stainless steel	EN 10213-4-GX5CrNiMo19-11-2 (1.4408)	ASTM CF8M (cast AISI 316)
3	Seal housing	Stainless steel	EN 10213-4-GX5CrNiMo19-11-2 (1.4408)	ASTM CF8M (cast AISI 316)
5	Rigid shaft coupling	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
6	Impeller locknut and washer	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
7	Tab	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
8	Fill/drain plugs	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
9	(front) Mechanical seal	Silicon Carbide / Silicon Carbide / FPM (standard version)		
10	Elastomers	FPM (standard version)		
11	Adapter	Cast iron	EN 1561-GJL-200 (JL1030)	ASTM Class 25
12	Seal cover	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
13	Pump body fastening bolts & screws	Galvanized steel		
14	(back) Mechanical seal	Ceramic / Carbon / FPM (standard version)		

shod-en_a_tm

SHOD SERIES (DOUBLE MECHANICAL SEAL)
LIST OF MODELS AND TABLE OF MATERIALS

05576_A_DS



VERSIONS
2 POLES
SHOD 50-160/110A
SHOD 50-160/110

shod-s-en_a_mo

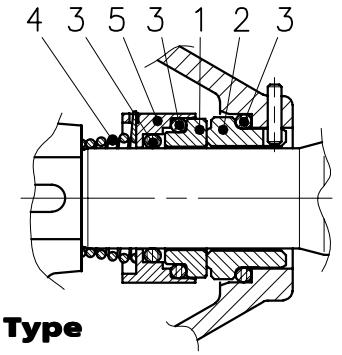
REF. N.	NAME	MATERIAL	REFERENCE STANDARDS	
			EUROPE	USA
1	Pump body	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
2	Impeller	Stainless steel	EN 10213-4-GX5CrNiMo19-11-2 (1.4408)	ASTM CF8M (cast AISI 316)
3	Seal housing	Stainless steel	EN 10213-4-GX5CrNiMo19-11-2 (1.4408)	ASTM CF8M (cast AISI 316)
5	Rigid shaft coupling	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
6	Impeller locknut and washer	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
7	Tab	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
8	Fill/drain plugs	Stainless steel	EN 10088-1-X5CrNiMo17-12-2 (1.4401)	AISI 316
9	(front) Mechanical seal	Silicon Carbide / Silicon Carbide / FPM (standard version)		
10	Elastomers	FPM (standard version)		
11	Adapter	Cast iron	EN 1561-GJL-200 (JL1030)	ASTM Class 25
12	Seal cover	Stainless steel	EN 10088-1-X2CrNiMo17-12-2 (1.4404)	AISI 316L
13	Pump body fastening bolts & screws	Galvanized steel		
14	(back) Mechanical seal	Ceramic / Carbon / FPM (standard version)		

shod-en_a_tm

SHO MECHANICAL SEAL SERIES, ACCORDING TO EN 12756

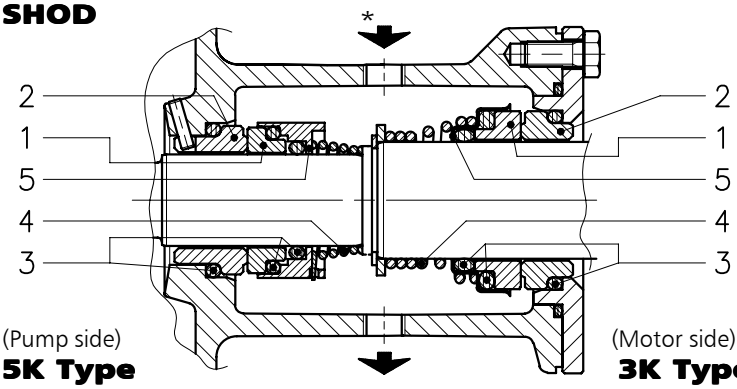
Mechanical seal with mounting dimensions according to EN12756 (ex DIN 24960) and ISO 3069.

SHOE-SHOS



5K Type

SHOD



5K Type **3K Type**

(*) Flushing of the seals has to be done with clean liquid and external flushing circuit. The liquid has to be compatible with the pumped liquid and with a pressure 0,5 bar higher than the pressure in the pump. (Rp 1/4 connections).

LIST OF MATERIALS

POSITION 1 - 2	POSITION 3	POSITION 4 - 5
B : Resin impregnated carbon	E : EPDM	G : AISI 316
Q_1 : Silicon carbide	V : FPM	
C : Special resin impregnated carbon	T : PTFE	
V : Ceramic		

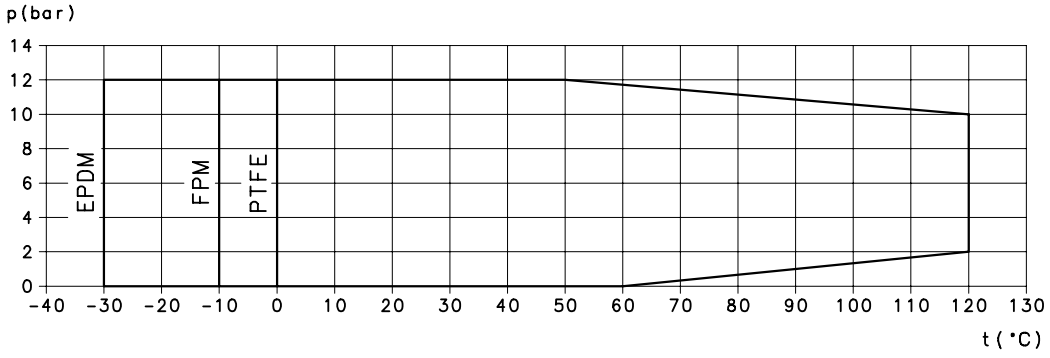
sho-shod_ten-mec-en_a_tm

SEAL TYPES

TYPE	POSITION 1	2	3	4	5	TEMPERATURE (°C)
	ROTATING ASSEMBLY	FIXED ASSEMBLY	ELASTOMERS	SPRINGS	OTHER COMPONENTS	
STANDARD MECHANICAL SEALS						
3K - V B V G G	V	B	V	G	G	-10 +120
5K - Q_1 Q_1 V G G	Q_1	Q_1	V	G	G	-10 +120
OTHER MECHANICAL SEAL TYPES						
3K - V B E G G	V	B	E	G	G	-30 +120
5K - Q_1 B V G G	Q_1	B	V	G	G	-10 +120
5K - Q_1 Q_1 E G G	Q_1	Q_1	E	G	G	-30 +120
5K - Q_1 B E G G	Q_1	B	E	G	G	-30 +120
5K - Q_1 C T G G	Q_1	C	T	G	G	0 +120
5K - Q_1 Q_1 T G G	Q_1	Q_1	T	G	G	0 +120

sho-shod_tipi-ten-mec-en_a_tc

COMPLETE PUMP PRESSURE / TEMPERATURE OPERATING LIMITS (WITH ANY OF THE SEALS LISTED ABOVE)



MOTORS FOR SHO SERIES

Standard supplied IE2/IE3 three-phase surface motors ≥ 0,75 kW are compliant with Regulation (EC) no. 640/2009 and IEC 60034-30.

Enclosed short circuit squirrel cage motor (TEFC), with external ventilation.
Electrical performances according to EN 60034-1.
Insulation class 155 (F).
IP55 protection.
Condensate drain plugs on standard version.
Cooling by fan according to EN 60034-6.
Cable gland metric size according to EN 50262.
Standard voltage:

- **Three-phase** version: 220-240/380-415 V 50 Hz for powers up to 3 kW. 380-415/660-690 V 50 Hz for powers above 3 kW. Overload protection to be provided by the user.

LOWARA
a xylem brand

SHOE SERIES
THREE-PHASE MOTORS AT 50 Hz, 2 POLES

P_N	Efficiency η_N %																		IE	Year of manufacture
	Δ 220 V Y 380 V			Δ 230 V Y 400 V			Δ 240 V Y 415 V			Δ 380 V Y 660 V			Δ 400 V Y 690 V			Δ 415 V				
kW	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4		
1,1	84,0	84,7	83,4	84,4	84,5	82,5	84,3	84,0	81,4	84,0	84,0	81,4	84,0	84,0	81,4	84,0	84,0	81,4	3	By June 2011
1,5	85,6	86,5	85,8	85,9	86,4	84,9	86,0	86,0	84,0	85,6	86,0	84,0	85,6	86,0	84,0	85,6	86,0	84,0		
2,2	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	2	
3	85,5	86,8	85,6	86,1	86,8	85,6	86,3	86,8	85,6	85,5	86,8	85,6	85,5	86,8	85,6	85,5	86,8	85,6		
4	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3		
5,5	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6		
7,5	88,6	88,1	88,1	88,6	88,1	88,1	88,6	88,1	88,1	88,6	88,1	88,1	88,6	88,1	88,1	88,6	88,1	88,1		
9,2	89,3	88,8	88,8	89,3	88,8	88,8	89,3	88,8	88,8	89,3	88,8	88,8	89,3	88,8	88,8	89,3	88,8	88,8		
11	90,3	91,1	90,3	90,3	91,1	90,3	90,3	91,1	90,3	90,3	91,1	90,3	90,8	91,1	90,3	91,0	91,1	90,3		

P_N	Manufacturer: Lowara srl Unipersonale, Reg. No. 341820260, Montecchio Maggiore Vicenza - Italia	IEC SIZE*	Construction Design	N. of Poles	f_N	Data for 400 V / 50 Hz Voltage				
kW	Model				Hz	cosφ	Is / I_N	T_N Nm	T_s/T_N	Tm/Tn
1,1	SM90RB14/311PE	90R	SPECIAL	2	50	0,79	8,31	3,63	3,95	3,95
1,5	SM90RB14/315PE	90R				0,80	8,80	4,96	4,31	4,10
2,2	PLM90B14/322	90				0,80	8,63	7,25	3,74	3,71
3	PLM90B14/330	90				0,82	8,39	9,96	3,50	3,32
4	PLM112RB14/340	112R				0,85	9,52	13,1	3,04	4,40
5,5	PLM112B14/355	112				0,87	10,3	18,1	4,43	5,80
7,5	PLM132B14/375	132				0,87	9,21	24,5	3,26	4,55
9,2	PLM132B14/392	132				0,88	9,66	30,3	3,17	4,54
11	PLM132B14/3110	132				0,87	9,72	36,0	3,46	4,56

P_N	Voltage U_N V											n_N	See note.	Operating conditions **		
	Δ			Y			Δ			Y				Altitude Above Sea Level (m)	T. amb min/max °C	ATEX
	220 V	230 V	240 V	380 V	400 V	415 V	380 V	400 V	415 V	660 V	690 V					
kW	I_N (A)											min^{-1}				
1,1	4,19	4,14	4,16	2,42	2,39	2,40	2,41	2,38	2,38	1,39	1,37	2870 ÷ 2900				
1,5	5,56	5,49	5,51	3,21	3,17	3,18	3,21	3,18	3,19	1,85	1,84	2870 ÷ 2895				
2,2	8,05	8,04	8,09	4,65	4,64	4,67	4,62	4,61	4,63	2,67	2,66	2885 ÷ 2900				
3	10,8	10,6	10,6	6,23	6,14	6,12	6,18	6,10	6,06	3,57	3,52	2850 ÷ 2885				
4	13,6	13,5	13,5	7,88	7,77	7,79	7,80	7,63	7,65	4,51	4,41	2895 ÷ 2920		≤ 1000	-15 / 40	No
5,5	18,3	18,0	17,9	10,6	10,4	10,3	10,6	10,4	10,5	6,14	6,02	2885 ÷ 2905				
7,5	25,4	24,8	24,4	14,7	14,3	14,1	14,5	14,0	13,9	8,35	8,11	2920 ÷ 2935				
9,2	29,7	28,9	28,3	17,2	16,7	16,4	17,3	16,8	16,6	10,0	9,70	2910 ÷ 2930				
11	36,0	35,1	34,7	20,8	20,3	20,0	20,8	20,3	20,1	12,0	11,7	2910 ÷ 2925				

* R = Reduced size of motor casing as compared to shaft extension and flange.

shoe-ie2-mott-2p50-en_b_te

** Operating conditions to be referred to motor only. About electric pump, refer to limits in user's manual.

Note: Observe the regulations and codes locally in force regarding sorted waste disposal.

LOWARA
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SHOS - SHOD SERIES
THREE-PHASE MOTORS AT 50 Hz, 2 POLES

P_N	Efficiency η_N %																		IE	Year of manufacture
	Δ 220 V Y 380 V			Δ 230 V Y 400 V			Δ 240 V Y 415 V			Δ 380 V Y 660 V			Δ 400 V Y 690 V			Δ 415 V				
kW	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4		
1,1	84,0	84,7	83,4	84,4	84,5	82,5	84,3	84,0	81,4	84,0	84,0	81,4	84,0	84,0	81,4	84,0	84,0	81,4	3	By June 2011
1,5	85,6	86,5	85,8	85,9	86,4	84,9	86,0	86,0	84,0	85,6	86,0	84,0	85,6	86,0	84,0	85,6	86,0	84,0		
2,2	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	83,7	2	
3	85,5	86,8	85,6	86,1	86,8	85,6	86,3	86,8	85,6	85,5	86,8	85,6	85,5	86,8	85,6	85,5	86,8	85,6		
4	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3	86,3		
5,5	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6	87,6		
7,5	88,6	88,1	88,1	88,6	88,1	88,1	88,6	88,1	88,1	88,6	88,1	88,1	88,6	88,1	88,1	88,6	88,1	88,1		
11	89,8	89,8	89,8	89,8	89,8	89,8	89,8	89,8	89,8	89,8	89,8	89,8	89,8	89,8	89,8	89,8	89,8	89,8		

P_N	Manufacturer: Lowara srl Unipersonale, Reg. No. 341820260, Montecchio Maggiore Vicenza - Italia	IEC SIZE*	Construction Design	N. of Poles	f_N	Data for 400 V / 50 Hz Voltage				
kW	Model				Hz	cosφ	Is / I_N	T_N Nm	Ts/T_N	Tm/Tn
1,1	SM80B5/311PE	80	B5	2	50	0,79	8,31	3,63	3,95	3,95
1,5	SM90RB5/315PE	90R				0,80	8,80	4,96	4,31	4,10
2,2	PLM90B5/322	90				0,80	8,63	7,25	3,74	3,71
3	PLM100RB5/330	100R				0,82	8,39	9,96	3,50	3,32
4	PLM112RB5/340	112R				0,85	9,52	13,1	3,04	4,40
5,5	PLM132RB5/355	132R				0,87	10,3	18,1	4,43	5,80
7,5	PLM132B5/375	132				0,87	9,21	24,5	3,26	4,55
11	PLM160B35/3110	160	B35			0,88	8,14	35,6	2,22	4,00

P_N	Voltage U_N V											n_N	See note.	Operating conditions **		
	Δ			Y			Δ			Y				Altitude Above Sea Level (m)	T. amb min/max °C	ATEX
kW	220 V	230 V	240 V	380 V	400 V	415 V	380 V	400 V	415 V	660 V	690 V	min^{-1}				
	I_N (A)															
1,1	4,19	4,14	4,16	2,42	2,39	2,40	2,41	2,38	2,38	1,39	1,37	2870 ÷ 2900				
1,5	5,56	5,49	5,51	3,21	3,17	3,18	3,21	3,18	3,19	1,85	1,84	2870 ÷ 2895				
2,2	8,05	8,04	8,09	4,65	4,64	4,67	4,62	4,61	4,63	2,67	2,66	2885 ÷ 2900				
3	10,8	10,6	10,6	6,23	6,14	6,12	6,18	6,10	6,06	3,57	3,52	2850 ÷ 2885				
4	13,6	13,5	13,5	7,88	7,77	7,79	7,80	7,63	7,65	4,51	4,41	2895 ÷ 2920				
5,5	18,3	18,0	17,9	10,6	10,4	10,3	10,6	10,4	10,5	6,14	6,02	2885 ÷ 2905				
7,5	25,4	24,8	24,4	14,7	14,3	14,1	14,5	14,0	13,9	8,35	8,11	2920 ÷ 2935				
11	35,5	34,3	33,4	20,5	19,8	19,3	20,6	19,9	19,5	11,9	11,5	2940 ÷ 2950				
														≤ 1000	-15 / 40	No

* R = Reduced size of motor casing as compared to shaft extension and flange.

shosshod-ie2-mott-2p50-en_b_te

** Operating conditions to be referred to motor only. About electric pump, refer to limits in user's manual.

Note: Observe the regulations and codes locally in force regarding sorted waste disposal.

SHOE4 - SHOS4 - SHOD4 SERIES
THREE-PHASE MOTORS AT 50 Hz, 4 POLES

P_N	Efficiency η_N %																		IE	Year of manufacture
	Δ 220 V Y 380 V			Δ 230 V Y 400 V			Δ 240 V Y 415 V			Δ 380 V Y 660 V			Δ 400 V Y 690 V			Δ 415 V				
kW	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4	4/4	3/4	2/4		
0,37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	By June 2011
0,55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
0,75	80,4	81,3	79,8	81,1	81,4	79,1	81,4	81,2	78,4	80,4	81,2	78,4	80,4	81,2	78,4	80,4	81,2	78,4		
1,1	81,4	81,4	81,1	81,4	81,4	81,1	81,4	81,4	81,1	81,4	81,4	81,1	81,4	81,4	81,1	81,4	81,4	81,1	2	
1,5	83,1	83,1	82,0	83,1	83,1	82,0	83,1	83,1	82,0	83,1	83,1	82,0	83,1	83,1	82,0	83,1	83,1	82,0		
0,37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
0,55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
0,75	80,4	81,3	79,8	81,1	81,4	79,1	81,4	81,2	78,4	80,4	81,2	78,4	80,4	81,2	78,4	80,4	81,2	78,4		
1,1	81,4	81,4	81,1	81,4	81,4	81,1	81,4	81,4	81,1	81,4	81,4	81,1	81,4	81,4	81,1	81,4	81,4	81,1	2	
1,5	83,1	83,1	82,0	83,1	83,1	82,0	83,1	83,1	82,0	83,1	83,1	82,0	83,1	83,1	82,0	83,1	83,1	82,0		

P_N	Manufacturer: Lowara srl Unipersonale, Reg. No. 341820260, Montecchio Maggiore Vicenza - Italia		IEC SIZE*	Construction Design	N. of Poles	f_N	Data for 400 V / 50 Hz Voltage				
kW	Model					Hz	cosφ	Is / I_N	T_N Nm	Ts/T_N	Tm/Tn
0,37	SM471B5/304	SHOE4	71	B5	4	50	0,60	3,39	2,57	3,40	2,47
0,55	SM490RB14S/305		90R	SPECIAL			0,67	3,95	3,77	2,45	2,38
0,75	LLM490RB14S/307		90				0,75	5,78	5,03	2,77	3,31
1,1	PLM490B5S/311		90				0,72	6,34	7,27	2,80	3,43
1,5	PLM490B5S/315		90				0,67	6,79	9,88	3,33	3,67
0,37	SM480B5/304	SHOS-SHOD	80	B5			0,60	3,39	2,57	3,40	2,47
0,55	SM480B5/305		80				0,67	3,95	3,77	2,45	2,38
0,75	LLM480B5/307		90				0,75	5,78	5,03	2,77	3,31
1,1	PLM490B5/311		90				0,72	6,34	7,27	2,80	3,43
1,5	PLM490B5/315		90				0,67	6,79	9,88	3,33	3,67

P_N	Voltage U_N V											n_N	See note.	Operating conditions **		
	Δ			Y			Δ			Y				Altitude Above Sea Level (m)	T. amb min/max °C	ATEX
kW	220 V	230 V	240 V	380 V	400 V	415 V	380 V	400 V	415 V	660 V	690 V	min^{-1}				
	I_N (A)															
0,37	2,46	2,53	2,62	1,42	1,46	1,51	-	-	-	-	-	1355 ÷ 1380				
0,55	2,98	3,03	3,1	1,72	1,75	1,79	-	-	-	-	-	1380 ÷ 1400				
0,75	3,08	3,03	3,01	1,78	1,75	1,74	1,78	1,75	1,74	1,03	1,01	1410 ÷ 1430				
1,1	4,64	4,61	4,61	2,68	2,66	2,66	2,66	2,64	2,64	1,54	1,53	1435 ÷ 1445				
1,5	6,50	6,51	6,62	3,75	3,76	3,82	3,74	3,75	3,80	2,16	2,16	1440 ÷ 1450				
0,37	2,46	2,53	2,62	1,42	1,46	1,51	-	-	-	-	-	1355 ÷ 1380				
0,55	2,98	3,03	3,1	1,72	1,75	1,79	-	-	-	-	-	1380 ÷ 1400				
0,75	3,08	3,03	3,01	1,78	1,75	1,74	1,78	1,75	1,74	1,03	1,01	1410 ÷ 1430				
1,1	4,64	4,61	4,61	2,68	2,66	2,66	2,66	2,64	2,64	1,54	1,53	1435 ÷ 1445				
1,5	6,50	6,51	6,62	3,75	3,76	3,82	3,74	3,75	3,80	2,16	2,16	1440 ÷ 1450				

≤ 1000	-15 / 40	No

* R = Reduced size of motor casing as compared to shaft extension and flange.

shoe4-ie2-mott-4p50-en_a_te

** Operating conditions to be referred to motor only. About electric pump, refer to limits in user's manual.

Note: Observe the regulations and codes locally in force regarding sorted waste disposal.

MOTOR NOISE

The tables below show the mean sound pressure levels (Lp) measured at 1 meter's distance in a free field according to the A curve (ISO 1680 standard).
The noise values are measured with idling 50 Hz motor with a tolerance of 3 dB (A).

SHOE 50 Hz 2-POLE MOTOR NOISE

POWER kW	MOTOR TYPE SIZE IEC*	NOISE LpA dB
1,1	90R	<70
1,5	90R	<70
2,2	90R	<70
3	90	<70
4	112R	<70
5,5	112	<70
7,5	132	71
9,2	132	73
11	132	73

SHOS-SHOD 50 Hz 2-POLE MOTOR NOISE

POWER kW	MOTOR TYPE SIZE IEC*	NOISE LpA dB
1,1	80	<70
1,5	90R	<70
2,2	90R	<70
3	100R	<70
4	112R	<70
5,5	132R	<70
7,5	132	71
11	160	71

SHOE4 50 Hz 4-POLE MOTOR NOISE

POWER kW	MOTOR TYPE SIZE IEC*	NOISE LpA dB
0,37	71	<70
0,55	90R	<70
0,75	90R	<70
1,1	90	<70
1,5	90	<70

*R = Reduced size of motor casing as compared to shaft extension and flange.

SHOS4-SHOD4 50 Hz 4-POLE MOTOR NOISE

POWER kW	MOTOR TYPE SIZE IEC	NOISE LpA dB
0,37	80	<70
0,55	80	<70
0,75	80	<70
1,1	90	<70
1,5	90	<70

sho_mott-en_b_tr

AVAILABLE VOLTAGES
MOTORS FOR SHO SERIES

	THREE-PHASE - 2 POLES																
	50 Hz							60 Hz								50/60 Hz	
P_N kW	3 x 220-230-240/380-400-415	3 x 380-400-415/660-690	3 x 200-208/346-360	3 x 255-265/440-460	3 x 290-300/500-525	3 x 440-460/-	3 x 500-525/-	3 x 220-230/380-400	3 x 255-265-277/440-460-480	3 x 380-400/660-690	3 x 440-460-480/-	3 x 110-115/190-200	3 x 200-208/346-360	3 x 330-346/575-600	3 x 575/-	3 x 230/400 50 Hz 3 x 265/460 60 Hz	3 x 400/690 50 Hz 3 x 460/- 60 Hz
1,1	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o	o
1,5	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o	o
2,2	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o	o
3	s	o	o	o	o	o	o	s	o	o	o	o	o	o	o	o	o
4	o	s	o	o	o	o	o	s	o	o	o	o	o	o	o	o	o
5,5	o	s	o	o	o	o	o	s	o	o	o	o	o	o	o	o	o
7,5	o	s	o	o	o	o	o	s	o	o	o	o	o	o	o	o	o
9,2	o	s	o	o	o	o	o	s	o	o	o	o	o	o	o	o	o
11	o	s	o	o	o	o	o	s	o	o	o	o	o	o	o	o	o

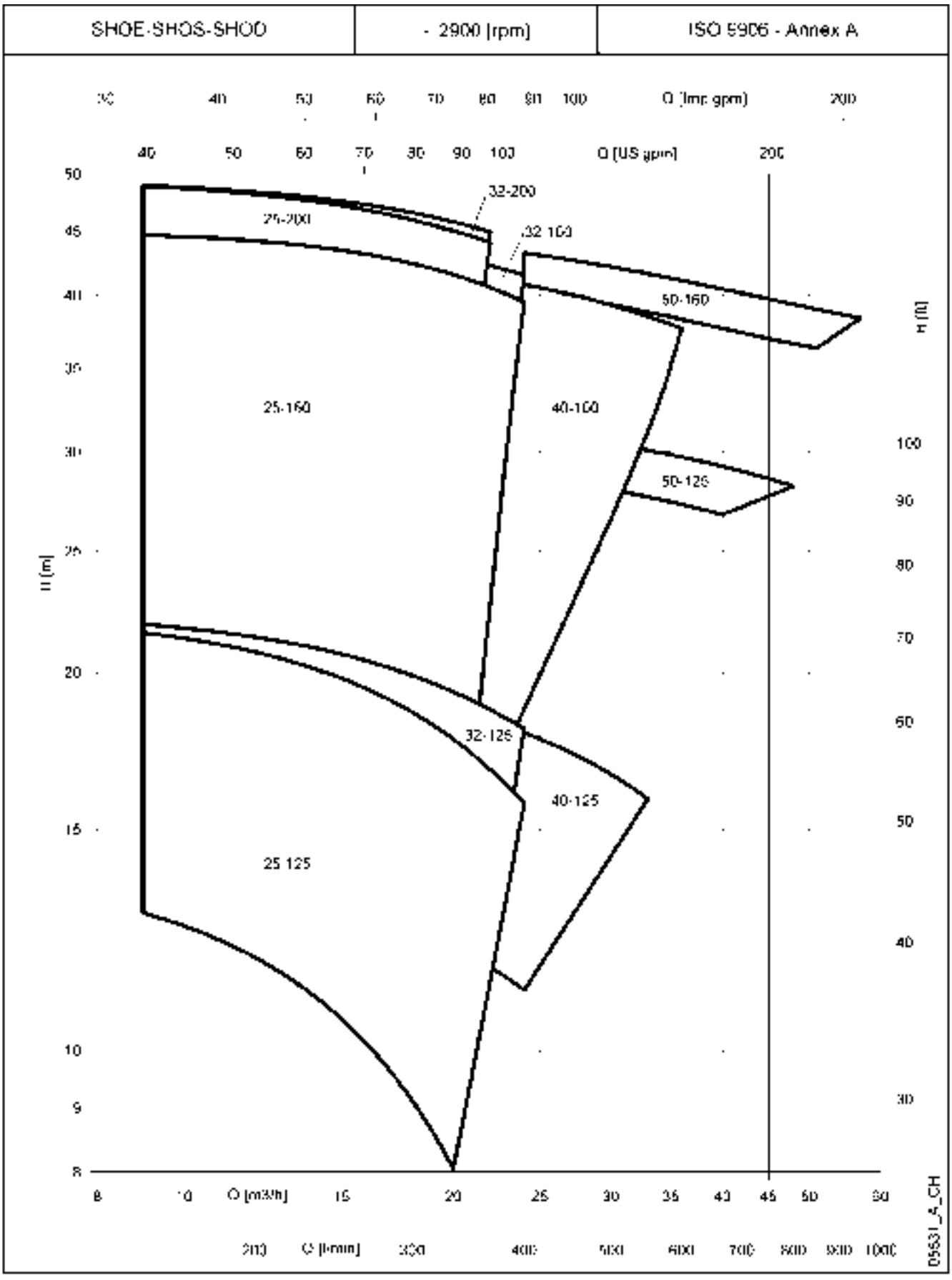
s = Standard voltage o = Optional voltage - = Not available

sho-volt-lowa-en_a_te

LOWARA
a xylem brand

SHOE - SHOS - SHOD SERIES
HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 2 POLES

SHOE-SHOS-SHOD	- 2900 [rpm]	ISO 9906 - Annex A



These performances are valid for liquids with density ρ = 1.0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec

LOWARA
a xylem brand

SHOE - SHOS - SHOD SERIES
TABLE OF HYDRAULIC PERFORMANCES AT 50 Hz, 2 POLES

PUMP TYPE	RATED POWER		Q = DELIVERY																	Passes solids up to (mm)
	kW	HP	l/min 0	150	200	250	300	333	350	367	383	400	500	550	567	600	667	800	950	
			m^3/h 0	9	12	15	18	20	21	22	23	24	30	33	34	36	40	48	57	
			H = TOTAL HEAD METRES COLUMN OF WATER																	
SHO.. 25-125/11	1,1	1,5	14,1	12,9	11,9	10,6	9,1	8,0												22
SHO.. 25-125/15	1,5	2	17,6	16,6	15,7	14,6	13,4	12,4	11,9	11,4										22
SHO.. 25-125/22	2,2	3	22,4	21,5	20,8	19,8	18,6	17,7	17,2	16,8	16,3	15,7								22
SHO.. 25-160/30	3	4	29,3	28,3	27,4	26,2	24,9	23,9	23,4	22,9										22
SHO.. 25-160/40	4	5,5	36,7	36,2	35,5	34,4	33,2	32,2	31,7	31,2	30,6									22
SHO.. 25-160/55	5,5	7,5	44,8	44,7	44,2	43,5	42,4	41,6	41,1	40,6	40,1	39,5								22
SHO.. 25-200/30	3	4	32,6	31,4	30,4	29,2	27,6	26,5												20
SHO.. 25-200/40	4	5,5	40,7	40,0	39,2	38,1	36,8	35,8	35,2											20
SHO.. 25-200/55	5,5	7,5	49,3	48,9	48,2	47,2	45,9	45,0	44,6	44,1										20
SHO.. 32-125/11	1,1	1,5	14,0	13,2	12,4	11,5	10,4	9,6												22
SHO.. 32-125/15	1,5	2	17,6	16,7	16,1	15,4	14,4	13,7	13,4	13,0										22
SHO.. 32-125/22	2,2	3	22,7	21,9	21,4	20,7	19,9	19,3	19,0	18,7	18,4	18,1								22
SHO.. 32-160/30	3	4	29,3	28,6	27,9	27,1	26,1	25,4	25,0	24,6										22
SHO.. 32-160/40	4	5,5	36,8	36,4	36,0	35,3	34,4	33,7	33,3	32,9	32,5									22
SHO.. 32-160/55	5,5	7,5	44,7	44,7	44,5	44,0	43,4	42,9	42,6	42,2	41,9	41,5								22
SHO.. 32-200/30	3	4	32,6	31,4	30,6	29,5	28,1	27,0												20
SHO.. 32-200/40	4	5,5	40,9	40,3	39,5	38,6	37,4	36,5	36,1											20
SHO.. 32-200/55	5,5	7,5	49,5	49,0	48,4	47,6	46,6	45,8	45,4	45,0										20
SHO.. 40-125/15	1,5	2	14,0		13,5	13,1	12,5	12,1	11,9	11,7	11,4	11,2								30
SHO.. 40-125/22	2,2	3	18,6		17,8	17,3	16,8	16,4	16,2	16,0	15,9	15,7	14,3							30
SHO.. 40-125/30	3	4	20,9		19,9	19,5	19,0	18,7	18,5	18,3	18,1	17,9	16,6	15,9						30
SHO.. 40-160/40	4	5,5	31,3		30,7	30,2	29,5	29,1	28,8	28,6	28,3	28,1	26,6							30
SHO.. 40-160/55	5,5	7,5	38,7		38,3	37,9	37,4	36,9	36,7	36,4	36,1	35,9	34,1	33,2	33,0					30
SHO.. 40-160/75	7,5	10	42,9		42,8	42,4	42,0	41,6	41,4	41,2	41,0	40,8	39,3	38,5	38,2	37,6				30
SHO.. 50-125/55	5,5	7,5	29,7				29,3	29,1	29,0	28,9	28,8	28,7	28,0	27,6	27,5	27,2	26,7			40
SHO.. 50-125/75	7,5	10	32,0				31,7	31,6	31,5	31,4	31,3	31,2	30,5	30,1	30,0	29,7	29,2	28,2		40
SHO.. 50-160/92	9,2	12,5	41,9									40,4	39,3	38,8	38,6	38,3	37,7	36,6		30
SHO.. 50-160/110	11	15	45,1									43,2	42,2	41,6	41,5	41,1	40,5	39,4	38,4	30

Performances according to ISO standards 9906 - Annex A.

sho_2p50-en_c_th

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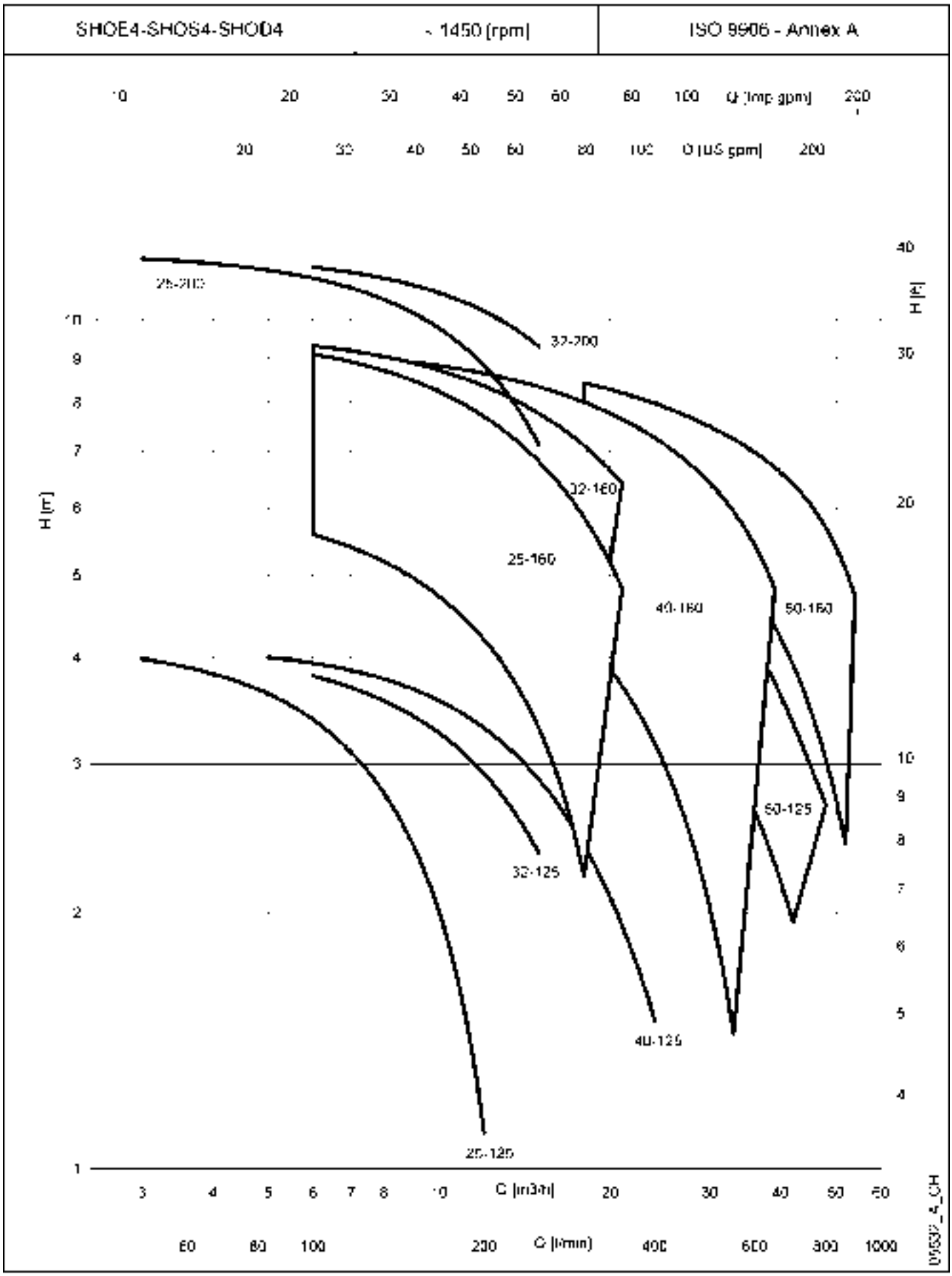
SHOE4 - SHOS4 - SHOD4 SERIES
HYDRAULIC PERFORMANCE RANGE AT 50 Hz, 4 POLES



These performances are valid for liquids with density ρ = 1.0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec

LOWARA
a xylem brand

SHOE4 - SHOS4 - SHOD4 SERIES
TABLE OF HYDRAULIC PERFORMANCES AT 50 Hz, 4 POLES

PUMP TYPE	RATED POWER		Q = DELIVERY																	Passes solids up to (mm)
	kW	HP	l/min 0	50	100	150	200	250	300	350	400	500	550	600	650	700	800	867	900	
			m^3/h 0	3	6	9	12	15	18	21	24	30	33	36	39	42	48	52	54	
			H = TOTAL HEAD METRES COLUMN OF WATER																	
SHO..4 25-125/03	0,37	0,5	4,2	4,0	3,4	2,4	1,1													22
SHO..4 25-160/03	0,37	0,5	6,1		5,6	5,0	4,2	3,3	2,2											22
SHO..4 25-160/05	0,55	0,75	7,8		7,3	6,7	6,0	5,1	4,1											22
SHO..4 25-160/07	0,75	1	9,5		9,1	8,5	7,7	6,8	5,9	4,8										22
SHO..4 25-200/07	0,75	1	12,0	11,8	11,2	10,2	8,8	7,1												20
SHO..4 32-125/03	0,37	0,5	4,2		3,8	3,4	2,9	2,3												22
SHO..4 32-160/03	0,37	0,5	6,2		5,7	5,2	4,7	4,0	3,3											22
SHO..4 32-160/05	0,55	0,75	7,8		7,5	7,0	6,5	6,0	5,3											22
SHO..4 32-160/07	0,75	1	9,5		9,3	8,9	8,4	7,8	7,1	6,4										22
SHO..4 32-200/07	0,75	1	12,0		11,5	11,0	10,2	9,3												20
SHO..4 40-125/03	0,37	0,5	3,7			3,3	3,0	2,6	2,2	1,8	1,4									30
SHO..4 40-160/05	0,55	0,75	5,9			5,4	5,1	4,7	4,2	3,7	3,2	2,0	1,4							30
SHO..4 40-160/07	0,75	1	7,5			7,0	6,7	6,3	6,0	5,5	5,1	4,0	3,4	2,8						30
SHO..4 40-160/11	1,1	1,5	9,3			8,9	8,7	8,3	8,0	7,6	7,3	6,4	5,9	5,4	4,8					30
SHO..4 50-125/07	0,75	1	5,4					4,9	4,7	4,4	4,0	3,3	3,0	2,6	2,3	1,9				40
SHO..4 50-125/11	1,1	1,5	6,5					6,2	6,1	5,8	5,6	4,9	4,5	4,1	3,7	3,3	2,7			40
SHO..4 50-160/11	1,1	1,5	7,4					6,9	6,7	6,4	6,1	5,5	5,1	4,8	4,4	3,9	3,0	2,4		40
SHO..4 50-160/15	1,5	2	9,2					8,6	8,4	8,2	8,0	7,5	7,2	7,0	6,7	6,4	5,7	5,1	4,7	40

Performances according to ISO standards 9906 - Annex A.

sho_4p50-en_c_th

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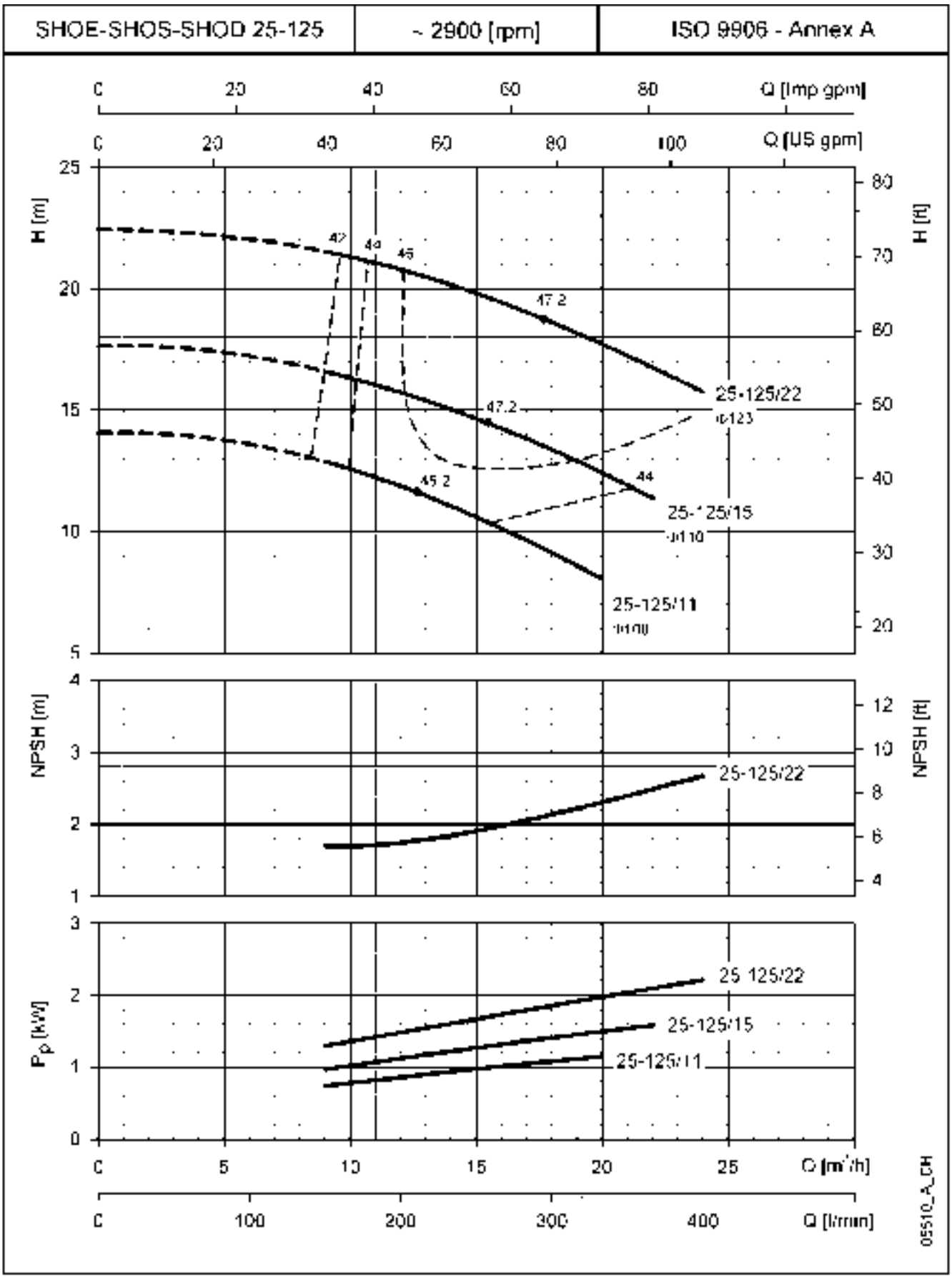
a xylem brand

SHOE - SHOS - SHOD SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES

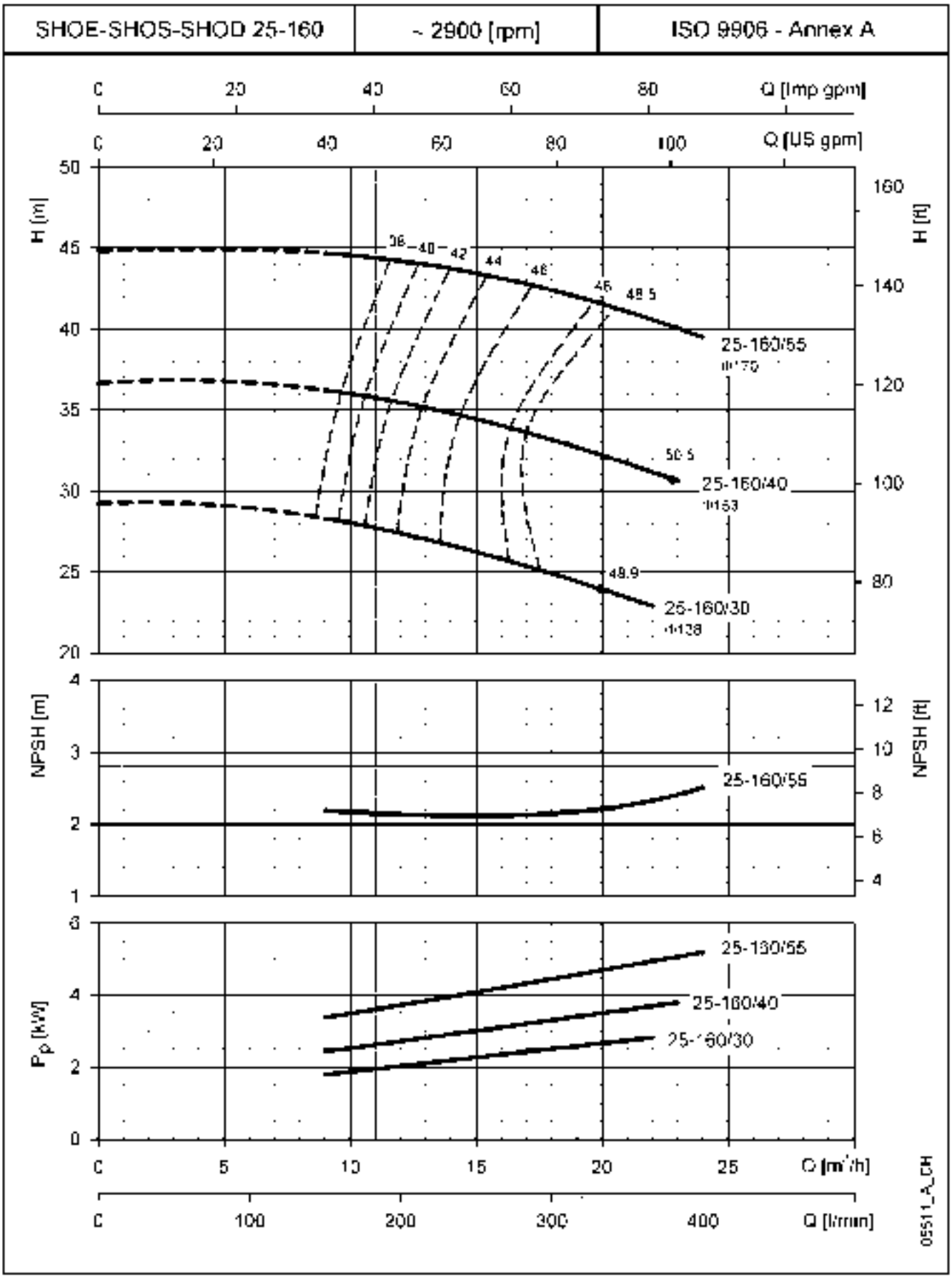
SHOE-SHOS-SHOD 25-125	~ 2900 [rpm]	ISO 9906 - Annex A



The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density ρ = 1.0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.

SHOE - SHOS - SHOD SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES

SHOE-SHOS-SHOD 25-160	~ 2900 [rpm]	ISO 9906 - Annex A



The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density $\rho = 1.0$ Kg/dm^3 and kinematic viscosity $\nu = 1$ mm^2/sec.

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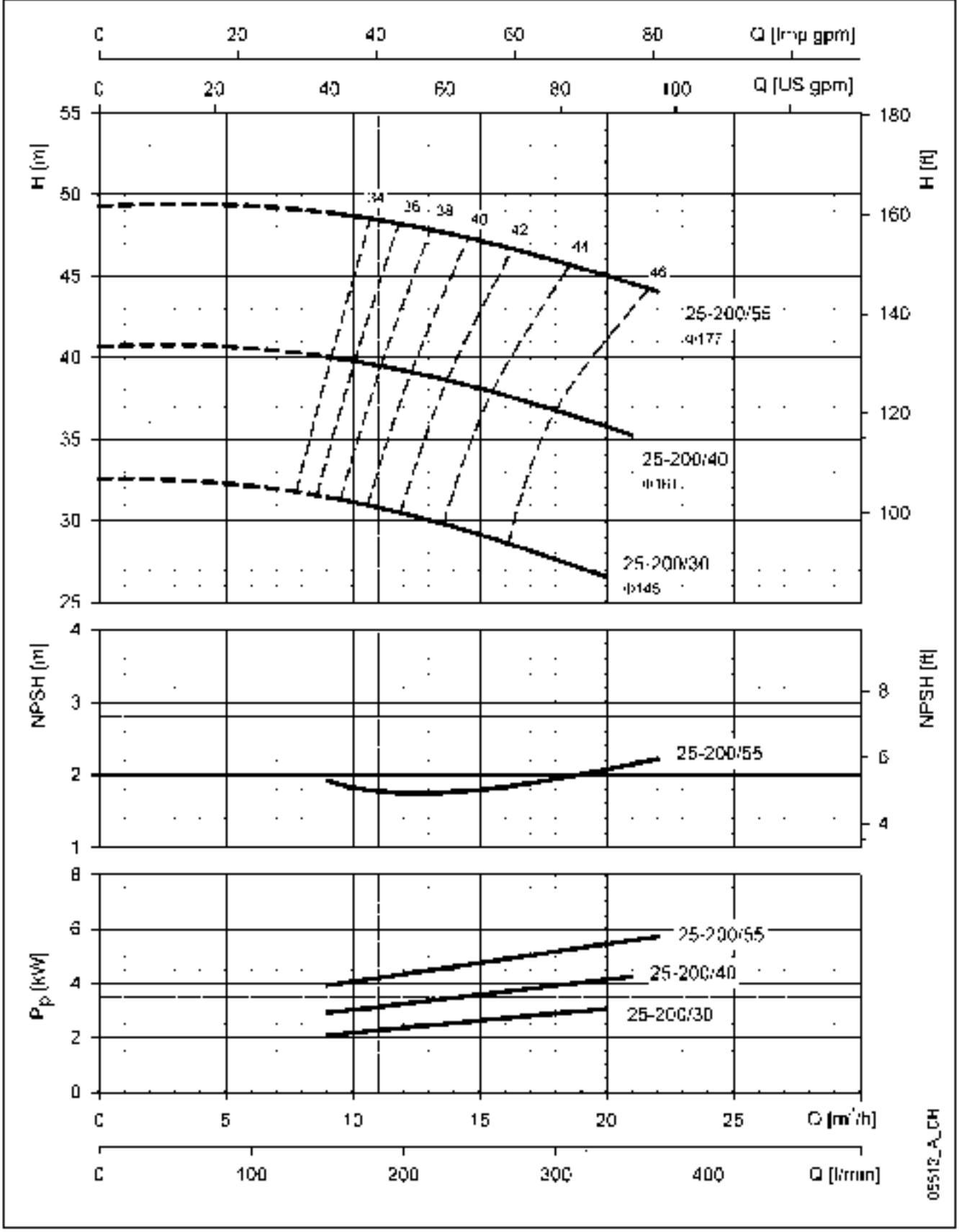
SHOE - SHOS - SHOD SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES

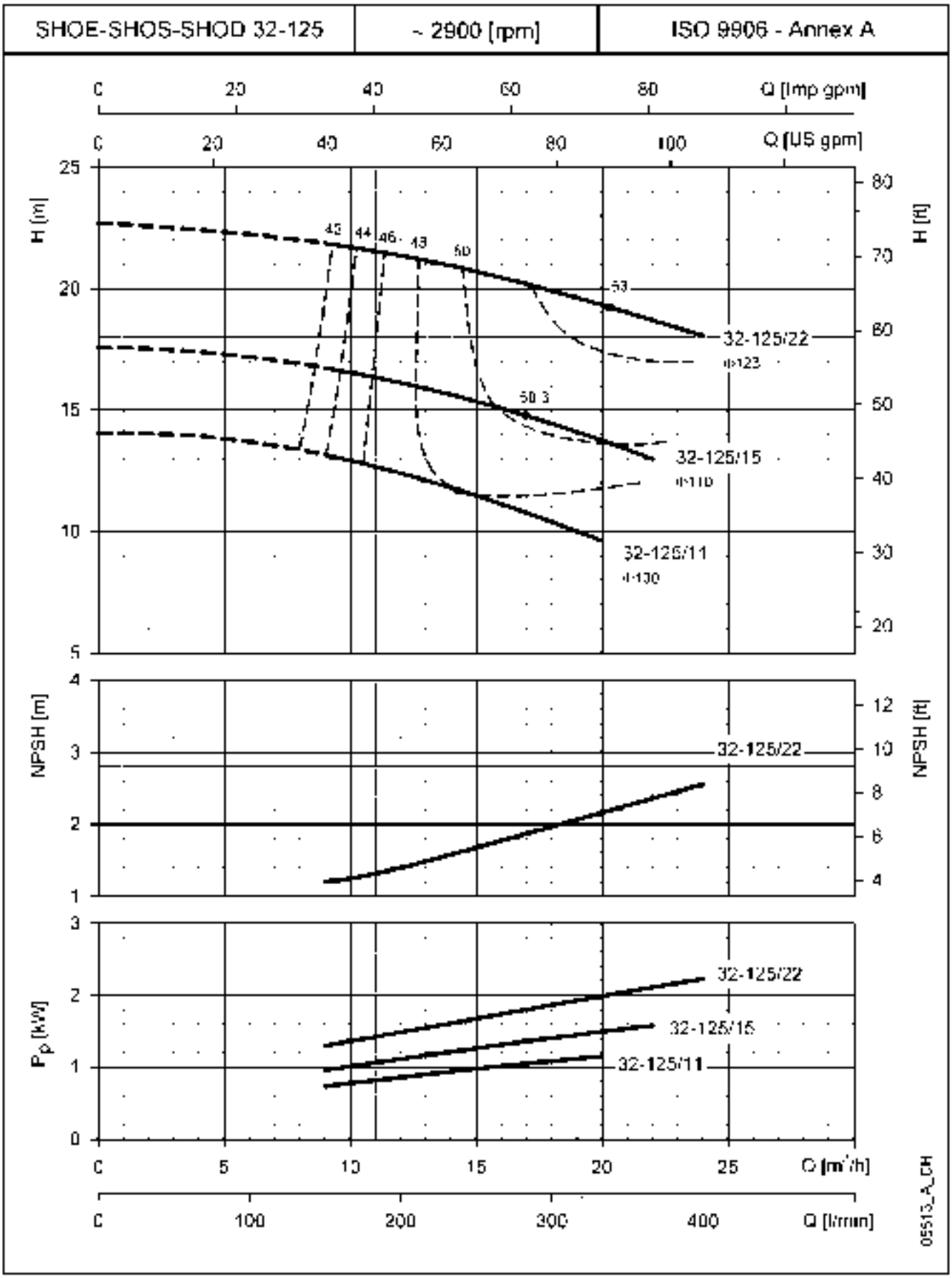
SHOE-SHOS-SHOD 25-200	~ 2900 [rpm]	ISO 9906 - Annex A



The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density $\rho = 1.0$ Kg/dm³ and kinematic viscosity $\nu = 1$ mm²/sec.

SHOE - SHOS - SHOD SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES

SHOE-SHOS-SHOD 32-125	~ 2900 [rpm]	ISO 9906 - Annex A



The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density ρ = 1.0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.

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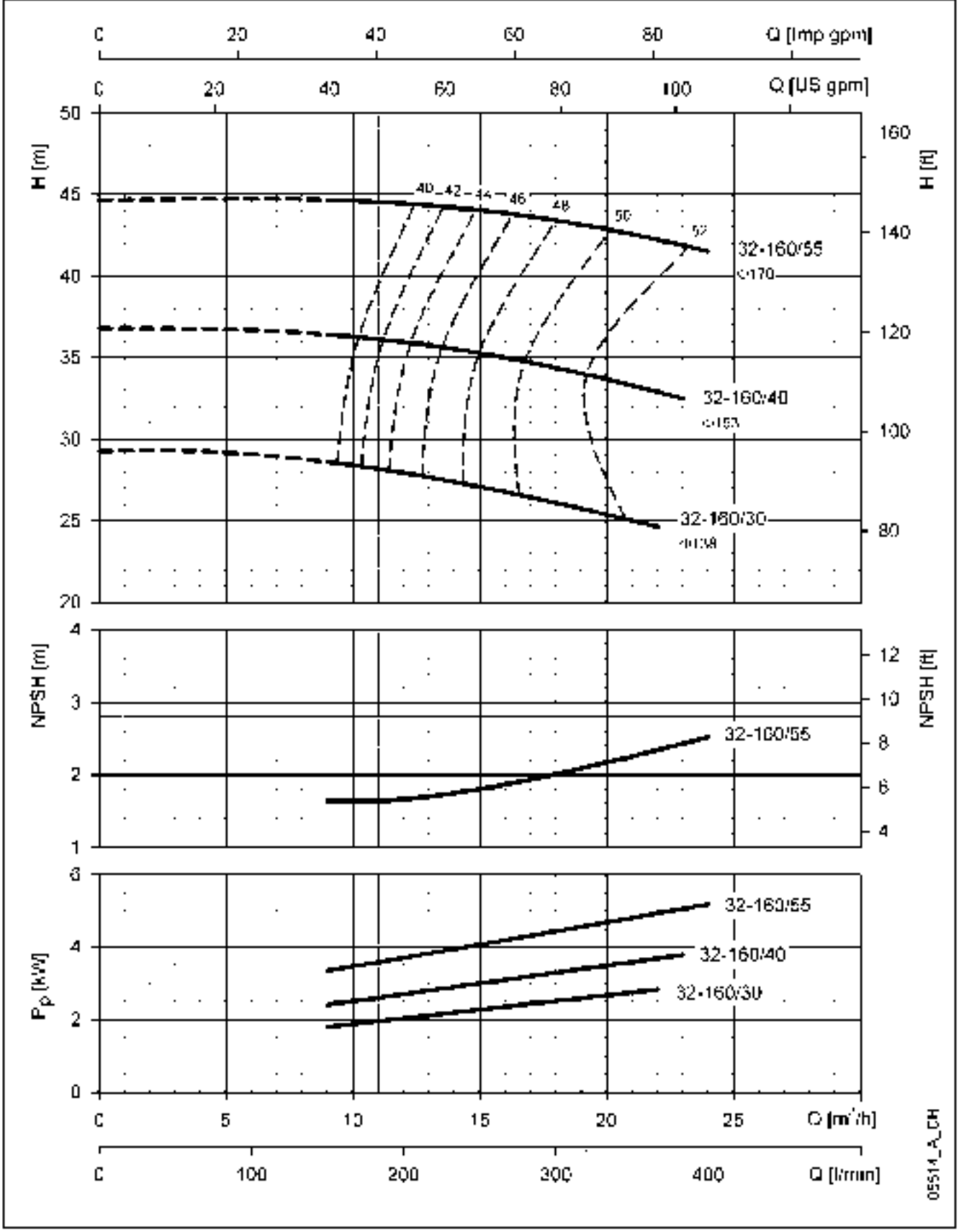
SHOE - SHOS - SHOD SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES

SHOE-SHOS-SHOD 32-160	~ 2900 [rpm]	ISO 9906 - Annex A



The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density ρ = 1.0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.

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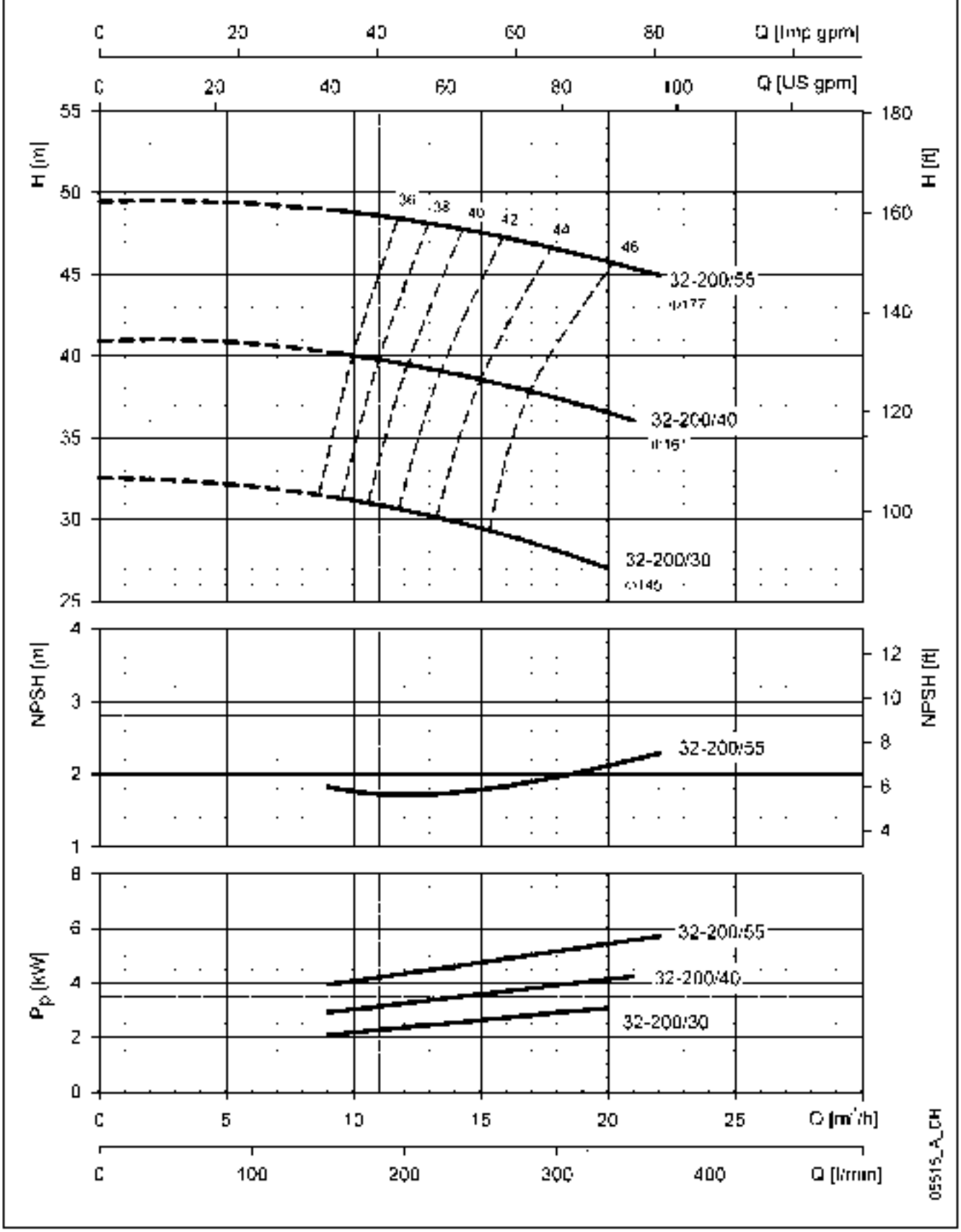
SHOE - SHOS - SHOD SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES

SHOE-SHOS-SHOD 32-200	~ 2900 [rpm]	ISO 9906 - Annex A



The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density $\rho = 1.0$ Kg/dm^3 and kinematic viscosity $\nu = 1$ mm^2/sec.

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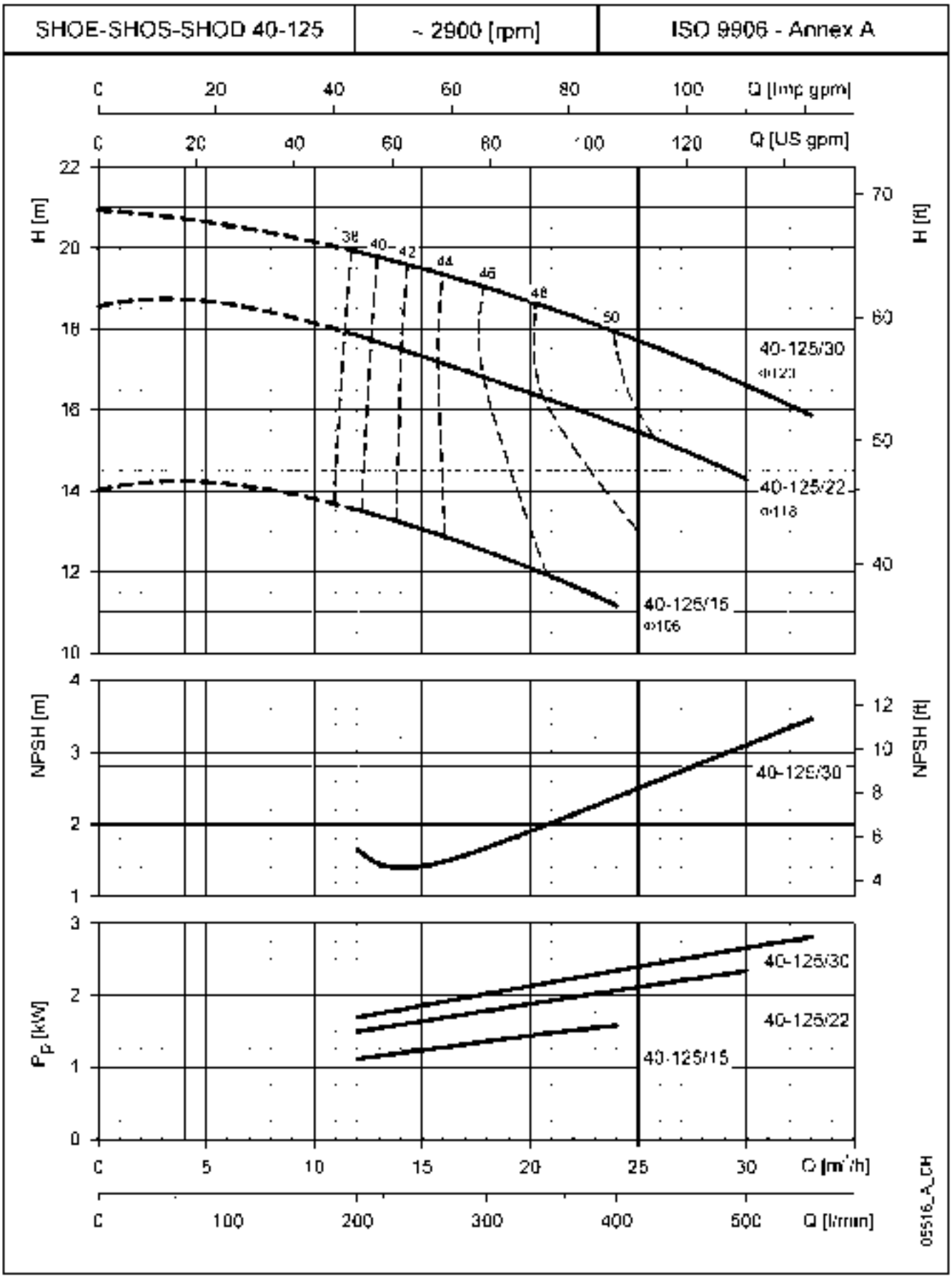
SHOE - SHOS - SHOD SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES

SHOE-SHOS-SHOD 40-125	~ 2900 [rpm]	ISO 9906 - Annex A



The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density ρ = 1.0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.

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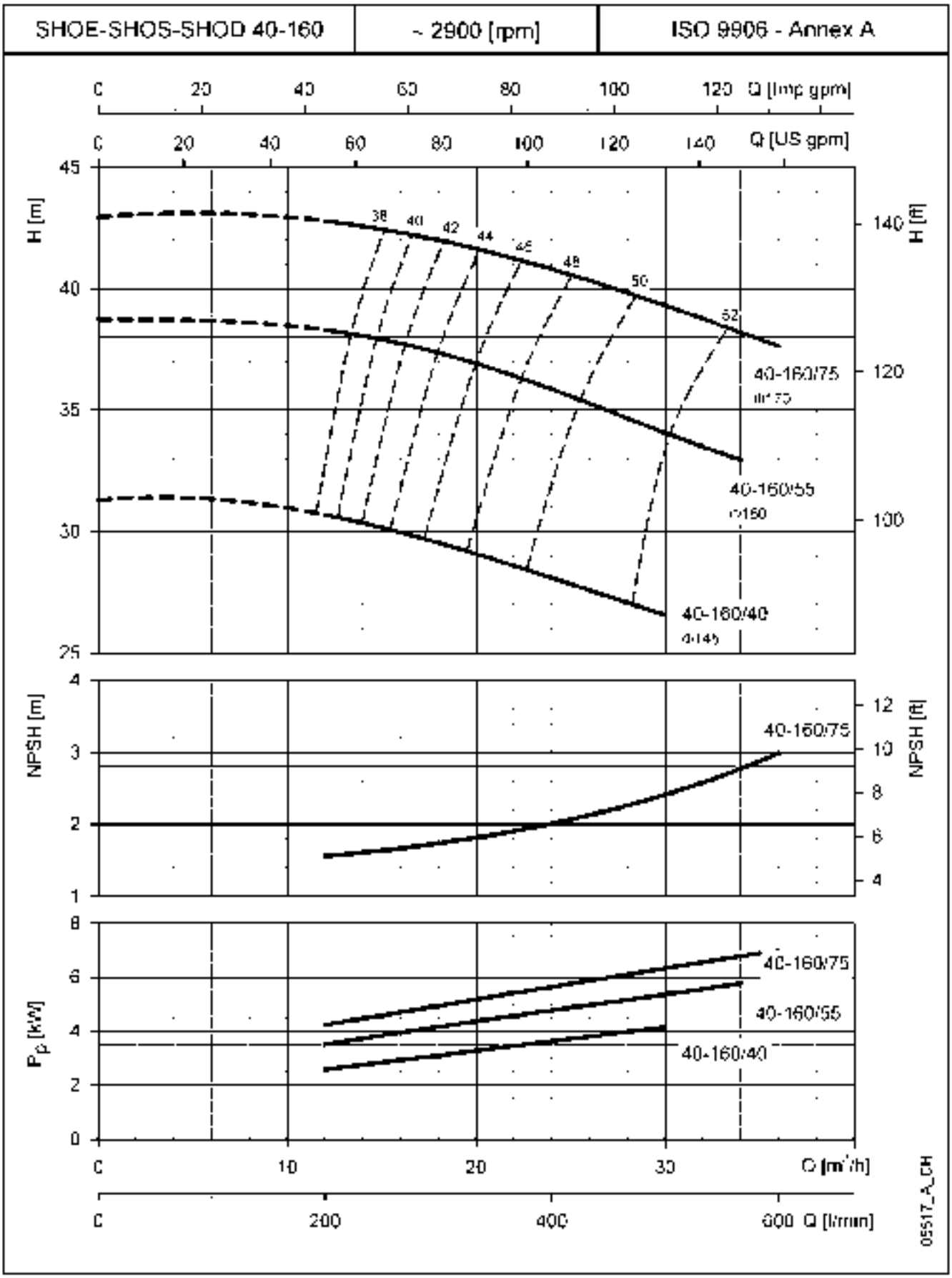
a xylem brand

SHOE - SHOS - SHOD SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES

SHOE-SHOS-SHOD 40-160	~ 2900 [rpm]	ISO 9906 - Annex A



The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density ρ = 1.0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.

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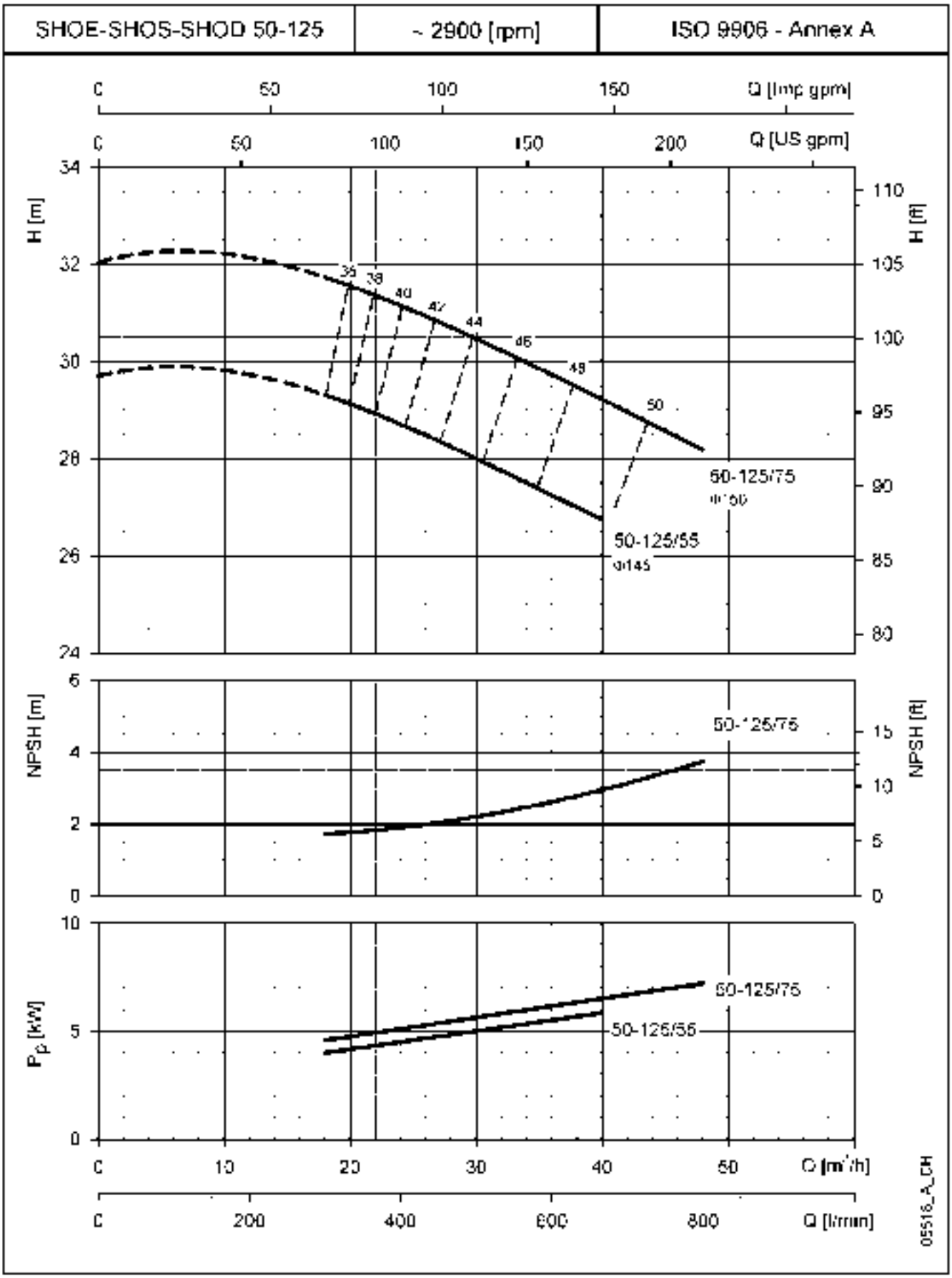
a xylem brand

SHOE - SHOS - SHOD SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES

SHOE-SHOS-SHOD 50-125	~ 2900 [rpm]	ISO 9906 - Annex A

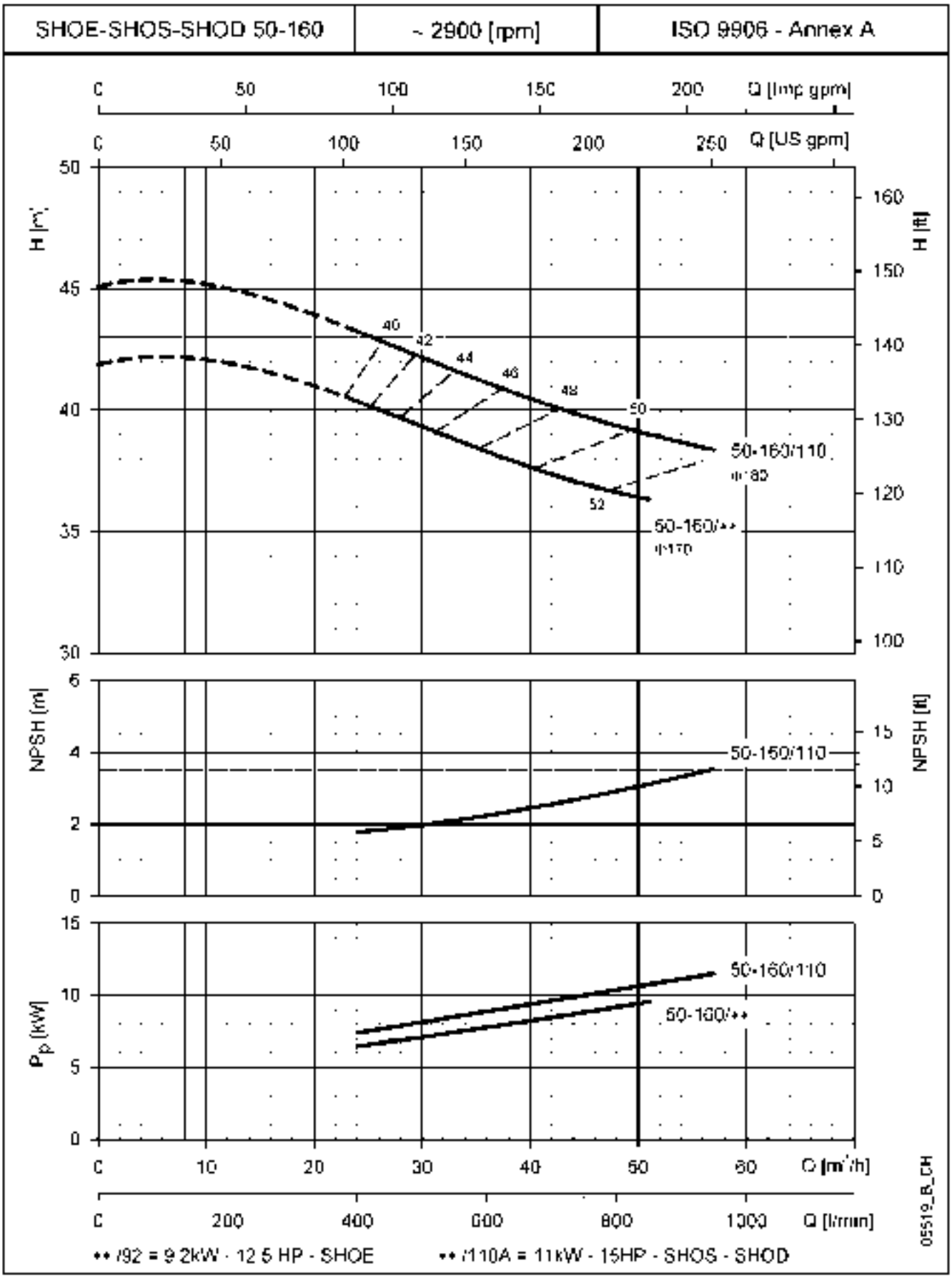


The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density $\rho = 1.0$ Kg/dm³ and kinematic viscosity $\nu = 1$ mm²/sec.

LOWARA
a xylem brand

SHOE - SHOS - SHOD SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 2 POLES

SHOE-SHOS-SHOD 50-160	~ 2900 [rpm]	ISO 9906 - Annex A



The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density $\rho = 1.0$ Kg/dm^3 and kinematic viscosity $\nu = 1$ mm^2/sec.

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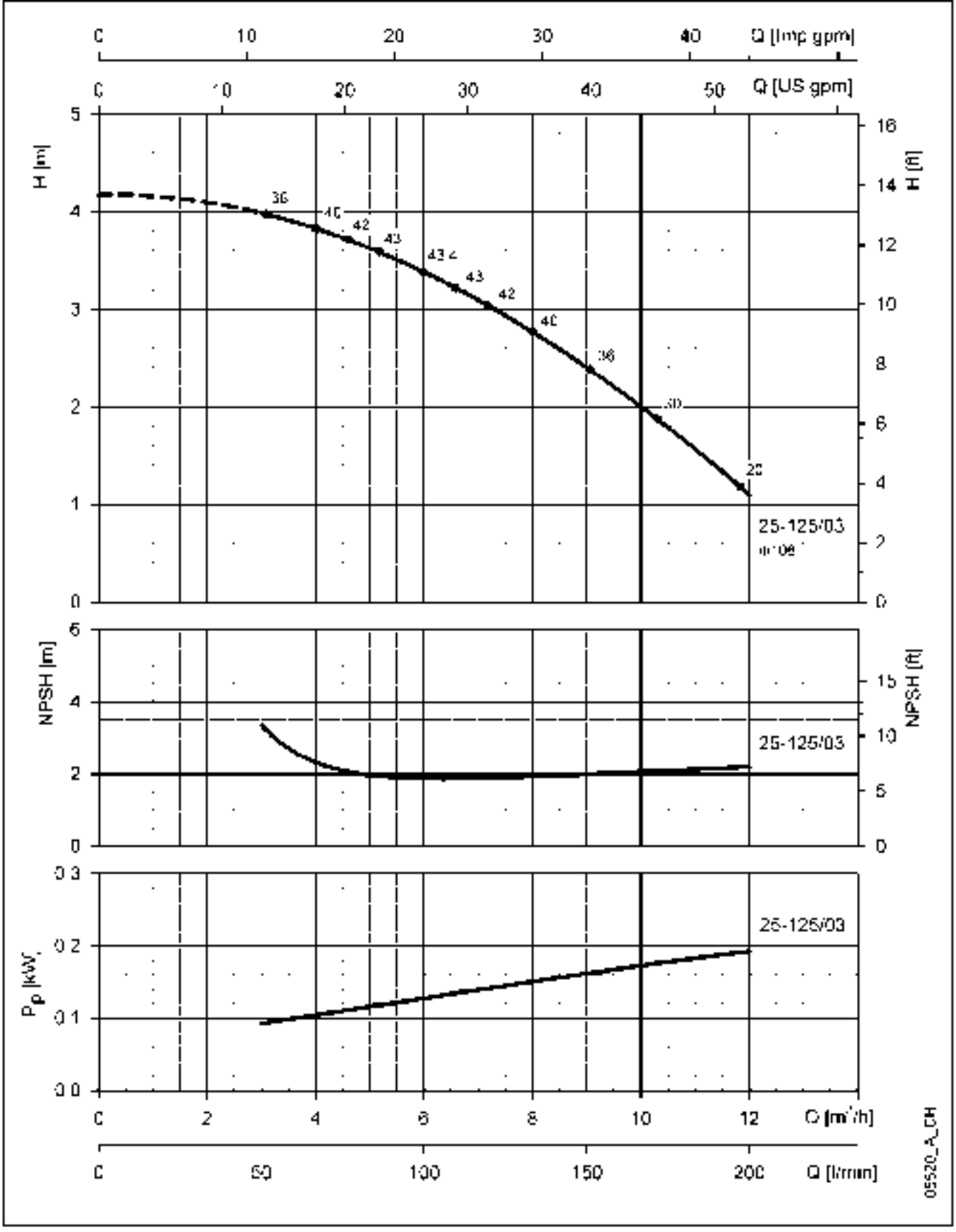
a xylem brand

SHOE4 - SHOS4 - SHOD4 SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES

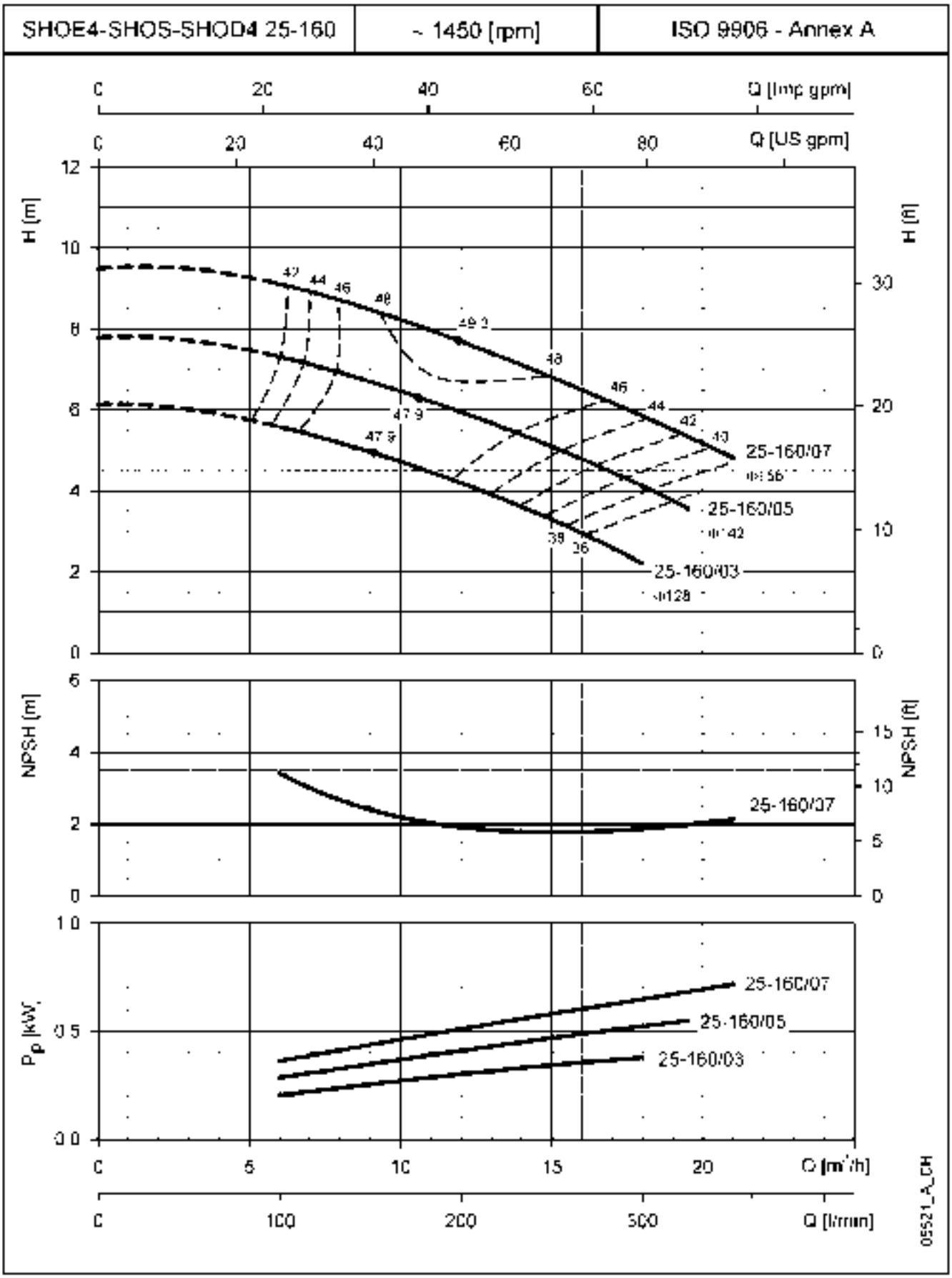
SHOE4-SHOS4-SHOD4 25-125	~ 1450 [rpm]	ISO 9906 - Annex A



The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density ρ = 1.0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.

SHOE4 - SHOS4 - SHOD4 SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES

SHOE4-SHOS-SHOD4 25-160	~ 1450 [rpm]	ISO 9906 - Annex A



The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density ρ = 1.0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.

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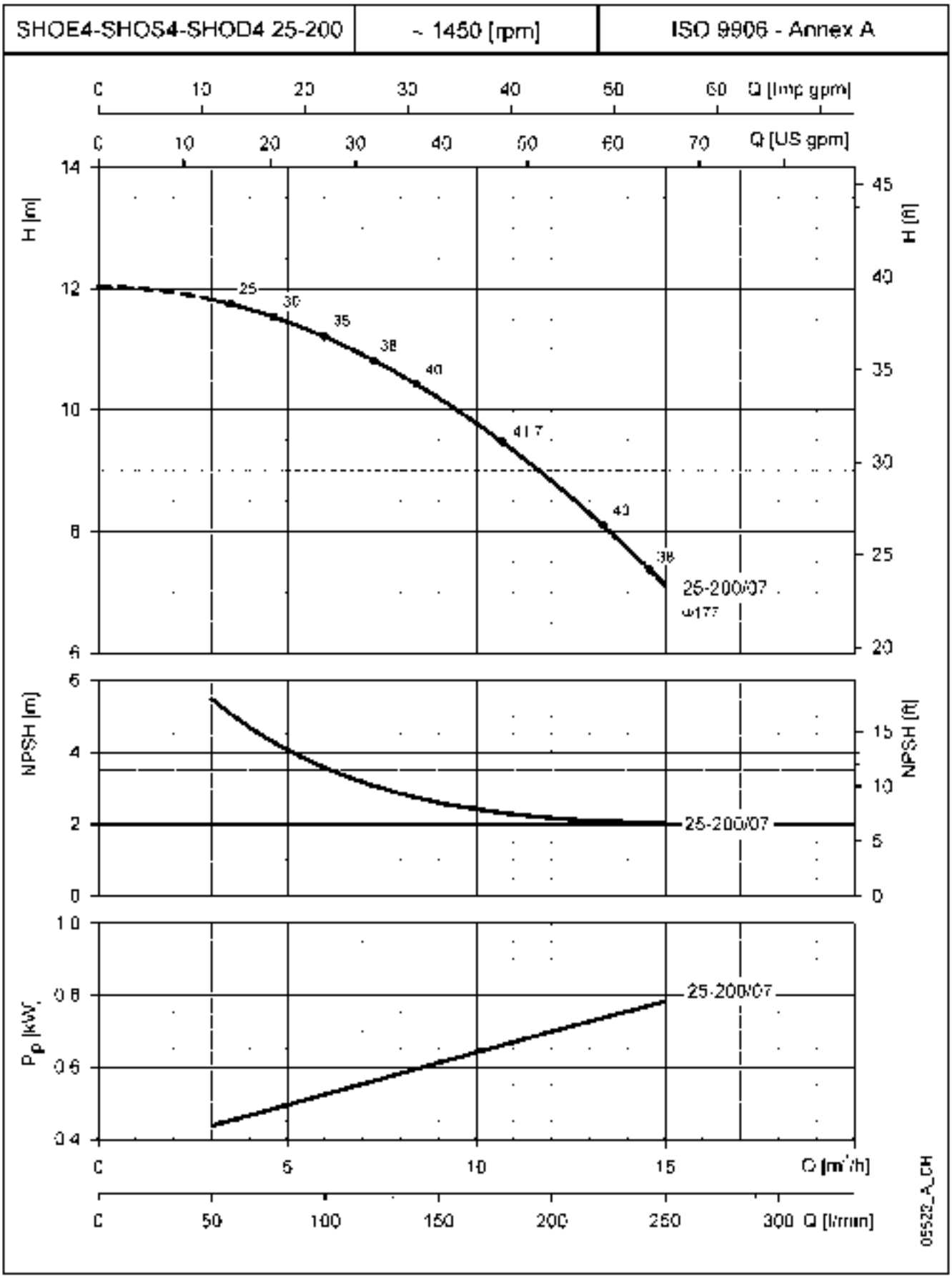
SHOE4 - SHOS4 - SHOD4 SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES

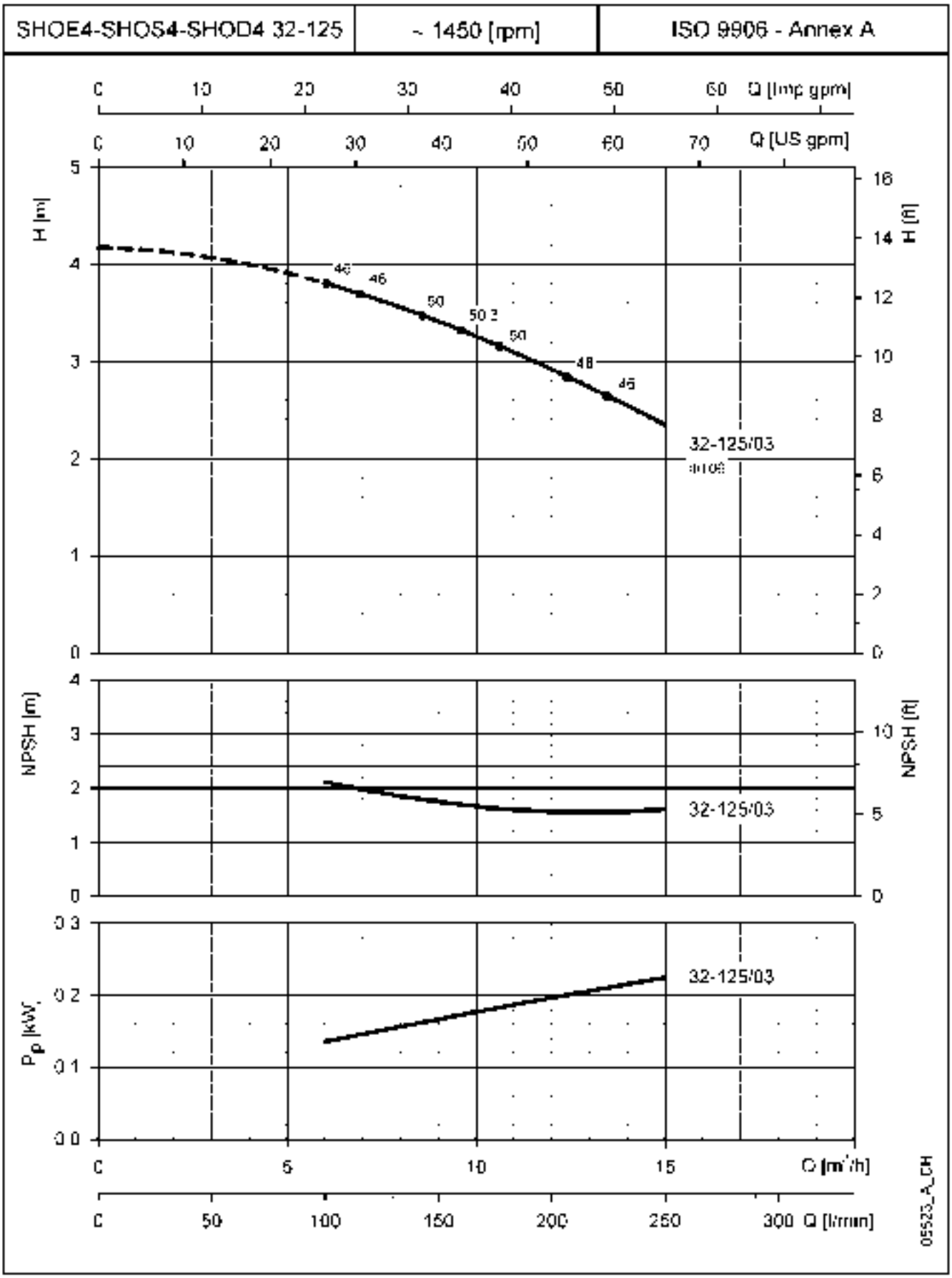
SHOE4-SHOS4-SHOD4 25-200	~ 1450 [rpm]	ISO 9906 - Annex A



The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density $\rho = 1.0$ Kg/dm³ and kinematic viscosity $\nu = 1$ mm²/sec.

SHOE4 - SHOS4 - SHOD4 SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES

SHOE4-SHOS4-SHOD4 32-125	~ 1450 [rpm]	ISO 9906 - Annex A



The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density $\rho = 1.0$ Kg/dm^3 and kinematic viscosity $\nu = 1$ mm^2/sec.

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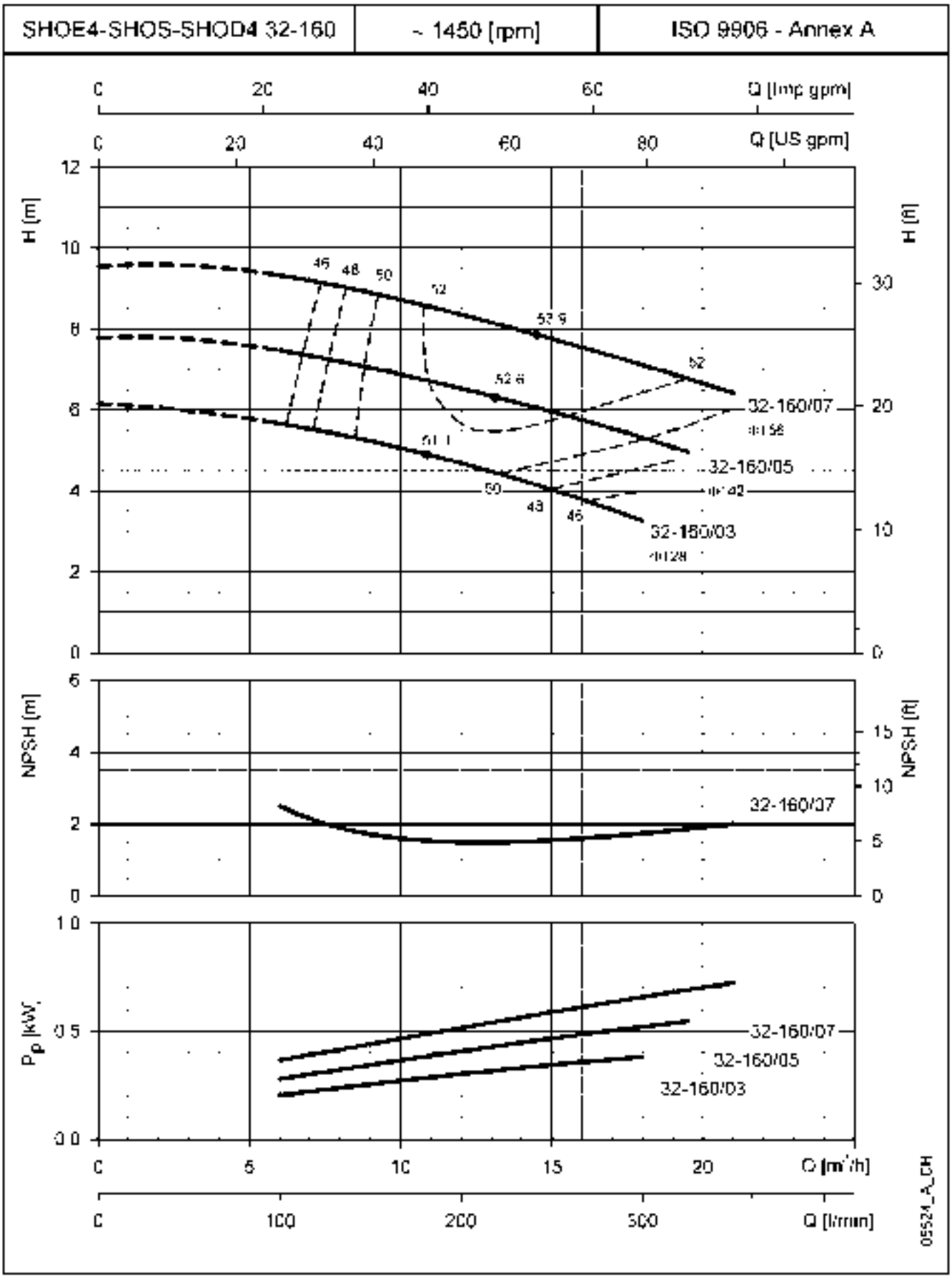
SHOE4 - SHOS4 - SHOD4 SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES

SHOE4-SHOS-SHOD4 32-160	~ 1450 [rpm]	ISO 9906 - Annex A



The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density ρ = 1.0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.

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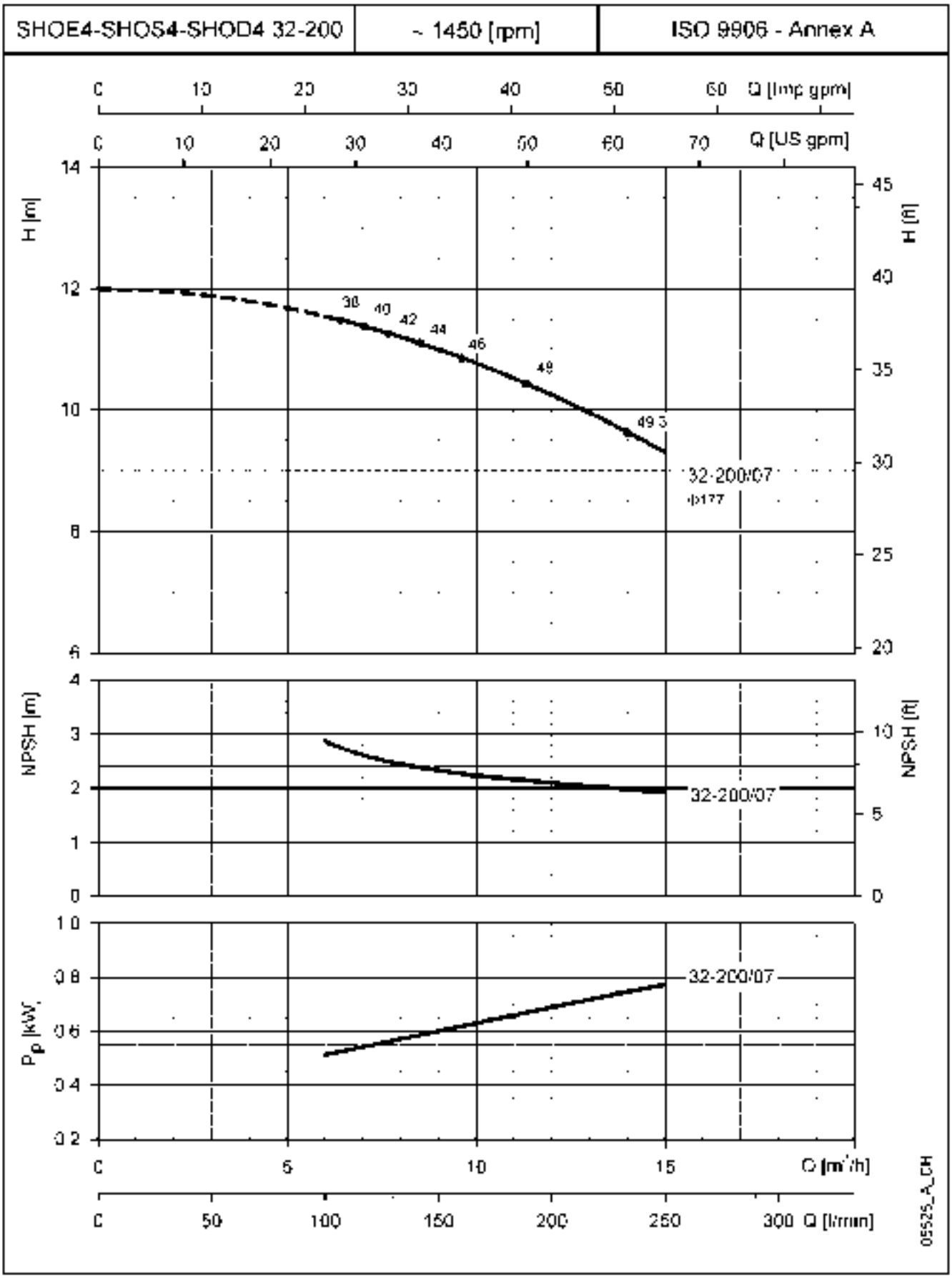
SHOE4 - SHOS4 - SHOD4 SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES

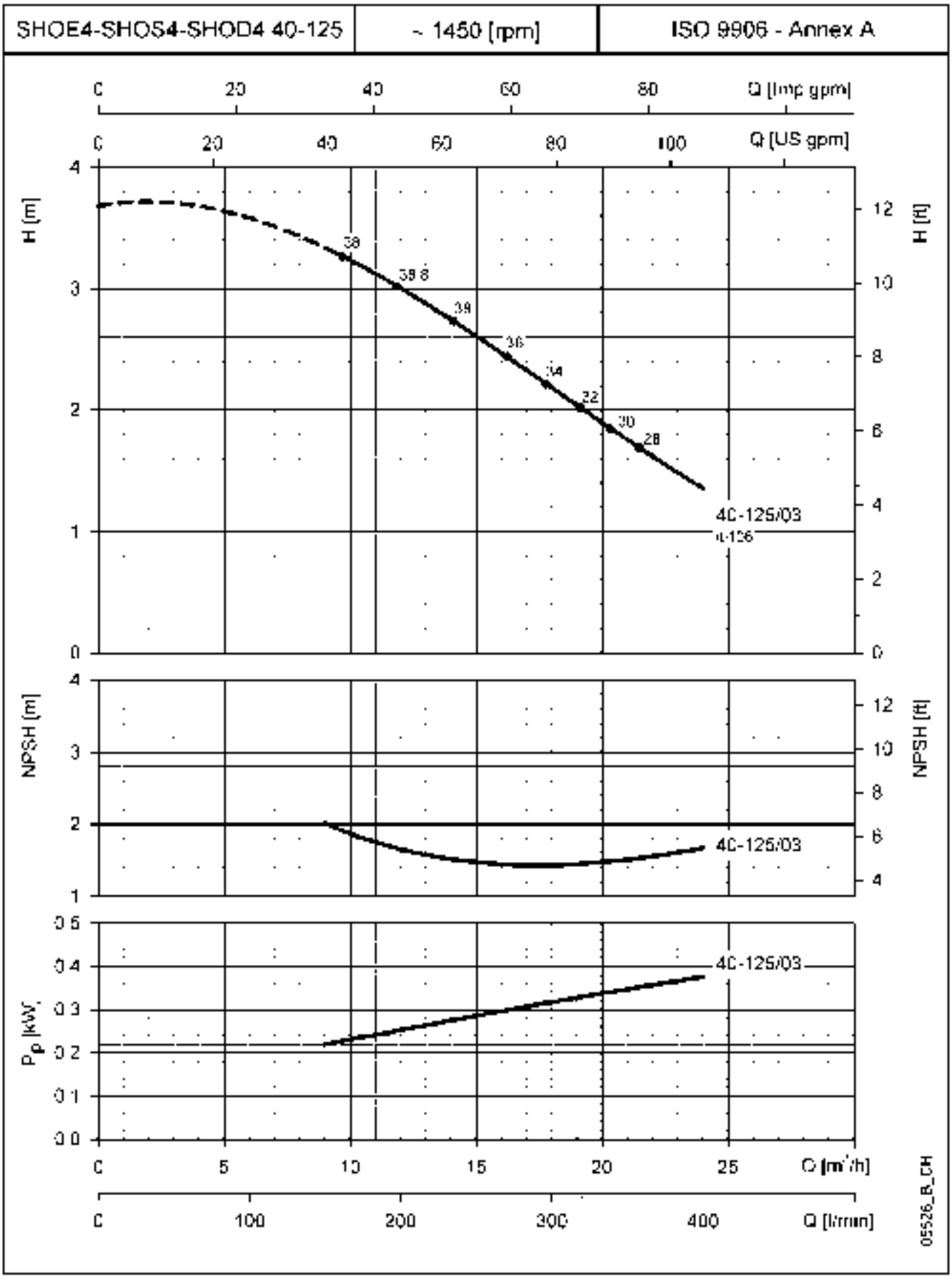
SHOE4-SHOS4-SHOD4 32-200	~ 1450 [rpm]	ISO 9906 - Annex A



The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density $\rho = 1.0$ Kg/dm^3 and kinematic viscosity $\nu = 1$ mm^2/sec.

SHOE4 - SHOS4 - SHOD4 SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES

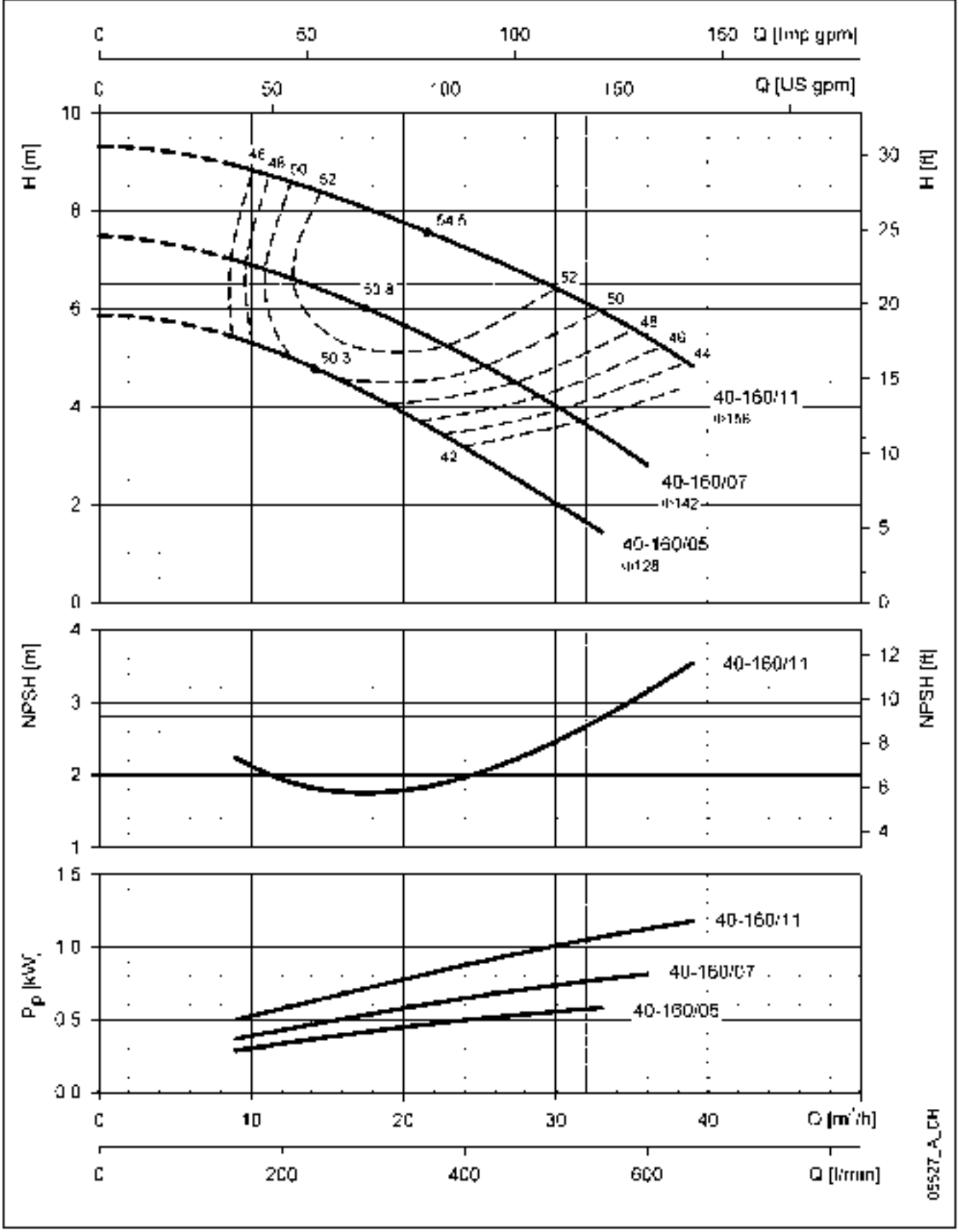
SHOE4-SHOS4-SHOD4 40-125	~ 1450 [rpm]	ISO 9906 - Annex A



The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density $\rho = 1.0$ Kg/dm^3 and kinematic viscosity $\nu = 1$ mm^2/sec.

SHOE4 - SHOS4 - SHOD4 SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES

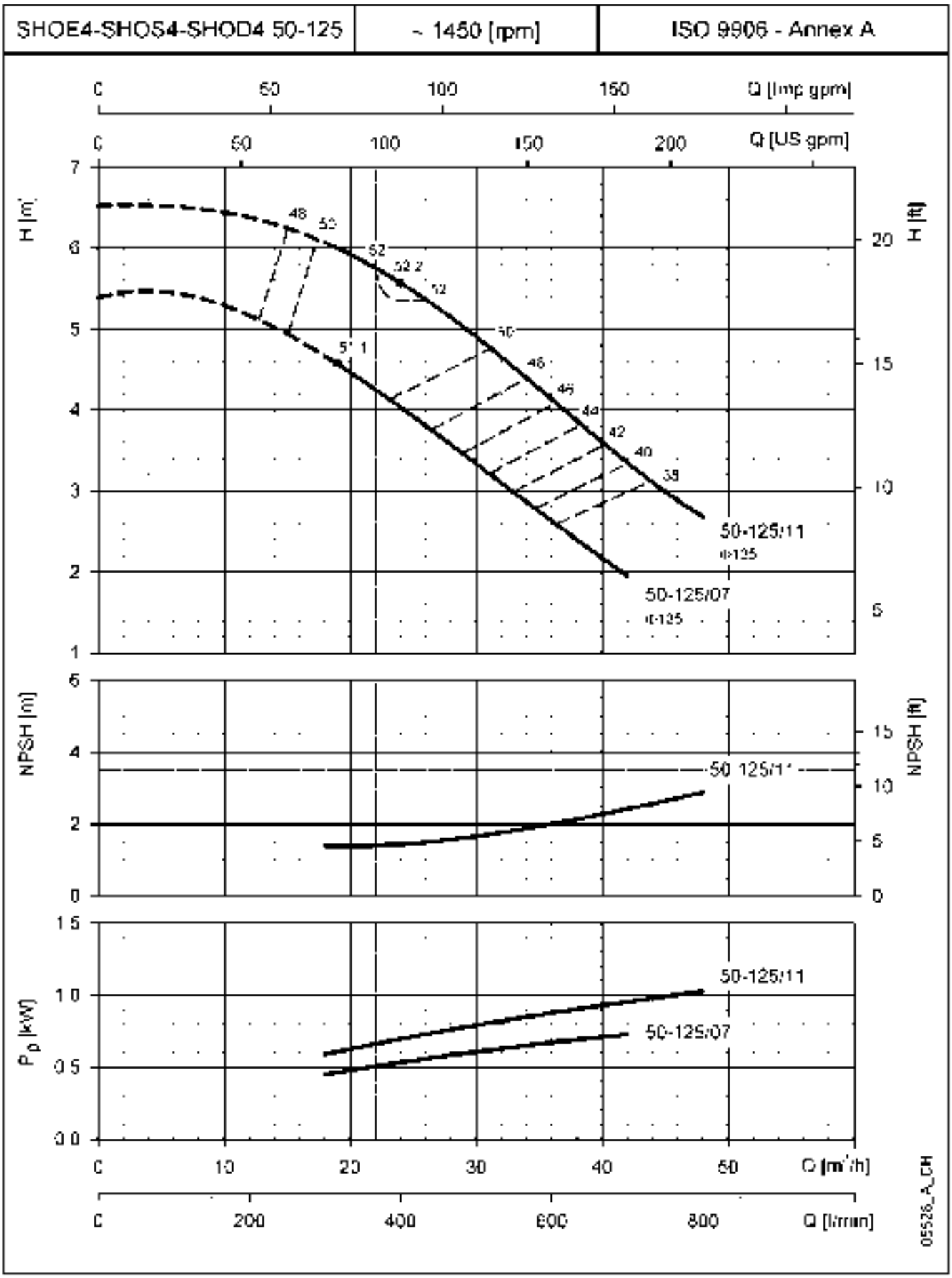
SHOE4-SHOS4-SHOD4 40-160	~ 1450 [rpm]	ISO 9906 - Annex A



The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density ρ = 1.0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.

SHOE4 - SHOS4 - SHOD4 SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES

SHOE4-SHOS4-SHOD4 50-125	~ 1450 [rpm]	ISO 9906 - Annex A



The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density ρ = 1.0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.

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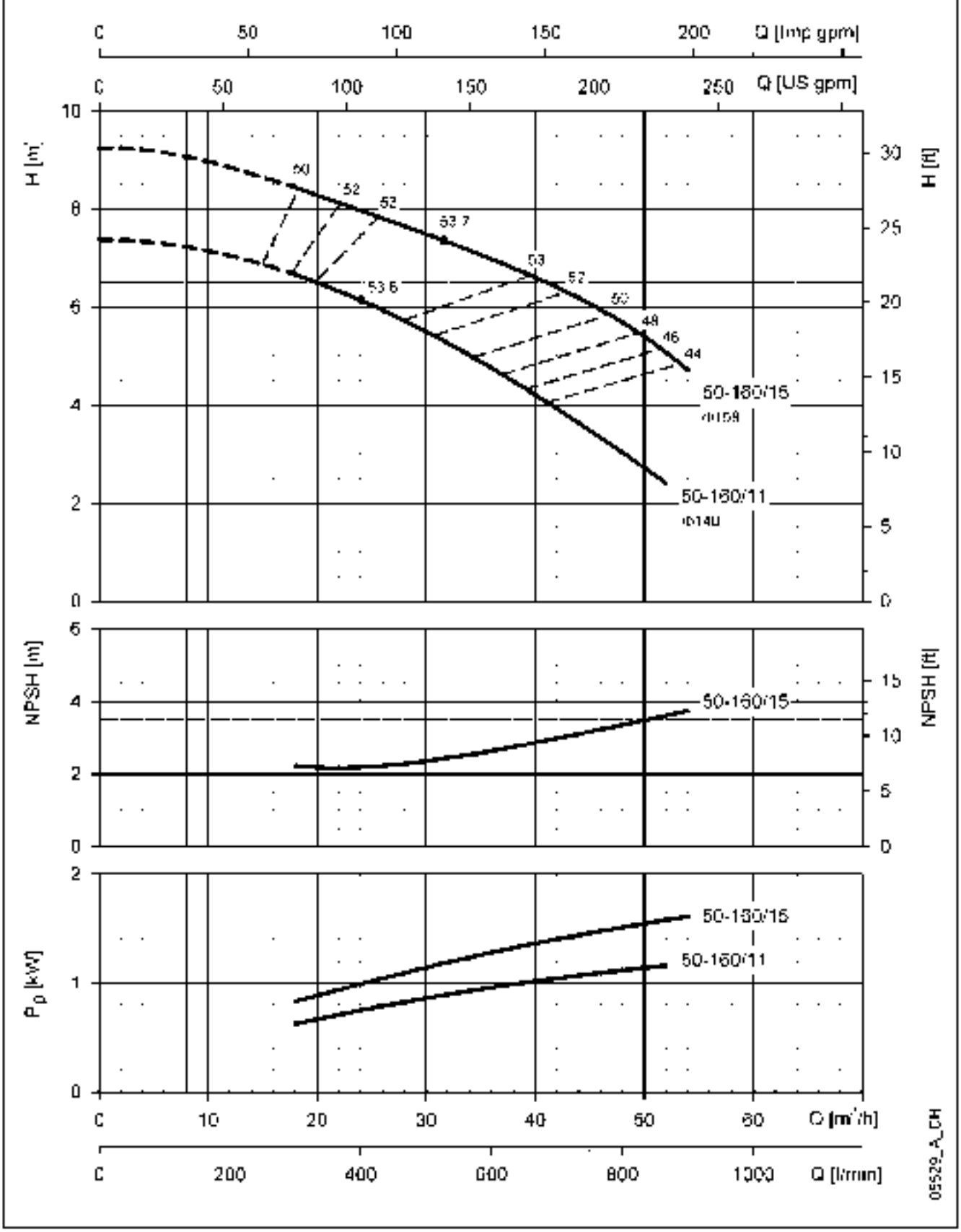
SHOE4 - SHOS4 - SHOD4 SERIES
OPERATING CHARACTERISTICS AT 50 Hz, 4 POLES

SHOE4-SHOS4-SHOD4 50-160	~ 1450 [rpm]	ISO 9906 - Annex A



The NPSH values are laboratory values: for practical use we suggest increasing these values by 0,5 m.
These performances are valid for liquids with density ρ = 1.0 Kg/dm³ and kinematic viscosity ν = 1 mm²/sec.

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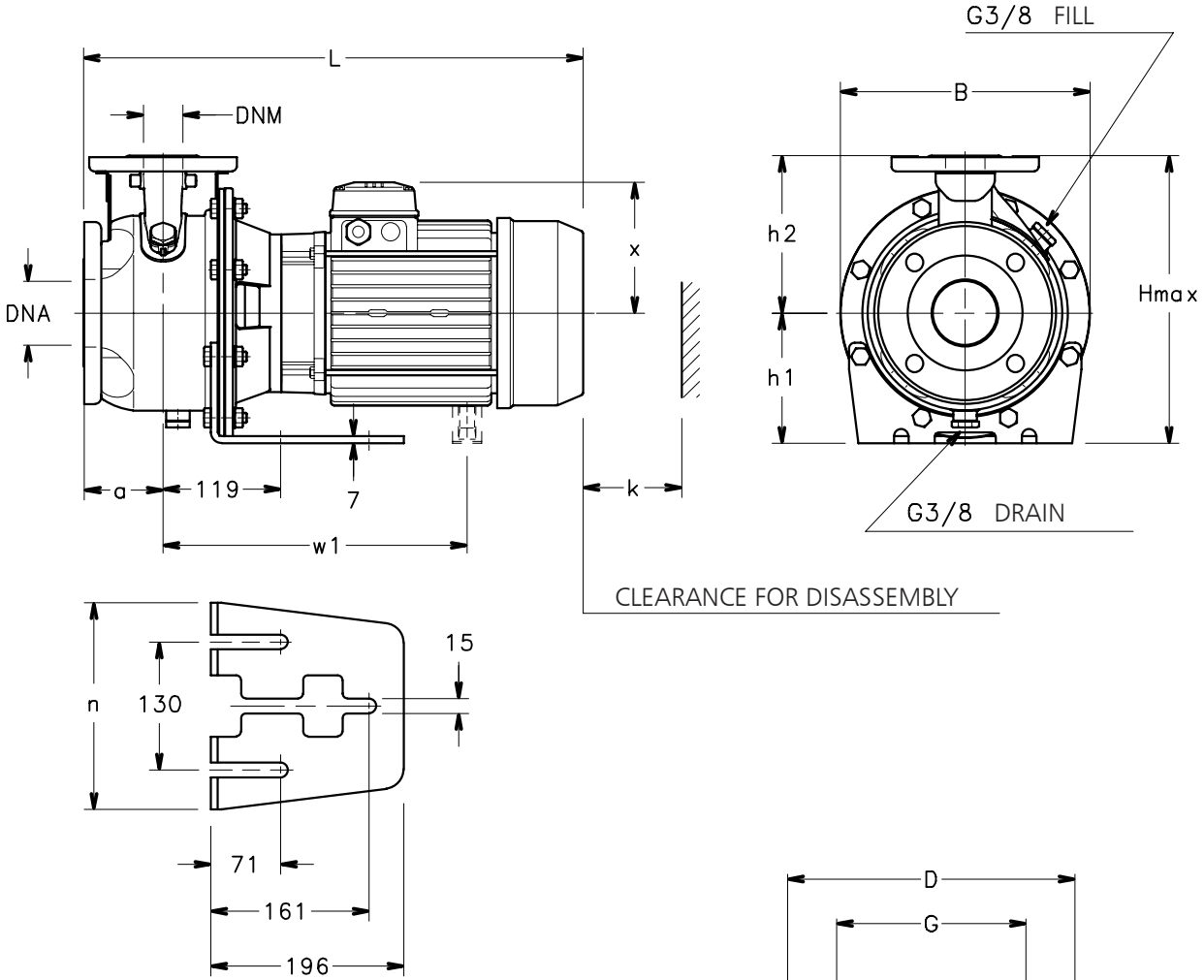
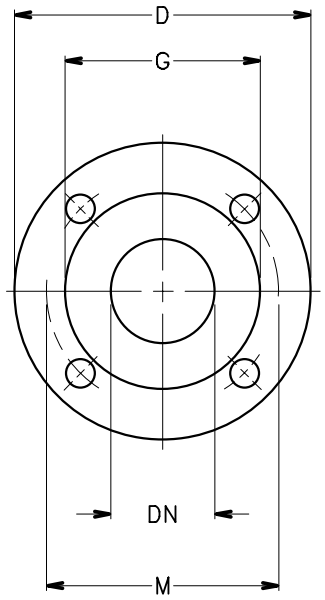
SHO SERIES DIMENSIONS AND WEIGHTS

SHOE SERIES
DIMENSIONS AND WEIGHTS AT 50 Hz, 2 POLES





PUMP FLANGES

DN	D	M	G	HOLES		MAX THICK-NESS
				N°	DIA.	
25	115	85	56	4	18	16
32	140	100	64	4	18	16
40	150	110	68	4	18	16
50	165	125	83	4	18	18
65	185	145	104	4	18	18

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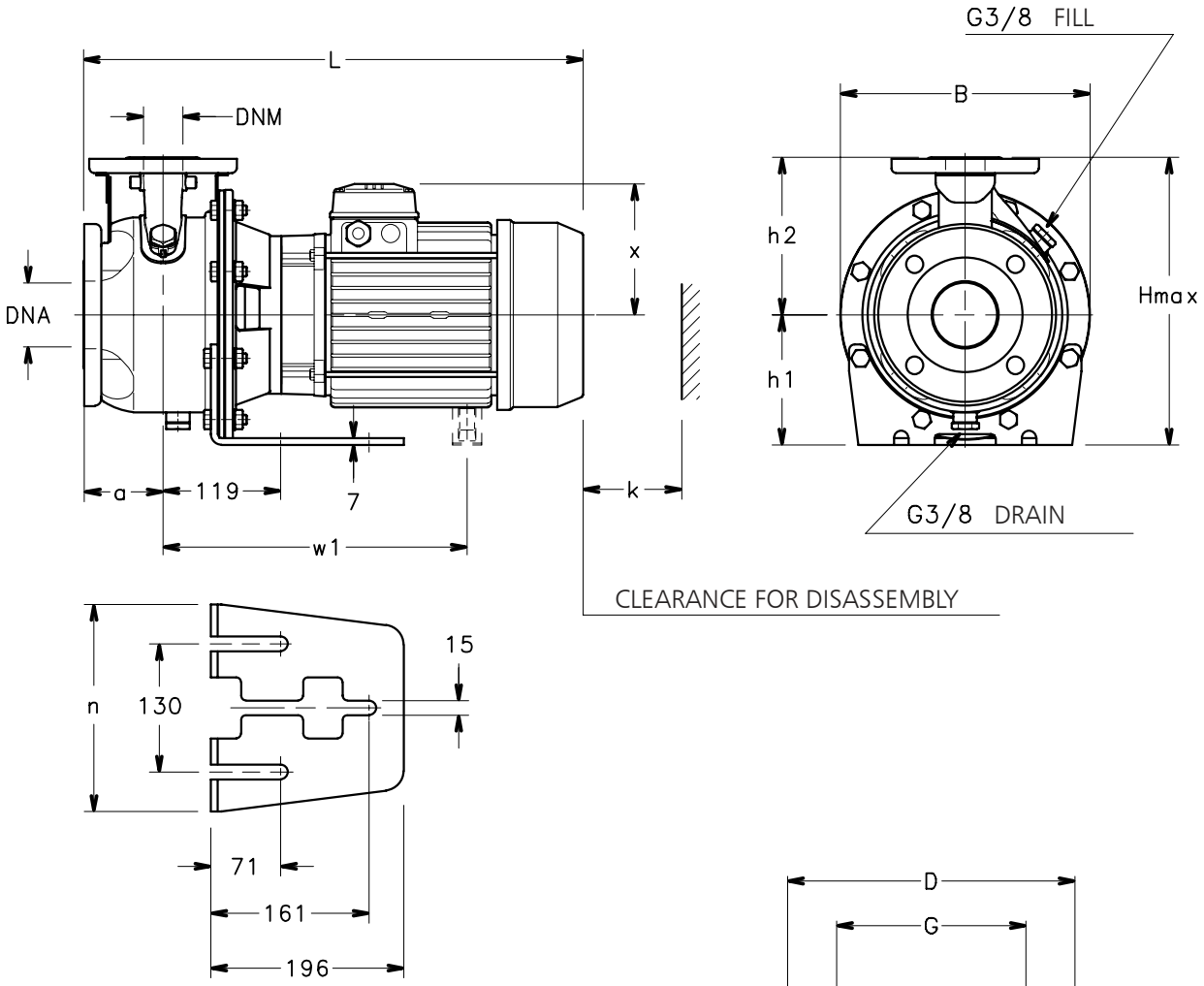
SHOE SERIES
DIMENSIONS AND WEIGHTS AT 50 Hz, 2 POLES

PUMP TYPE	DIMENSIONS (mm)												WEIGHT
	PUMP						SUPPORT		B	H	L	k	
	DNM	DNA	a	h2	w1	x	h1	n		max			kg
SHOE 25-125/11/D	25	50	80	140	-	129	112	190	219	252	453	98	22
SHOE 25-125/15/D	25	50	80	140	-	129	112	190	219	252	453	98	23
SHOE 25-125/22/P	25	50	80	140	-	134	112	190	219	252	488	98	28
SHOE 25-160/30/P	25	50	80	160	-	134	132	210	254	292	488	98	33
SHOE 25-160/40/P	25	50	80	160	-	154	132	210	254	292	509	98	40
SHOE 25-160/55/P	25	50	80	160	-	168	132	210	254	292	543	98	48
SHOE 25-200/30/P	25	50	80	180	-	134	160	230	284	340	488	98	36
SHOE 25-200/40/P	25	50	80	180	-	154	160	230	284	340	509	98	42
SHOE 25-200/55/P	25	50	80	180	-	168	160	230	284	340	543	98	51
SHOE 32-125/11/D	32	50	80	140	-	129	112	190	219	252	453	98	22
SHOE 32-125/15/D	32	50	80	140	-	129	112	190	219	252	453	98	23
SHOE 32-125/22/P	32	50	80	140	-	134	112	190	219	252	488	98	28
SHOE 32-160/30/P	32	50	80	160	-	134	132	210	254	292	488	98	33
SHOE 32-160/40/P	32	50	80	160	-	154	132	210	254	292	509	98	40
SHOE 32-160/55/P	32	50	80	160	-	168	132	210	254	292	543	98	48
SHOE 32-200/30/P	32	50	80	180	-	134	160	230	284	340	488	98	36
SHOE 32-200/40/P	32	50	80	180	-	154	160	230	284	340	509	98	42
SHOE 32-200/55/P	32	50	80	180	-	168	160	230	284	340	543	98	51
SHOE 40-125/15/D	40	65	80	140	-	129	112	190	219	252	463	100	24
SHOE 40-125/22/P	40	65	80	140	-	134	112	190	219	252	498	100	29
SHOE 40-125/30/P	40	65	80	140	-	134	112	190	219	252	498	100	32
SHOE 40-160/40/P	40	65	80	160	-	154	132	210	254	292	519	100	41
SHOE 40-160/55/P	40	65	80	160	-	168	132	210	254	300	553	100	49
SHOE 40-160/75/P	40	65	80	160	-	191	132	210	254	323	567	100	64
SHOE 50-125/55/P	50	65	100	160	-	168	132	210	254	300	573	104	49
SHOE 50-125/75/P	50	65	100	160	-	191	132	210	254	323	587	104	65
SHOE 50-160/92/P	50	65	100	180	363	191	160	210	254	351	625	104	60
SHOE 50-160/110/P	50	65	100	180	363	191	160	210	254	351	625	104	63

shoe-2p50-en_d_td

SHOE4 SERIES
DIMENSIONS AND WEIGHTS AT 50 Hz, 4 POLES



PUMP FLANGES

DN	D	M	G	HOLES		MAX THICK-NESS
				N°	DIA.	
25	115	85	56	4	18	16
32	140	100	64	4	18	16
40	150	110	68	4	18	16
50	165	125	83	4	18	18
65	185	145	104	4	18	18

05503_A_DD

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SHOE4 SERIES
DIMENSIONS AND WEIGHTS AT 50 Hz, 4 POLES

PUMP TYPE	DIMENSIONS (mm)							B	H	L	k	WEIGHT
	PUMP											
	DNM	DNA	a	h2	x	h1	n		max			kg
SHOE4 25-125/03	25	50	80	140	121	112	190	219	252	421	98	19
SHOE4 25-160/03	25	50	80	160	121	132	210	254	292	421	98	23
SHOE4 25-160/05	25	50	80	160	129	132	210	254	292	453	98	25
SHOE4 25-160/07/C	25	50	80	160	128	132	210	254	292	421	98	27
SHOE4 25-200/07/C	25	50	80	180	128	160	230	284	340	421	98	30
SHOE4 32-125/03	32	50	80	140	121	112	190	219	252	421	98	19
SHOE4 32-160/03	32	50	80	160	121	132	210	254	292	421	98	23
SHOE4 32-160/05	32	50	80	160	129	132	210	254	292	453	98	25
SHOE4 32-160/07/C	32	50	80	160	128	132	210	354	292	421	98	27
SHOE4 32-200/07/C	32	50	80	180	128	160	230	284	340	421	98	30
SHOE4 40-125/03	40	65	80	140	121	112	190	219	252	431	100	21
SHOE4 40-160/05	40	65	80	160	129	132	210	254	292	463	100	26
SHOE4 40-160/07/C	40	65	80	160	128	132	210	254	292	431	100	27
SHOE4 40-160/11/P	40	65	80	160	134	132	210	254	292	498	100	31
SHOE4 50-125/07/C	50	65	100	160	128	132	210	254	292	451	104	28
SHOE4 50-125/11/P	50	65	100	160	134	132	210	254	292	518	104	34
SHOE4 50-160/11/P	50	65	100	180	134	160	210	254	340	518	104	35
SHOE4 50-160/15/P	50	65	100	180	134	160	210	254	340	518	104	38

shoe4-4p50-en_d_td

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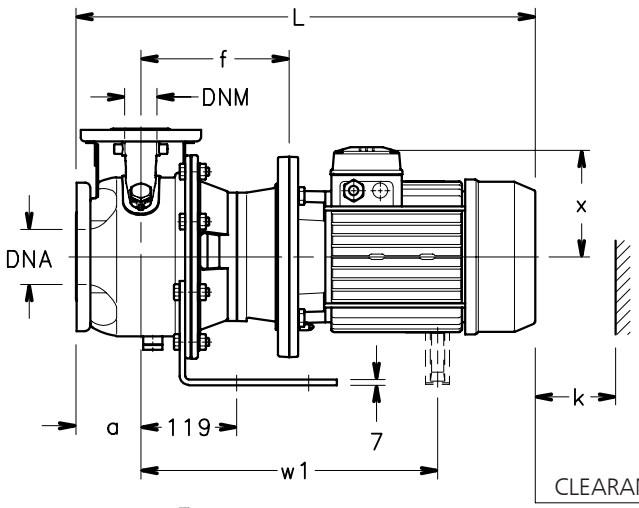
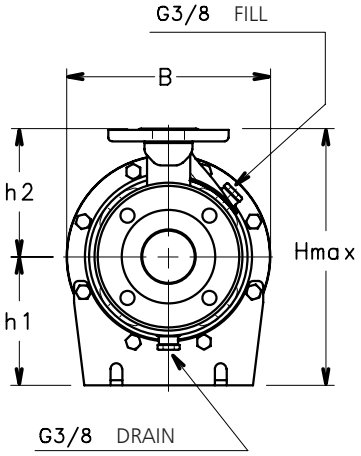
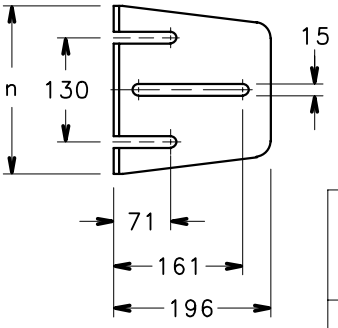
SERIE SHOS
DIMENSIONS AND WEIGHTS AT 50 Hz, 2 POLES

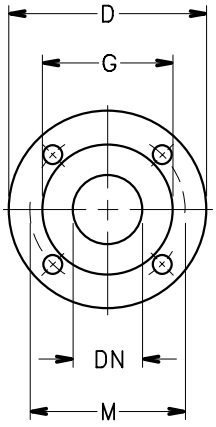




CLEARANCE FOR DISASSEMBLY

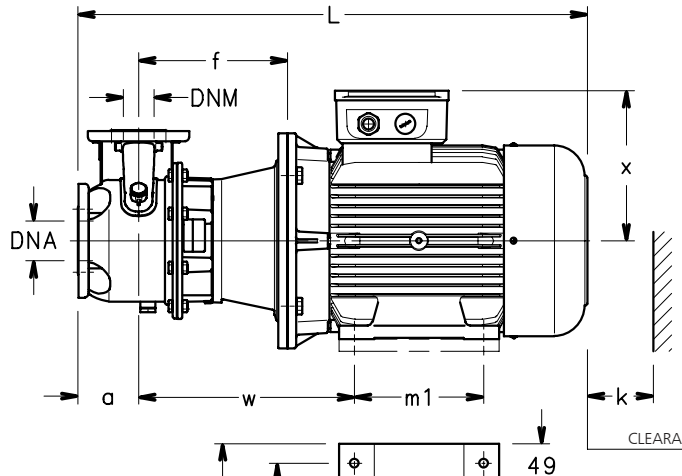


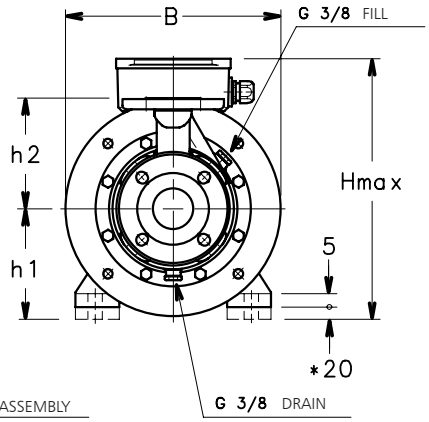
SHOS WITH PUMP SUPPORT FOOT
MOTORS UP TO 7,5 kW



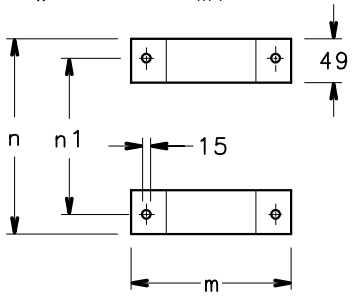
PUMP FLANGES

DN	D	M	G	HOLES		MAX THICK-NESS
				N°	DIA.	
25	115	85	56	4	18	16
32	140	100	64	4	18	16
40	150	110	68	4	18	16
50	165	125	83	4	18	18
65	185	145	104	4	18	18





CLEARANCE FOR DISASSEMBLY



* SHOS WITH SUPPORT UNDER THE MOTOR
11 kW MOTORS

05553_C_DD

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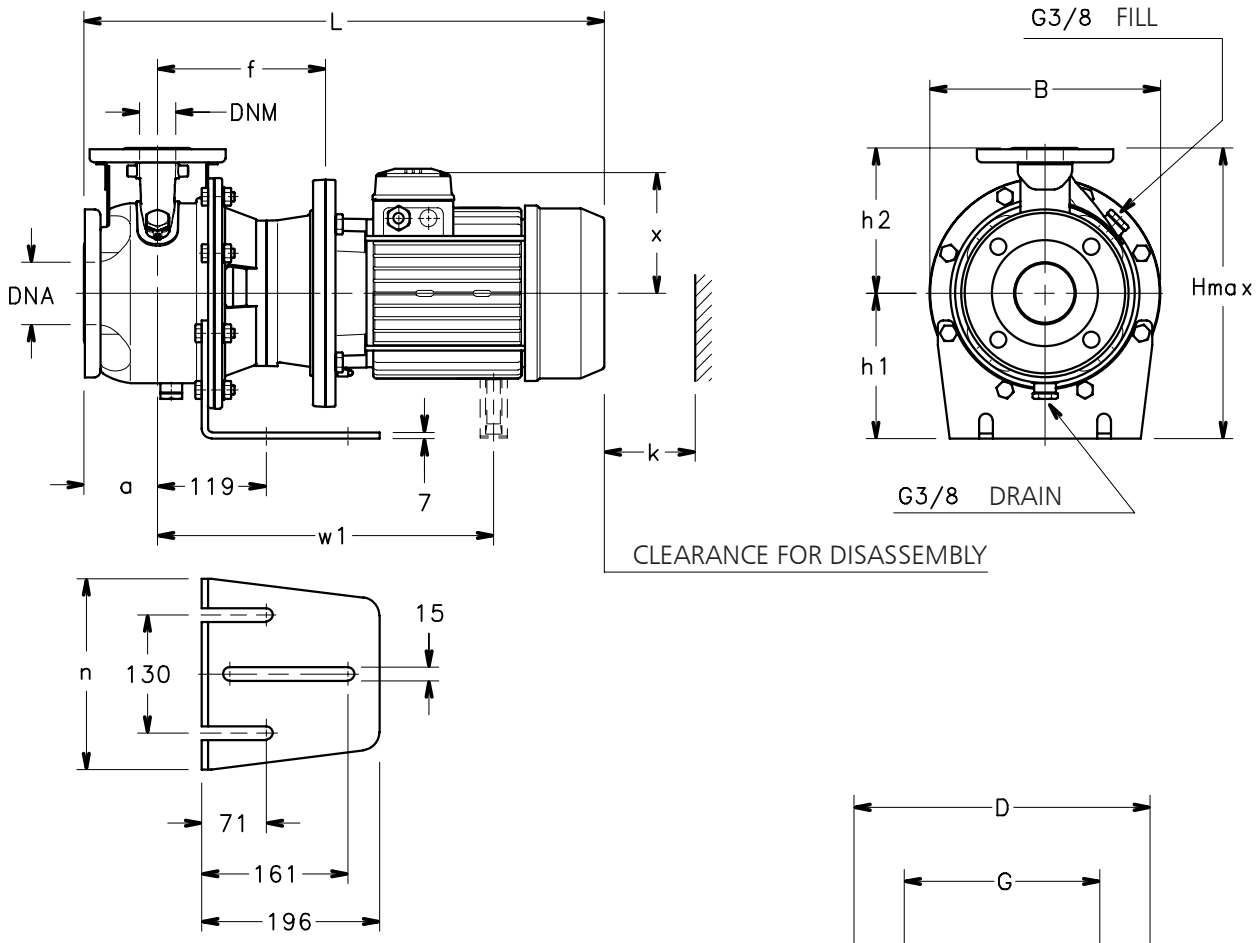
SERIE SHOS
DIMENSIONS AND WEIGHTS AT 50 Hz, 2 POLES

PUMP TYPE	DIMENSIONS (mm)																	WEIGHT
	PUMP								SUPPORT					B	H	L	k	
	DNM	DNA	a	f	h2	w	w1	x	h1	m	m1	n	n1		max			kg
SHOS 25-125/11/D	25	50	80	165	140	-	-	129	112	-	-	190	-	219	252	508	98	26
SHOS 25-125/15/D	25	50	80	165	140	-	-	129	112	-	-	190	-	219	252	508	98	27
SHOS 25-125/22/P	25	50	80	165	140	-	-	134	112	-	-	190	-	219	252	543	98	33
SHOS 25-160/30/P	25	50	80	175	160	-	-	134	160	-	-	210	-	254	320	553	98	42
SHOS 25-160/40/P	25	50	80	175	160	-	-	154	160	-	-	210	-	254	320	574	98	47
SHOS 25-160/55/P	25	50	80	202	160	-	409	168	160	-	-	210	-	254	320	657	98	60
SHOS 25-200/30/P	25	50	80	175	180	-	-	134	160	-	-	230	-	284	340	553	98	44
SHOS 25-200/40/P	25	50	80	175	180	-	-	154	160	-	-	230	-	284	340	574	98	50
SHOS 25-200/55/P	25	50	80	202	180	-	409	168	160	-	-	230	-	284	340	657	98	63
SHOS 32-125/11/D	32	50	80	165	140	-	-	129	112	-	-	190	-	219	252	508	98	26
SHOS 32-125/15/D	32	50	80	165	140	-	-	129	112	-	-	190	-	219	252	508	98	27
SHOS 32-125/22/P	32	50	80	165	140	-	-	134	112	-	-	190	-	219	252	543	98	33
SHOS 32-160/30/P	32	50	80	175	160	-	-	134	160	-	-	210	-	254	320	553	98	42
SHOS 32-160/40/P	32	50	80	175	160	-	-	154	160	-	-	210	-	254	320	574	98	47
SHOS 32-160/55/P	32	50	80	202	160	-	409	168	160	-	-	210	-	254	320	657	98	60
SHOS 32-200/30/P	32	50	80	175	180	-	-	134	160	-	-	230	-	284	340	553	98	44
SHOS 32-200/40/P	32	50	80	175	180	-	-	154	160	-	-	230	-	284	340	574	98	50
SHOS 32-200/55/P	32	50	80	202	180	-	409	168	160	-	-	230	-	284	340	657	98	63
SHOS 40-125/15/D	40	65	80	175	140	-	-	129	112	-	-	190	-	219	252	518	100	28
SHOS 40-125/22/P	40	65	80	175	140	-	-	134	112	-	-	190	-	219	252	553	100	34
SHOS 40-125/30/P	40	65	80	185	140	-	-	134	160	-	-	190	-	219	300	563	100	40
SHOS 40-160/40/P	40	65	80	185	160	-	-	154	160	-	-	210	-	254	320	584	100	48
SHOS 40-160/55/P	40	65	80	212	160	-	419	168	160	-	-	210	-	254	328	667	100	61
SHOS 40-160/75/P	40	65	80	212	160	-	417	191	160	-	-	210	-	254	351	659	100	79
SHOS 50-125/55/P	50	65	100	212	160	-	419	168	160	-	-	210	-	254	328	687	104	61
SHOS 50-125/75/P	50	65	100	212	160	-	417	191	160	-	-	210	-	254	351	679	104	79
SHOS 50-160/110A/P	50	65	100	242	180	350	-	240	180	304	210	304	254	350	420	836	104	117
SHOS 50-160/110/P	50	65	100	242	180	350	-	240	180	304	210	304	254	350	420	836	104	117

* Motor shim (20 mm) on request

shos-2p50-en_d._td

SHOS4 SERIES
DIMENSIONS AND WEIGHTS AT 50 Hz, 4 POLES



PUMP FLANGES

DN	D	M	G	HOLES		MAX THICK-NESS
				N°	DIA.	
25	115	85	56	4	18	16
32	140	100	64	4	18	16
40	150	110	68	4	18	16
50	165	125	83	4	18	18
65	185	145	104	4	18	18

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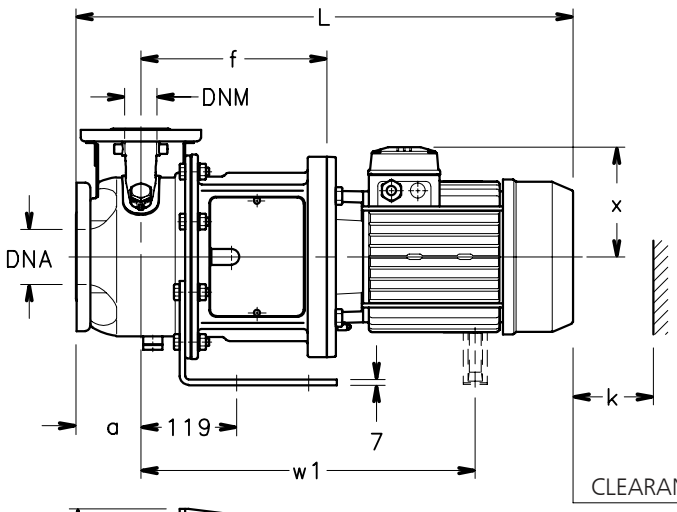
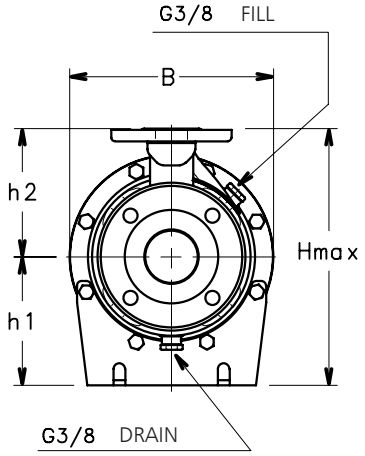
SHOS4 SERIES
DIMENSIONS AND WEIGHTS AT 50 Hz, 4 POLES

PUMP TYPE	DIMENSIONS (mm)												WEIGHT
	PUMP						SUPPORT		B	H	L	k	
	DNM	DNA	a	f	h2	x	h1	n		max			kg
SHOS4 25-125/03	25	50	80	165	140	129	112	190	219	252	508	98	24
SHOS4 25-160/03	25	50	80	165	160	129	132	210	254	292	508	98	27
SHOS4 25-160/05	25	50	80	165	160	129	132	210	254	292	508	98	27
SHOS4 25-160/07/C	25	50	80	165	160	128	132	210	254	292	476	98	29
SHOS4 25-200/07/C	25	50	80	165	180	128	160	230	284	340	476	98	33
SHOS4 32-125/03	32	50	80	165	140	129	112	190	219	252	508	98	24
SHOS4 32-160/03	32	50	80	165	160	129	132	210	254	292	508	98	27
SHOS4 32-160/05	32	50	80	165	160	129	132	210	254	292	508	98	27
SHOS4 32-160/07/C	32	50	80	165	160	128	132	210	254	292	476	98	29
SHOS4 32-200/07/C	32	50	80	165	180	128	160	230	284	340	476	98	33
SHOS4 40-125/03	40	65	80	175	140	129	112	190	219	252	518	100	25
SHOS4 40-160/05	40	65	80	175	160	129	132	210	254	292	518	100	29
SHOS4 40-160/07/C	40	65	80	175	160	128	132	210	254	292	486	100	31
SHOS4 40-160/11/P	40	65	80	175	160	134	132	210	254	292	553	100	37
SHOS4 50-125/07/C	50	65	100	175	160	128	132	210	254	292	506	104	31
SHOS4 50-125/11/P	50	65	100	175	160	134	132	210	254	292	573	104	38
SHOS4 50-160/11/P	50	65	100	175	180	134	160	230	254	340	573	104	39
SHOS4 50-160/15/P	50	65	100	175	180	134	160	230	254	340	573	104	41

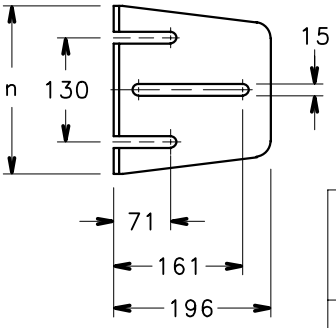
shos4-4p50-en_d_td

SHOD SERIES
DIMENSIONS AND WEIGHTS AT 50 Hz, 2 POLES

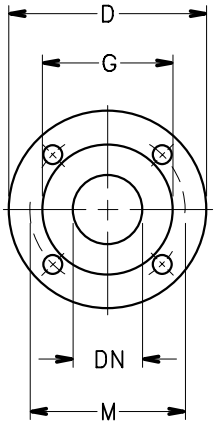




CLEARANCE FOR DISASSEMBLY

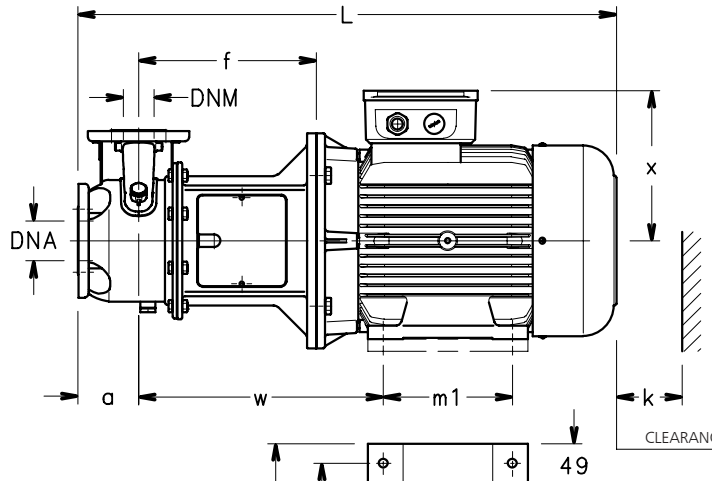


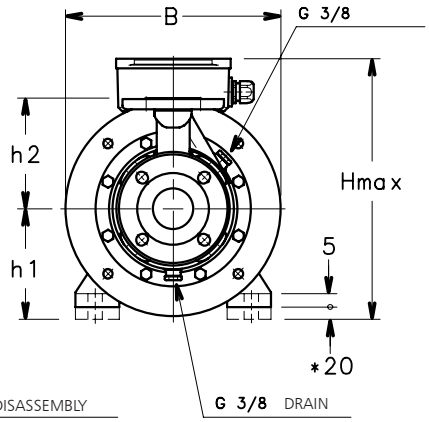
SHOD WITH PUMP SUPPORT FOOT
MOTORS UP TO 7,5 kW



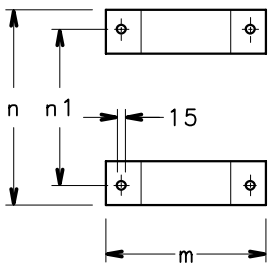
PUMP FLANGES

DN	D	M	G	HOLES		MAX THICK-NESS
				N°	DIA.	
25	115	85	56	4	18	16
32	140	100	64	4	18	16
40	150	110	68	4	18	16
50	165	125	83	4	18	18
65	185	145	104	4	18	18





CLEARANCE FOR DISASSEMBLY



* SHOD WITH SUPPORT UNDER THE MOTOR
11 kW MOTORS

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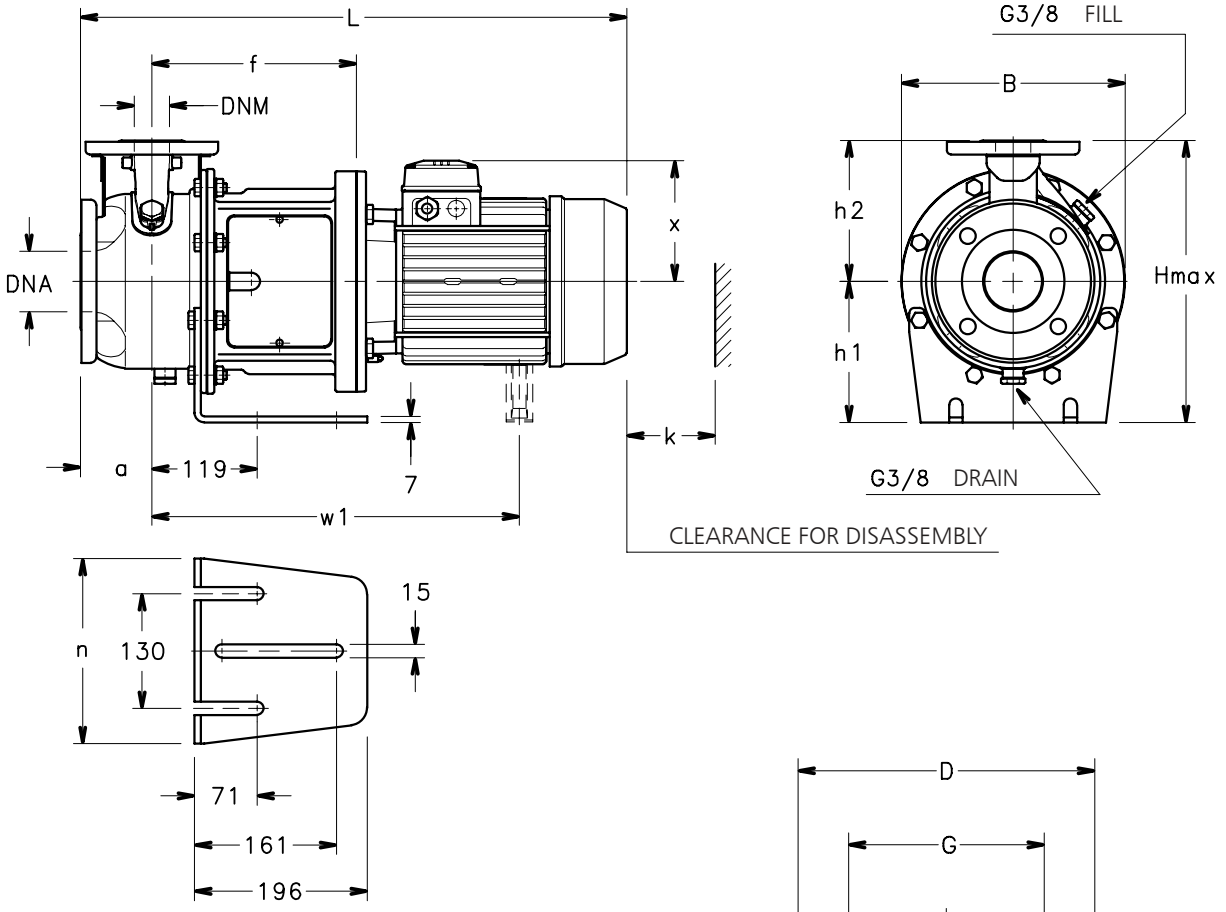
SHOD SERIES
DIMENSIONS AND WEIGHTS AT 50 Hz, 2 POLES

PUMP TYPE	DIMENSIONS (mm)																	WEIGHT
	PUMP								SUPPORT					B	H	L	k	
	DNM	DNA	a	f	h2	w	w1	x	h1	m	m1	n	n1		max			kg
SHOD 25-125/11/D	25	50	80	212	140	-	-	129	112	-	-	190	-	219	252	555	98	28
SHOD 25-125/15/D	25	50	80	212	140	-	-	129	112	-	-	190	-	219	252	555	98	29
SHOD 25-125/22/P	25	50	80	212	140	-	-	134	112	-	-	190	-	219	252	590	98	35
SHOD 25-160/30/P	25	50	80	222	160	-	-	134	160	-	-	210	-	254	320	600	98	44
SHOD 25-160/40/P	25	50	80	222	160	-	-	154	160	-	-	210	-	254	320	621	98	49
SHOD 25-160/55/P	25	50	80	249	160	-	456	168	160	-	-	210	-	254	320	704	98	61
SHOD 25-200/30/P	25	50	80	222	180	-	-	134	160	-	-	230	-	284	340	600	98	46
SHOD 25-200/40/P	25	50	80	222	180	-	-	154	160	-	-	230	-	284	340	621	98	52
SHOD 25-200/55/P	25	50	80	249	180	-	456	168	160	-	-	230	-	284	340	704	98	65
SHOD 32-125/11/D	32	50	80	212	140	-	-	129	112	-	-	190	-	219	252	555	98	28
SHOD 32-125/15/D	32	50	80	212	140	-	-	129	112	-	-	190	-	219	252	555	98	29
SHOD 32-125/22/P	32	50	80	212	140	-	-	134	112	-	-	190	-	219	252	590	98	35
SHOD 32-160/30/P	32	50	80	222	160	-	-	134	160	-	-	210	-	254	320	600	98	44
SHOD 32-160/40/P	32	50	80	222	160	-	-	154	160	-	-	210	-	254	320	621	98	49
SHOD 32-160/55/P	32	50	80	249	160	-	456	168	160	-	-	210	-	254	320	704	98	61
SHOD 32-200/30/P	32	50	80	222	180	-	-	134	160	-	-	230	-	284	340	600	98	46
SHOD 32-200/40/P	32	50	80	222	180	-	-	154	160	-	-	230	-	284	340	621	98	52
SHOD 32-200/55/P	32	50	80	249	180	-	456	168	160	-	-	230	-	284	340	704	98	65
SHOD 40-125/15/D	40	65	80	222	140	-	-	129	112	-	-	190	-	219	252	565	100	29
SHOD 40-125/22/P	40	65	80	222	140	-	-	134	112	-	-	190	-	219	252	600	100	35
SHOD 40-125/30/P	40	65	80	232	140	-	-	134	160	-	-	190	-	219	300	610	100	41
SHOD 40-160/40/P	40	65	80	232	160	-	-	154	160	-	-	210	-	254	320	631	100	51
SHOD 40-160/55/P	40	65	80	259	160	-	466	168	160	-	-	210	-	254	328	714	100	65
SHOD 40-160/75/P	40	65	80	259	160	-	464	191	160	-	-	210	-	254	351	706	100	82
SHOD 50-125/55/P	50	65	100	259	160	-	466	168	160	-	-	210	-	254	328	734	104	65
SHOD 50-125/75/P	50	65	100	259	160	-	464	191	160	-	-	210	-	254	351	726	104	83
SHOD 50-160/110A/P	50	65	100	289	180	397	-	240	180	304	210	304	254	350	420	883	104	120
SHOD 50-160/110/P	50	65	100	289	180	397	-	240	180	304	210	304	254	350	420	883	104	120

* Motor shim (20 mm) on request

shod-2p50-en_d_td

SHOD4 SERIES
DIMENSIONS AND WEIGHTS AT 50 Hz, 4 POLES



PUMP FLANGES

DN	D	M	G	HOLES		MAX THICK-NESS
				N°	DIA.	
25	115	85	56	4	18	16
32	140	100	64	4	18	16
40	150	110	68	4	18	16
50	165	125	83	4	18	18
65	185	145	104	4	18	18

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SHOD4 SERIES
DIMENSIONS AND WEIGHTS AT 50 Hz, 4 POLES

PUMP TYPE	DIMENSIONS (mm)												WEIGHT
	PUMP						SUPPORT		B	H	L	k	
	DNM	DNA	a	f	h2	x	h1	n		max			kg
SHOD4 25-125/03	25	50	80	212	140	129	112	190	219	252	555	98	26
SHOD4 25-160/03	25	50	80	212	160	129	132	210	254	292	555	98	29
SHOD4 25-160/05	25	50	80	212	160	129	132	210	254	292	555	98	29
SHOD4 25-160/07/C	25	50	80	212	160	128	132	210	254	292	523	98	31
SHOD4 25-200/07/C	25	50	80	212	180	128	160	230	284	340	523	98	34
SHOD4 32-125/03	32	50	80	212	140	129	112	190	219	252	555	98	26
SHOD4 32-160/03	32	50	80	212	160	129	132	210	254	292	555	98	29
SHOD4 32-160/05	32	50	80	212	160	129	132	210	254	292	555	98	29
SHOD4 32-160/07/C	32	50	80	212	160	128	132	210	254	292	523	98	31
SHOD4 32-200/07/C	32	50	80	212	180	128	160	230	284	340	523	98	34
SHOD4 40-125/03	40	65	80	222	140	129	112	190	219	252	565	100	26
SHOD4 40-160/05	40	65	80	222	160	129	132	210	254	292	565	100	29
SHOD4 40-160/07/C	40	65	80	222	160	128	132	210	254	292	533	100	31
SHOD4 40-160/11/P	40	65	80	222	160	134	132	210	254	292	600	100	38
SHOD4 50-125/07/C	50	65	100	222	160	128	132	210	254	292	553	104	32
SHOD4 50-125/11/P	50	65	100	222	160	134	132	210	254	292	620	104	38
SHOD4 50-160/11/P	50	65	100	222	180	134	160	230	254	340	620	104	39
SHOD4 50-160/15/P	50	65	100	222	180	134	160	230	254	340	620	104	41

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TECHNICAL APPENDIX

TYPICAL APPLICATIONS OF CO - SHO SERIES ELECTRIC PUMPS

Water Purification:
De-ionized water
Water treatment
Filtration
Commercial pools

Food and Drink:
Food processing
Bootle washing
Citrus processing
Dish washing
Brewing
Sanitary ware

Medical:
Laser cooling
Medical chillers
Sanitary equipment

Heating, Ventilating & Air Conditioning (HVAC)
Air scrubbers
Water re-circulation
Cooling towers
Cooling systems
Temperature control
Chillers
Induction heating
Heat exchangers
Water heating

Graphics:
Film washing
Cooling

Plastics:
Extrusion machines
Temperature control
Manufacture of polymers

Waste Management:
Waste treatment

Machine Tool:
Degreasing
Parts washing
Chemical treatment
Heat treatment

Laundry:
Industrial and Commercial washing

General Industry:
Spray Booths
Light chemical transfer
Booster systems
Firefighting systems

NPSH

The minimum operating values that can be reached at the pump suction end are limited by the onset of cavitation.

Cavitation is the formation of vapour-filled cavities within liquids where the pressure is locally reduced to a critical value, or where the local pressure is equal to, or just below the vapour pressure of the liquid.

The vapour-filled cavities flow with the current and when they reach a higher pressure area the vapour contained in the cavities condenses. The cavities collide, generating pressure waves that are transmitted to the walls. These, being subjected to stress cycles, gradually become deformed and yield due to fatigue. This phenomenon, characterized by a metallic noise produced by the hammering on the pipe walls, is called incipient cavitation.

The damage caused by cavitation may be magnified by electrochemical corrosion and a local rise in temperature due to the plastic deformation of the walls. The materials that offer the highest resistance to heat and corrosion are alloy steels, especially austenitic steel. The conditions that trigger cavitation may be assessed by calculating the total net suction head, referred to in technical literature with the acronym NPSH (Net Positive Suction Head).

The NPSH represents the total energy (expressed in m.) of the liquid measured at suction under conditions of incipient cavitation, excluding the vapour pressure (expressed in m.) that the liquid has at the pump inlet.

To find the static height hz at which to install the machine under safe conditions, the following formula must be verified:

hp + hz ≥ (NPSHr + 0.5) + hf + hpv

where:

hp is the absolute pressure applied to the free liquid surface in the suction tank, expressed in m. of liquid; hp is the quotient between the barometric pressure and the specific weight of the liquid.

hz is the suction lift between the pump axis and the free liquid surface in the suction tank, expressed in m.; hz is negative when the liquid level is lower than the pump axis.

hf is the flow resistance in the suction line and its accessories, such as: fittings, foot valve, gate valve, elbows, etc.

hpv is the vapour pressure of the liquid at the operating temperature, expressed in m. of liquid. hpv is the quotient between the Pv vapour pressure and the liquid's specific weight.

0,5 is the safety factor.

The maximum possible suction head for installation depends on the value of the atmospheric pressure (i.e. the elevation above sea level at which the pump is installed) and the temperature of the liquid.

To help the user, with reference to water temperature (4° C) and to the elevation above sea level, the following tables show the drop in hydraulic pressure head in relation to the elevation above sea level, and the suction loss in relation to temperature.

Water temperature (°C)	20	40	60	80	90	110	120
Suction loss (m)	0,2	0,7	2,0	5,0	7,4	15,4	21,5

Elevation above sea level (m)	500	1000	1500	2000	2500	3000
Suction loss (m)	0,55	1,1	1,65	2,2	2,75	3,3

Friction loss is shown in the tables at pages 100-101 of this catalogue. To reduce it to a minimum, especially in cases of high suction head (over 4-5 m.) or within the operating limits with high flow rates, we recommend using a suction line having a larger diameter than that of the pump's suction port.
It is always a good idea to position the pump as close as possible to the liquid to be pumped.

FLOW RESISTANCE

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

FLOW RATE			NOMINAL DIAMETER IN mm AND INCHES																
m³/h	l/min.		15 ½"	20 ¾"	25 1"	32 1 ¼"	40 1½"	50 2"	65 2½"	80 3"	100 4"	125 5"	150 6"	175 7"	200 8"	250 10"	300 12"	350 14"	400 16"
0,6	10	V	0,94	0,53	0,34	0,21													
		hr	11,8	2,82	1	0,25													
0,9	15	V	1,42	0,8	0,51	0,31													
		hr	25,1	6,04	2,16	0,55													
1,2	20	V	1,89	1,06	0,68	0,41	0,27												
		hr	43,1	10,4	3,72	0,95	0,31												
1,5	25	V	2,36	1,33	0,85	0,52	0,33												
		hr	64,5	15,8	5,68	1,47	0,47												
1,8	30	V	2,83	1,59	1,02	0,62	0,4												
		hr	92	22,3	8	2,09	0,66												
2,1	35	V	3,3	1,86	1,19	0,73	0,46	0,3											
		hr	123	29,8	10,8	2,81	0,89	0,31											
2,4	40	V	3,77	2,12	1,36	0,83	0,53	0,34											
		hr	164	38,2	13,8	2,65	1,15	0,4											
3	50	V	4,72	2,65	1,7	1,04	0,66	0,42											
		hr	246	58,2	21,5	5,6	1,75	0,61											
3,6	60	V		3,18	2,04	1,24	0,8	0,51											
		hr		82	30	8	2,48	0,86											
4,2	70	V		3,72	2,38	1,45	0,93	0,59											
		hr		110	40	10,8	3,33	1,14											
4,8	80	V		4,25	2,72	1,66	1,06	0,68											
		hr		141	51,5	13,9	4,3	1,46											
5,4	90	V			3,06	1,87	1,19	0,76	0,45										
		hr			64	17,5	5,4	1,82	0,46										
6	100	V			3,4	2,07	1,33	0,85	0,5										
		hr			79	21,4	6,6	2,22	0,56										
7,5	125	V			4,25	2,59	1,66	1,06	0,63										
		hr			120	33	10	3,4	0,86										
9	150	V				3,11	1,99	1,27	0,75	0,5									
		hr				47	14,2	4,74	1,21	0,43									
10,5	175	V				3,63	2,32	1,49	0,88	0,58									
		hr				63	19	6,3	1,63	0,57									
12	200	V				4,15	2,65	1,7	1,01	0,66									
		hr				82	24,5	8,1	2,1	0,74									
15	250	V				5,18	3,32	2,12	1,26	0,83	0,53								
		hr				126	37,5	12,3	3,2	1,12	0,36								
18	300	V					3,98	2,55	1,51	1	0,64								
		hr					53	17,3	4,5	1,58	0,51								
24	400	V					5,31	3,4	2,01	1,33	0,85								
		hr					92	29,5	7,8	2,7	0,89								
30	500	V					6,63	4,25	2,51	1,66	1,06	0,68							
		hr					140	44,8	12	4,13	1,36	0,48							
36	600	V						5,1	3,02	1,99	1,27	0,82							
		hr						63	16,9	5,8	1,93	0,68							
42	700	V						5,94	3,52	2,32	1,49	0,95							
		hr						84	22,6	7,8	2,6	0,9							
48	800	V						6,79	4,02	2,65	1,70	1,09	0,75						
		hr						108	29	10	3,35	1,16	0,43						
54	900	V						7,64	4,52	2,99	1,91	1,22	0,85						
		hr						134	36	12,5	4,2	1,45	0,54						
60	1000	V							5,03	3,32	2,12	1,36	0,94						
		hr							44,5	15,2	5,14	1,76	0,66						
75	1250	V							6,28	4,15	2,65	1,70	1,18	0,87					
		hr							68	23	7,9	2,68	1	0,48					
90	1500	V							7,54	4,98	3,18	2,04	1,42	1,04					
		hr							96	32,6	11,2	3,77	1,42	0,68					
105	1750	V							8,79	5,81	3,72	2,38	1,65	1,21	0,93				
		hr							129	43,5	15	5,04	1,9	0,91	0,45				
120	2000	V								6,63	4,25	2,72	1,89	1,39	1,06	0,68			
		hr								56	19,4	6,5	2,43	1,18	0,58	0,16			
150	2500	V								8,29	5,31	3,40	2,36	1,73	1,33	0,85			
		hr								85	30	9,8	3,75	1,79	0,89	0,25			
180	3000	V								9,95	6,37	4,08	2,83	2,08	1,59	1,02	0,71		
		hr								120	42	13,8	5,3	2,53	1,25	0,35	0,15		
300	5000	V									10,62	6,79	4,72	3,47	2,65	1,70	1,18	0,87	0,66
		hr									124,9	41,3	16,74	7,81	4,03	1,34	0,54	0,25	0,13
600	10000	V										13,59	9,44	6,93	5,31	3,4	2,36	1,73	1,33
		hr										161	65	30,2	15,6	5,16	2,09	0,97	0,5
1200	20000	V														6,79	4,72	3,47	2,65
		hr														20,1	8,13	3,8	1,95
1800	30000	V															7,7	5,2	4,0
		hr															18,07	8,39	4,32
3000	50000	V															11,8	8,67	6,63
		hr															49,5	23	11,8
4500	75000	V															17,7	13	9,9
		hr															110,5	51,3	26,4
6000	100000	V																17,33	13,27
		hr																90,6	46,6

THE FLOW RESISTANCE MUST BE MULTIPLIED BY:
- 0.8 for stainless steel pipes
- 1.25 for slightly rusted steel pipes
- 1.7 for pipes with deposits that reduce the flow section
- 0.7 for aluminium pipes
- 1.3 for fibre-cement pipes

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

V = WATER SPEED (m/sec)

FLOW RESISTANCE

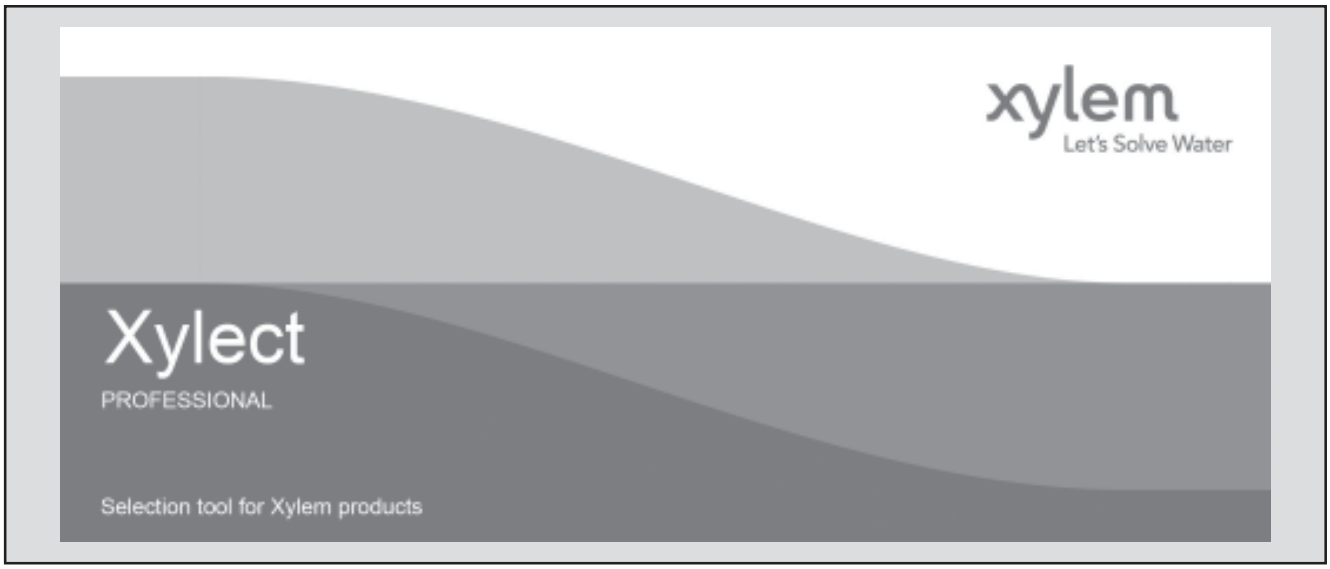
TABLE OF FLOW RESISTANCE OF BENDS AND VALVES IN cm OF COLUMN OF WATER

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

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

FURTHER PRODUCT SELECTION AND DOCUMENTATION

Xylect



Xylect is pump solution selection software with an extensive online database of product information across the entire Lowara, and Vogel range of pumps and related products, with multiple search options and helpful project management facilities. The system holds up-to-date product information on thousands of products and accessories.

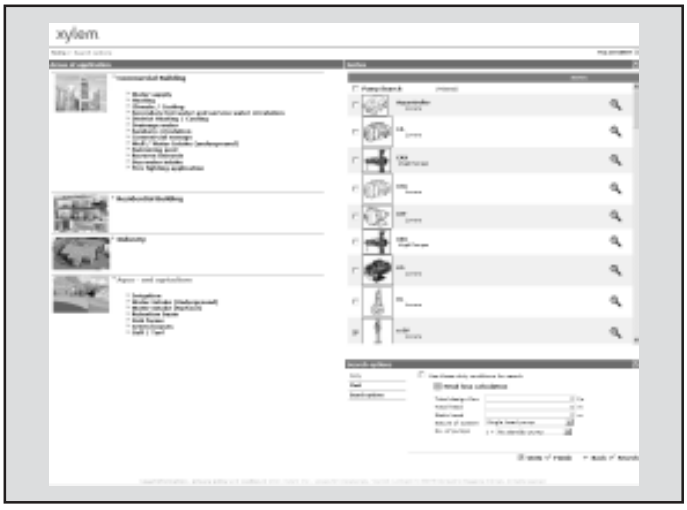
The possibility to search by applications and the detailed information output given makes it easy to make the optimal selection without having detailed knowledge about the Lowara and Vogel products.

The search can be made by:

- Application
- Product type
- Duty point

Xylect gives a detailed output:

- List with search results
- Performance curves (flow, head, power, efficiency, NPSH)
- Motor data
- Dimensional drawings
- Options
- Data sheet printouts
- Document downloads incl dxf files



The search by application guides users not familiar with the product range to the right choice.

FURTHER PRODUCT SELECTION AND DOCUMENTATION

Xylect

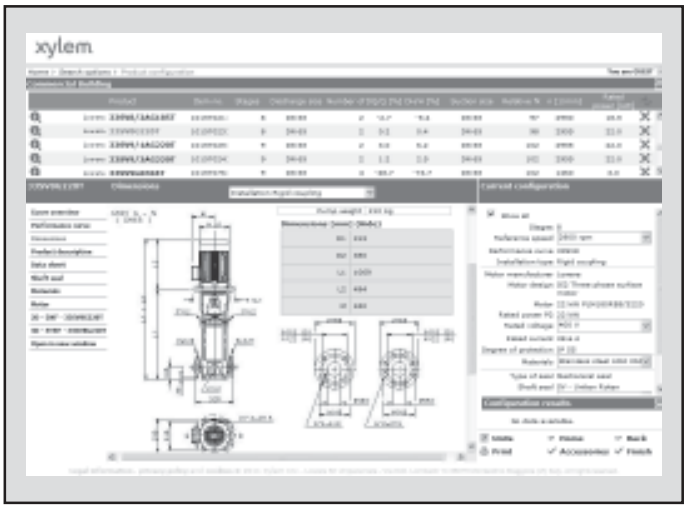
The detailed output makes it easy to select the optimal pump from the given alternatives.

The best way to work with Xylect is to create a personal account. This makes it possible to:

- Set own standard units
- Create and save projects
- Share projects with other Xylect users

Every user have a My Xylect space, where all projects are saved.

For more information about Xylect please contact our sales network or visit www.xylect.com.



Dimensional drawings appear on the screen and can be downloaded in dxf format.

Xylem |'zīləm|

1) The tissue in plants that brings water upward from the roots;
2) a leading global water technology company.

We're 12,000 people unified in a common purpose: creating innovative solutions to meet our world's water needs. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. We move, treat, analyze, and return water to the environment, and we help people use water efficiently, in their homes, buildings, factories and farms. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise, backed by a legacy of innovation.

For more information on how Xylem can help you, go to xyleminc.com.

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