

**[Scientific and Research Centre for Fire Protection
National Research Institute]**

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Series: NATIONAL TECHNICAL ASSESSMENTS

**CNBOP-PIB NATIONAL TECHNICAL ASSESSMENT
CNBOP-PIB-KOT-2019/0136-1005 edition 2**

Pursuant to the Regulation of the Minister of Infrastructure and Construction of 17 November 2016 on national technical assessments (Journal of Laws 2016, item 1968), upon the proceedings on the issuance of the National Technical Assessment conducted in the Centrum Naukowo-Badawcze Ochrony Przeciwpożarowej – Państwowy Instytut Badawczy [Scientific and Research Centre for Fire Protection – National Research Institute] in Józefów k/Otwocka, upon the request of:

**Wilo Polska Sp. z o.o.
ul. Jedności 5, 05-506 Lesznowola**

it is hereby certified that the construction product named below has successfully undergone the assessment of performance for its intended use:

**Centrifugal, vertical, multistage, high-pressure
fire pumps, of size: 2, 4, 6, 10, 16, 22, 36, 52,
type Helix VF and Helix First VF**

manufactured by **Wilo SE Wilopark 1,
44263 Dortmund, Germany**

of application, scope, conditions as well as under provisions set out in the appendix, which constitutes an integral part of this CNBOP-PIB National Technical Assessment.

Validity period

from 27 May, 2021
to 7 August, 2024

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inscription in the rim:*

*Scientific and Research
Centre for Fire Protection,
National Research Institute]*

Deputy Director
Certification and Approval
(-) *[signature illegible]*
st. bryg. dr inż. Jacek
Zboina

Appendix:

General and technical provisions

Józefów, 27 May, 2021

The CNBOP-PIB KOT-2019/0136-1005 National Technical Assessment edition 2 consists of 25 pages. It is permissible to print this National Technical Assessment in its entirety only. Copying, publishing or dissemination in any other form (also electronic) of parts hereof requires a written consent of the Research Centre for Fire Protection – National Research Institute.

This is an electronic version of the CNBOP-PIB National Technical Assessment no CNBOP-PIB KOT-2019/0136-1005 edition 2 issued in paper and may be used solely for information purposes, with no amendments.

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GENERAL AND TECHNICAL PROVISIONS

TABLE OF CONTENTS

1. Technical description of the product

- 1.1 General technical arrangements of the product
- 1.2 Name of the production plant and its address
- 1.3 Division
- 1.4 Designation

2. Intended use of the product

- 2.1 Intended use
- 2.2 Scope and conditions of use, limitations
- 2.3 Installing

3. Performance characteristics of the product and assessment methods applied

- 3.1 Design
- 3.2 Technical / environmental requirements

4. Packing, storage, transport and marking

- 4.1 Packing
- 4.2 Storage
- 4.3 Transport
- 4.4 Marking

5. Assessment and verification of constancy of performance

- 5.1 General provisions
- 5.2 Factory production control (FPC)
- 5.3 Initial type testing
- 5.4 Finished product testing
- 5.5 Testing methods
- 5.6 Sampling for testing
- 5.7 Assessment of test results

6. Notice

7. Register of documents utilised in the course of the proceedings

Appendices

ADDITIONAL INFORMATION

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1. TECHNICAL DESCRIPTION OF THE PRODUCT

1.1 General technical arrangements of the product

The subject of this National Technical Assessment is centrifugal, vertical, multi-stage, high-pressure fire pumps, of size: 2, 4, 6, 10, 16, 22, 36, 52, type Helix VF and Helix First VF.

The main components of the above fire pumps are as follows:

- pump housing with suction and discharge connections,
- shaft with bearings and seals,
- impeller (-s).

The pump housing is equipped with two radial connections, suction and discharge, with the housing design ensuring perpendicular inflow to the impeller blades of the pump first stage and outflow through channels in the cross section of the pump housing to the discharge connection. Each pump is equipped with an electric motor of power depending on the pump size as well as the stage (impeller) number. The number of impellers may range from 1 to 33, depending on the hydraulic parameters of the pump. The construction of Helix VF and Helix First VF pumps is the same (excluding the pump body material and type designation).

The Helix VF pump housing is made of stainless steel, while the Helix First VF pump housing is made of grey cast iron. The suction and discharge connections of the pumps are oval flanges PN 16 or round flanges PN25 or PN40. The fire pumps type Helix VF and Helix First VF may in addition be equipped with an integrated "X-care" dry-running sensor as well as a maximum operating pressure sensor.

The maximum operating pressure for Helix VF pumps is 16 bar, 25 bar or 30 bar, whereas for Helix First VF pumps the maximum operating pressure is 12 bar (at a maximum pump head of 110 m for Helix First VF pumps).

[a photograph of two pumps]



Fig. 1. Appearance of the fire pumps type Helix VF and Helix First VF.

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[a drawing illustrating the pump cross-section and references to components described below]

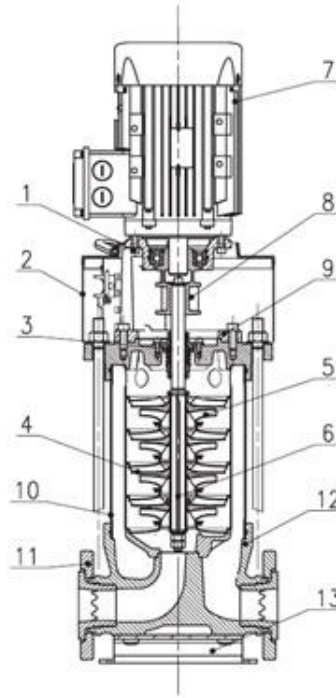


Fig. 2. Design of the Helix VF and Helix First VF fire pumps (components and materials used are provided in Table 1 below).

No. in Fig. 2	Subassembly	Material
1	Motor fixing bolts	SAE 304 stainless steel
2	Coupling guard	Stainless steel
3	Mechanical seal	EPDM or FKM Viton
4,5	Stage/Impeller	Stainless steel
6	Pump shaft	AISI 304 or AISI 316L stainless steel
7	Motor	-
8	Coupling	-
9	Lantern ring	Cast iron
10	Tube liner	AISI 304 or AISI 316L stainless steel
11	Flange	AISI 304 or AISI 316L stainless steel or grey cast iron EN-GJL-250 *
12	Housing	AISI 304 or AISI 316L stainless steel or grey cast iron EN-GJL-250 *
13	Baseplate	Stainless steel

* applies only to Helix First VF pumps

1.2 Name of the production plant and its address

The above-specified pumps are manufactured by Wilo Salmson France SAS 80
Boulevard de l'Industrie, 53000 Laval, France.

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1.3 Division

1.3.1 Size

The following pump sizes are distinguished according to their rated flow in m³/h: 2, 4, 6, 10, 16, 22, 36, and 52.

1.3.2 Material

In terms of the pump housing material, the following are distinguished: pumps with grey cast iron housing and pumps with stainless steel housing.

1.3.3 Connections

In terms of connection type, the following are distinguished: pumps with oval flanges PN 16, round flanges PN25 and round flanges PN40.

1.3.4 Sealing

In terms of sealing type, the following are distinguished: pumps with mechanical seal material: EPDM or FKM) or with cartridge seal (material: EPDM or FKM).

1.3.5 Impeller diameter

In terms of impeller diameter, the following are distinguished: pumps with standard impeller diameter and pumps with reduced impeller diameter.

1.4 Designation

For the designation of types and sizes of the fire pumps specified in 1.1, the manufacturer's designation type key is applied, as provided in sections 1.4.1 and 1.4.2 below.

- 1.4.1 A designation example for the Helix V fire pump, VdS-certified (F), rated flow of 16m³/h (16), five-stage (05), equipped with 5 impellers of standard diameter, with AISI 304 stainless steel pump housing (1), in PN16 version with oval flanges PN16(16), with EPDM (E) cartridge mechanical seal (KS), with an electric motor of 400V power supply (/400) and 50Hz frequency (50):

Fire pump Helix First V(F) 2205/2-1/16/V/SX/400

- 1.4.2 1.4.2 A designation example for the Helix First V fire pump (Helix First V), VdS-certified (F), rated flow of 22m³/h (22), five-stage (05), equipped with 5 impellers, including 2 of reduced diameter (2), with AISI 304 stainless steel pump housing (1), in PN16 version with oval flanges PN16(/16), with FKM (V) mechanical seal (S), equipped with an integrated dry-running sensor (X), with an electric motor of 400V power supply (400) and 50Hz frequency (50):

Fire pump Helix First V(F) 2205/2-1/16/V/SX/400

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2 INTENDED USE OF THE PRODUCT

2.1 Intended use

Fire pumps specified in section 1.1 are intended for increasing water pressure in fixed water fire-extinguishing systems as well as in firefighting water installations and grids¹.

2.2 Scope and conditions of use, limitations

The above-specified fire pumps are intended for increasing water pressure in fixed water fire-extinguishing systems, designed and installed in accordance with VdS CEA 4001, PN-EN 12845² or other standards and guidelines of a comparable level of requirements, as well as in firefighting water installations and grids, designed and installed in accordance with relevant regulations and / or guidelines. The basic operating parameters and performance of the fire pumps are provided in sections 2.2.1, 2.2.2 of this National Technical Assessment.

The maximum permissible hydrostatic pressure in the pump suction pipeline shall be such that the sum of the hydrostatic pressure in the suction pipeline and the maximum pump head does not exceed the maximum permissible pump pressure specified by the manufacturer (12 bar for Helix First VF pumps and 16 bar, 25 bar and 30 bar for Helix VF pumps, as per values specified by the manufacturer).

2.2.1 Basic operating parameters

Table 2

Basic operating parameters	
Pumped liquid	Water of temperature up to 40°C, free of solids and/or aggressive contaminants
Liquid temperature	Water of temperature up to 40°C, free of solids and/or aggressive contaminants
Rated delivery head	8 m – 290 m (depending on the pump type)
Rated pump speed	2900 1/min (2900 RPM)
Rated flow ³	2 – 52 m ³ /h (depending on the pump type)
Number of stages (impellers)	1 – 33 (depending on the pump type)
Suction port diameter	DN 40 – DN 80 (depending on the pump type)
Discharge port diameter	DN 40 – DN 80 (depending on the pump type)

¹ Firefighting water installations and grids within the meaning of, respectively: Regulation of the Minister of Interior and Administration of 7 June, 2010, on the fire protection of buildings, other construction buildings and areas (Journal of Laws 2010 No. 109 item 719) and the Regulation of the Minister of Interior and Administration of 24 July, 2009, on fire-fighting water supply and fire roads.

² The name and date of issue of the document is provided in section 7 of this National Technical Assessment

³ Rated flow is the flow obtained at rated delivery head and rated motor speed.

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2.3 Performance parameters

Nominal performance parameters of the fire pumps are provided in Table 3-18. Detailed pump characteristics are presented in the reports issued by testing bodies⁴ as well as in the manufacturer's documentation.

Table 3

Nominal performance parameters of the Helix VF 2 fire pump					
Rated speed ^{a)}	Maximum permissible flow ^{b)}	Number of stages ^{c)}	Delivery head ^{d)}	Maximum delivery head ^{e)}	Motor power ^{f)}
RPM	m ³ /h		m	m	kW
1	2	3	4	5	6
2900	3,48	2	6,2	15	0,37
		3	8,5	22	0,37
		4	10,4	29	0,37
		5	14,4	37	0,55
		6	16,2	44	0,55
		7	17,7	51	0,75
		8	25,7	59	0,75
		9	28,3	66	0,75
		10	30,8	73	1,10
		11	36,3	81	1,10
		12	39,2	89	1,10
		13	41,9	96	1,10
		14	44,6	103	1,50
		16	53,0	119	1,50
		18	59,0	134	1,50
		20	66,9	149	2,20
		22	72,7	163	2,20
24	78,3	178	2,20		
26	83,7	192	2,20		
29	91,3	214	3,00		
31	103,7	231	3,00		
33	109,6	246	3,00		

a) Rated speed of the motor (pump shaft).

b) Maximum permissible flow determined in accordance with VDS 2100-07: 2013-05

c) Number of stages corresponding to the number of impellers.

d) Delivery head determined at the maximum permissible flow according to column 2 of this table.

e) Maximum delivery head corresponding to minimum flow or zero flow.

f) Motor power in accordance with VdS 2100-07:2013-05 and IEC 60034.

"*" - impeller of reduced diameter, e.g. 2-1 * means two standard impellers and one impeller of reduced diameter.

⁴ The testing bodies, test results of which were utilised in the proceedings concerned with the issuance of this National Technical Assessment. A register of the test reports and names of respective testing bodies are provided in section 7 of this National Technical Assessment.

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Nominal performance parameters of the fire pump Helix VF 4					
Rated speed ^{a)}	Maximum permissible flow ^{b)}	Number of stages ^{c)}	Delivery head ^{d)}	Maximum delivery head ^{e)}	Motor power ^{f)}
RPM	m ³ /h		m	m	kW
1	2	3	4	5	6
2900	5,92	2	5,1	16	0,37
		3	6,9	23	0,55
		4	10,4	31	0,55
		5	15,2	39	0,75
		6	19,0	47	1,10
		7	23,7	55	1,10
		8	26,6	63	1,10
		9	29,5	71	1,50
		10	34,3	79	1,50
		11	37,5	87	1,50
		12	40,6	94	2,20
		13	45,0	103	2,20
		14	48,0	111	2,20
		16	53,8	126	2,20
		18	60,3	142	3,00
		20	71,0	159	3,00
22	77,3	174	3,00		
24	83,4	189	4,00		
26	93,0	208	4,00		
29	108,4	232	4,00		

Table 5

Nominal performance parameters of the fire pump Helix VF 6					
Rated speed ^{a)}	Maximum permissible flow ^{b)}	Number of stages ^{c)}	Delivery head ^{d)}	Maximum delivery head ^{e)}	Motor power ^{f)}
RPM	m ³ /h		m	m	kW
1	2	3	4	5	6
2900	8,13	1	4,0	8	0,37
		2	8,4	17	0,55
		3	11,5	26	0,75
		4	18,6	34	1,10
		5	24,3	43	1,10
		6	28,7	52	1,50
		7	34,7	61	1,50
		8	39,3	69	2,20
		9	44,9	78	2,20
		10	49,3	87	2,20
		11	53,6	95	3,00
		12	60,9	105	3,00
		13	65,6	114	3,00
		14	70,3	122	4,00
		15	74,8	131	4,00
		16	81,7	142	4,00
		18	90,9	159	4,00
		20	100,0	176	5,50
		21	108,1	187	5,50
		23	117,6	204	5,50
25	127,0	221	5,50		

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Table 6

Nominal performance parameters of the fire pump Helix VF 10					
Rated speed ^{a)}	Maximum permissible flow ^{b)}	Number of stages ^{c)}	Delivery head ^{d)}	Maximum delivery head e)	Motor power ^{f)}
RPM	m ³ /h		m	m	kW
1	2	3	4	5	6
2900	15,33	1	2,4	10	0,55
		2	5,9	20	1,10
		3	9,4	31	1,50
		4	13,2	41	2,20
		5	16,5	52	2,20
		6	19,1	62	3,00
		7	23,8	73	3,00
		8	26,7	83	4,00
		9	31,1	94	4,00
		10	34,0	104	4,00
		11	36,7	115	5,50
		12	42,1	126	5,50
		13	45,1	136	5,50
		15	51,0	157	7,50
		17	58,9	178	7,50
19	64,6	198	7,50		

Table 7

Nominal performance parameters of the fire pump Helix VF 16					
Rated speed ^{a)}	Maximum permissible flow ^{b)}	Number of stages ^{c)}	Delivery head ^{d)}	Maximum delivery head e)	Motor power ^{f)}
RPM	m ³ /h		m	m	kW
1	2	3	4	5	6
2900	19,33	1	7,7	12	1,10
		2	17,1	26	2,20
		3	25,8	39	3,00
		4	35,4	52	4,00
		5	44,8	65	4,00
		6	53,0	78	5,50
		7	63,3	91	5,50
		8	71,8	104	7,50
		9	81,7	118	7,50
		10	90,0	131	7,50
		11	98,2	144	9,00
		12	110,2	158	11,00
		13	118,6	171	11,00
16	144,9	210	15,00		

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Table 8

Nominal performance parameters of the fire pump Helix VF 22					
Rated speed ^{a)}	Maximum permissible flow ^{b)}	Number of stages ^{c)}	Delivery head ^{d)}	Maximum delivery head e)	Motor power ^{f)}
RPM	m ³ /h		m	m	kW
1	2	3	4	5	6
2900	25,91	1	11	18	1,50
		2	23	36	3,00
		3	34	54	4,00
		4	47	72	5,50
		5	59	90	7,50
		6	70	108	9,00
		7	84	126	11,00
		8	95	144	11,00
		9	106	162	15,00
		10	125	181	15,00
		11	137	199	15,00
		12	147	217	18,50
		13	160	235	18,50
		14	172	252	22,00
		15	184	271	22,00
		16	197	290	22,00

Table 9

Nominal performance parameters of the fire pump Helix VF 36					
Rated speed ^{a)}	Maximum permissible flow ^{b)}	Number of stages ^{c)}	Delivery head ^{d)}	Maximum delivery head e)	Motor power ^{f)}
RPM	m ³ /h		m	m	kW
1	2	3	4	5	6
2900	47,90	1*	5,2	18	2,20
		1	11,3	25	3,00
		2*	12,6	37	5,50
		1-1*	19,0	44	5,50
		2	24,7	50	7,50
		1-2*	26,2	63	7,50
		2-1*	31,8	69	9,00
		3	39,1	77	9,00
		2-2*	40,3	89	11,00
		4	51,8	101	15,00
		3-2*	57,9	115	15,00
		5	69,2	128	15,00
		4-2*	69,3	141	18,50
		6	82,9	154	18,50
		5-2*	84,3	165	22,00
		7	95,6	179	22,00
		6-2*	97,7	191	22,00
		8	109,3	204	30,00
		7-2*	115,7	218	30,00
		9	128,0	230	30,00
		8-2*	129,6	243	30,00
10	141,8	256	30,00		
9-2*	143,4	268	37,00		
11	156,5	282	37,00		

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Table 10

Nominal performance parameters of the fire pump Helix VF 52					
Rated speed ^{a)}	Maximum permissible flow ^{b)}	Number of stages ^{c)}	Delivery head ^{d)}	Maximum delivery head e)	Motor power ^{f)}
RPM	m ³ /h		m	m	kW
1	2	3	4	5	6
2900	56,1	1*	10,3	19	3,00
		1	15,9	28	4,00
		2*	22,3	39	7,50
		2	33,3	56	9,00
		1-2*	40,6	68	11,00
		3	51,1	85	15,00
		2-2*	61,0	96	15,00
		4	71,2	114	18,50
		2-3*	78,2	125	18,50
		5	89,1	142	22,00
		4-2*	95,8	154	22,00
		6	106,5	171	30,00
		5-2*	116,5	183	30,00
		7	127,7	201	30,00
		6-2*	134,5	211	30,00
8	145,6	229	37,00		
7-2*	153,0	241	37,00		
9	164,1	258	37,00		
8-2*	170,8	269	37,00		

Table 11

Nominal performance parameters of the fire pump Helix First VF 2					
Rated speed ^{a)}	Maximum permissible flow ^{b)}	Number of stages ^{c)}	Delivery head ^{d)}	Maximum delivery head e)	Motor power ^{f)}
RPM	m ³ /h		m	m	kW
1	2	3	4	5	6
2900	3,48	2	6,2	15	0,37
		3	8,5	22	0,37
		4	10,4	29	0,37
		5	14,4	37	0,55
		6	16,2	44	0,55
		7	17,7	51	0,75
		8	25,7	59	0,75
		9	28,3	66	0,75
		10	30,8	73	1,10
		11	36,3	81	1,10
		12	39,2	89	1,10
		13	41,9	96	1,10
14	44,6	103	1,50		

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Nominal performance parameters of the fire pump Helix First VF 4					
Rated speed ^{a)}	Maximum permissible flow ^{b)}	Number of stages ^{c)}	Delivery head ^{d)}	Maximum delivery head e)	Motor power ^{f)}
RPM	m ³ /h		m	m	kW
1	2	3	4	5	6
2900	5,92	2	5,1	16	0,37
		3	6,9	23	0,55
		4	10,4	31	0,55
		5	15,2	39	0,75
		6	19,0	47	1,10
		7	23,7	55	1,10
		8	26,6	63	1,10
		9	29,5	71	1,50
		10	34,3	79	1,50
		11	37,5	87	1,50
		12	40,6	94	2,20
		13	45,0	103	2,20

Table 13

Nominal performance parameters of the fire pump Helix First VF 6					
Rated speed ^{a)}	Maximum permissible flow ^{b)}	Number of stages ^{c)}	Delivery head ^{d)}	Maximum delivery head e)	Motor power ^{f)}
RPM	m ³ /h		m	m	kW
1	2	3	4	5	6
2900	8,13	1	4,0	8	0,37
		2	8,4	17	0,55
		3	11,5	26	0,75
		4	18,6	34	1,10
		5	24,3	43	1,10
		6	28,7	52	1,50
		7	34,7	61	1,50
		8	39,3	69	2,20
		9	44,9	78	2,20
		10	49,3	87	2,20
		11	53,6	95	3,00
		12	60,9	105	3,00

Table 14

Nominal performance parameters of the fire pump Helix First VF 10					
Rated speed ^{a)}	Maximum permissible flow ^{b)}	Number of stages ^{c)}	Delivery head ^{d)}	Maximum delivery head e)	Motor power ^{f)}
RPM	m ³ /h		m	m	kW
1	2	3	4	5	6
2900	15,33	1	2	10	0,55
		2	6	20	1,10
		3	9	31	1,50
		4	13	41	2,20
		5	17	52	2,20
		6	19	62	3,00
		7	24	73	3,00
		8	27	83	4,00
		9	31	94	4,00
		10	34	104	4,00

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Table 15

Nominal performance parameters of the fire pump Helix First VF 16					
Rated speed ^{a)}	Maximum permissible flow ^{b)}	Number of stages ^{c)}	Delivery head ^{d)}	Maximum delivery head e)	Motor power ^{f)}
RPM	m ³ /h		m	m	kW
1	2	3	4	5	6
2900	19,33	1	8	12	1,10
		2	17	26	2,20
		3	26	39	3,00
		4	35	52	4,00
		5	45	65	4,00
		6	53	78	5,50
		7	63	91	5,50
		8	72	104	7,50

Table 16

Nominal performance parameters of the fire pump Helix First VF 22					
Rated speed ^{a)}	Maximum permissible flow ^{b)}	Number of stages ^{c)}	Delivery head ^{d)}	Maximum delivery head e)	Motor power ^{f)}
RPM	m ³ /h		m	m	kW
1	2	3	4	5	6
2900	25,91	1	11	18	1,50
		2	23	36	3,00
		3	34	54	4,00
		4	47	72	5,50
		5	59	90	7,50
		6	70	108	9,00

Table 17

Nominal performance parameters of the fire pump Helix First VF 36					
Rated speed ^{a)}	Maximum permissible flow ^{b)}	Number of stages ^{c)}	Delivery head ^{d)}	Maximum delivery head e)	Motor power ^{f)}
RPM	m ³ /h		m	m	kW
1	2	3	4	5	6
2900	47,9	1*	5,2	18	2,20
		1	11,3	25	3,00
		2*	12,6	37	5,50
		1-1*	19,0	44	5,50
		2	24,7	50	7,50
		1-2*	26,2	63	7,50
		2-1*	31,8	69	9,00
		3	39,1	77	9,00
		2-2*	40,3	89	11,00
		4	51,8	101	15,00

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Table 18

Nominal performance parameters of the fire pump Helix First VF 52					
Rated speed ^{a)}	Maximum permissible flow ^{b)}	Number of stages ^{c)}	Delivery head ^{d)}	Maximum delivery head ^{e)}	Motor power ^{f)}
RPM	m ³ /h		m	m	kW
1	2	3	4	5	6
2900	56,1	1*	10	19	3,00
		1	16	28	4,00
		2*	22	39	7,50
		2	33	56	9,00
		1-2*	41	68	11,00
		3	51	85	15,00
		2-2*	61	96	15,00

2.3 Installing

The installation and operation of the fire pump shall be performed in accordance with the manufacturer's operating manuals:

- 1) "Wilo-Helix V(F) 2-4-6-10-16 Wilo-Helix FIRST V(F) 2-4-6-10-16 Instrukcja montażu i obsługi /Installation and operating instructions/" no. 4 143 727-Ed.09 / 2018-01-Wilo;
- 2) "Wilo-Helix V(F) 22-36-52 Wilo-Helix FIRST V(F) 22-36-52 Instrukcja montażu i obsługi /Installation and operating instructions/" no. 4 120 943-Ed.10 / 2018-01-Wilo.

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3. PERFORMANCE CHARACTERISTICS OF THE PRODUCT AND ASSESSMENT METHODS APPLIED

3.1 Design

The design of the fire pump is illustrated in Fig. 1 and Fig 2. Pump components and respective materials are provided in Table 1⁵.

3.2 Technical / environmental requirements

The performance characteristics, requirements and testing methods of the fire pumps, are provided in Table 19.

Table 19

No	Performance characteristics	Requirements	Testing
1	2	3	4
1	Marking	VdS 2100-7:2013-5 ⁶ , chapter 4.1	*
2	Technical documentation	VdS 2100-7:2013-5, chapter 4.2	*
3	Connections	VdS 2100-7:2013-5, chapter 4.3	*
4	Resistance to pressure	VdS 2100-7:2013-5, chapter 4.4	PN-EN 12162
5	Design requirements	VdS 2100-7:2013-5, chapter 4.5	*
6	H(Q) characteristic curve, delivery flow and delivery head	VdS 2100-7:2013-5, chapter 4.6	PN-EN ISO 9906, at least as for class 3B
7	Drive power and torque	VdS 2100-7:2013-5, chapter 4.8	PN-EN ISO 9906, at least as for class 3B
* Tests involve the analysis of documentation and/or visual inspection, checking dimensions, initial laboratory tests of performance.			

⁵ Detailed specification of materials is provided in manufacturer's documentation specified in chapter 7 of this National Technical Assessment.

⁶ Guidelines *VdS 2100-07:2013-05 Sprinklerpumpen. Anforderungen und Prüfmethoden* with guidelines *VdS 2344:2014-07 Verfahren für die Prüfung, Anerkennung und Zertifizierung von Produkten und Systemen der Brandschutz - und Sicherheitstechnik*. Equivalent requirements/tests are permissible as per other standards and guidelines of comparable level of requirements.

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4. PACKING, STORAGE, TRANSPORT AND MARKING

4.1 Packing

The products shall be supplied in manufacturer's packaging. The packaging shall bear the data specified in 4.4.3.

4.2 Storage

The products shall be stored in manufacturer's packaging, in dry and cool rooms, protected against exposure to mechanical impact and other conditions that may cause damage, in accordance with manufacturer's guidelines.

4.3 Transport

Transport of the products packaged as set out in 4.1. shall be conducted in a manner ensuring protection against any damage.

4.4 Marking

The marking of the construction product as well as its packaging, prior to the product being placed on the market, shall bear the information required by this National Technical Assessment.

4.4.1 Construction product marking

Product marking mark shall be conducted in accordance with the guidelines set out in the Regulation of the Minister of Infrastructure of 17 November, 2016 on the methods of declaring conformity of construction products and their marking with a construction mark (Journal of Laws, item 1966, as amended):

§ 10. 1. The manufacturer shall mark the construction product with a construction mark prior to placing it on the market or making it available on the domestic market.

2. The construction mark shall be affixed visibly, legibly and permanently, directly to the construction product or to a label attached to the product.

3. Should marking the product with a construction mark as set out in point 2 render not feasible due to the size or nature of the construction product, the construction mark shall be placed on the unit packaging or collective packaging of the product or on accompanying documents.

§ 11. 1. The marking of the construction product shall be accompanied by the following information:

- 1) The last two digits of the year in which the construction mark was first placed on the construction product;
- 2) Manufacturer's name and seat or an identification mark that explicitly identifies the manufacturer's name and its seat;
- 3) Name and type designation of the construction product;

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- 4) Number and year of issue of the National Technical Assessment, according to which the performance characteristics are declared;
- 5) Number of the national declaration of performance;
- 6) Level or class of the performance characteristics declared;
- 7) Name of the certification body, provided that the aforementioned participated in the assessment and verification of constancy of performance of the construction product;
- 8) Manufacturer's website address if the national declaration is available thereon.

§ 12. Other markings, marks and inscriptions may be placed on the construction product marked with a construction mark on the condition that they do not restrict the visibility and legibility of the construction mark or the information referred to in § 11, and their meaning as well as graphic form shall not be misleading.

4.4.2 Marking of the type, characteristics and intended use of the product

Notwithstanding the requirements set out in 4.4.1, the pump housing shall bear legible and permanent marking indicating at least the following:

- Manufacturer's name or trademark;
- Type designation or other marking;
- Year of manufacture;
- Max. permissible delivery flow (in l/min);
- Speed (in RPM);
- Diameter of impeller (or impellers – for trimmed impellers);
- Delivery head at max. permissible delivery flow (m);
- Max. power absorbed;
- Max. starting current (A).

4.4.3 Marking of product packaging

The packaging of the product being subject of this National Technical Assessment shall bear at least the following information:

1. The construction mark - conditionally, as per the guidelines set out in 4.4.1
2. Type, catalogue designation or other of equivalent character
3. Manufacturer's name or trademark
4. Year of manufacture.

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5. ASSESSMENT AND VERIFICATION OF CONSTANCY OF PERFORMANCE

5.1 General provisions

Pursuant to Article 4, Article 5 paragraph 2 and Article 8 paragraph 1 of the Act of 16 April 2004 on construction products (Journal of Laws No 92, Item 881, as amended) the product referred to in this National Technical Assessment may be placed on the market and used in construction works to the extent of its performance characteristics and intended use, provided that the manufacturer has conducted the assessment and verification of constancy of performance, and by issuing a national declaration of performance has declared, in sole responsibility, that the performance of the product conforms to the **National Technical Assessment CNBOP-PIB No CNBOP-PIB-KOT-2019/0136-1005 edition 2**, and has marked the product with the construction mark.

Pursuant to the Regulation of the Minister of Infrastructure and Construction of 17 November 2016 on the methods of declaring conformity of construction products and their marking with a construction mark (Journal of Laws 2016, item 1966, as amended), the assessment and verification of constancy of performance of the fire pumps shall be conducted by the manufacturer by applying **System 1 of the assessment and verification of constancy of performance**, which indicates certification of conformity of the product performance characteristics by an accredited certifying body based on:

- 1) Tasks of the manufacturer which include type specification of the construction product as well as:
 - a) factory production control (FPC),
 - b) testing of samples taken by the manufacturer at the factory, conducted in accordance with the test plan established by the manufacturer;
- 2) Assessment and verification conducted by an accredited certification body:
 - a) initial inspection of the factory and factory production control,
 - b) issuance of the national certificate of constancy of performance,
 - c) continuous supervision, assessment and evaluation of factory production control

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5.2 Factory production control (FPC)

5.2.1 General provisions

The manufacturer shall establish, document and maintain a factory production control system in order to ensure that the products placed on the market comply with the declared performance characteristics.

The factory production control system shall entail written procedures, regular inspections and tests and/or assessments as well as utilisation of their results to control raw materials and other incoming materials or components, equipment, production process, and the product itself.

All elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner, in the form of written policies and procedures. Documentation of the factory production control system shall ensure general understanding of the conformity assessment and shall allow to obtain the required performance characteristics of the product as well as verify the effectiveness of the factory production control system under inspection.

The factory production control shall adopt both operating techniques and any measures allowing to maintain and control conformity of the product performance with this National Technical Assessment.

5.2.2 Requirements

The construction product being subject of this National Technical Assessment shall be produced in accordance with the factory production control system.

The manufacturer shall establish, document, implement and maintain the factory production control system in order to maintain constancy of the performance characteristics specified in this National Technical Assessment.

The documentation of factory production control shall include:

- a) organizational structure,
- b) requirements for personnel (required qualifications, specification of authorisations, specification of responsibility for individual elements of factory production control, training),
- c) management review conducted by managerial staff,
- d) supervision over documentation and records,
- e) test and control plans for raw materials, requirements,
- f) test and control plans for finished product,
- g) supervision over production equipment,
- h) supervision over monitoring and measuring equipment, maintaining consistency of measurements,
- i) supervision over production process, including ongoing inspections and in-process tests
- j) description of subcontracted processes and procedure of supervision
- k) handling a non-compliant product and complaints, corrective actions
- l) description of packing, transport, storage and marking

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The documentation of factory production control shall be accompanied by technical documentation, technical specifications (product standards, testing standards, European or national technical assessments, etc.), legal regulations.

A quality management system applied in accordance with the requirements of ISO 9001 may be deemed as a factory production control system, provided that the requirements of this National Technical Assessment are complied with.

5.3 Initial type testing

Initial type testing attests to the required performance characteristics and is conducted prior to placing the product on the market and upon any change of raw materials or components and production technology, as well as changes in the FPC system if they affect the performance characteristics of the product.

Based on **System 1 of the assessment and verification of constancy of performance** adopted for the product being subject of this National Technical Assessment as well as pursuant to § 5 of the Regulation of the Minister of Infrastructure and Construction of 17 November, 2016, on national technical assessments (Journal of Laws 2016, item 1968), initial type testing shall be conducted by:

- 1) An accredited testing laboratory, in accordance with the Act of 13 April 2016 on compliance assessment systems and market surveillance or;
- 2) A foreign laboratory, should this derive from international agreements or;
- 3) A notified laboratory, in accordance with the Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonized conditions for the marketing of construction products and repealing Council Directive 89/106 / EEC or;
- 4) Other laboratory which the assessment body concluded an agreement with on the recognition of test and calculation results.
- 5) The assessment body may recognise test and calculation results submitted by the applicant and produced by national and foreign laboratories other than listed above.

The scope of initial type testing includes all tests specified in Table 19.

Positive results of the tests, conducted by accredited laboratories, on the basis of which performance characteristics were established in the course of the **National Technical Assessment CNBOP-PIB-KOT-2019/0136-1005 edition 2** proceedings, are deemed as initial type testing in the assessment and verification of constancy of performance of the product.

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5.4 Finished product testing

The plan for finished product testing includes ongoing product testing and periodic testing.

5.4.1 Periodic testing

Periodic testing shall be conducted for the purpose of periodic product quality control as well as confirmation of production stability, at least once per 3 years. The scope of periodic testing includes at least the tests specified in Table 20.

Table 20

No.	Performance characteristic	Requirement /requirement description	Test / test description	Sample size
1	2	3	4	5
1	Documentation; compliance with documentation	The documentation, as to the scope and content, shall contain sufficient data concerning the product, in accordance with Item 1 of Table 5 of this National Technical Assessment. The product shall be compliant with the documentation.	Analysis of documentation, measurements and (if necessary) laboratory tests in order to determine compliance with requirements according to column 3 of this table.	According to arrangements with the CNBOP-PIB laboratory
2	Marking	Section 4.4.2 of this National Technical Assessment.	Analysis of documentation and visual inspection of the product.	

5.4.2 Ongoing product testing

Ongoing product testing is a procedure of internal production control, as a result of which the manufacturer ensures conformity of the product technical characteristics with the provisions of the National Technical Assessment. The scope of ongoing product testing is specified in Table 21.

Table 21

N o.	Performance characteristic	Requirement	Test	Sample size
1	2	3	4	5
1	Compliance with documentation (for defects / damage)	The product shall not show any defects or damage that may worsen its performance, as per manufacturer's manual "GMH4 10000002486" of 15 November, 2016.	According to the relevant manufacturer's procedure	According to the relevant manufacturer's procedure
2	Hydrostatic resistance	A complete pump or its body (ready for assembly of a complete pump), subjected to the test according to column 4 of this table, shall not show cracks or unacceptable deformations during and after the test.	The test shall be conducted with the use of water at a pressure equivalent to at least 1.5 times the maximum operating pressure of the pump for a period of at least 5 minutes. An equivalent manufacturer's method is permissible.	Each specimen of a complete pump or its body (ready for assembly of a complete pump)
3	Delivery flow	The pump performance curve shall correspond to the performance curve obtained in type tests of the pump (permissible deviation of + 5% in the range from zero flow to 0.5 maximum permissible flow)	According to the relevant manufacturer's procedure	Each specimen of a complete pump.

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The results of the ongoing product testing shall be recorded systematically, and the records shall attest that the product meets the criteria of conformity assessment.

Each batch shall be unequivocally identifiable in the test register. The manufacturer shall indicate the percentage of product samples (no less than 1%) to be used for ongoing product testing.

Should one product batch include different product models (versions), then the tests shall be conducted for each of the models.

5.5 Testing methods

Product testing shall be conducted by means of the methods specified in column 4 of Table 19.

The results obtained shall be compared to the requirements set out in column 3 therein.

Environmental requirements set out in the normative documents specified in section 3.2 of this National Technical Assessment shall be ensured during sample taking and preparation as well as during tests.

5.6 Sampling for testing

Test samples shall be taken at random, in accordance with the relevant standard.

5.7 Assessment of test results

The manufactured products shall be deemed compliant with this National Technical Assessment if all test results attest to the conformity with the requirements provided in section Table 19 herein. The assessment of test results shall also include the results of previous tests conducted in accredited laboratories, provided that the testing methods and exposure conditions are in line with the requirements of this National Technical Standard.

6. NOTICE

6.1 The National Technical Assessment **CNBOP-PIB-KOT-2019/0136-1005 edition 2** is a document certifying that the product has successfully undergone the assessment of performance for its intended use to the extent resulting from the provisions of this National Technical Assessment.

6.2 The set of performance characteristics specified in the National Technical Assessment as well as their required level constitute the reference basis for the manufacturer to conduct the assessment and verification of constancy of performance, as well as issue, under his sole responsibility, the national declaration of performance.

6.3 The National Technical Assessment **CNBOP-PIB-KOT-2019/0136-1005 edition 2** certifies positive assessment of the product manufactured and submitted by the manufacturer for the purpose of assessment proceedings concerned with the issuance of the National Technical Assessment. The assessment proceedings neither change nor improve the product by assigning other requirements than those declared by the manufacturer, nor do they introduce other methods of testing performance characteristics than those that are actually applied in the course of production in type testing and ongoing production control.

6.4 The National Technical Assessment is not a document authorising construction product marking prior to placing it on the market.

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- 6.5 The product shall be delivered to a recipient in accordance with the provisions concerning packing, storage and transport, set out in section 4 of this National Technical Assessment. This condition applies to the supplier at all stages of product distribution, from the manufacturer to the end-customer.
- 6.6 The National Technical Assessment does not release the manufacturer from liability for the quality of the construction product, any batch of this product as well as its single units, and does not release contractors of construction works from liability for their correct application.
- 6.7 Warranty for the construction product referred to in this National Technical Assessment shall be issued by the supplier in accordance with separate regulations.
- 6.8 The content of brochures, announcements as well as other documents issued in relation with placing the product referred to in this National Technical Assessment on the market and its use in construction shall contain a note regarding the **National Technical Assessment CNBOP-PIB-KOT-2019/0136-1005 edition 2** having been issued for this product.
- 6.9 The CNBOP-PIB National Technical Assessment does not infringe the rights arising from the provisions on the protection of industrial property, in particular the Act of 30 June, 2000 Industrial Property Law (Journal of Laws 2001, no 49, item 508, as amended). The responsibility for ensuring these rights lies with the user of this National Technical Assessment. The manufacturer shall determine whether the product being the subject of this National Technical Assessment does not infringe the rights of third parties.
- 6.10 Liability for any damage caused to anyone as a result of product defect lies with the manufacturer.
- 6.11 By issuing this National Technical Assessment, CNBOP-PIB shall not be liable for any possible infringement of exclusive and acquired rights.
- 6.12 CNBOP-PIB may introduce changes to the performance characteristics specified in this National Technical Assessment. This requires a written application, with reasons, submitted by the manufacturer as well as assessment proceedings to be conducted in scope commensurate with the changes. No changes shall be introduced to the content of this National Technical Assessment in other manner than stated above.
- 6.13 The CNBOP-PIB National Technical Assessment may be repealed by CNBOP-PIB in the event of changes in separate regulations, standards and provisions laid down by international organisations if it stems from existing contracts, significant changes in scientific basis and practical knowledge as well as in the event of no evidence present for the positive assessment of performance of the construction product for its intended use, while in use. The National Technical Assessment may be repealed on the initiative of CNBOP-PIB or at the request of the General Inspector of Construction Supervision upon conducting an investigative procedure with participation of the applicant.

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7. REGISTER OF DOCUMENTS UTILISED IN THE PROCEEDINGS

Standards and related documents

With respect to the documents listed below, where no date of issue has been provided, the latest edition of the referenced document shall apply, including its amendments.

VdS CEA 4001:2018-01	Guidelines for sprinkler systems – Planning and installation
VdS 2100-07:2014-07	Sprinkler Pumps – Requirements and test methods
VdS 2344:2014-07	Verfahren für die Prüfung, Anerkennung und Zertifizierung von Produkten und Systemen der Brandschutz- und Sicherungstechnik
PN-EN ISO 9906:2012	Pompy wirowe - Badania odbiorcze parametrów hydraulicznych - Klasy dokładności 1, 2 i 3 [<i>Rotodynamic pumps – Hydraulic performance acceptance tests – Grades 1, 2 and 3</i>]
PN-EN 12845:2015-10	Stałe urządzenia gaśnicze - Automatyczne urządzenia tryskaczowe - Projektowanie, instalowanie i konserwacja [<i>Fixed firefighting systems – Automatic sprinkler systems – Design, installation and maintenance</i>].
PN-EN 12162+A1:2009	Pompy do cieczy -- Wymagania bezpieczeństwa -- Procedura prób hydrostatycznych [<i>Liquid pumps – Safety Requirements – Procedure for hydrostatic testing</i>]

Test reports:

Test report VdS Schadenverhütung No. WAL 18026, dated 08/10/2018 on the testing of Helix First VF and Helix VF pumps;

Test report on the testing procedures conducted in Zespół Laboratoriów Urządzeń i Środków Gaśniczych BU, Centrum Naukowo-Badawcze Ochrony Przeciwpożarowej im. J. Tuliszkowskiego – Państwowy Instytut Badawczy /*Laboratories of Fire Extinguishing Devices and Media; Research Centre for Fire Protection - National Research Institute*/ no 1595/BU/19 of 15 May, 2019 on the testing of Helix First VF and Helix VF pumps.

Certificates

VdS Schadenverhütung Certificate No. P418007 of 15 October, 2018, on Helix First VF and Helix VF sprinkler pumps.

Manufacturer's documentation

Installation and operating instructions for Helix VF and Helix First VF pumps, size 2, 4, 6, 10, 16, no. 4 143 727-Ed.09 / 2018-01-Wilo.

Installation and operating instructions for Helix VF and Helix First VF pumps, size 22, 36, 52, no. 4 120 943-Ed.10 / 2018-01-Wilo.

Warranty card Wilo Polska no. PL/2015/10.

Statement issued by Wilo Polska regarding the confidentiality of documents enclosed to the application for the National Technical Assessment.

Document of the Factory Production Control, testing procedure "PRESSURE TEST VDS" no. 4228918 edition 01 of 22 March, 2018.

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Document of the Factory Production Control, testing schedule, "PLAN DE CONTRÔLE FLEXLINE Helix 5-6" V/VE/FIRST V/VF "no. 4198301 of 11 August, 2015, revision 06 of 30 June, 2017, edition of 23 March, 2018.

Document of the Factory Production Control, inspection and testing plan, "PLAN DE CONTRÔLE Helix 8" V/VE/FIRST V/VF " no. 4197542 of 04 February, 2016, revision 08 of 29 August, 2017, edition of 23 March, 2018.

APPENDICES

No appendices

END OF THE NATIONAL TECHNICAL ASSESSMENT

The National Technical Assessment has been drawn up by	mgr inż. Karolina Równicka Title or equivalent term, name and surname	27.05.2021 (-) <i>[signature illegible]</i> Date, signature
The National Technical Assessment has been authorized by	mgr inż. Robert Śliwiński Title or equivalent term, name and surname	27.05.2021 (-) <i>[signature illegible]</i> Date, signature

ADDITIONAL INFORMATION

Legal regulations

- > The Act of 16 April, 2004, on construction products (Journal of Laws No 92, item 881, as amended)
- > The Regulation of the Minister of Infrastructure and Construction of 17 November, 2016, on national technical assessments (Journal of Laws 2016, item 1968).
- > The Regulation of the Minister of Infrastructure and Construction of 17 November, 2016, on the methods of declaring conformity of construction products and their marking with a construction mark (Journal of Laws 2016, item 1966, as amended)
- > The Act of 30 June, 2000, on industrial property law (Journal of Laws 2001, No 49, item 508, as amended)

Changes introduced to the National Technical Assessment

The following changes have been introduced to the National Technical Assessment No CNBOP-PIB-KOT-2019/0136-1005 edition 1:

1. The product manufacturer's address has been changed from *Wilo SE Nortkirchenstrasse 100, 44263 Dortmund, Germany* to *Wilo SE Wilopark 1, 44263 Dortmund, Germany*.

This National Technical Assessment No CNBOP-PIB-KOT-2019/0136-1005 edition 2 replaces the National Technical Assessment No CNBOP-PIB-KOT-2019/0136-1005 edition 1.