

**DEKLARACJA WŁAŚCIWOŚCI UŻYTKOWYCH**  
(DECLARATION OF PERFORMANCE)  
Nr (No.) **NDWU/1/TUBUS 4 D50P/2021**

<b>1. Niepowtarzalny kod identyfikacyjny typu wyrobu:</b> (Unique identification code of the product-type:)  <b>TUBUS 4</b>																								
<b>2. Zamierzone zastosowanie lub zastosowania:</b> W instalacjach grzewczych w budynkach (Intended use/es: In heating systems in buildings)																								
<b>3. Producent:</b> (Manufacturer:)  INSTAL-PROJEKT Gawłowscy, Ścierzyńscy Spółka jawna, Nowa Wieś k/ Włocławka, ul. Jana Pawła II 12A, 87-853 Kruszyn, Polska. (INSTAL-PROJEKT Gawłowscy, Ścierzyńscy Spółka jawna, 87-853 Kruszyn, Nowa Wieś near Włocławek, Jana Pawła II 12A str., Poland.)																								
<b>4. System(-y) oceny i weryfikacji stałości właściwości użytkowych:</b> (System/s of AVCP:)  System 3																								
<b>5. Norma zharmonizowana:</b> (Harmonised standard:)  PN-EN 442-1:2015 EN 442-1:2014																								
<b>6. Jednostka lub jednostki notyfikowane:</b> (Notified body/ies:)  Notyfikowana jednostka badawcza Instytut Energetyki - Oddział Techniki Grzewczej i Sanitarnej ul. Wilcza 8, PL- 26-610 Radom . Nr akredytacji: AB 143, Nr notyfikacji: 1452, wykonała wstępne badanie typu i wydała sprawozdanie z badań. (Notified accredited body Instytut Energetyki - Oddział Techniki Grzewczej i Sanitarnej ul. Wilcza 8, PL- 26-610 Radom. Accreditation no. AB 143, Notification no. 1452, performed initial type testing and issued test reports)																								
<b>7. Deklarowane właściwości użytkowe:</b> (Declared performance's:) <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 33%; text-align: center;">Zasadnicze charakterystyki Essential characteristics</th> <th style="width: 33%; text-align: center;">Właściwości użytkowe Performance</th> <th style="width: 33%; text-align: center;">Zharmonizowana specyfikacja techniczna Harmonised technical specification</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;"> <b>Reakcja na ogień</b> (Reaction to fire)                             </td> <td style="text-align: center; padding: 2px;">A1</td> <td rowspan="10" style="text-align: center; vertical-align: middle; padding: 2px;">                                 PN-EN 442-1:2015                                  EN 442-1:2014                             </td> </tr> <tr> <td style="padding: 2px;"> <b>Uwalnianie substancji niebezpiecznych</b> (Release of dangerous substances)                             </td> <td style="text-align: center; padding: 2px;">Nie ma (None)</td> </tr> <tr> <td style="padding: 2px;"> <b>Szczelność pod działaniem ciśnienia</b> (Pressure tightness)                             </td> <td style="padding: 2px;">Brak przecieku przy ciśnieniu 1,3 krotnie większym od maksymalnego ciśnienia [kPa] (No leakage at 1,3 x maximum operating pressure [kPa])                             </td> </tr> <tr> <td style="padding: 2px;"> <b>Temperatura powierzchni</b> (Surface temperature)                             </td> <td style="text-align: center; padding: 2px;">Maksymalnie 95 °C (Maximum 95 °C)</td> </tr> <tr> <td style="padding: 2px;"> <b>Odporność na działanie ciśnienia</b> (Resistance to pressure)                             </td> <td style="padding: 2px;">Brak pęknięć przy ciśnieniu 1,69 krotnie większym od maksymalnego dopuszczalnego ciśnienia roboczego [kPa]. (No breakage at 1,69 x maximum operating pressure [kPa])                                   Maksymalne dopuszczalne ciśnienie robocze: 1000 [kPa] (Maximum operating pressure 1000 [kPa])                             </td> </tr> <tr> <td style="padding: 2px;"> <b>Nominalna moc cieplna (Φ 50 , Φ 30)</b> (Rated thermal output) (Φ 50 , Φ 30)                             </td> <td style="text-align: center; padding: 2px;">Patrz Tabela nr.1 (See Table No.1)</td> </tr> <tr> <td style="padding: 2px;"> <b>Moc cieplna w różnych warunkach eksploatacyjnych (charakterystyka)</b> (Thermal output in different operating conditions (characteristic curve))                             </td> <td style="text-align: center; padding: 2px;">Patrz Tabela nr.1 (See Table No.1)</td> </tr> <tr> <td style="padding: 2px;"> <b>Odporność na korozję</b> (Resistance against corrosion)                             </td> <td style="padding: 2px;">Brak korozji po 100 h w wilgoci (No corrosion after 100 h humidity)</td> </tr> <tr> <td style="padding: 2px;"> <b>Odporność na słabe uderzenia</b> (Resistance against minor impact)                             </td> <td style="text-align: center; padding: 2px;">Klasa 0 (Class 0)</td> </tr> </tbody> </table>			Zasadnicze charakterystyki Essential characteristics	Właściwości użytkowe Performance	Zharmonizowana specyfikacja techniczna Harmonised technical specification	<b>Reakcja na ogień</b> (Reaction to fire)	A1	PN-EN 442-1:2015 EN 442-1:2014	<b>Uwalnianie substancji niebezpiecznych</b> (Release of dangerous substances)	Nie ma (None)	<b>Szczelność pod działaniem ciśnienia</b> (Pressure tightness)	Brak przecieku przy ciśnieniu 1,3 krotnie większym od maksymalnego ciśnienia [kPa] (No leakage at 1,3 x maximum operating pressure [kPa])	<b>Temperatura powierzchni</b> (Surface temperature)	Maksymalnie 95 °C (Maximum 95 °C)	<b>Odporność na działanie ciśnienia</b> (Resistance to pressure)	Brak pęknięć przy ciśnieniu 1,69 krotnie większym od maksymalnego dopuszczalnego ciśnienia roboczego [kPa]. (No breakage at 1,69 x maximum operating pressure [kPa])  Maksymalne dopuszczalne ciśnienie robocze: 1000 [kPa] (Maximum operating pressure 1000 [kPa])	<b>Nominalna moc cieplna (Φ 50 , Φ 30)</b> (Rated thermal output) (Φ 50 , Φ 30)	Patrz Tabela nr.1 (See Table No.1)	<b>Moc cieplna w różnych warunkach eksploatacyjnych (charakterystyka)</b> (Thermal output in different operating conditions (characteristic curve))	Patrz Tabela nr.1 (See Table No.1)	<b>Odporność na korozję</b> (Resistance against corrosion)	Brak korozji po 100 h w wilgoci (No corrosion after 100 h humidity)	<b>Odporność na słabe uderzenia</b> (Resistance against minor impact)	Klasa 0 (Class 0)
Zasadnicze charakterystyki Essential characteristics	Właściwości użytkowe Performance	Zharmonizowana specyfikacja techniczna Harmonised technical specification																						
<b>Reakcja na ogień</b> (Reaction to fire)	A1	PN-EN 442-1:2015 EN 442-1:2014																						
<b>Uwalnianie substancji niebezpiecznych</b> (Release of dangerous substances)	Nie ma (None)																							
<b>Szczelność pod działaniem ciśnienia</b> (Pressure tightness)	Brak przecieku przy ciśnieniu 1,3 krotnie większym od maksymalnego ciśnienia [kPa] (No leakage at 1,3 x maximum operating pressure [kPa])																							
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<b>Moc cieplna w różnych warunkach eksploatacyjnych (charakterystyka)</b> (Thermal output in different operating conditions (characteristic curve))	Patrz Tabela nr.1 (See Table No.1)																							
<b>Odporność na korozję</b> (Resistance against corrosion)	Brak korozji po 100 h w wilgoci (No corrosion after 100 h humidity)																							
<b>Odporność na słabe uderzenia</b> (Resistance against minor impact)	Klasa 0 (Class 0)																							

8. Właściwości użytkowe określonego powyżej wyrobu są zgodne z zestawem deklarowanych właściwości użytkowych. Niniejsza deklaracja właściwości użytkowych wydana zostaje zgodnie z rozporządzeniem (UE) nr 305/2011 na wyłączną odpowiedzialność producenta określonego powyżej.  
(The performance of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.)

Tabela nr 1

(Table no. 1)

Model grzejnika	Normalna moc cieplna [W] (75/65/20°C) $\phi_{50}$	Moc cieplna [W] (55/45/20°C) $\phi_{30}$	Wykładnik n	$\Delta T$	$K_M$	Moc cieplna w różnych warunkach eksploatacji				
Radiator model	Rated thermal output (75/65/20°C) $\phi_{50}$	Rated thermal output (55/45/20°C) $\phi_{30}$	Index exponent n	$\Delta T$	$K_M$	Thermal output in different operating conditions (characteristic curve)				
TUB4-030/02D50P	91	47	1,2720	50	0,6252	$\phi =$	0,6252	x	$\Delta T$	1,2720
TUB4-030/03D50P	136	71	1,2720	50	0,9378	$\phi =$	0,9378	x	$\Delta T$	1,2720
TUB4-030/04D50P	181	95	1,2720	50	1,2505	$\phi =$	1,2505	x	$\Delta T$	1,2720
TUB4-030/05D50P	227	118	1,2720	50	1,5631	$\phi =$	1,5631	x	$\Delta T$	1,2720
TUB4-030/06D50P	272	142	1,2720	50	1,8757	$\phi =$	1,8757	x	$\Delta T$	1,2720
TUB4-030/07D50P	317	166	1,2720	50	2,1883	$\phi =$	2,1883	x	$\Delta T$	1,2720
TUB4-030/08D50P	362	189	1,2720	50	2,5009	$\phi =$	2,5009	x	$\Delta T$	1,2720
TUB4-030/09D50P	408	213	1,2720	50	2,8135	$\phi =$	2,8135	x	$\Delta T$	1,2720
TUB4-030/10D50P	453	237	1,2720	50	3,1261	$\phi =$	3,1261	x	$\Delta T$	1,2720
TUB4-030/11D50P	498	260	1,2720	50	3,4388	$\phi =$	3,4388	x	$\Delta T$	1,2720
TUB4-030/12D50P	544	284	1,2720	50	3,7514	$\phi =$	3,7514	x	$\Delta T$	1,2720
TUB4-030/13D50P	589	308	1,2720	50	4,0640	$\phi =$	4,0640	x	$\Delta T$	1,2720
TUB4-030/14D50P	634	331	1,2720	50	4,3766	$\phi =$	4,3766	x	$\Delta T$	1,2720
TUB4-030/15D50P	680	355	1,2720	50	4,6892	$\phi =$	4,6892	x	$\Delta T$	1,2720
TUB4-030/16D50P	725	378	1,2720	50	5,0018	$\phi =$	5,0018	x	$\Delta T$	1,2720
TUB4-030/17D50P	770	402	1,2720	50	5,3144	$\phi =$	5,3144	x	$\Delta T$	1,2720
TUB4-030/18D50P	815	426	1,2720	50	5,6271	$\phi =$	5,6271	x	$\Delta T$	1,2720
TUB4-030/19D50P	861	449	1,2720	50	5,9397	$\phi =$	5,9397	x	$\Delta T$	1,2720
TUB4-030/20D50P	906	473	1,2720	50	6,2523	$\phi =$	6,2523	x	$\Delta T$	1,2720
TUB4-030/21D50P	951	497	1,2720	50	6,5649	$\phi =$	6,5649	x	$\Delta T$	1,2720
TUB4-030/22D50P	997	520	1,2720	50	6,8775	$\phi =$	6,8775	x	$\Delta T$	1,2720
TUB4-030/23D50P	1042	544	1,2720	50	7,1901	$\phi =$	7,1901	x	$\Delta T$	1,2720
TUB4-030/24D50P	1087	568	1,2720	50	7,5027	$\phi =$	7,5027	x	$\Delta T$	1,2720
TUB4-030/25D50P	1133	591	1,2720	50	7,8153	$\phi =$	7,8153	x	$\Delta T$	1,2720
TUB4-030/26D50P	1178	615	1,2720	50	8,1280	$\phi =$	8,1280	x	$\Delta T$	1,2720
TUB4-030/27D50P	1223	639	1,2720	50	8,4406	$\phi =$	8,4406	x	$\Delta T$	1,2720
TUB4-030/28D50P	1268	662	1,2720	50	8,7532	$\phi =$	8,7532	x	$\Delta T$	1,2720
TUB4-030/29D50P	1314	686	1,2720	50	9,0658	$\phi =$	9,0658	x	$\Delta T$	1,2720
TUB4-030/30D50P	1359	710	1,2720	50	9,3784	$\phi =$	9,3784	x	$\Delta T$	1,2720
TUB4-030/31D50P	1404	733	1,2720	50	9,6910	$\phi =$	9,6910	x	$\Delta T$	1,2720
TUB4-030/32D50P	1450	757	1,2720	50	10,0036	$\phi =$	10,0036	x	$\Delta T$	1,2720
TUB4-030/33D50P	1495	781	1,2720	50	10,3163	$\phi =$	10,3163	x	$\Delta T$	1,2720
TUB4-030/34D50P	1540	804	1,2720	50	10,6289	$\phi =$	10,6289	x	$\Delta T$	1,2720
TUB4-030/35D50P	1586	828	1,2720	50	10,9415	$\phi =$	10,9415	x	$\Delta T$	1,2720
TUB4-030/36D50P	1631	852	1,2720	50	11,2541	$\phi =$	11,2541	x	$\Delta T$	1,2720
TUB4-030/37D50P	1676	875	1,2720	50	11,5667	$\phi =$	11,5667	x	$\Delta T$	1,2720

TUB4-030/38D50P	1721	899	1,2720	50	11,8793	$\phi =$	11,8793	x	$\Delta T$	1,2720
TUB4-030/39D50P	1767	923	1,2720	50	12,1919	$\phi =$	12,1919	x	$\Delta T$	1,2720
TUB4-030/40D50P	1812	946	1,2720	50	12,5046	$\phi =$	12,5046	x	$\Delta T$	1,2720
TUB4-030/41D50P	1857	970	1,2720	50	12,8172	$\phi =$	12,8172	x	$\Delta T$	1,2720
TUB4-030/42D50P	1903	993	1,2720	50	13,1298	$\phi =$	13,1298	x	$\Delta T$	1,2720
TUB4-030/43D50P	1948	1017	1,2720	50	13,4424	$\phi =$	13,4424	x	$\Delta T$	1,2720
TUB4-030/44D50P	1993	1041	1,2720	50	13,7550	$\phi =$	13,7550	x	$\Delta T$	1,2720
TUB4-030/45D50P	2039	1064	1,2720	50	14,0676	$\phi =$	14,0676	x	$\Delta T$	1,2720
TUB4-040/02D50P	127	66	1,2779	50	0,8578	$\phi =$	0,8578	x	$\Delta T$	1,2779
TUB4-040/03D50P	191	99	1,2779	50	1,2867	$\phi =$	1,2867	x	$\Delta T$	1,2779
TUB4-040/04D50P	254	132	1,2779	50	1,7155	$\phi =$	1,7155	x	$\Delta T$	1,2779
TUB4-040/05D50P	318	166	1,2779	50	2,1444	$\phi =$	2,1444	x	$\Delta T$	1,2779
TUB4-040/06D50P	382	199	1,2779	50	2,5733	$\phi =$	2,5733	x	$\Delta T$	1,2779
TUB4-040/07D50P	445	232	1,2779	50	3,0022	$\phi =$	3,0022	x	$\Delta T$	1,2779
TUB4-040/08D50P	509	265	1,2779	50	3,4311	$\phi =$	3,4311	x	$\Delta T$	1,2779
TUB4-040/09D50P	572	298	1,2779	50	3,8600	$\phi =$	3,8600	x	$\Delta T$	1,2779
TUB4-040/10D50P	636	331	1,2779	50	4,2889	$\phi =$	4,2889	x	$\Delta T$	1,2779
TUB4-040/11D50P	700	364	1,2779	50	4,7178	$\phi =$	4,7178	x	$\Delta T$	1,2779
TUB4-040/12D50P	763	397	1,2779	50	5,1466	$\phi =$	5,1466	x	$\Delta T$	1,2779
TUB4-040/13D50P	827	430	1,2779	50	5,5755	$\phi =$	5,5755	x	$\Delta T$	1,2779
TUB4-040/14D50P	890	464	1,2779	50	6,0044	$\phi =$	6,0044	x	$\Delta T$	1,2779
TUB4-040/15D50P	954	497	1,2779	50	6,4333	$\phi =$	6,4333	x	$\Delta T$	1,2779
TUB4-040/16D50P	1018	530	1,2779	50	6,8622	$\phi =$	6,8622	x	$\Delta T$	1,2779
TUB4-040/17D50P	1081	563	1,2779	50	7,2911	$\phi =$	7,2911	x	$\Delta T$	1,2779
TUB4-040/18D50P	1145	596	1,2779	50	7,7200	$\phi =$	7,7200	x	$\Delta T$	1,2779
TUB4-040/19D50P	1208	629	1,2779	50	8,1489	$\phi =$	8,1489	x	$\Delta T$	1,2779
TUB4-040/20D50P	1272	662	1,2779	50	8,5777	$\phi =$	8,5777	x	$\Delta T$	1,2779
TUB4-040/21D50P	1336	695	1,2779	50	9,0066	$\phi =$	9,0066	x	$\Delta T$	1,2779
TUB4-040/22D50P	1399	728	1,2779	50	9,4355	$\phi =$	9,4355	x	$\Delta T$	1,2779
TUB4-040/23D50P	1463	762	1,2779	50	9,8644	$\phi =$	9,8644	x	$\Delta T$	1,2779
TUB4-040/24D50P	1526	795	1,2779	50	10,2933	$\phi =$	10,2933	x	$\Delta T$	1,2779
TUB4-040/25D50P	1590	828	1,2779	50	10,7222	$\phi =$	10,7222	x	$\Delta T$	1,2779
TUB4-040/26D50P	1654	861	1,2779	50	11,1511	$\phi =$	11,1511	x	$\Delta T$	1,2779
TUB4-040/27D50P	1717	894	1,2779	50	11,5800	$\phi =$	11,5800	x	$\Delta T$	1,2779
TUB4-040/28D50P	1781	927	1,2779	50	12,0088	$\phi =$	12,0088	x	$\Delta T$	1,2779
TUB4-040/29D50P	1844	960	1,2779	50	12,4377	$\phi =$	12,4377	x	$\Delta T$	1,2779
TUB4-040/30D50P	1908	993	1,2779	50	12,8666	$\phi =$	12,8666	x	$\Delta T$	1,2779
TUB4-040/31D50P	1972	1026	1,2779	50	13,2955	$\phi =$	13,2955	x	$\Delta T$	1,2779
TUB4-040/32D50P	2035	1060	1,2779	50	13,7244	$\phi =$	13,7244	x	$\Delta T$	1,2779
TUB4-040/33D50P	2099	1093	1,2779	50	14,1533	$\phi =$	14,1533	x	$\Delta T$	1,2779
TUB4-040/34D50P	2162	1126	1,2779	50	14,5822	$\phi =$	14,5822	x	$\Delta T$	1,2779
TUB4-040/35D50P	2226	1159	1,2779	50	15,0111	$\phi =$	15,0111	x	$\Delta T$	1,2779
TUB4-040/36D50P	2290	1192	1,2779	50	15,4399	$\phi =$	15,4399	x	$\Delta T$	1,2779
TUB4-040/37D50P	2353	1225	1,2779	50	15,8688	$\phi =$	15,8688	x	$\Delta T$	1,2779
TUB4-040/38D50P	2417	1258	1,2779	50	16,2977	$\phi =$	16,2977	x	$\Delta T$	1,2779
TUB4-040/39D50P	2480	1291	1,2779	50	16,7266	$\phi =$	16,7266	x	$\Delta T$	1,2779

TUB4-040/40D50P	2544	1324	1,2779	50	17,1555	$\phi =$	17,1555	x	$\Delta T$	1,2779
TUB4-040/41D50P	2608	1358	1,2779	50	17,5844	$\phi =$	17,5844	x	$\Delta T$	1,2779
TUB4-040/42D50P	2671	1391	1,2779	50	18,0133	$\phi =$	18,0133	x	$\Delta T$	1,2779
TUB4-040/43D50P	2735	1424	1,2779	50	18,4422	$\phi =$	18,4422	x	$\Delta T$	1,2779
TUB4-040/44D50P	2798	1457	1,2779	50	18,8710	$\phi =$	18,8710	x	$\Delta T$	1,2779
TUB4-040/45D50P	2862	1490	1,2779	50	19,2999	$\phi =$	19,2999	x	$\Delta T$	1,2779
TUB4-050/02D50P	161	84	1,2824	50	1,0681	$\phi =$	1,0681	x	$\Delta T$	1,2824
TUB4-050/03D50P	242	126	1,2824	50	1,6021	$\phi =$	1,6021	x	$\Delta T$	1,2824
TUB4-050/04D50P	322	167	1,2824	50	2,1362	$\phi =$	2,1362	x	$\Delta T$	1,2824
TUB4-050/05D50P	403	209	1,2824	50	2,6702	$\phi =$	2,6702	x	$\Delta T$	1,2824
TUB4-050/06D50P	484	251	1,2824	50	3,2043	$\phi =$	3,2043	x	$\Delta T$	1,2824
TUB4-050/07D50P	564	293	1,2824	50	3,7383	$\phi =$	3,7383	x	$\Delta T$	1,2824
TUB4-050/08D50P	645	335	1,2824	50	4,2723	$\phi =$	4,2723	x	$\Delta T$	1,2824
TUB4-050/09D50P	725	377	1,2824	50	4,8064	$\phi =$	4,8064	x	$\Delta T$	1,2824
TUB4-050/10D50P	806	419	1,2824	50	5,3404	$\phi =$	5,3404	x	$\Delta T$	1,2824
TUB4-050/11D50P	887	460	1,2824	50	5,8745	$\phi =$	5,8745	x	$\Delta T$	1,2824
TUB4-050/12D50P	967	502	1,2824	50	6,4085	$\phi =$	6,4085	x	$\Delta T$	1,2824
TUB4-050/13D50P	1048	544	1,2824	50	6,9426	$\phi =$	6,9426	x	$\Delta T$	1,2824
TUB4-050/14D50P	1128	586	1,2824	50	7,4766	$\phi =$	7,4766	x	$\Delta T$	1,2824
TUB4-050/15D50P	1209	628	1,2824	50	8,0106	$\phi =$	8,0106	x	$\Delta T$	1,2824
TUB4-050/16D50P	1290	670	1,2824	50	8,5447	$\phi =$	8,5447	x	$\Delta T$	1,2824
TUB4-050/17D50P	1370	712	1,2824	50	9,0787	$\phi =$	9,0787	x	$\Delta T$	1,2824
TUB4-050/18D50P	1451	754	1,2824	50	9,6128	$\phi =$	9,6128	x	$\Delta T$	1,2824
TUB4-050/19D50P	1531	795	1,2824	50	10,1468	$\phi =$	10,1468	x	$\Delta T$	1,2824
TUB4-050/20D50P	1612	837	1,2824	50	10,6809	$\phi =$	10,6809	x	$\Delta T$	1,2824
TUB4-050/21D50P	1693	879	1,2824	50	11,2149	$\phi =$	11,2149	x	$\Delta T$	1,2824
TUB4-050/22D50P	1773	921	1,2824	50	11,7489	$\phi =$	11,7489	x	$\Delta T$	1,2824
TUB4-050/23D50P	1854	963	1,2824	50	12,2830	$\phi =$	12,2830	x	$\Delta T$	1,2824
TUB4-050/24D50P	1934	1005	1,2824	50	12,8170	$\phi =$	12,8170	x	$\Delta T$	1,2824
TUB4-050/25D50P	2015	1047	1,2824	50	13,3511	$\phi =$	13,3511	x	$\Delta T$	1,2824
TUB4-050/26D50P	2096	1088	1,2824	50	13,8851	$\phi =$	13,8851	x	$\Delta T$	1,2824
TUB4-050/27D50P	2176	1130	1,2824	50	14,4192	$\phi =$	14,4192	x	$\Delta T$	1,2824
TUB4-050/28D50P	2257	1172	1,2824	50	14,9532	$\phi =$	14,9532	x	$\Delta T$	1,2824
TUB4-050/29D50P	2337	1214	1,2824	50	15,4872	$\phi =$	15,4872	x	$\Delta T$	1,2824
TUB4-050/30D50P	2418	1256	1,2824	50	16,0213	$\phi =$	16,0213	x	$\Delta T$	1,2824
TUB4-050/31D50P	2499	1298	1,2824	50	16,5553	$\phi =$	16,5553	x	$\Delta T$	1,2824
TUB4-050/32D50P	2579	1340	1,2824	50	17,0894	$\phi =$	17,0894	x	$\Delta T$	1,2824
TUB4-050/33D50P	2660	1381	1,2824	50	17,6234	$\phi =$	17,6234	x	$\Delta T$	1,2824
TUB4-050/34D50P	2740	1423	1,2824	50	18,1574	$\phi =$	18,1574	x	$\Delta T$	1,2824
TUB4-050/35D50P	2821	1465	1,2824	50	18,6915	$\phi =$	18,6915	x	$\Delta T$	1,2824
TUB4-050/36D50P	2902	1507	1,2824	50	19,2255	$\phi =$	19,2255	x	$\Delta T$	1,2824
TUB4-050/37D50P	2982	1549	1,2824	50	19,7596	$\phi =$	19,7596	x	$\Delta T$	1,2824
TUB4-050/38D50P	3063	1591	1,2824	50	20,2936	$\phi =$	20,2936	x	$\Delta T$	1,2824
TUB4-050/39D50P	3143	1633	1,2824	50	20,8277	$\phi =$	20,8277	x	$\Delta T$	1,2824
TUB4-050/40D50P	3224	1675	1,2824	50	21,3617	$\phi =$	21,3617	x	$\Delta T$	1,2824
TUB4-050/41D50P	3305	1716	1,2824	50	21,8957	$\phi =$	21,8957	x	$\Delta T$	1,2824

TUB4-050/42D50P	3385	1758	1,2824	50	22,4298	$\phi =$	22,4298	x	$\Delta T$	1,2824
TUB4-050/43D50P	3466	1800	1,2824	50	22,9638	$\phi =$	22,9638	x	$\Delta T$	1,2824
TUB4-050/44D50P	3546	1842	1,2824	50	23,4979	$\phi =$	23,4979	x	$\Delta T$	1,2824
TUB4-050/45D50P	3627	1884	1,2824	50	24,0319	$\phi =$	24,0319	x	$\Delta T$	1,2824
TUB4-070/02D50P	218	113	1,2893	50	1,4047	$\phi =$	1,4047	x	$\Delta T$	1,2893
TUB4-070/03D50P	327	169	1,2893	50	2,1070	$\phi =$	2,1070	x	$\Delta T$	1,2893
TUB4-070/04D50P	436	225	1,2893	50	2,8093	$\phi =$	2,8093	x	$\Delta T$	1,2893
TUB4-070/05D50P	545	282	1,2893	50	3,5117	$\phi =$	3,5117	x	$\Delta T$	1,2893
TUB4-070/06D50P	653	338	1,2893	50	4,2140	$\phi =$	4,2140	x	$\Delta T$	1,2893
TUB4-070/07D50P	762	395	1,2893	50	4,9164	$\phi =$	4,9164	x	$\Delta T$	1,2893
TUB4-070/08D50P	871	451	1,2893	50	5,6187	$\phi =$	5,6187	x	$\Delta T$	1,2893
TUB4-070/09D50P	980	507	1,2893	50	6,3210	$\phi =$	6,3210	x	$\Delta T$	1,2893
TUB4-070/10D50P	1089	564	1,2893	50	7,0234	$\phi =$	7,0234	x	$\Delta T$	1,2893
TUB4-070/11D50P	1198	620	1,2893	50	7,7257	$\phi =$	7,7257	x	$\Delta T$	1,2893
TUB4-070/12D50P	1307	676	1,2893	50	8,4280	$\phi =$	8,4280	x	$\Delta T$	1,2893
TUB4-070/13D50P	1416	733	1,2893	50	9,1304	$\phi =$	9,1304	x	$\Delta T$	1,2893
TUB4-070/14D50P	1525	789	1,2893	50	9,8327	$\phi =$	9,8327	x	$\Delta T$	1,2893
TUB4-070/15D50P	1634	845	1,2893	50	10,5351	$\phi =$	10,5351	x	$\Delta T$	1,2893
TUB4-070/16D50P	1742	902	1,2893	50	11,2374	$\phi =$	11,2374	x	$\Delta T$	1,2893
TUB4-070/17D50P	1851	958	1,2893	50	11,9397	$\phi =$	11,9397	x	$\Delta T$	1,2893
TUB4-070/18D50P	1960	1015	1,2893	50	12,6421	$\phi =$	12,6421	x	$\Delta T$	1,2893
TUB4-070/19D50P	2069	1071	1,2893	50	13,3444	$\phi =$	13,3444	x	$\Delta T$	1,2893
TUB4-070/20D50P	2178	1127	1,2893	50	14,0467	$\phi =$	14,0467	x	$\Delta T$	1,2893
TUB4-070/21D50P	2287	1184	1,2893	50	14,7491	$\phi =$	14,7491	x	$\Delta T$	1,2893
TUB4-070/22D50P	2396	1240	1,2893	50	15,4514	$\phi =$	15,4514	x	$\Delta T$	1,2893
TUB4-070/23D50P	2505	1296	1,2893	50	16,1538	$\phi =$	16,1538	x	$\Delta T$	1,2893
TUB4-070/24D50P	2614	1353	1,2893	50	16,8561	$\phi =$	16,8561	x	$\Delta T$	1,2893
TUB4-070/25D50P	2723	1409	1,2893	50	17,5584	$\phi =$	17,5584	x	$\Delta T$	1,2893
TUB4-070/26D50P	2831	1465	1,2893	50	18,2608	$\phi =$	18,2608	x	$\Delta T$	1,2893
TUB4-070/27D50P	2940	1522	1,2893	50	18,9631	$\phi =$	18,9631	x	$\Delta T$	1,2893
TUB4-070/28D50P	3049	1578	1,2893	50	19,6654	$\phi =$	19,6654	x	$\Delta T$	1,2893
TUB4-070/29D50P	3158	1635	1,2893	50	20,3678	$\phi =$	20,3678	x	$\Delta T$	1,2893
TUB4-070/30D50P	3267	1691	1,2893	50	21,0701	$\phi =$	21,0701	x	$\Delta T$	1,2893
TUB4-070/31D50P	3376	1747	1,2893	50	21,7725	$\phi =$	21,7725	x	$\Delta T$	1,2893
TUB4-070/32D50P	3485	1804	1,2893	50	22,4748	$\phi =$	22,4748	x	$\Delta T$	1,2893
TUB4-070/33D50P	3594	1860	1,2893	50	23,1771	$\phi =$	23,1771	x	$\Delta T$	1,2893
TUB4-070/34D50P	3703	1916	1,2893	50	23,8795	$\phi =$	23,8795	x	$\Delta T$	1,2893
TUB4-070/35D50P	3812	1973	1,2893	50	24,5818	$\phi =$	24,5818	x	$\Delta T$	1,2893
TUB4-070/36D50P	3920	2029	1,2893	50	25,2841	$\phi =$	25,2841	x	$\Delta T$	1,2893
TUB4-070/37D50P	4029	2085	1,2893	50	25,9865	$\phi =$	25,9865	x	$\Delta T$	1,2893
TUB4-070/38D50P	4138	2142	1,2893	50	26,6888	$\phi =$	26,6888	x	$\Delta T$	1,2893
TUB4-070/39D50P	4247	2198	1,2893	50	27,3912	$\phi =$	27,3912	x	$\Delta T$	1,2893
TUB4-070/40D50P	4356	2255	1,2893	50	28,0935	$\phi =$	28,0935	x	$\Delta T$	1,2893
TUB4-070/41D50P	4465	2311	1,2893	50	28,7958	$\phi =$	28,7958	x	$\Delta T$	1,2893
TUB4-070/42D50P	4574	2367	1,2893	50	29,4982	$\phi =$	29,4982	x	$\Delta T$	1,2893
TUB4-080/02D50P	240	124	1,2920	50	1,5303	$\phi =$	1,5303	x	$\Delta T$	1,2920

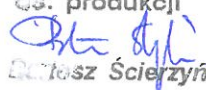
TUB4-080/03D50P	360	186	1,2920	50	2,2955	$\phi =$	2,2955	x	$\Delta T$	1,2920
TUB4-080/04D50P	480	248	1,2920	50	3,0606	$\phi =$	3,0606	x	$\Delta T$	1,2920
TUB4-080/05D50P	600	310	1,2920	50	3,8258	$\phi =$	3,8258	x	$\Delta T$	1,2920
TUB4-080/06D50P	719	372	1,2920	50	4,5909	$\phi =$	4,5909	x	$\Delta T$	1,2920
TUB4-080/07D50P	839	434	1,2920	50	5,3561	$\phi =$	5,3561	x	$\Delta T$	1,2920
TUB4-080/08D50P	959	496	1,2920	50	6,1212	$\phi =$	6,1212	x	$\Delta T$	1,2920
TUB4-080/09D50P	1079	558	1,2920	50	6,8864	$\phi =$	6,8864	x	$\Delta T$	1,2920
TUB4-080/10D50P	1199	620	1,2920	50	7,6516	$\phi =$	7,6516	x	$\Delta T$	1,2920
TUB4-080/11D50P	1319	682	1,2920	50	8,4167	$\phi =$	8,4167	x	$\Delta T$	1,2920
TUB4-080/12D50P	1439	744	1,2920	50	9,1819	$\phi =$	9,1819	x	$\Delta T$	1,2920
TUB4-080/13D50P	1559	806	1,2920	50	9,9470	$\phi =$	9,9470	x	$\Delta T$	1,2920
TUB4-080/14D50P	1679	868	1,2920	50	10,7122	$\phi =$	10,7122	x	$\Delta T$	1,2920
TUB4-080/15D50P	1799	930	1,2920	50	11,4773	$\phi =$	11,4773	x	$\Delta T$	1,2920
TUB4-080/16D50P	1918	992	1,2920	50	12,2425	$\phi =$	12,2425	x	$\Delta T$	1,2920
TUB4-080/17D50P	2038	1054	1,2920	50	13,0077	$\phi =$	13,0077	x	$\Delta T$	1,2920
TUB4-080/18D50P	2158	1115	1,2920	50	13,7728	$\phi =$	13,7728	x	$\Delta T$	1,2920
TUB4-080/19D50P	2278	1177	1,2920	50	14,5380	$\phi =$	14,5380	x	$\Delta T$	1,2920
TUB4-080/20D50P	2398	1239	1,2920	50	15,3031	$\phi =$	15,3031	x	$\Delta T$	1,2920
TUB4-080/21D50P	2518	1301	1,2920	50	16,0683	$\phi =$	16,0683	x	$\Delta T$	1,2920
TUB4-080/22D50P	2638	1363	1,2920	50	16,8334	$\phi =$	16,8334	x	$\Delta T$	1,2920
TUB4-080/23D50P	2758	1425	1,2920	50	17,5986	$\phi =$	17,5986	x	$\Delta T$	1,2920
TUB4-080/24D50P	2878	1487	1,2920	50	18,3637	$\phi =$	18,3637	x	$\Delta T$	1,2920
TUB4-080/25D50P	2998	1549	1,2920	50	19,1289	$\phi =$	19,1289	x	$\Delta T$	1,2920
TUB4-080/26D50P	3117	1611	1,2920	50	19,8941	$\phi =$	19,8941	x	$\Delta T$	1,2920
TUB4-080/27D50P	3237	1673	1,2920	50	20,6592	$\phi =$	20,6592	x	$\Delta T$	1,2920
TUB4-080/28D50P	3357	1735	1,2920	50	21,4244	$\phi =$	21,4244	x	$\Delta T$	1,2920
TUB4-080/29D50P	3477	1797	1,2920	50	22,1895	$\phi =$	22,1895	x	$\Delta T$	1,2920
TUB4-080/30D50P	3597	1859	1,2920	50	22,9547	$\phi =$	22,9547	x	$\Delta T$	1,2920
TUB4-080/31D50P	3717	1921	1,2920	50	23,7198	$\phi =$	23,7198	x	$\Delta T$	1,2920
TUB4-080/32D50P	3837	1983	1,2920	50	24,4850	$\phi =$	24,4850	x	$\Delta T$	1,2920
TUB4-080/33D50P	3957	2045	1,2920	50	25,2501	$\phi =$	25,2501	x	$\Delta T$	1,2920
TUB4-080/34D50P	4077	2107	1,2920	50	26,0153	$\phi =$	26,0153	x	$\Delta T$	1,2920
TUB4-080/35D50P	4197	2169	1,2920	50	26,7805	$\phi =$	26,7805	x	$\Delta T$	1,2920
TUB4-080/36D50P	4316	2231	1,2920	50	27,5456	$\phi =$	27,5456	x	$\Delta T$	1,2920
TUB4-080/37D50P	4436	2293	1,2920	50	28,3108	$\phi =$	28,3108	x	$\Delta T$	1,2920
TUB4-090/02D50P	257	133	1,2944	50	1,6273	$\phi =$	1,6273	x	$\Delta T$	1,2944
TUB4-090/03D50P	386	199	1,2944	50	2,4409	$\phi =$	2,4409	x	$\Delta T$	1,2944
TUB4-090/04D50P	515	266	1,2944	50	3,2546	$\phi =$	3,2546	x	$\Delta T$	1,2944
TUB4-090/05D50P	644	332	1,2944	50	4,0682	$\phi =$	4,0682	x	$\Delta T$	1,2944
TUB4-090/06D50P	772	399	1,2944	50	4,8818	$\phi =$	4,8818	x	$\Delta T$	1,2944
TUB4-090/07D50P	901	465	1,2944	50	5,6955	$\phi =$	5,6955	x	$\Delta T$	1,2944
TUB4-090/08D50P	1030	532	1,2944	50	6,5091	$\phi =$	6,5091	x	$\Delta T$	1,2944
TUB4-090/09D50P	1158	598	1,2944	50	7,3228	$\phi =$	7,3228	x	$\Delta T$	1,2944
TUB4-090/10D50P	1287	664	1,2944	50	8,1364	$\phi =$	8,1364	x	$\Delta T$	1,2944
TUB4-090/11D50P	1416	731	1,2944	50	8,9500	$\phi =$	8,9500	x	$\Delta T$	1,2944
TUB4-090/12D50P	1544	797	1,2944	50	9,7637	$\phi =$	9,7637	x	$\Delta T$	1,2944

TUB4-090/13D50P	1673	864	1,2944	50	10,5773	$\phi =$	10,5773	x	$\Delta T$	1,2944
TUB4-090/14D50P	1802	930	1,2944	50	11,3909	$\phi =$	11,3909	x	$\Delta T$	1,2944
TUB4-090/15D50P	1931	997	1,2944	50	12,2046	$\phi =$	12,2046	x	$\Delta T$	1,2944
TUB4-090/16D50P	2059	1063	1,2944	50	13,0182	$\phi =$	13,0182	x	$\Delta T$	1,2944
TUB4-090/17D50P	2188	1129	1,2944	50	13,8319	$\phi =$	13,8319	x	$\Delta T$	1,2944
TUB4-090/18D50P	2317	1196	1,2944	50	14,6455	$\phi =$	14,6455	x	$\Delta T$	1,2944
TUB4-090/19D50P	2445	1262	1,2944	50	15,4591	$\phi =$	15,4591	x	$\Delta T$	1,2944
TUB4-090/20D50P	2574	1329	1,2944	50	16,2728	$\phi =$	16,2728	x	$\Delta T$	1,2944
TUB4-090/21D50P	2703	1395	1,2944	50	17,0864	$\phi =$	17,0864	x	$\Delta T$	1,2944
TUB4-090/22D50P	2831	1462	1,2944	50	17,9001	$\phi =$	17,9001	x	$\Delta T$	1,2944
TUB4-090/23D50P	2960	1528	1,2944	50	18,7137	$\phi =$	18,7137	x	$\Delta T$	1,2944
TUB4-090/24D50P	3089	1595	1,2944	50	19,5273	$\phi =$	19,5273	x	$\Delta T$	1,2944
TUB4-090/25D50P	3218	1661	1,2944	50	20,3410	$\phi =$	20,3410	x	$\Delta T$	1,2944
TUB4-090/26D50P	3346	1727	1,2944	50	21,1546	$\phi =$	21,1546	x	$\Delta T$	1,2944
TUB4-090/27D50P	3475	1794	1,2944	50	21,9683	$\phi =$	21,9683	x	$\Delta T$	1,2944
TUB4-090/28D50P	3604	1860	1,2944	50	22,7819	$\phi =$	22,7819	x	$\Delta T$	1,2944
TUB4-090/29D50P	3732	1927	1,2944	50	23,5955	$\phi =$	23,5955	x	$\Delta T$	1,2944
TUB4-090/30D50P	3861	1993	1,2944	50	24,4092	$\phi =$	24,4092	x	$\Delta T$	1,2944
TUB4-090/31D50P	3990	2060	1,2944	50	25,2228	$\phi =$	25,2228	x	$\Delta T$	1,2944
TUB4-090/32D50P	4118	2126	1,2944	50	26,0364	$\phi =$	26,0364	x	$\Delta T$	1,2944
TUB4-090/33D50P	4247	2192	1,2944	50	26,8501	$\phi =$	26,8501	x	$\Delta T$	1,2944
TUB4-100/02D50P	271	140	1,2966	50	1,6986	$\phi =$	1,6986	x	$\Delta T$	1,2966
TUB4-100/03D50P	407	210	1,2966	50	2,5479	$\phi =$	2,5479	x	$\Delta T$	1,2966
TUB4-100/04D50P	542	279	1,2966	50	3,3972	$\phi =$	3,3972	x	$\Delta T$	1,2966
TUB4-100/05D50P	678	349	1,2966	50	4,2464	$\phi =$	4,2464	x	$\Delta T$	1,2966
TUB4-100/06D50P	813	419	1,2966	50	5,0957	$\phi =$	5,0957	x	$\Delta T$	1,2966
TUB4-100/07D50P	949	489	1,2966	50	5,9450	$\phi =$	5,9450	x	$\Delta T$	1,2966
TUB4-100/08D50P	1084	559	1,2966	50	6,7943	$\phi =$	6,7943	x	$\Delta T$	1,2966
TUB4-100/09D50P	1220	629	1,2966	50	7,6436	$\phi =$	7,6436	x	$\Delta T$	1,2966
TUB4-100/10D50P	1355	699	1,2966	50	8,4929	$\phi =$	8,4929	x	$\Delta T$	1,2966
TUB4-100/11D50P	1491	769	1,2966	50	9,3422	$\phi =$	9,3422	x	$\Delta T$	1,2966
TUB4-100/12D50P	1626	838	1,2966	50	10,1915	$\phi =$	10,1915	x	$\Delta T$	1,2966
TUB4-100/13D50P	1762	908	1,2966	50	11,0407	$\phi =$	11,0407	x	$\Delta T$	1,2966
TUB4-100/14D50P	1897	978	1,2966	50	11,8900	$\phi =$	11,8900	x	$\Delta T$	1,2966
TUB4-100/15D50P	2033	1048	1,2966	50	12,7393	$\phi =$	12,7393	x	$\Delta T$	1,2966
TUB4-100/16D50P	2168	1118	1,2966	50	13,5886	$\phi =$	13,5886	x	$\Delta T$	1,2966
TUB4-100/17D50P	2304	1188	1,2966	50	14,4379	$\phi =$	14,4379	x	$\Delta T$	1,2966
TUB4-100/18D50P	2439	1258	1,2966	50	15,2872	$\phi =$	15,2872	x	$\Delta T$	1,2966
TUB4-100/19D50P	2575	1328	1,2966	50	16,1365	$\phi =$	16,1365	x	$\Delta T$	1,2966
TUB4-100/20D50P	2710	1397	1,2966	50	16,9858	$\phi =$	16,9858	x	$\Delta T$	1,2966
TUB4-100/21D50P	2846	1467	1,2966	50	17,8350	$\phi =$	17,8350	x	$\Delta T$	1,2966
TUB4-100/22D50P	2981	1537	1,2966	50	18,6843	$\phi =$	18,6843	x	$\Delta T$	1,2966
TUB4-100/23D50P	3117	1607	1,2966	50	19,5336	$\phi =$	19,5336	x	$\Delta T$	1,2966
TUB4-100/24D50P	3252	1677	1,2966	50	20,3829	$\phi =$	20,3829	x	$\Delta T$	1,2966
TUB4-100/25D50P	3388	1747	1,2966	50	21,2322	$\phi =$	21,2322	x	$\Delta T$	1,2966
TUB4-100/26D50P	3523	1817	1,2966	50	22,0815	$\phi =$	22,0815	x	$\Delta T$	1,2966

TUB4-100/27D50P	3659	1886	1,2966	50	22,9308	$\phi =$	22,9308	x	$\Delta T$	1,2966
TUB4-100/28D50P	3794	1956	1,2966	50	23,7801	$\phi =$	23,7801	x	$\Delta T$	1,2966
TUB4-100/29D50P	3930	2026	1,2966	50	24,6293	$\phi =$	24,6293	x	$\Delta T$	1,2966
TUB4-100/30D50P	4065	2096	1,2966	50	25,4786	$\phi =$	25,4786	x	$\Delta T$	1,2966

W imieniu producenta podpisał:  
(Signed for and on behalf of the manufacturer by:)

Z-ca Prezesa ds. Produkcji  
Bartosz Ścierzyński  
Nowa Wieś 19.05.2021 r.

Z-ca PREZESA  
ds. produkcji  
  
Bartosz Ścierzyński

.....  
(podpis)  
(signature)

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