

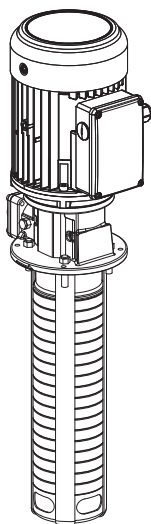


WALRUS
PUMP

TPRK_E Series

使用說明書

直立浸水式泵浦



Model : 1T / 3T / 5T / 10T / 15T / 20T

為確保安全和正確使用，請在操作前閱讀本說明。

ISO 9001 Certified 大井泵浦工業股份有限公司



EC Declaration of Conformity

Manufacturer:

Walrus Pump Co., Ltd.

Address:

No.83-14, Dapiantou, Sanzhi Dist., New Taipei City 252, Taiwan

Declare that the machinery described:

Name: Water Pump

Model: TPRK Series

Conform to the following directive:

2006/42/EC—Machinery directive

2014/35/EU—Low voltage directive

2014/30/EU—EMC (Electromagnetic compatibility) directive

Refer to the following standards:

EN ISO 12100:2010

EN 809:1998+A1:2009

EN 60335-1:2012+A15

EN IEC 60335-2-41:2021+A11

EN IEC 61000-6-2:2019

EN IEC 61000-6-3:2021

R&D Department: Chen, Chih-Chung

Director: *Chen, chih-chung*

TPRK Instruction Manual



Before installing your new system, please study all instructions carefully, as the warranty does not cover failures caused by incorrect installation and operation.

1. Application

- 1.1 The TPRK Series is multi-stage centrifugal pump designed for transferring liquid used in machine tools.
- 1.2 The pump can not be used to transfer explosive liquids, such as gasoline, diesel oil and other similar liquids. It is only suitable for water diluted, low viscosity, uncorrosive cooling or lubricant liquids.

Caution: The pump must NOT be used to transfer flammable or toxic liquids.

2. Model Explanation

The pump models are coded based on the number of pump stages. Standard stages consist of both diffusers and impellers, and null stages, for special installation considerations, contain diffuser chamber only. The pump model is shown on the pump nameplate.

	TPRK	1T	23	-	23	E
Model Type						
Standard Capacity (m ³ /h)						
Number of Diffuser						
Number of Impellers						
Drain back tank structure						

3. Technical Data

1. Ambient Temperature: Max. +40°C
2. Liquid Temperature: +0°C ~ +90°C
3. Enclosure Class: IP54
4. Discharge Pressure: Max. 30kg/cm²
5. Submerged depth: Min. 40mm
6. Stainer Diameter: Ø2mm (TPRK 1T / 3T)
Ø4mm (TPRK 5T/10T/15T/20T)
7. Particle Size: 2mm (TPRK 1T / 3T)
4mm (TPRK 5T/10T/15T/20T)

8. Liquids (maximum content of solid particles in suspension 50g/m³)
9. Kinematic Viscosity: 32 cst (mm²/s)
10. Head: 50Hz: Up to 240M
60Hz: Up to 240M

4. Installation



The pump has hot surface on the motor. It must be installed so that persons cannot accidentally come into contact with the hot surface.

4.1. Submerged Depth

To avoid dry running and damage the pump during operation, the minimum pump submerged depth is 40mm as shown in Fig 1. In addition, the bottom of the pump suction inlet must be at least 25 mm above the bottom of the tank.

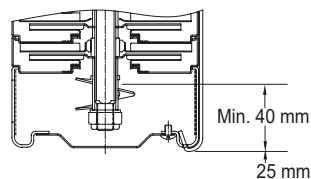


Fig.1

- 4.2 We recommend outlet should stay the same size as the original. If you narrow the pipe size, it will affect the performance of the pump.
- 4.3 The motor protector shall be installed by the user.

5. Electrical Connection



5.1 This mark located outside the connection box is an Electrical Hazard Warning.



5.2 The electrical connection should be carried out in accordance with local regulations. The operating voltage and frequency are marked on the nameplate. Please make sure that these data match your job requirement.

- 5.3 For your safety, please make sure that the wiring is correctly grounded.

- 5.4 The pumps must be supplied through a Residual Current Device (RCD) with a rated residual operating current not exceeding 30 mA.
- 5.5 Motors must be connected to a motor-protective circuit breaker which can be manually reset. Set the motor-protective circuit breaker according to the rated current of the motor. See nameplate.
- 5.6 Make electrical connection in accordance with connecting diagram located inside the connection box. The motor current must be within the rated amps range indicated on nameplate. Three phase motor requires a magnetic starter for safety.
- 5.7 Three phase motor must check rotating direction. The rotating direction indicated on the fan cover, is clockwise viewing from fan cover end. Interchanging any two leads with power off can reverse the pump rotation.
- 5.8 If the supply cord is damaged, it must be replaced by the manufacturer, authorized service agent, or qualified persons in order to avoid causing a hazard.
- 5.9 This pump appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities or lack of experience and knowledge unless they have been given supervision or instruction concerning use of the pump appliance by a person responsible for their safety.

6. Start-Up

- 6.1 Before starting the pump, make sure the following:
- 6.1.1 All piping joints are completely tightened. Leakage in piping may cause the pump hydraulic loss.
 - 6.1.2 The pump is filled with liquid.
 - 6.1.3 The suction filter is not blocked by any foreign objects.
- 6.2 Start the pump as follows:
- 6.2.1 Start the pump and check the

direction of rotation.

- 6.2.2 See the correct direction of rotation of the pump on the motor fan cover or on the coupling guard.

When seen from the top, the pump should rotate counter clockwise.



always disconnect the appliance from the supply before assembling, disassembling or cleaning.

pumps without indication that they are protected against the effect of freezing shall not be left outside during freezing weather conditions.

to disconnect the appliance from its power source during service and when replacing parts.

7. Operation and Maintenance



It is dangerous to operate the pump against a closed discharge outlet because it will cause extremely high liquid flow temperature and damage the pump in a few minutes.

7.1. Lubrication

The mechanical seal and shaft sleeves are lubricated by the pumped liquid.

7.2. Suction Filter

Always keep suction filter clean and make sure it is not blocked by impurities.

7.3. Periodic Checks

To ensure regular operation, please follow the below-checking points:

- 7.3.1 Check the amount of liquid and operating pressure.
- 7.3.2 Check there are no leaks on piping joints.
- 7.3.3 Check the tripping of the motor starter.
- 7.3.4 Check that all controls are functioned normally.
- 7.4 When pump is not in use for a period, it should be drained. For start up after long time inactivity please check if the impeller and mechanical seal are free. If they are locked up by sand, rust or something else please clean them up.

- 7.5 DO NOT use the pump to transfer explosive liquids. In systems with hot liquid (over 60°C), extra caution should be exercised to prevent personal injury.
- 7.6 DO NOT use the pump should not be used to transfer toxic or contaminated liquids. Please carefully follow all instructions in the manual as Walrus may refuse to accept the contaminated pump for servicing.
- 7.7 If the power supply cord is damaged, it must be replaced by an authorized engineer or assembly available from the manufacturer or service agent.

8. Please lift or move the pump by hoist as shown in Fig 2 below.

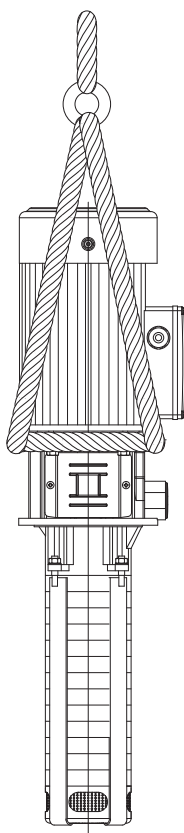


Fig.2

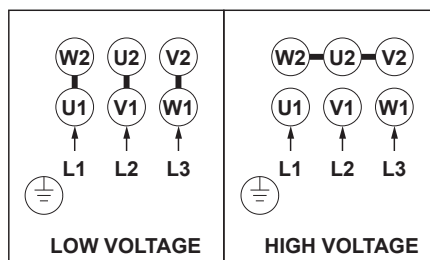
9. Noise Level

Motor (kW)	$\overline{L_A}$ dB(A)
	50Hz
1.5	<70
2.2	<70
3.0	72
4.0	72
5.5	80
7.5	80
11	86
15	86
18.5	86

The above drawing shows the noise level while the pump operated with a closed outlet. The tolerance of noise level is $\pm 4\text{dB(A)}$.

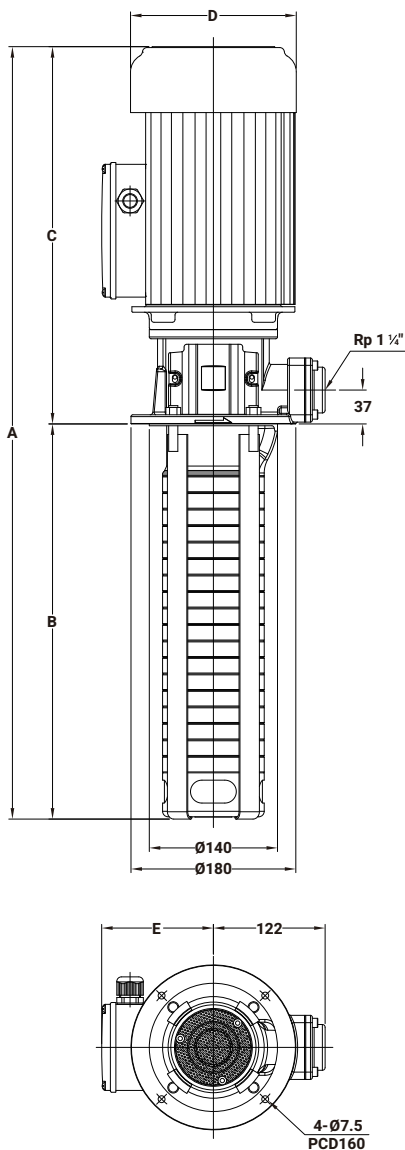
A Hearing protection device is needed by the personnel around the pump where is noise over 80 dB(A)

10. Wiring Diagram



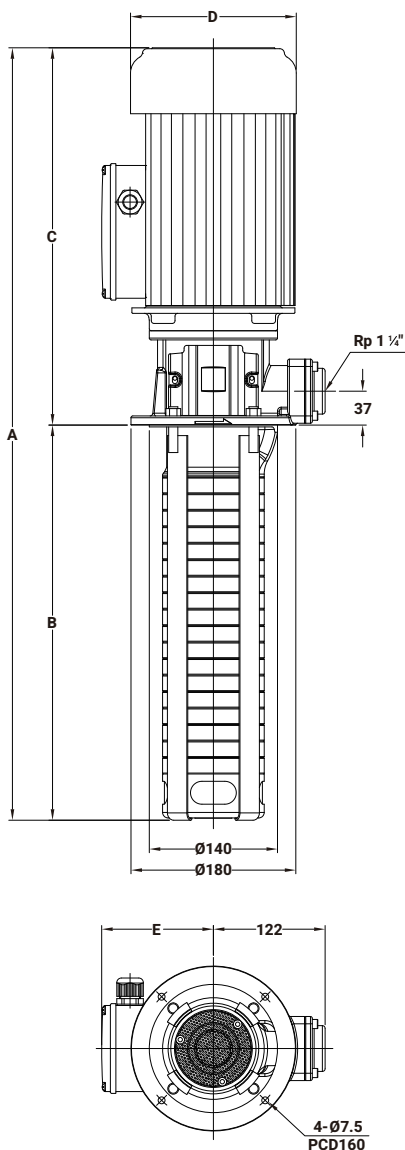
11. Dimensions

TPRK 1, 3, 5T - 50Hz



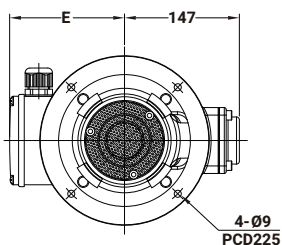
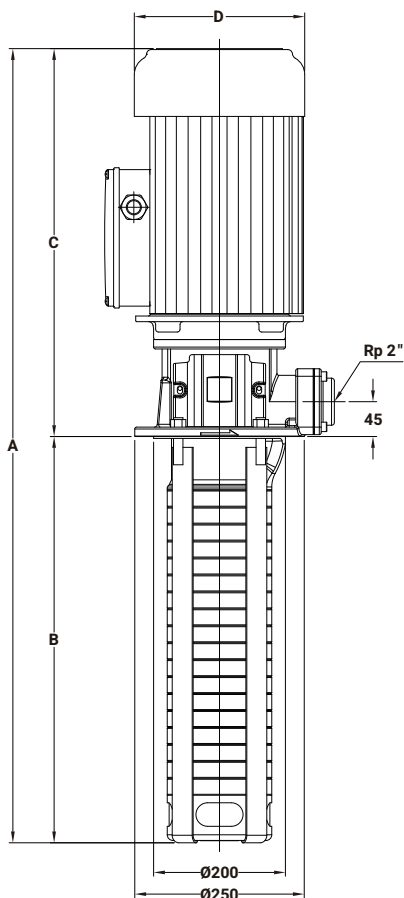
Model	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)
TPRK 1T 50Hz					
TPRK1T25-25E	953	576	377	Ø181	129
TPRK1T26-26E	971	594	377	Ø181	129
TPRK1T27-27E	989	612	377	Ø181	129
TPRK1T30-30E	1043	666	377	Ø181	129
TPRK1T33-33E	1132	720	412	Ø181	126
TPRK1T36-36E	1186	774	412	Ø181	126
TPRK 3T 50Hz					
TPRK3T17-17E	809	432	377	Ø181	129
TPRK3T19-19E	845	468	377	Ø181	129
TPRK3T21-21E	916	504	412	Ø181	126
TPRK3T22-22E	934	522	412	Ø181	126
TPRK3T23-23E	952	540	412	Ø181	126
TPRK3T25-25E	988	576	412	Ø181	126
TPRK3T26-26E	1006	594	412	Ø181	126
TPRK3T27-27E	1024	612	412	Ø181	126
TPRK3T30-30E	1105	666	439	Ø208	137
TPRK3T33-33E	1159	720	439	Ø208	137
TPRK3T36-36E	1213	774	439	Ø208	137
TPRK 5T 50Hz					
TPRK5T9-9E	737	360	377	Ø181	129
TPRK5T10-10E	764	387	377	Ø181	129
TPRK5T12-12E	853	441	412	Ø181	126
TPRK5T14-14E	907	495	412	Ø181	126
TPRK5T16-16E	961	549	412	Ø181	126
TPRK5T17-17E	1015	576	439	Ø208	137
TPRK5T18-18E	1042	603	439	Ø208	137
TPRK5T19-19E	1069	630	439	Ø208	137
TPRK5T20-20E	1096	657	439	Ø208	137
TPRK5T21-21E	1123	684	439	Ø208	137
TPRK5T22-22E	1180	711	469	Ø208	137
TPRK5T24-24E	1234	765	469	Ø208	137
TPRK5T26-26E	1288	819	469	Ø208	137
TPRK5T29-29E	1369	900	469	Ø208	137
TPRK5T32-32E	1534	981	553	Ø244	162

TPRK 1, 3, 5T - 60Hz



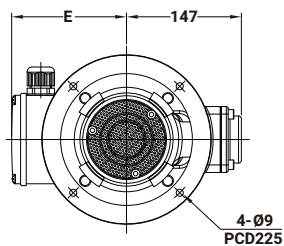
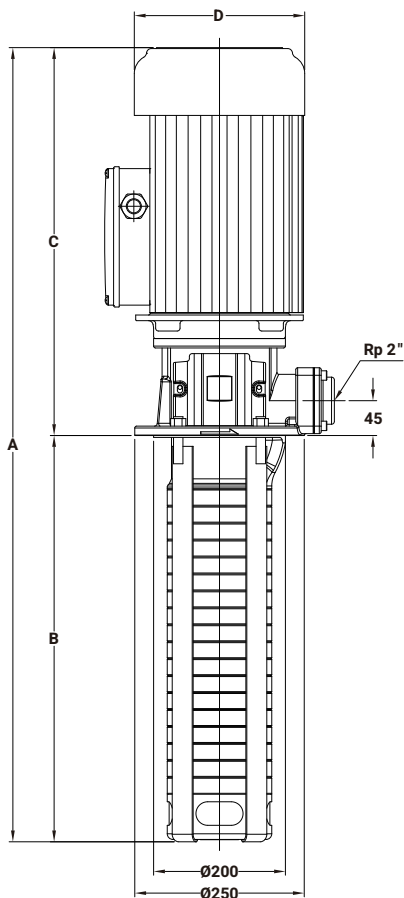
Model	(A) (mm)	(B) (mm)	(C) (mm)	(D) (mm)	(E) (mm)
TPRK 1T 60Hz					
TPRK1T15-15E	773	396	377	Ø181	129
TPRK1T17-17E	809	432	377	Ø181	129
TPRK1T19-19E	880	468	412	Ø181	126
TPRK1T21-21E	916	504	412	Ø181	126
TPRK1T22-22E	934	522	412	Ø181	126
TPRK1T23-23E	952	540	412	Ø181	126
TPRK1T25-25E	988	576	412	Ø181	126
TPRK1T26-26E	1033	594	439	Ø208	137
TPRK1T27-27E	1051	612	439	Ø208	137
TPRK 3T 60Hz					
TPRK3T9-9E	665	288	377	Ø181	129
TPRK3T10-10E	683	306	377	Ø181	129
TPRK3T11-11E	701	324	377	Ø181	129
TPRK3T12-12E	754	342	412	Ø181	126
TPRK3T13-13E	772	360	412	Ø181	126
TPRK3T15-15E	808	396	412	Ø181	126
TPRK3T17-17E	844	432	412	Ø181	126
TPRK3T19-19E	907	468	439	Ø208	137
TPRK3T21-21E	943	504	439	Ø208	137
TPRK3T22-22E	961	522	439	Ø208	137
TPRK3T23-23E	979	540	439	Ø208	137
TPRK3T25-25E	1045	576	469	Ø208	137
TPRK3T26-26E	1063	594	469	Ø208	137
TPRK 5T 60Hz					
TPRK5T5-5E	629	252	377	Ø181	129
TPRK5T6-6E	691	279	412	Ø181	126
TPRK5T7-7E	718	306	412	Ø181	126
TPRK5T8-8E	745	333	412	Ø181	126
TPRK5T10-10E	826	387	439	Ø208	137
TPRK5T12-12E	880	441	439	Ø208	137
TPRK5T14-14E	964	495	469	Ø208	137
TPRK5T16-16E	1018	549	469	Ø208	137
TPRK5T18-18E	1156	603	553	Ø244	162
TPRK5T19-19E	1183	630	553	Ø244	162
TPRK5T20-20E	1210	657	553	Ø244	162
TPRK5T22-22E	1264	711	553	Ø244	162
TPRK5T24-24E	1318	765	553	Ø244	162

TPRK 10, 15, 20T - 50Hz



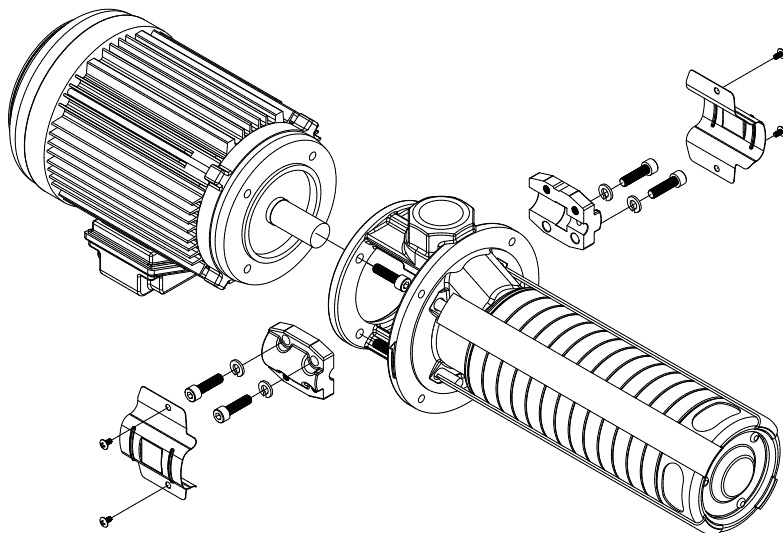
Model	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)
TPRK 10T 50Hz					
TPRK10T4-4E	631	248	383	Ø181	129
TPRK10T5-5E	696	278	418	Ø181	126
TPRK10T6-6E	726	308	418	Ø181	126
TPRK10T7-7E	776	338	438	Ø208	137
TPRK10T8-8E	806	368	438	Ø208	137
TPRK10T9-9E	836	398	438	Ø208	137
TPRK10T10-10E	896	428	468	Ø208	137
TPRK10T12-12E	956	488	468	Ø208	137
TPRK10T14-14E	1100	548	552	Ø244	162
TPRK10T16-16E	1160	608	552	Ø244	162
TPRK10T18-18E	1220	668	552	Ø244	162
TPRK10T20-20E	1280	728	552	Ø244	162
TPRK10T22-22E	1340	788	552	Ø244	162
TPRK 15T 50Hz					
TPRK15T2-2E	636	218	418	Ø181	126
TPRK15T3-3E	701	263	438	Ø208	137
TPRK15T4-4E	776	308	468	Ø208	137
TPRK15T5-5E	821	353	468	Ø208	137
TPRK15T6-6E	950	398	552	Ø244	162
TPRK15T7-7E	995	443	552	Ø244	162
TPRK15T8-8E	1040	488	552	Ø244	162
TPRK15T9-9E	1085	533	552	Ø244	162
TPRK15T10-10E	1303	578	725	Ø319	253
TPRK15T12-12E	1393	668	725	Ø319	253
TPRK15T14-14E	1483	758	725	Ø319	253
TPRK15T16-16E	1573	848	725	Ø319	253
TPRK15T17-17E	1618	893	725	Ø319	253
TPRK 20T 50Hz					
TPRK20T2-2E	636	218	418	Ø181	126
TPRK20T3-3E	731	263	468	Ø208	137
TPRK20T4-4E	860	308	552	Ø244	162
TPRK20T5-5E	905	353	552	Ø244	162
TPRK20T6-6E	950	398	552	Ø244	162
TPRK20T7-7E	995	443	552	Ø244	162
TPRK20T8-8E	1213	488	725	Ø319	253
TPRK20T10-10E	1303	578	725	Ø319	253
TPRK20T12-12E	1393	668	725	Ø319	253
TPRK20T14-14E	1483	758	725	Ø319	253
TPRK20T16-16E	1617	848	769	Ø319	253
TPRK20T17-17E	1662	893	769	Ø319	253

TPRK 10, 15, 20T - 60Hz



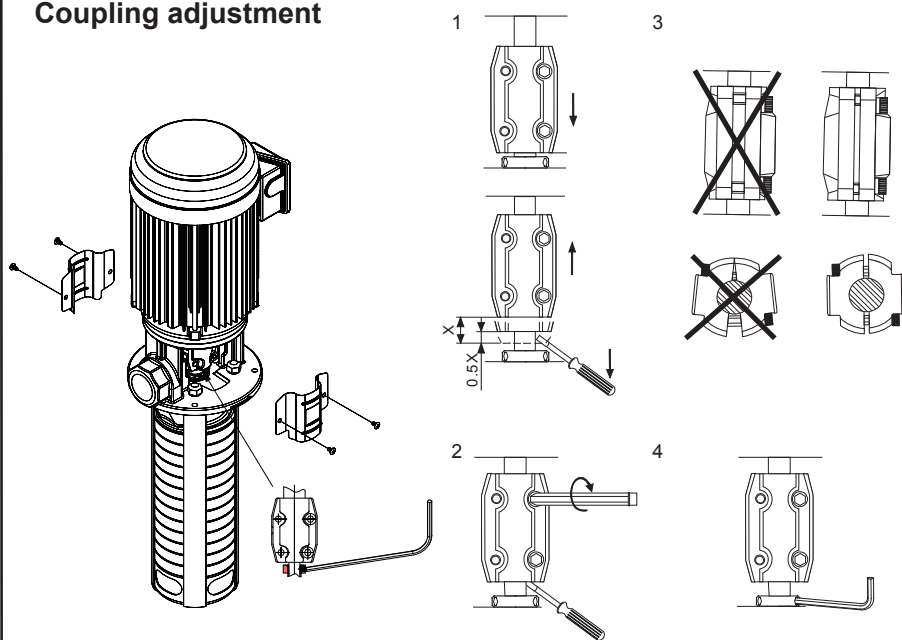
Model	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)
TPRK 10T 60Hz					
TPRK10T2-2E	571	188	383	Ø181	129
TPRK10T3-3E	636	218	418	Ø181	126
TPRK10T4-4E	686	248	438	Ø208	137
TPRK10T5-5E	716	278	438	Ø208	137
TPRK10T6-6E	776	308	468	Ø208	137
TPRK10T7-7E	890	338	552	Ø244	162
TPRK10T8-8E	920	368	552	Ø244	162
TPRK10T9-9E	950	398	552	Ø244	162
TPRK10T10-10E	980	428	552	Ø244	162
TPRK10T12-12E	1040	488	552	Ø244	162
TPRK10T14-14E	1273	548	725	Ø319	253
TPRK10T16-16E	1333	608	725	Ø319	253
TPRK10T18-18E	1393	668	725	Ø319	253
TPRK 15T 60Hz					
TPRK15T2-2E	656	218	438	Ø208	137
TPRK15T3-3E	731	263	468	Ø208	137
TPRK15T4-4E	860	308	552	Ø244	162
TPRK15T5-5E	905	353	552	Ø244	162
TPRK15T6-6E	1123	398	725	Ø319	253
TPRK15T7-7E	1168	443	725	Ø319	253
TPRK15T8-8E	1213	488	725	Ø319	253
TPRK15T10-10E	1303	578	725	Ø319	253
TPRK15T12-12E	1437	668	769	Ø319	253
TPRK 20T 60Hz					
TPRK20T2-2E	686	218	468	Ø208	137
TPRK20T3-3E	815	263	552	Ø244	162
TPRK20T4-4E	860	308	552	Ø244	162
TPRK20T5-5E	1078	353	725	Ø319	253
TPRK20T6-6E	1123	398	725	Ø319	253
TPRK20T7-7E	1168	443	725	Ø319	253
TPRK20T8-8E	1257	488	769	Ø319	253
TPRK20T10-10E	1347	578	769	Ø319	253

Connecting parts drawing



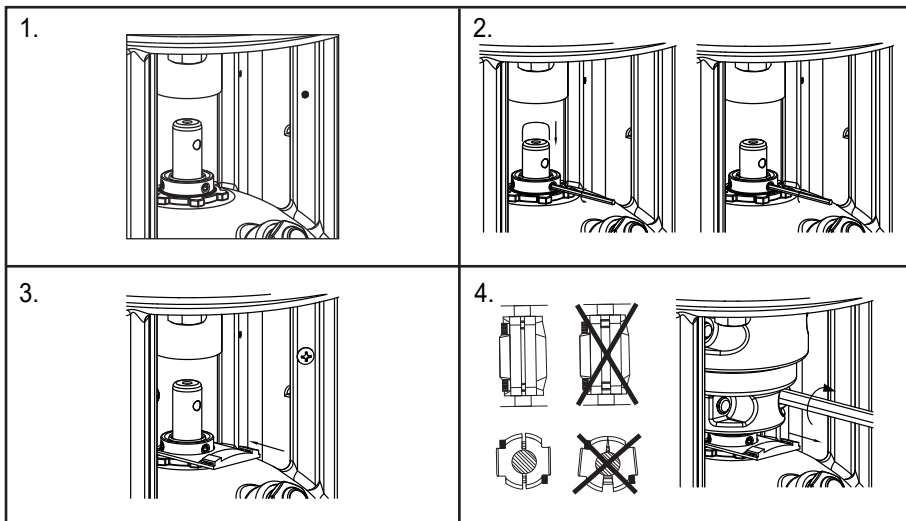
TPRK 1, 3, 5T

Coupling adjustment



TPRK 10, 15, 20T

Coupling Adjustment





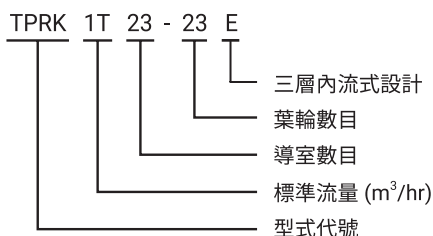
在開始安裝與操作之前，請仔細研讀本說明書裏各項的安裝與操作說明。

1. 應用

- 1.1 本機型 TPRK 產品是採用多段離心式設計之泵浦。可用來傳送工具機上之液體。
- 1.2 本泵浦不可以被使用於易燃的液體輸送，諸如柴油、石油、汽油或類似的液體。適用液體包括水溶性、低黏稠度、中性之冷卻／潤滑液。

2. 型別說明

泵浦型別主要依加壓導室而來，有葉輪之加壓導室為標準加壓導室，配合無葉輪的空加壓導室組合，可應用於另外的尺寸場合，泵浦的型別編號由泵浦銘板上可查得。



3. 使用條件

環境溫度：Max. +40°C
 液體溫度：+0°C ~ +90°C
 防護等級：IP54
 工作壓力：Max. 30 kg/cm²
 浸水高度：Min. 40mm
 濾網孔徑：Ø2mm (TPRK 1T/3T)
 Ø4mm (TPRK 5T/10T/15/20T)
 顆粒大小：2mm (TPRK 1T/3T)
 4mm (TPRK 5T/10T/15/20T)
 水中固體顆粒含量：50g/m³
 黏稠度：32cst(mm²/s)

4. 裝置



馬達表面有高熱，所以安裝位置儘量避免人容易意外碰觸到的位置。

4.1 吸入狀況

為防止泵浦於低水位時乾轉受損，其操作最低水位極限為 40mm。(Fig.1)

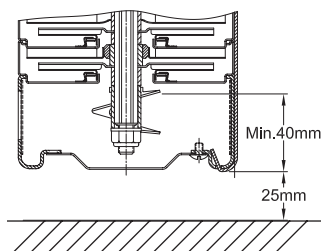


Fig.1

5. 電路安裝



5.1 電路必須依照各地規定的標準來安裝，於安裝泵浦電路時，必須將電源關閉。



5.2 會產生電的危險警告標示，於接線盒外明確標示，敬請小心。

5.3 泵浦使用的電壓，頻率標示於銘板上。同時請確認馬達標示的電壓、頻率與使用的電源規格相同，泵浦必須外接一個 ON / OFF 開關，並請加裝漏電斷路器 (RCD, 30mA)。

5.4 三相馬達必須接到啟動裝置，並檢視指示電流是否與銘板標示相符，且馬達電路連接須與接線盒蓋標示一致。

5.5 三相電源泵浦，必須檢查轉向，由風罩端看為逆時鐘方向且於馬達風罩上有箭頭標示正確轉向，若從風罩端看為順時鐘方向，則必須更改轉向，於更改轉向前必須先切斷電源，再將其電源線其中 2 條對調。

6. 啟動

6.1 於開始啟動泵浦前須確認之操作的事項：

6.1.1 全部的管路是否密閉，管路洩漏會造成泵浦壓力損失。

6.1.2 泵浦體需有液體存在。

6.1.3 濾網沒有被雜物堵塞。

6.1.4 初次啟動或久未使用，請先以螺絲起子在馬達軸心末端依旋轉標籤方想指示順時針方向或逆時針方試轉，確定泵浦可自由旋轉後方可啟動馬達。

6.2 啟動泵浦請確認：

6.2.1 馬達轉向是否正確，從風罩端看，應為逆時鐘方向。



在組裝、拆卸或清潔設備之前，請務必斷開設備的電源。

泵浦沒有抗冰凍的能力，請不要在冰凍的天氣條件下將泵浦置於室外。

在維修更換零件時請斷開設備電源。

7. 操作維護



於泵浦運轉時，不被允許將管路開關關閉，若是接近 1 分鐘，泵浦將受到損害。

7.1 潤滑維護

泵浦內機械軸封與軸套皆為自潤式，由傳動液體來潤滑。

7.2 濾網

須經常保持清潔，確定無雜物堵塞，如此才能維持一個最佳的液體流量。

7.3 定期檢查

在一定的操作時間，請必須作以下的檢查：

7.3.1 檢查液體的流量和操作壓力。

7.3.2 檢查管路系統是否洩漏。

7.3.3 檢查馬達的啟動是否正常。

7.3.4 檢查全部的操縱器，是否都達正常的狀況。

7.4 長期停用前，請將泵浦內部液體排乾。欲重新供電啟動前請先從風扇側試轉動泵軸，確認無卡住情形；若無法轉動，請把泵浦葉輪、軸封拆卸，清潔乾淨後重組裝，確認轉動平順再供電運轉。

7.5 本泵浦禁止使用於具有爆炸危險之環境，且使用液體溫度超過 60°C 時需加裝防護裝置，以避免燙傷。

7.6 假如泵浦被用來操作有害人類健康的有毒液體或污染源的話，在非一般使用情形下故障，本公司將拒絕各項的維修服務，顧客個人造成的損害，須自行負擔。

8. 搬運

注意！當安置泵浦時，建議使用搬運帶，如 Fig.2，以確保安全。

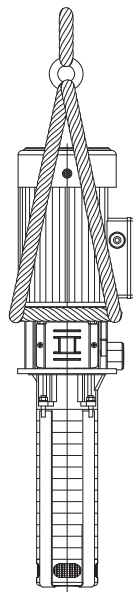


Fig.2

9. 噪音值

請參考第 5 頁第 9 章節

10. 結線圖

請參考第 5 頁第 10 章節

11. 外形尺寸

請參考第 6、7、8、9 頁第 11 章節

12. 故障與可能原因分析

在檢查泵浦各項故障原因前，必須確定已將電源關閉才可進行。

狀 況	可能原因	排除方法
1. 當啟動時，馬達不運轉。	電源供應失敗。	重新連結電源。
	保險絲被熔斷。	替換保險絲。
	馬達啟動器超載跳脫。	使馬達保護恢復正常。
	熱保護已經跳脫。	使熱保護恢復正常。
	馬達啟動器接觸不良或線圈失能。	更換啟動器或線圈。
	控制電路損壞。	修理這條控制電路。
	馬達損壞。	替換馬達。
2. 啟動時馬達啟動器超載立即跳脫。	保險絲熔斷 / 無熔絲開關跳脫。	替換保險絲 / 重新啟動無熔絲開關。
	馬達啟動器接觸不良。	替換馬達啟動器接觸。
	電纜連接是鬆脫或不良。	替換或固定電纜連接。
	馬達損壞。	替換馬達。
	泵浦堵塞。	去除堵塞。
	過載保護裝置設定過低。	正確設定啟動器過載保護電流值。
3. 馬達啟動器超載偶爾跳開。	過載保護裝置設定過低。	正確設定啟動器過載保護電流值。
	尖峰用電時電壓過低。	改善供電品質。
4. 馬達啟動器沒跳脫而泵浦無運轉。	電源供應失敗。	重新連結電源。
	保險絲被熔斷。	替換保險絲。
	熱保護已經跳脫。	使熱保護恢復正常。
	馬達啟動器接觸不良或線圈失能。	更換啟動器或線圈。
5. 泵浦正常運轉但出水量不正常。	泵浦濾網阻塞。	清洗這只濾器。
	水箱液位過低。	增加液體容量。
	吸入空氣。	檢查抽吸條件。
6. 軸封滲漏。	軸封損壞。	替換軸封。
7. 噪音。	抽入空氣。	檢查抽吸條件。
	軸心位置錯誤 (摩擦阻力) 造成泵浦無法自由旋轉。	調整泵浦軸心位置。



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