

高效永磁同步电机

Electronically Commutated Motors

T 系列 ECI 电机

T Series of ECI Motor

Edition 2.0
(Feb. 12,2022)



产品概述

General information

- 产品简介

作为一家关注环境和节能的专业电机制造商，我们最重要的目标之一是帮助合作伙伴降低运行成本，提高使用寿命和盈利能力，并使生产更加环保。

ECI电机是在IEC标准基础上设计的PMS

（永磁同步）电机，目前有四种机架尺寸：IEC-71#、IEC-90#、IEC-100#、IEC-132#，最大输出功率4kW，最大扭矩48Nm。

- 产品优势

- 极高的效率，平均值达到 IE5 标准。
- 在 3000rpm 的宽转速和功率范围内具有极高的效率。
- 紧凑轻巧的设计，外观设计与其他 M&D 产品高度一致。
- 安装尺寸符合 IEC 标准，易于从标准交流电机更换为 M&D ECI 电机。
- 相比需要外置变频器电机，操作简单、便捷。
- 各种灵活的安装类型。

- Product brief introduction

As a professional electric motors manufacturer who cares about environment and energy saving, one of our most important goals is to help our partners to reduce total life operation costs, increase profitability and make production more environmentally friendly.

ECI motor is a PMS motor (permanent magnet synchronous) which designed on the basis of IEC standards. At present, there are four frame sizes: IEC-71#, IEC-90#, IEC-100#, IEC-132#. The maximum output power is 4kw and the maximum torque is 48nm.

- Product advantage

- Extremely high efficiency, the average value reaches IE5 standard.
- Very high efficiency in wide speed up to 3000rpm and power range.
- Compact and light design with high uniformity in appearance design with other M&D products.
- Mounting dimensions according to the IEC norm, easy to replace from standard AC motors to M&D ECI motors.
- Compared with the external frequency converter motor, the operation is more easy and convenient
- Various and flexible mounting types suitable for different applications.

- 产品系列

1. EC 电动机是根据 IEC 标准专门设计的永磁同步电动机。E-MAX 永磁同步电机将用于需要更多节能产品的下一代。超过 IEC60034-30-2-2016 《交流调速电机的能效等级》。
2. E-MAX 电机是第一代 M&D EC 电机。E-MAX 引领了下一代电机效率和性能技术的发展。
E-MAX 电机包含两个系列：
 - EC 系列永磁同步电动机
 - ECI 系列-永磁同步电机集成驱动

- Product series

1. E-MAX motor is the special designed permanent magnet synchronous motor based on the IEC norm. E-MAX PMSM will be used for next generation which need more energy saving product. Efficiency classes of variable speed AC motors (IEC60034-30-2-2016).
2. E-MAX motor is the first generation of M&D EC motor. E-MAX has led to develop the next generation of technology in motor efficiency and performance.
E-MAX motor contain two series:
 - EC series – Permanent magnet synchronous motor
 - ECI series - permanent magnet synchronous motor integrated drive

防护等级

Degrees of Protection

- 根据 IEC60034-5 标准

IP55（标准款），全封闭电机，防止任意方向的灰尘和喷水后不受损害。
IP56（定制款），全封闭电机，防止灰尘渗透和遭大浪拍打后不受损害。
ECI 电机 IP56 同 IP55 一样，电机不配备外部风扇（IC411），如客户需在 IC410 环境下运行，产品特性、输出和技术数据按客户要求提供。

- IEC 60034-5 standards

IP 55 (standard) totally enclosed motors, protected against penetration of dust and water splashes coming from any direction.
IP 56 (upon request) totally enclosed motors, protected against dust penetration and against sea waves.
ECI motor IP56 is same as ECI motor IP55, it is not equipped with external fan (IC411). If the customer needs to operate under IC410 environment, the product characteristics, output and technical data shall be provided according to the customer's requirements.

型号命名方式

Model number nomenclature

T **100** **ECI** **10** **V** **18** **C2** **B14** **T1** **F**
1 **2** **3** **4** **5** **6** **7** **8** **9** **10**

位置 Position	字符 Character	描述 Description
1	"T"	产品平台： Product platform: T: IEC 系列 T: IEC Series
2	"90"	基座尺寸： Frame size: IEC 71, 90, 100 , 132
3	"ECI"	ECI: 集成驱动的永磁电机 ECI: permanent magnet motor with integrated drive
4	"10"	额定扭矩： Rated torque: 10 = 10 Nm
5	"V"	冷却方式： Cooling method: V = 通风应用，无风扇和风扇罩 V = Ventilation applications, without fan and fan hood
6	"18"	最大转速： Maximum speed: 18 = 1800 rpm
7	"C2"	电源线出线方式： Power line connection method: T1 = 顶部接线盒 T1 = Terminal box on top C1 = 无接线盒，机身出线 C1 = No terminal box, power line from housing C2 = 无接线盒，尾端出线 C2 = No terminal box, power line from NDE C3 = 无接线盒，电源线具有专用接头 C3 = No terminal box, Power line with special connector

位置 Position	字符 Character	描述 Description
8	“B14”	安装方式： Mounting method: B3, B14, B5, B34, B35, B14B, B5R
9	“T1”	电压代码： Voltage code: T1 = 3PH, 360-460 V, T2 = 3PH, 200-240V S1 = 1PH, 200-240V,
10	“F”	特殊要求： Special requirement: F = 内部保护器 F = Internal protector

电机型谱

Motor Model list

机座 Frame	型号 Model	额定扭矩 Rated torque (N. m)	最大速度 Maximum speed (r/min)	输出功率 Power (kW)
90	T90ECI03	3.2	600	0.20
90	T90ECI05	4.8	600	0.30
90	T90ECI07	7.0	600	0.44
100	T100ECI10	10.0	600	0.63
100	T100ECI14	14.0	600	0.88
100	T100ECI19	19.0	600	1.19
132	T132ECI26	26.0	600	1.63
132	T132ECI35	35.0	600	2.20
132	T132ECI48	48.0	600	3.01
90	T90ECI03	3.2	900	0.30
90	T90ECI05	4.8	900	0.45
90	T90ECI07	7.0	900	0.66
100	T100ECI10	10.0	900	0.94

机座 Frame	型号 Model	额定扭矩 Rated torque (N. m)	最大速度 Maximum speed (r/min)	输出功率 Power (kW)
100	T100ECI14	14.0	900	1.32
100	T100ECI19	19.0	900	1.79
132	T132ECI26	26.0	900	2.45
132	T132ECI35	35.0	900	3.30
71	T71ECI01	1.2	1500	0.19
71	T71ECI02	2.4	1500	0.38
71	T71ECI03	3.2	1500	0.50
90	T90ECI03	3.2	1500	0.50
90	T90ECI05	4.8	1500	0.75
90	T90ECI07	7.0	1500	1.10
100	T100ECI10	10.0	1500	1.57
100	T100ECI14	14.0	1500	2.20
100	T100ECI19	19.0	1500	2.98
132	T132ECI26	26.0	1500	4.08
71	T71ECI01	1.2	1800	0.23
71	T71ECI02	2.4	1800	0.45
71	T71ECI03	3.2	1800	0.60
90	T90ECI03	3.2	1800	0.60
90	T90ECI05	4.8	1800	0.90
90	T90ECI07	7.0	1800	1.32
100	T100ECI10	10.0	1800	1.88
100	T100ECI14	14.0	1800	2.64
100	T100ECI19	19.0	1800	3.58
71	T71ECI01	1.2	3600	0.45
71	T71ECI02	2.4	3000	0.75
71	T71ECI03	3.2	3000	1.00

机座 Frame	型号 Model	额定扭矩 Rated torque (N. m)	最大速度 Maximum speed (r/min)	输出功率 Power (kW)
90	T90ECI03	3.2	3000	1.00
90	T90ECI05	4.8	3000	1.51
90	T90ECI07	7.0	3000	2.20
100	T100ECI10	10.0	3000	3.14

* 额定扭矩基于电机冷却方法。详细扭矩见数据表。

* 71 机架和 90 机架 ECI 电机由单相电源供电，电压为 200-240V。100 机架和 132 机架 ECI 电机由三相电源供电，电压为 360-460V。部分负载情况下，电机也可选配 3ph@200-240Vac 或 1ph@200-240Vac 进行供电。

* TEAO: 电机必须在强制风冷条件下运行。

* 不配备外部风扇 (IC411)

* The rated torque is based on the motor cooling method. The detail torque please see data sheet.

* 71 frame and 90 frame ECI motor are supplied by 1 phase power with 200-240V. 100 frame and 132 frame ECI motor are supplied by 3 phase power with 360-460V. Under partial load, the motor can also be selected 3ph@200 -240Vac or 1ph@200 -240Vac for power supply.

* TEAO: Motor must be run at forced air cooling condition.

* Without external Fan (IC411).

电机铭牌

Motor nameplate

- ECI 电机单相铭牌

- Single phase nameplates of ECI motor

Serial n° :		*****	
Model or type :		T90ECI07V18C1B3S1	
Voltage/frequency/phase :		200-240V@50/60Hz,1ph	
Rate torque and speed :		7N.m,300-1800rpm	
Nominal power and current :		1.3kW 8.8A @1800rpm	
Efficiency :		η 88% @1800rpm	
S1	IP55	F/B Class	-25 - 40°C
Power terminal and cable		Control terminal and cable	
Line supply: Brown		Speed output: White	
Neutral: Blue		On/Off: Red	
PE: Yellow/Green		12VDC output: Yellow	
		0-10VDC input: Blue	
ON/OFF Control: Red+Yellow		Common: Black	
CW/CCW Control: Yellow+Brown		Modbus: A-Green,B-Grey	

- ECI 电机三相铭牌

- Three phase nameplates of ECI motor

Serial n° :		*****	
Model or type :		T100ECI10V30C2B3T1	
Voltage/frequency/phase :		360-460Vac,50/60Hz,3ph	
Rate torque and speed :		10 N.m,600-3000rpm	
Nominal power and current :		3.14kW @3000rpm 5.4A	
Efficiency :		η 89.4% @3000rpm	
S1	IP55	F/B Class	-25 - 40°C
Power terminal and cable		Control terminal and cable	
T1: Brown		Speed output: White	
T2: Blue		On/Off: Red	
T3: Black		12VDC output: Yellow	
PE: Yellow/Green		0-10VDC input: Blue	
ON/OFF Control: Red+Yellow		Common: Black	
CW/CCW Control: Yellow+Brown		Modbus: A-Green,B-Grey	

说明:

铭牌图片仅供格式参考，最终数据以实际铭牌为准。

Remark:

The format of the rating plate is for reference only. The final data will be subject to the actual rating plate.

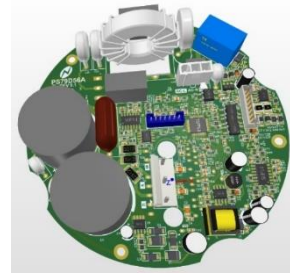
ECI 电机结构

ECI motor structure reference

- 71ECI 电机及内置驱动



- 71ECI motor and built-in drive



- 90ECI 电机及内置驱动



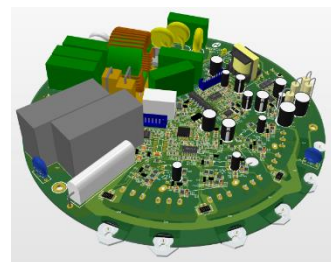
- 90ECI motor and built-in drive



- 100/132ECI 电机及内置驱动



- 100/132ECI motor and built-in drive



ECI 电机的控制功能

ECI motor control function

- I/O 控制功能

驱动器设置有运行/停止（红色）、CW/CCW（棕色）和速度调节控制信号，还设置有速度反馈信号 FG 和报警开关信号 FO（选配）。客户可以使用这些控制信号来控制 ECI 电机的速度调节、启动和停止，使其具有正确的旋转方向和速度。需要强调的是，这些控制信号只有在没有 MODBUS 通信的场合下方才生效。

- Modbus 控制功能

ECI 电机配备 MODBUS 通信控制功能，可通过通信功能控制 ECI 电机的启动和停止、速度调节、转向调节、跳频、识别电机错误信号及通过通讯协议采集驱动器输出信号。

- I / O control function

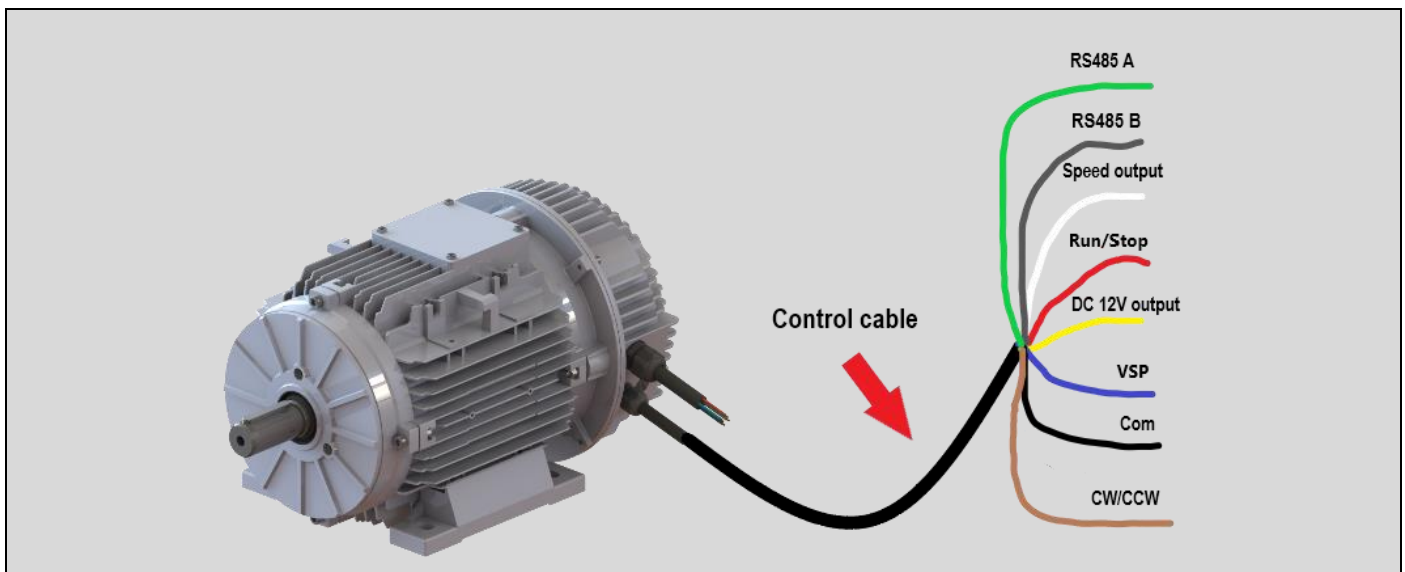
The motor driver is equipped with the control signals of starting/ending (red), CW/CCW (brown) and speed regulation, as well as signal FG of speed feedback and switch signal FO of alarm (which is optional). The customer can use these control signals to control the speed regulation, start and end of ECI motor, so that it has the correct rotation direction and speed. It should be emphasized that these control signals only take effect when there is no MODBUS communication.

- Modbus control function

ECI motor is equipped with MODBUS communication control function, which can control the starting and ending of the motor, speed regulation, steering regulation, frequency hopping, identifying error signals of motor and collect output signals of the driver through communication protocol.

- ECI 电机控制线定义

- ECI motor control line definition



项目 Item	功能 Fuction	导线颜色 Wire color	注释 Note
1.	RS485 A	绿色 Green	Modbus 485
2.	RS485 B	灰色 Gray	Modbus 485
3.	转速输出 Speed output	白色 White	每转 3 个脉冲 3 puls per rev
4.	正反转 CW/CCW	棕色 Brown	正转: 棕色, 反转: 棕色+黄色 CW: Brown, CCW: Brown+Yellow
5.	启动/停止 Run/Stop	红色 Red	启动: 红色+黄色 Run: Red+Yellow
6.	0-10V 直流输入 DC 0-10V input	蓝色 Blue	转速控制 Speed control
7.	12V 直流输出 DC 12V output	黄色 Yellow	
8.	COM	黑色 Black	
9.	24V 直流输出 DC 24V output	橙色 Orange	
10.	报警信号 FO	紫色 Purple	紫色+黑色 Purple+Black

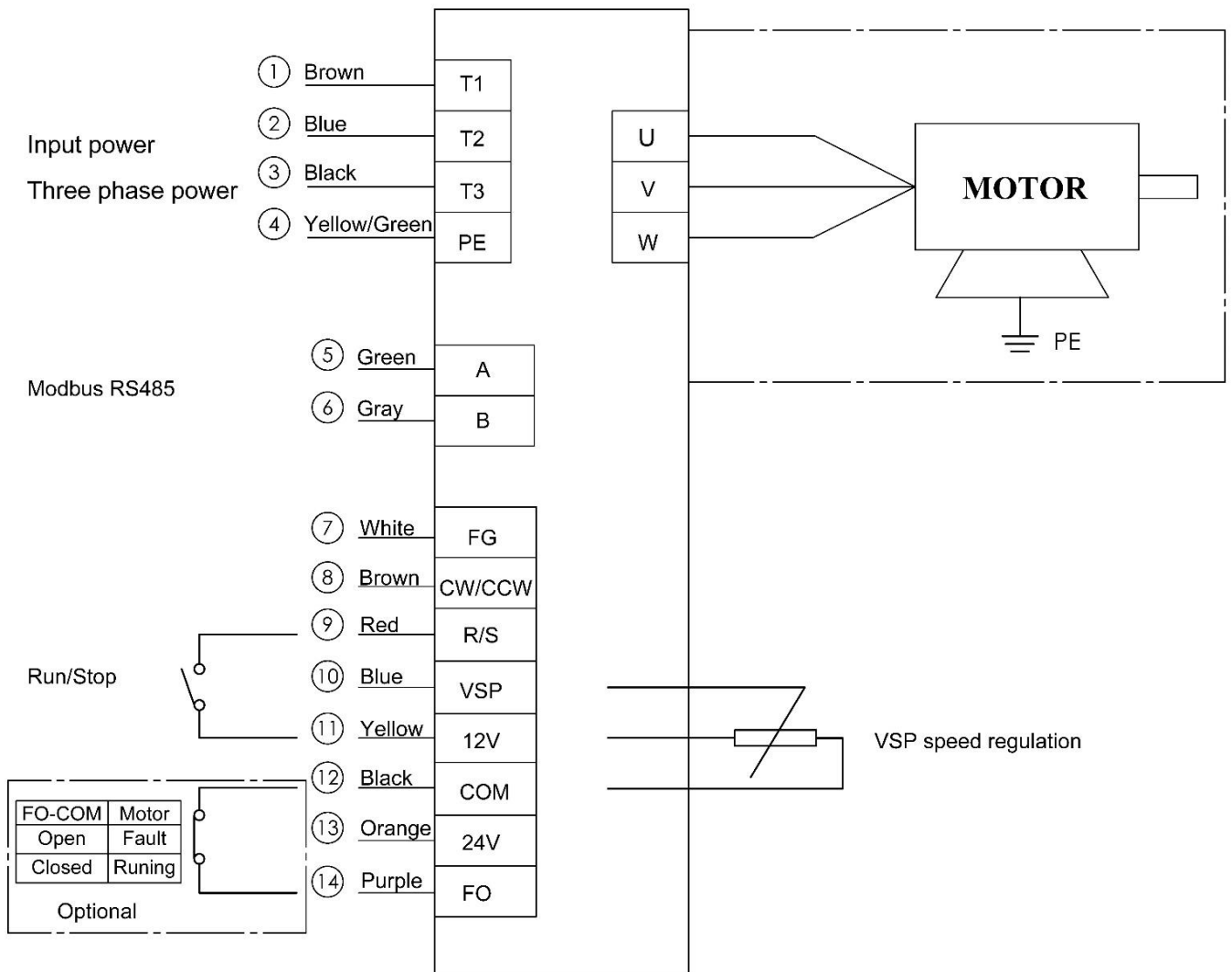
三相电机电源线定义

Three-phase motor power line

项目 Item	功能 Fuction	导线颜色 Wire color	注释 Note
1.	火线 T1	棕色 Brown	三相电 Three phase power
2.	火线 T2	蓝色 Blue	三相电 Three phase power
3.	火线 T3	黑色 Black	三相电 Three phase power
4.	地线 PE	黄绿 Yellow/Green	

三相电机接线图

Wiring diagram of three-phase motor



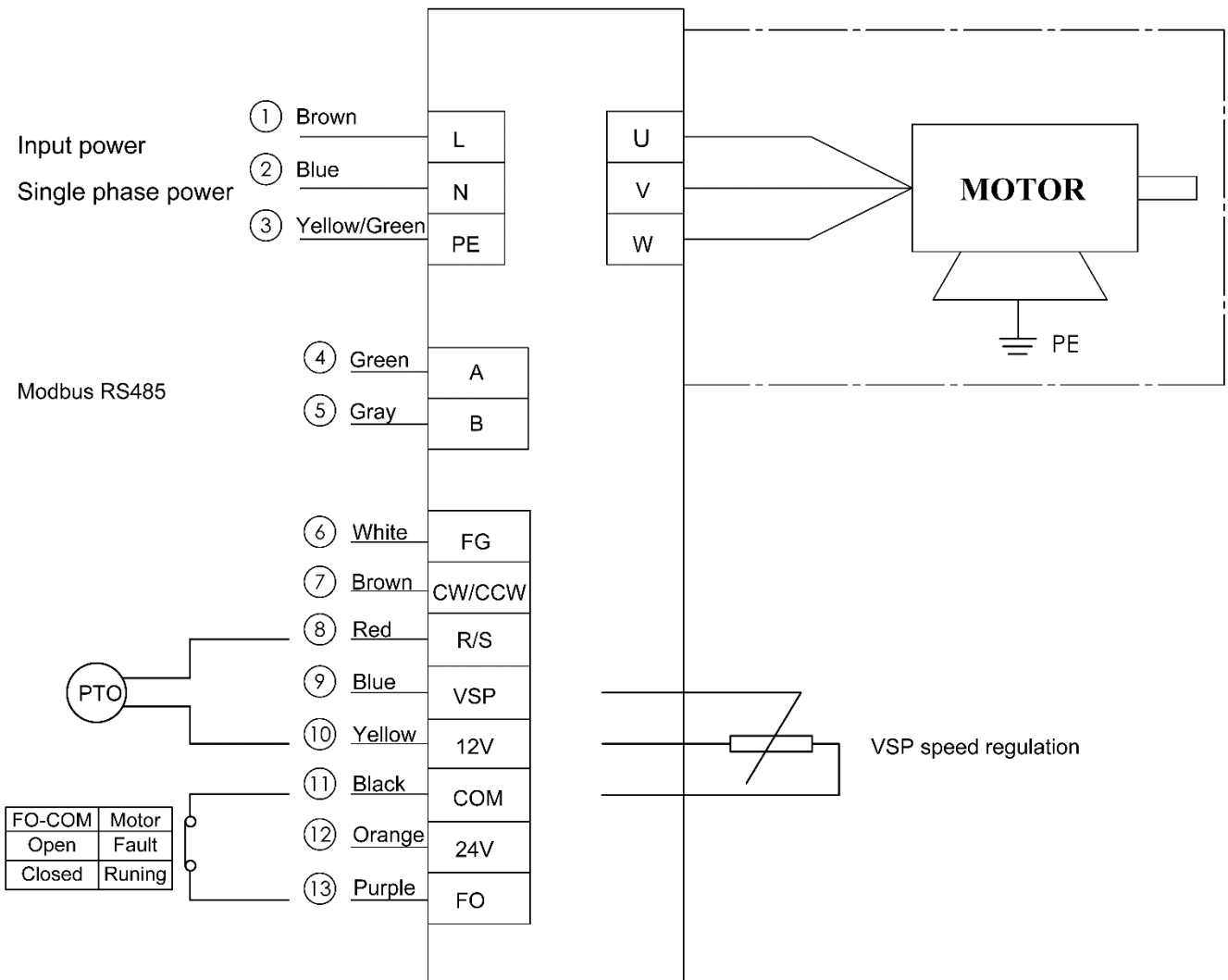
- 单相电机电源线定义

- Single-phase motor power line

项目 Item	功能 Fuction	导线颜色 Wire color	注释 Note
1.	火线 L	棕色 Brown	单相电 Single phase power
2.	零线 N	蓝色 Blue	单相电 Single phase power
3.	地线 PE	黄色/绿色 Yellow/Green	

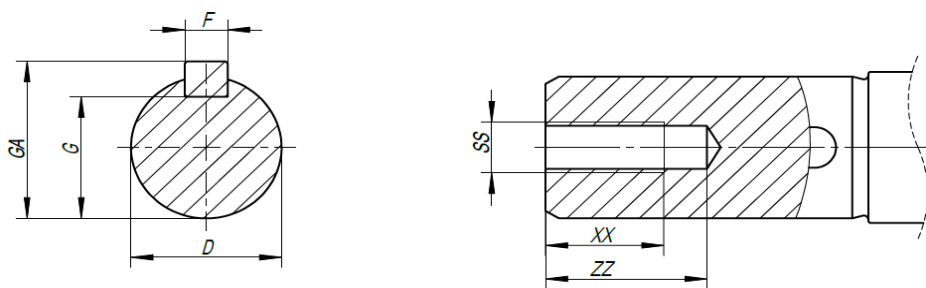
- 单相电机接线图

- Wiring diagram of single-phase motor

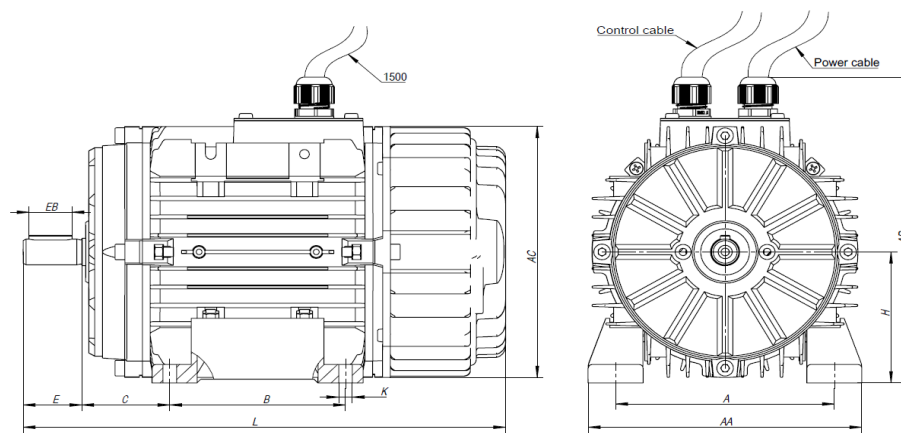


外形图及安装尺寸

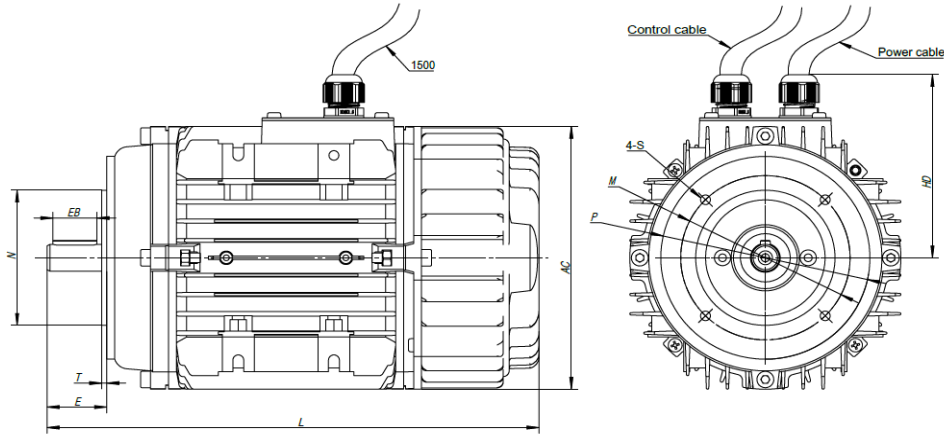
Dimension drawings



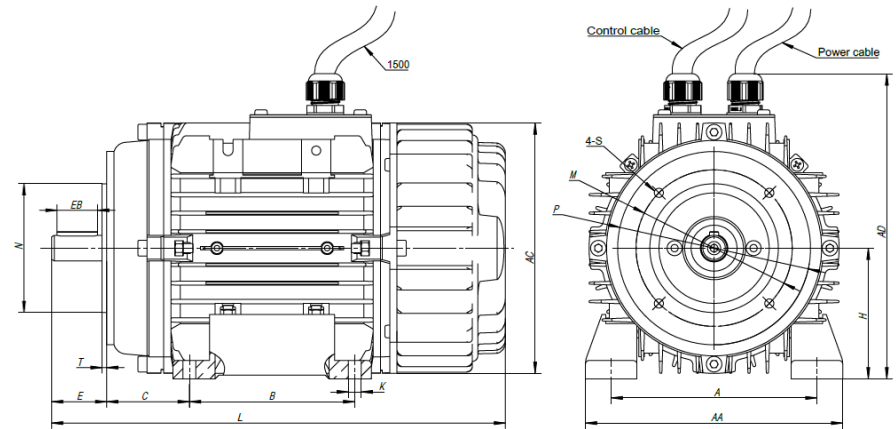
Shaft size (轴伸尺寸)



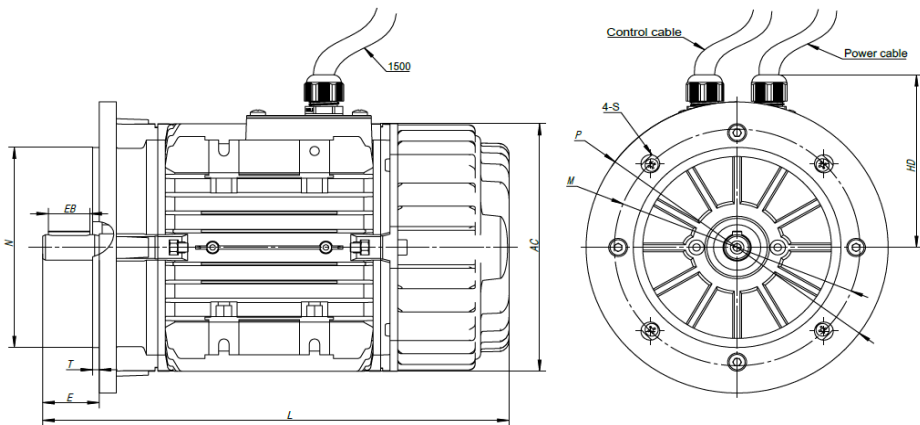
B3_71ECI



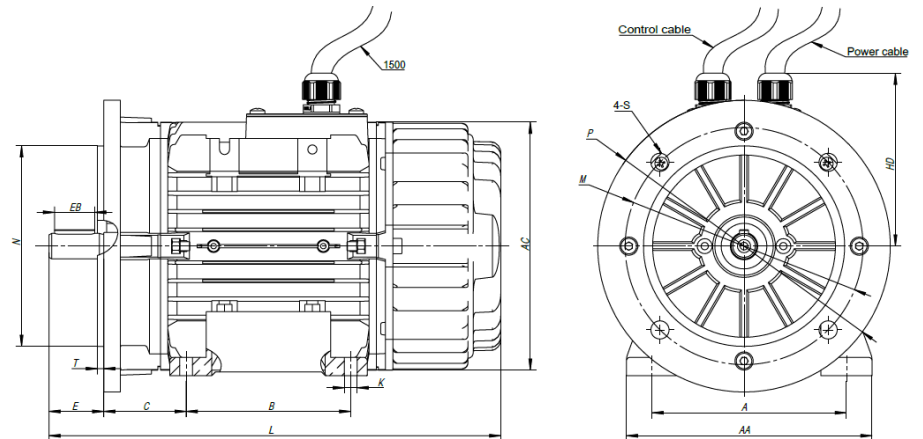
B14_71ECI



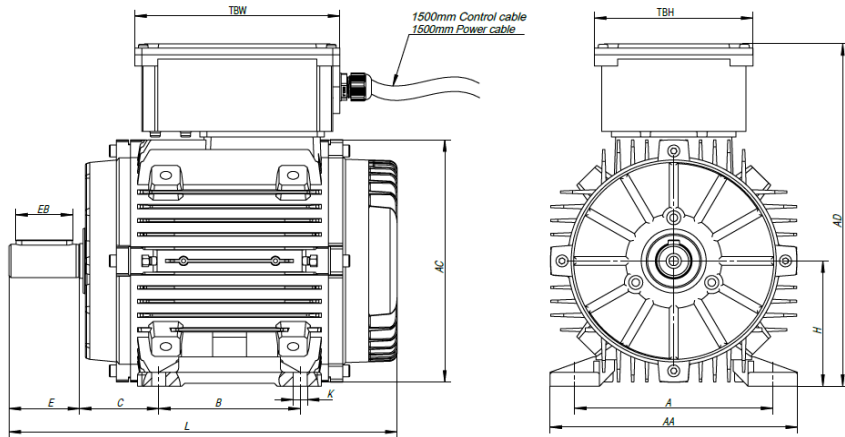
B34_71ECI



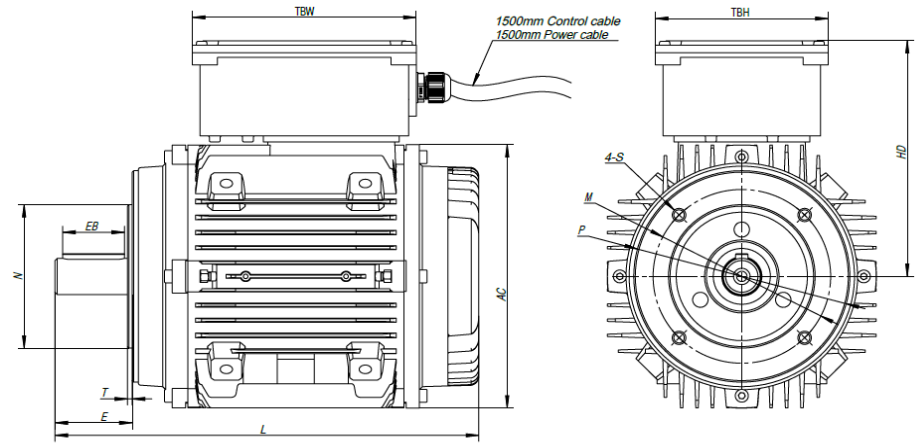
B5_71ECI



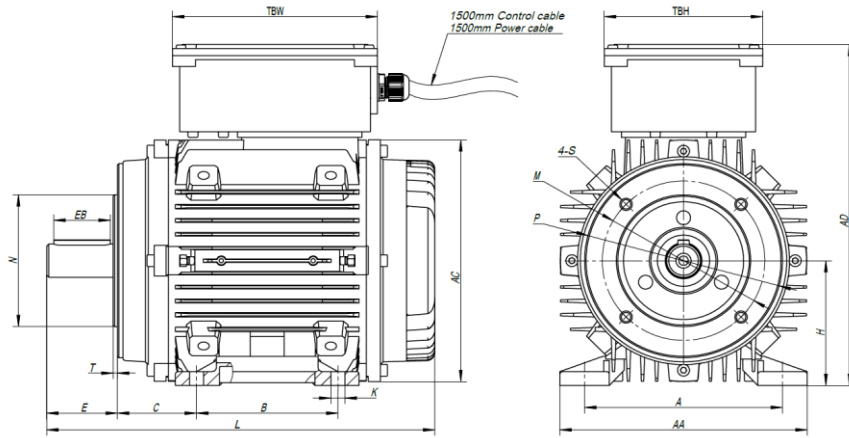
B35_71ECI



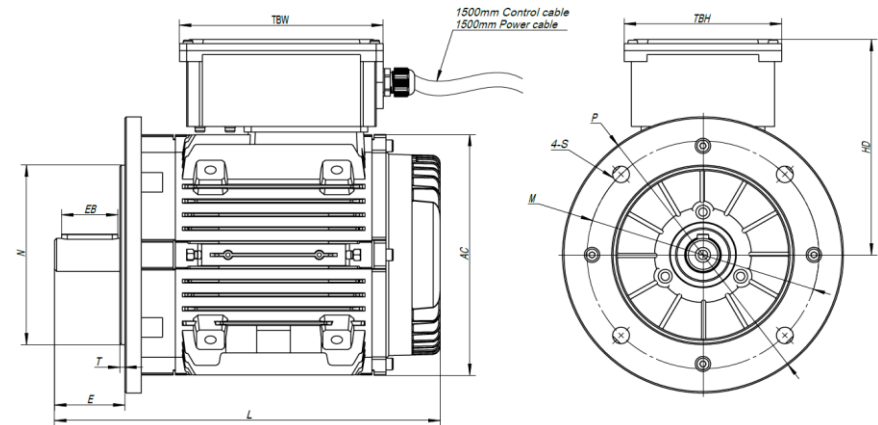
B3_90ECI



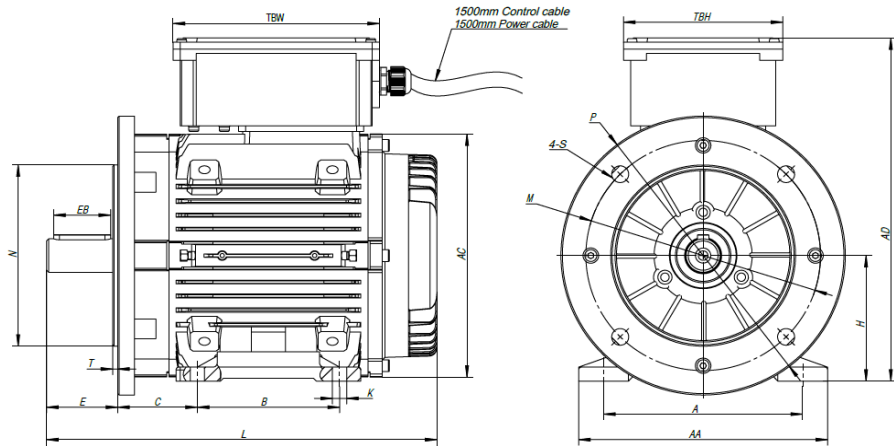
B14_90ECI



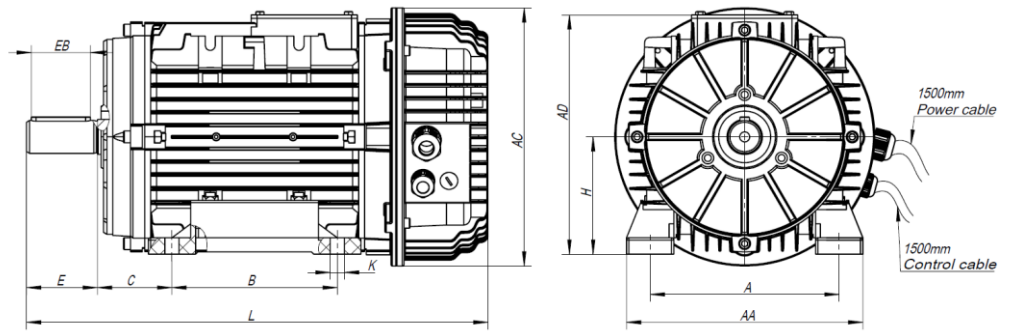
B34_90ECI



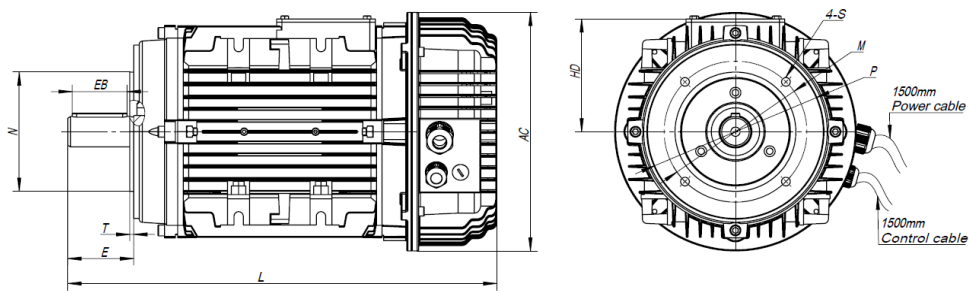
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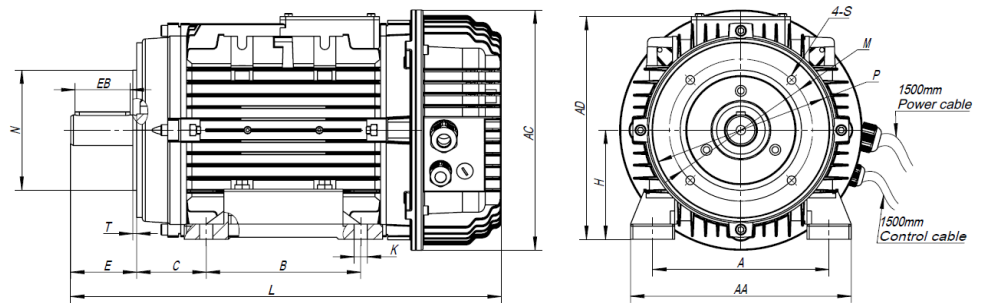
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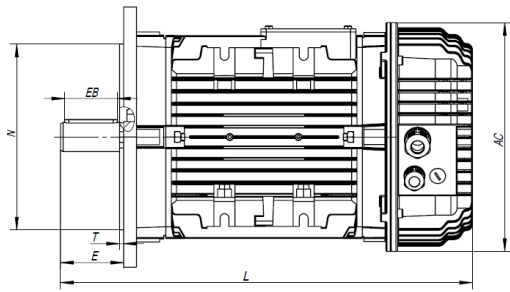
B3_100ECI



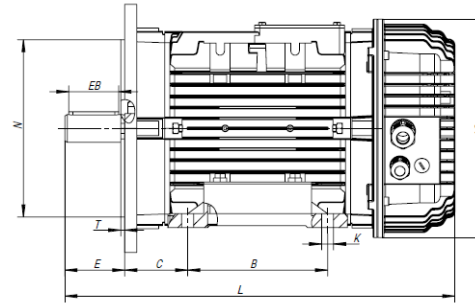
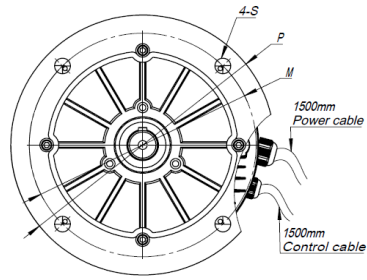
B14_100ECI



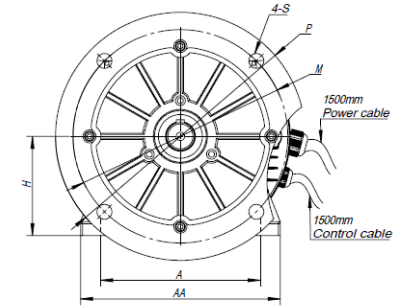
B34_100ECI



B5_100ECI



B35_100ECI



机架 Frame	基座安装 Foot Mounting				轴 Shaft									通用 General				
	H	A	B	C	D	E	F	G	K	SS	EB	XX	ZZ	AA	AD	HD	AC	L
71	71	112	90	45	Φ14	30	5	11	7×10	M5	22	12	17	140	168	95	Φ136	247
90	90	140	100	56	Φ24	50	8	20	10×15	M8	40	19	25	175	248	156	Φ175	275
100	100	160	140	63	Φ28	60	8	24	12×16	M10	50	22	30	200	208	108	Φ220	390.5
132	132	216	140	89	Φ38	80	10	33	12×16	M12	70	28	37	260	269	137	Φ259	463

机座 Frame	B5					B14					B5R					B14B				
	N	M	P	S	T	N	M	P	S	T	N	M	P	S	T	N	M	P	S	T
71	Φ110	Φ130	Φ160	Φ10	3.5	Φ70	Φ85	Φ105	M6	2.5	Φ95	Φ115	Φ140	Φ10	3	Φ95	Φ115	Φ140	M8	3
90	Φ130	Φ165	Φ200	Φ12	3.5	Φ95	Φ115	Φ140	M8	3	Φ110	Φ130	Φ160	Φ10	3.5	Φ110	Φ130	Φ160	M8	3.5
100	Φ180	Φ215	Φ250	Φ15	4	Φ110	Φ130	Φ160	M8	3.5	Φ130	Φ165	Φ200	Φ12	3.5	Φ130	Φ165	Φ200	M10	3.5
132	Φ230	Φ265	Φ300	Φ15	4	Φ130	Φ165	Φ200	M10	3.5	Φ180	Φ215	Φ250	Φ15	4	Φ180	Φ215	Φ250	M12	4