



HOUSEHOLD
APPLIANCES
MOTORS CATALOGUE





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ECOFRIENDLY

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A tall, white wind turbine with three blades, each featuring a red stripe near the tip, stands prominently in a lush green field. The background is a vibrant, multi-colored sky with soft, pastel hues of blue, pink, and yellow, suggesting a sunrise or sunset. The foreground shows rolling green hills and a line of trees in the distance.

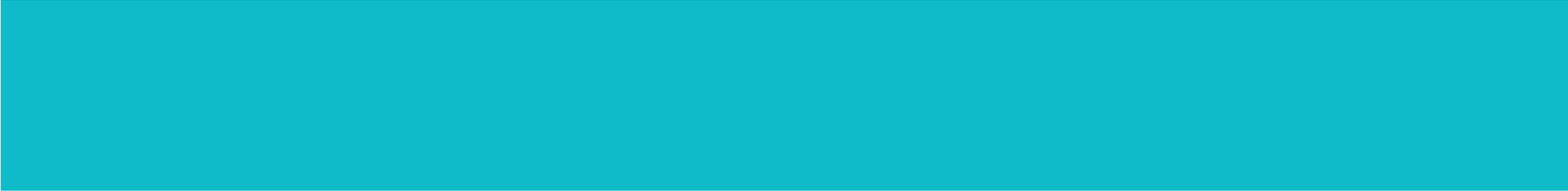
Ecofriendly

Energy -efficient
products, less
electricity
consumption and
Lower CO₂
footprint product

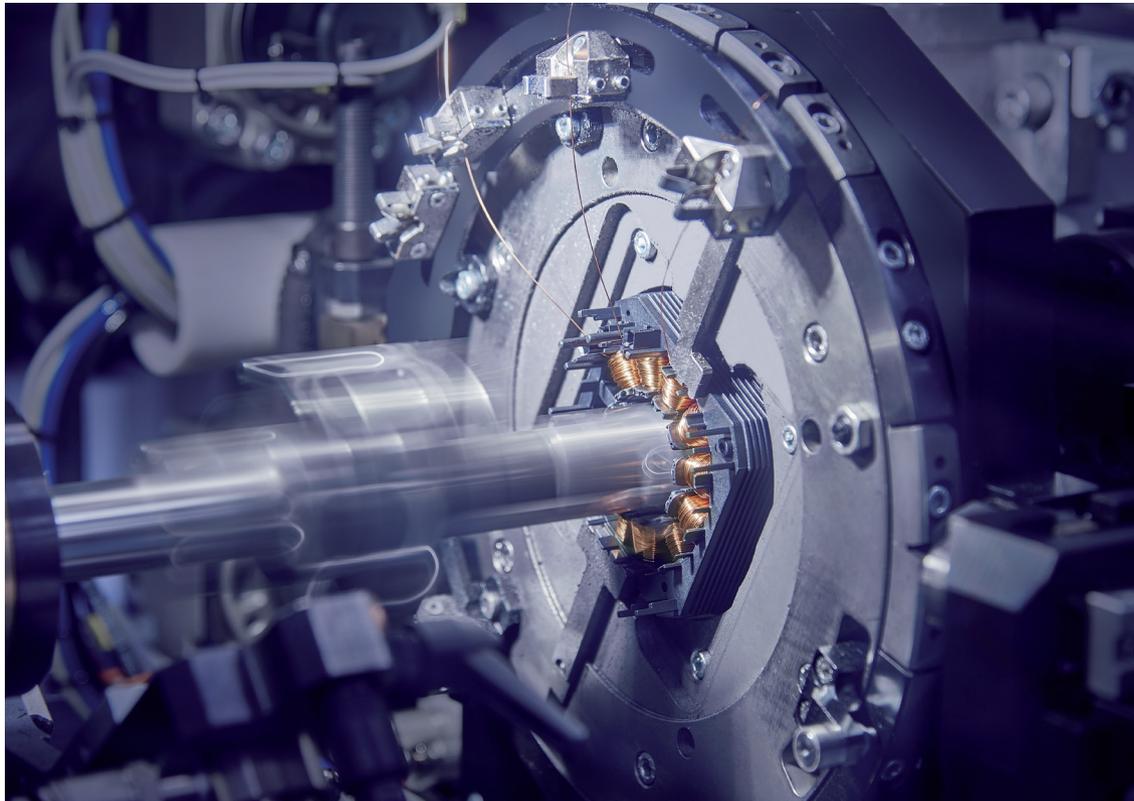


Why us?



- 
- Excellence in Production
 - Short delivery time
 - Affordable motors with sustainable quality
 - Due to strong R&D abilities wide range of motor design capability
 - Up to date motor technology solutions
- 

Durable Motor



For washing machines:

Increased life time with brushless motors

Utmost motor efficiency that will diminish appliance's energy consumption

Special design features for noise and vibration that will help your appliance noise level down dramatically

For dishwashers:

Increased life time with brushless motors

Higher energy efficient design, boost your appliance energy efficiency

Excellent noise performance with tailored design





Unmanned Production

Our company follows the recent technological developments closely and applies those technologies to its production.

Using high level of automation and robotics in production leads to unmanned production. Thus the production of high energy efficient and sophisticated products can be completed with higher accuracy and precision.

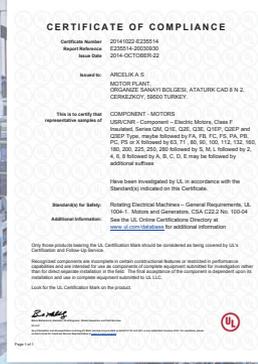


Our Motor Plant has been founded in 1965 and has an outstanding experience on technology dedicated motor design and production for Arçelik household appliances. Since 2001 we are designing and manufacturing permanent magnet motors in this facility. Factory is located in Çerkezköy close to İstanbul. Total production capacity is around 13 million pcs per year. Customer specific motors can be designed and manufactured as well.





ÇAMAŞIR MAKİNESİ
MOTORU SARGI
MONTAJ ALANI



International Standards

Household appliance motors are manufactured according to the international standards listed below:

- IEC 60335 Household and similar electrical appliances - Safety
- IEC 60317-20 Specifications for particular types of winding wires
- ISO 1940/VDI 2060 Mechanical Vibration-Balance quality requirements for rotors in a constant state
- UL 1004-1 Rotating Electrical Machines-General Requirements [*UL approved types]

NAMEPLATE INFORMATIONS

According to TEE normative; sample labels which contains voltage, frequency, speed, power and current of motor are given below.

Certificate Number: 20130814-E316423

		2.....(Model no)	
	VHzrpmWA	
Reg.Nr.: A...		İzo.Sinif:F	
GR.NO:2.....			

		2.....(Model no)	
	VHzrpmWA	
		İzo.Sinif:F	
GR.NO:2.....			

		2.....(Model no) BL.....	
		ELEKTRONİK KONTROLLÜ 220-240V 50/60HzrpmWA	
Reg.Nr.: A...		İzo.Sinif:F	

		2.....(Model no) BL.....	
		ELECTRONICALLY CONTROLLED 220-240VHzrpmWA	
		Ins. class F	

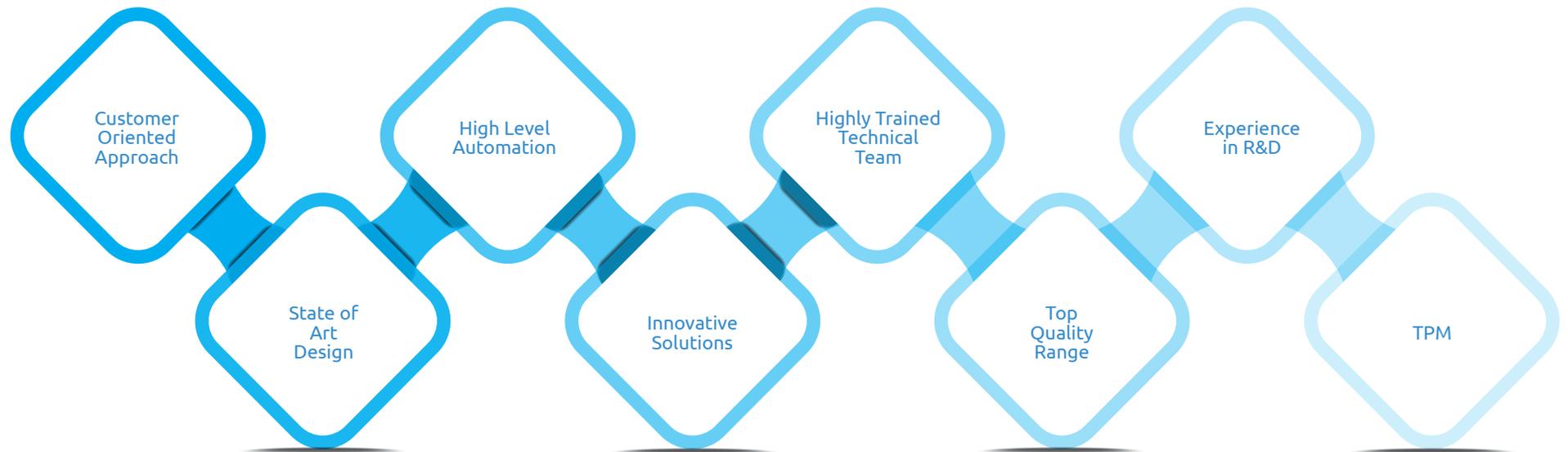
Insulation Systems

According to IEC60085 thermal classes standard, thermal insulation of wires can be classified into the groups by temperature and temperature rise in the motor.

Our standard motors are designed according to thermal insulation class F.

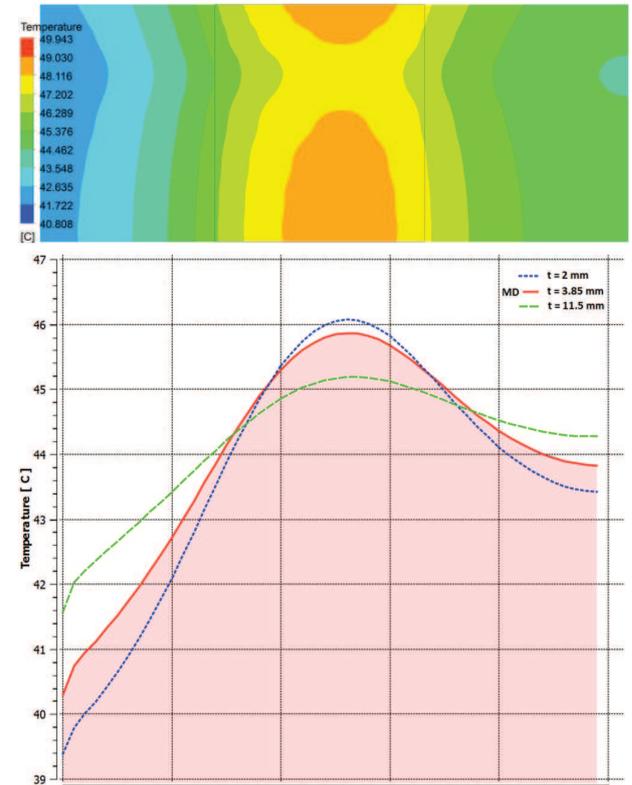
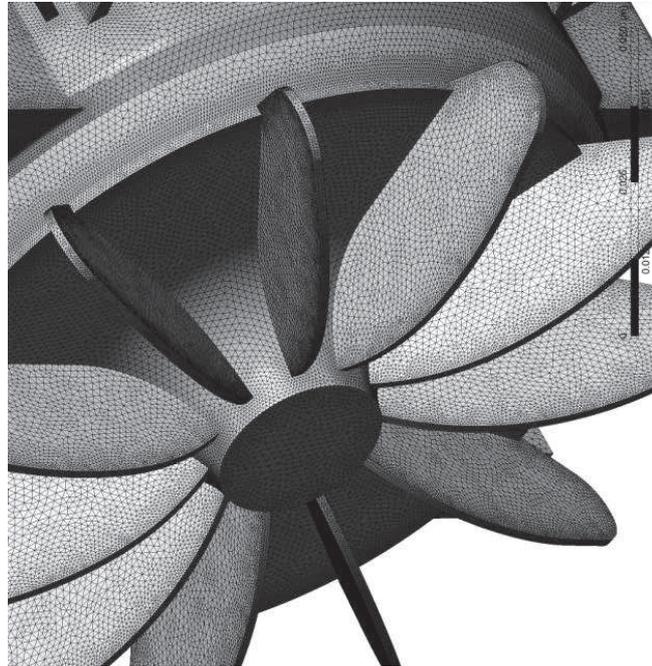
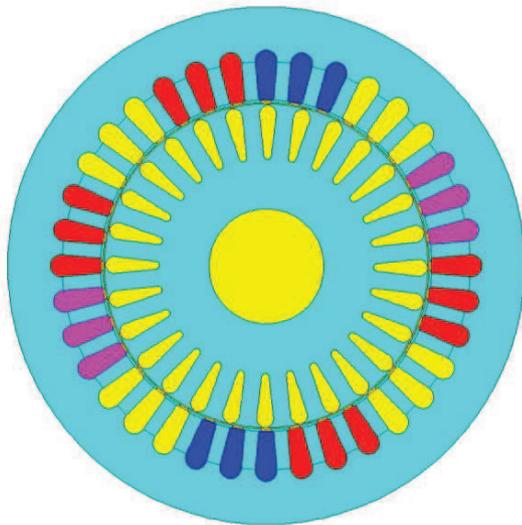


TEE Motor Plant



R&D Capabilities

Mechanical Design
Electromagnetic Design
Electronic Design
Sound and Vibration Optimization
Prototyping
Project Management

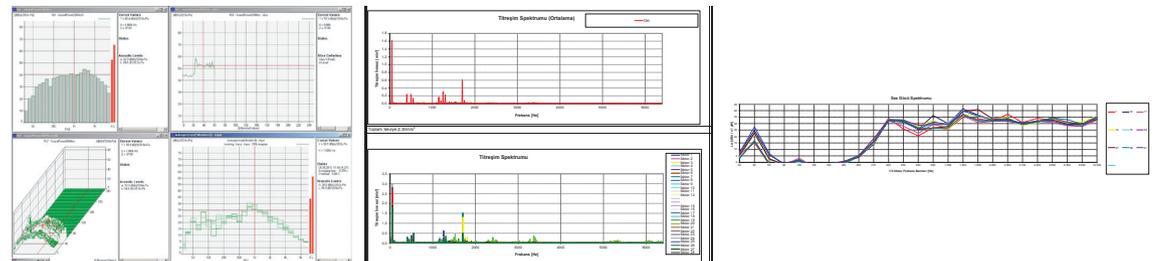


A photograph of an industrial laboratory. In the foreground, there are three large spools of copper wire, each mounted on a black base and enclosed in a clear plastic protective cage. Behind them is a large piece of industrial machinery with a control panel featuring a monitor and several buttons. The monitor displays a software interface with various data points and graphs. The background shows a factory-like environment with overhead pipes and lights.

Laboratories

- Heating Test Systems
- BH-Meters
- Dynamometers
- Electrical Performance Measurement Systems
- Data Acquisition Systems
- Life Test Systems

Sound & Vibration Laboratory



Motor Trends

Motors designed and produced under the TEE brand are suitable for Europe, Russia, China and US Markets (For different Voltages and Frequencies 110/230 V 50/60 Hz). All motors are approved according to 60335 regulations and F class insulation. UL approved versions are available within the product range. At least two alternative suppliers are available for most of the motor components. According to the customer needs, flexible motor designs can be done.

Customer Trends

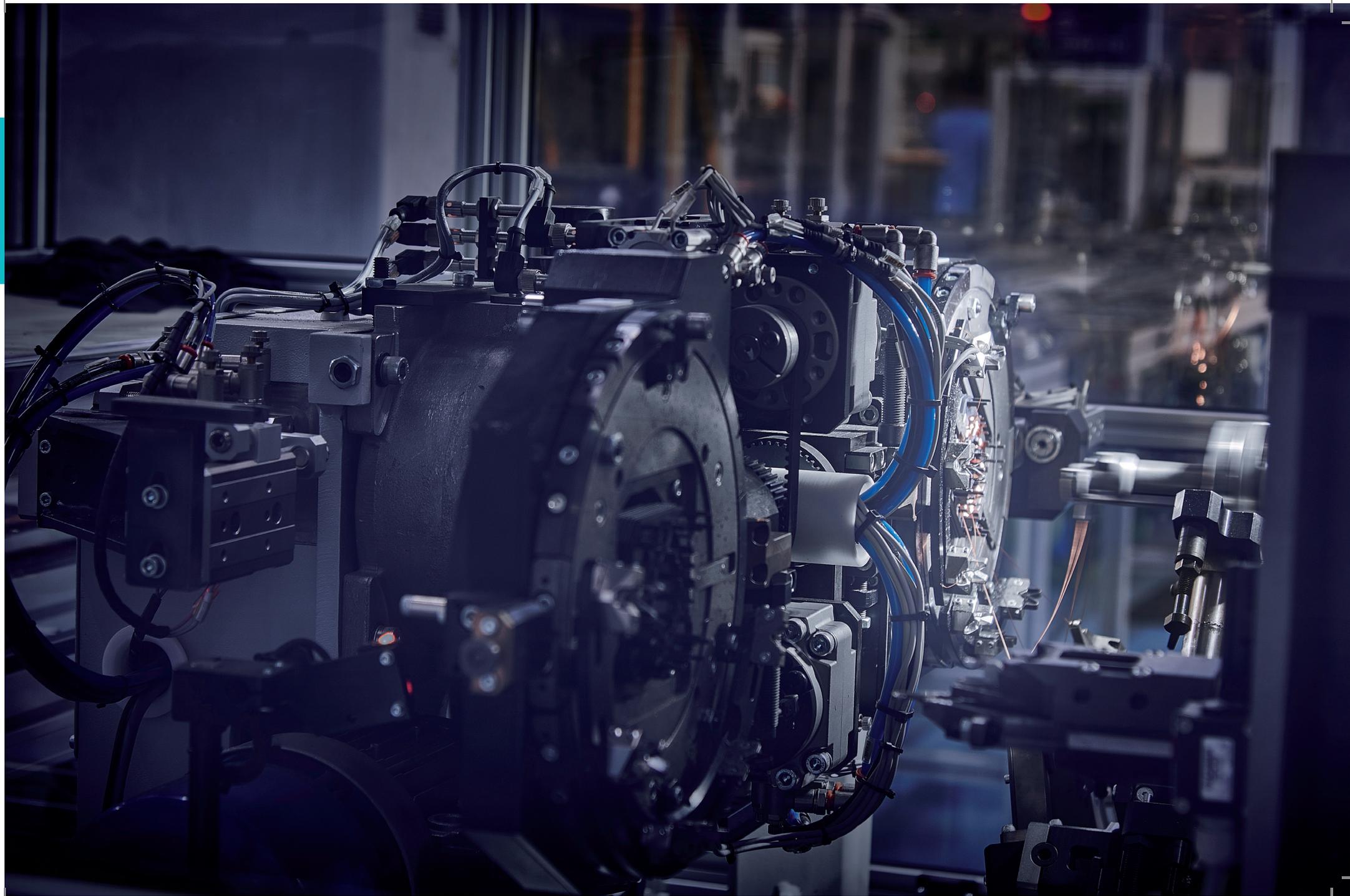


Application Trends

Motor Trends



- Compact Motors
- Durability (Eco Design Requirements)
 - MultiFunctional Designs
 - Energy Efficient
- High Technology Products [BLDC etc.]
 - Lower Sound Level
- Speed Control of Motor with Electronics



Tailored Motors



Universal Motors



Brushless DC Motors [BLDC]



Induction Motors



Brushless DC Motors [BLDC]



TEE has an experience both in design and in production of motors for washing machines, dishwashers and dryers and offers energy efficient, environmental friendly and low noise products for their customers.



Induction Motors



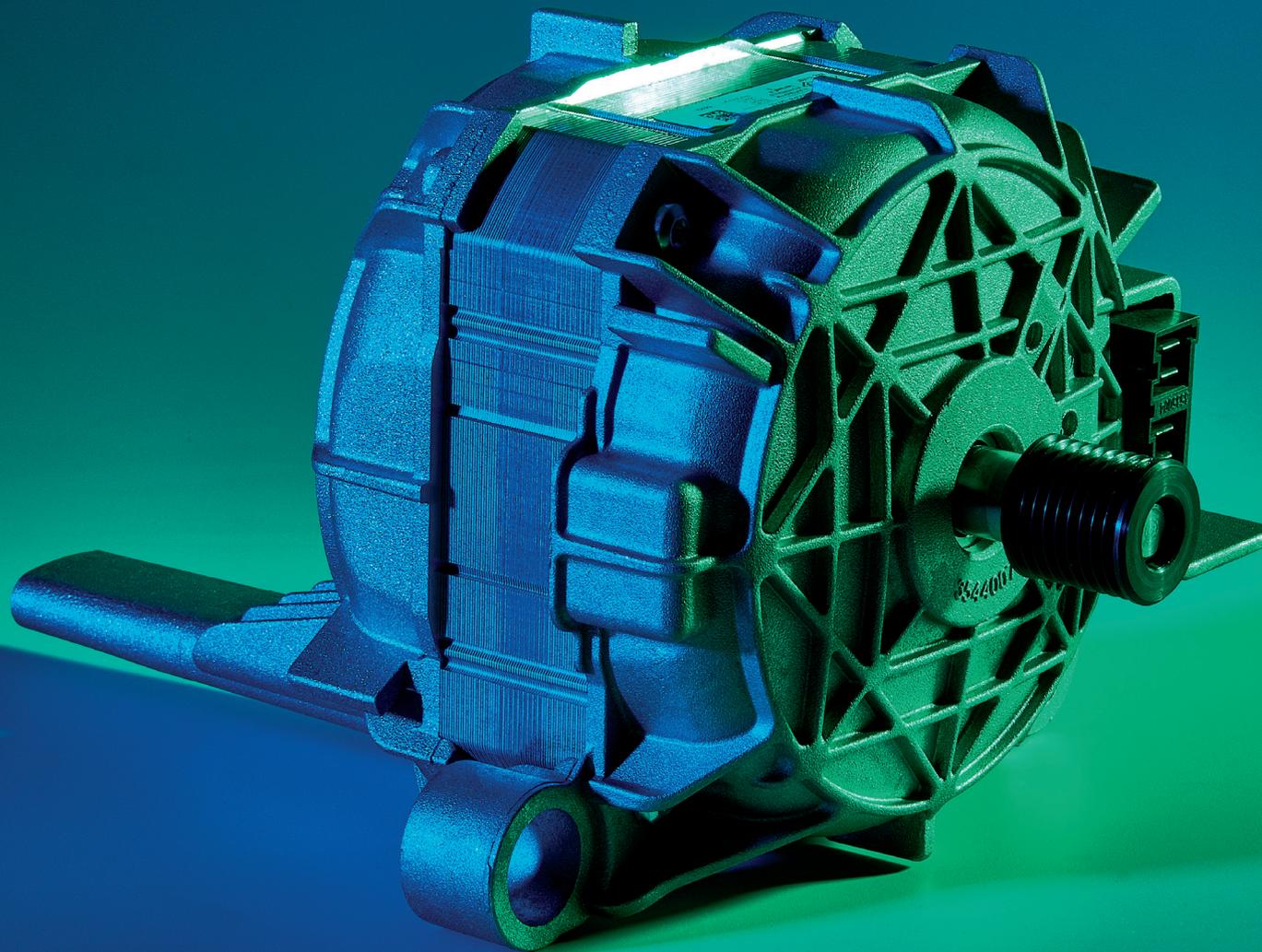
Brushless DC Motors [BLDC]



Drain Pumps



Washing Machine Motors



Extensive product range is offered to the washing machine producers. Our core business brings together the customer with quality, low noise and energy efficiency. In the light of these aims, both universal motors (AC/DC) and brushless DC motors of our product range that are dedicated for customer special needs. Whole product range uses belt-pulley mechanism to obtain higher efficiency levels.

Universal Motors

Know-how and experience about universal motor technology has been applied to the washing machine application since 1993 under TEE brand. For spinning cycle, speed level can reach up to 18000 rpm.

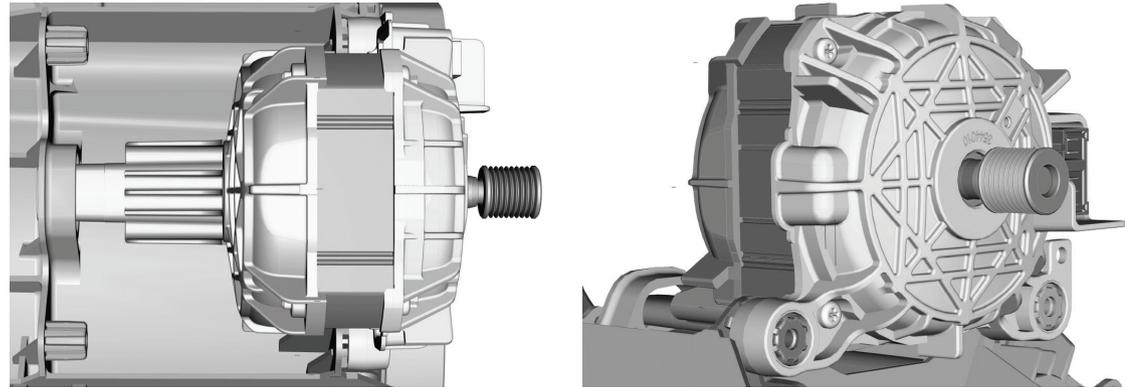
Brushless DC Motors

BLDC motors are available up to 750 W peak power for washing machines. Compared to the other motor technologies; higher efficiency level, lower noise level and higher durability can be obtained by usage of BLDC motor technology.

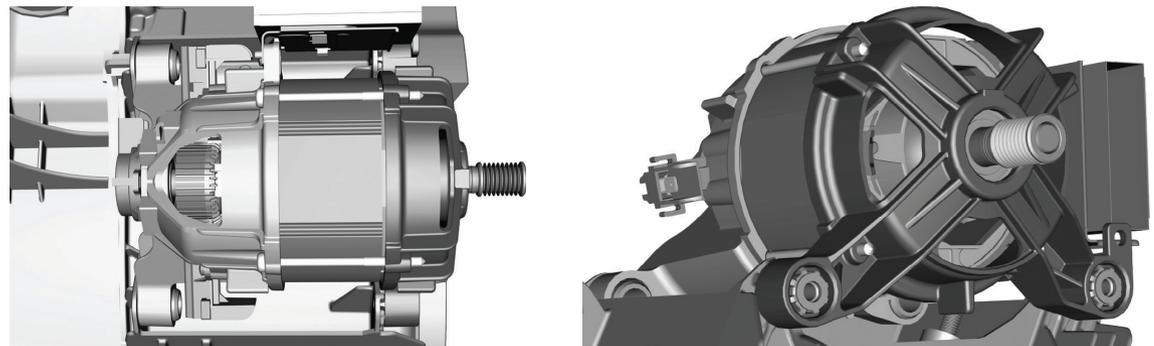
Mechanical Connection Types for Motors

Motors used in washing machines and dryers are transmitted to the machine with the help of belt-pulley system. Three point and four point connection types are available for TEE's washing machine motors. Types and dimensions of connections can be designed according to the customer specifications

Connection Types for Washing Machine Motors



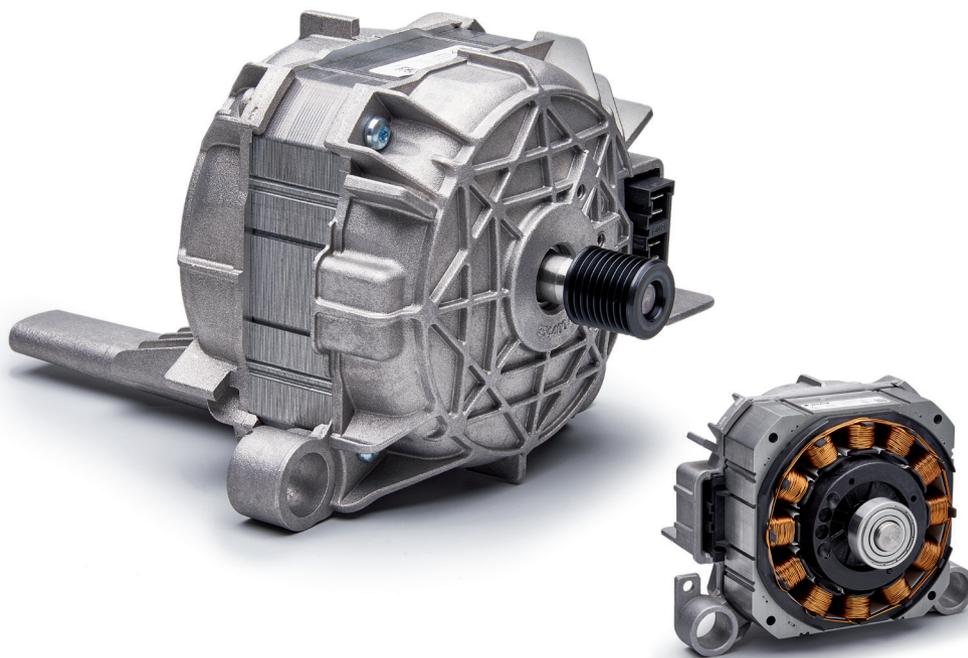
Example of 3 Point Mechanical Connection



Example of 4 Point Mechanical Connection

Brushless Permanent Magnet Synchronous Motor for Washing Machine

BLW132P8L22Y / BLW170P8L22Y / BLW090P8L50Y / BLW090P8L32Y / BLW072P8L42Y



Application: BLAC PMSM for Washing Machine

For different models; peak output power changes between 450 and 750 W

Permanent magnets inserted to rotor lamination (IPM rotor)

Field Oriented Control for shaft torque and speed

Sinusoidal back emf waveform (THD < %2)

No cable harness on the motor

Special endshield design for low noise

Ball bearing

Natural cooling motor construction

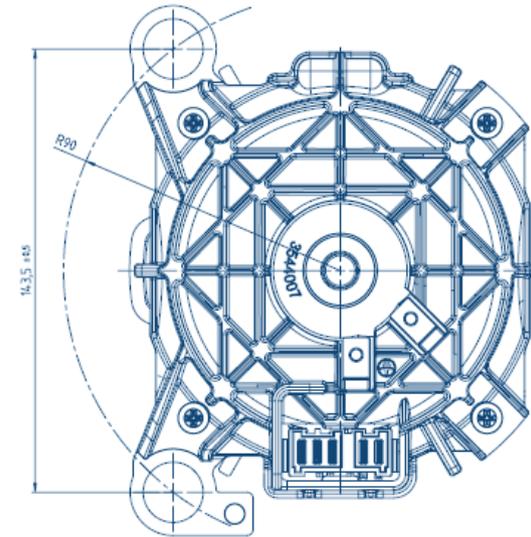
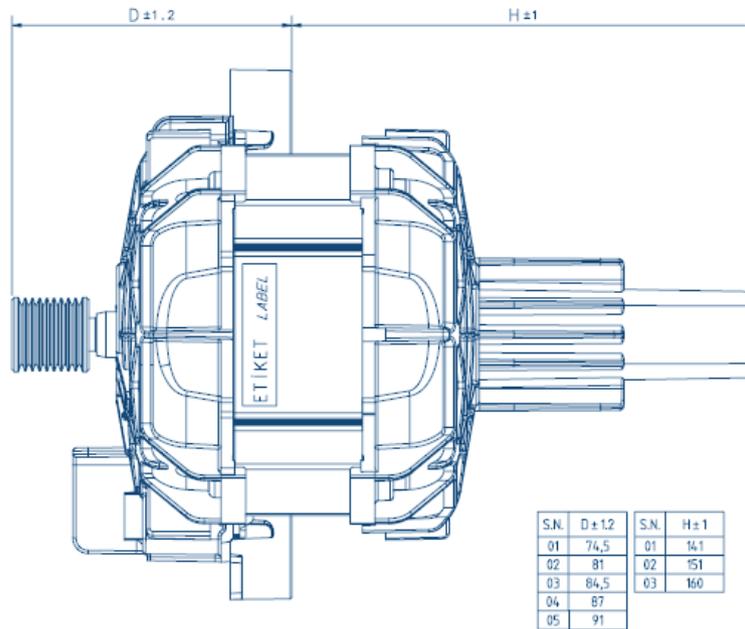
3 phase Y-connected stator fractional slot winding

Low noise and optimized lowest cogging torque

Cogging torque < %1 of rated torque

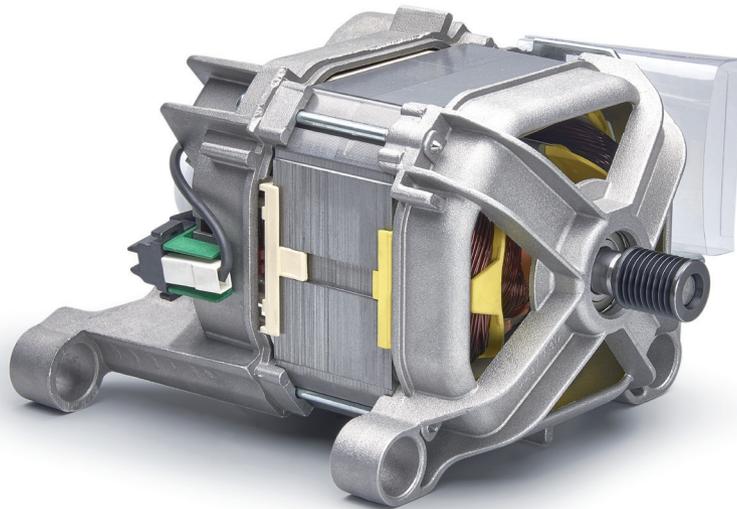
Maximum rotor speed is limited to 13500 rpm

Winding Options	Rated Voltage	Electrical Connector	Overload Protection	Duty Cycle	Weight	Tab Connection
Al, Cu	DC Bus voltage 290V - 300V	RAST 5	Thermal protector on motor is optional	Continuous	2.3 kg - 5.1 kg	3 point fixation



The products listed in this catalogue are only a few part of TEE Motor Plant's whole product range. Datas given in this catalogue are personalized according to customer requirements. TEE have a chance to change the technical informations without any notice. Our standard motors are designed according to thermal insulation class F.

Electronic Controlled Brush Type Washing Machine Motor **UM676055T300**



REG.-Nr.A334

Application: DC/AC

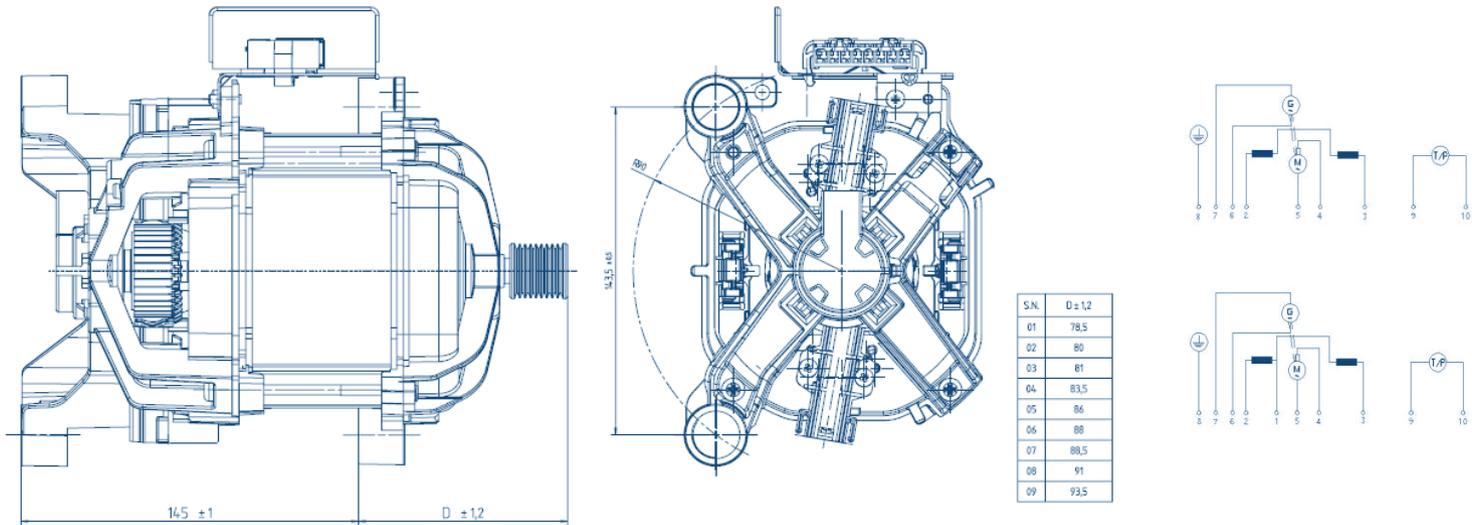
For fully automatic washing machines

Speed level can reach up to 18000 rpm for spinning cycle

Tapped coil option is available for high speed applications.

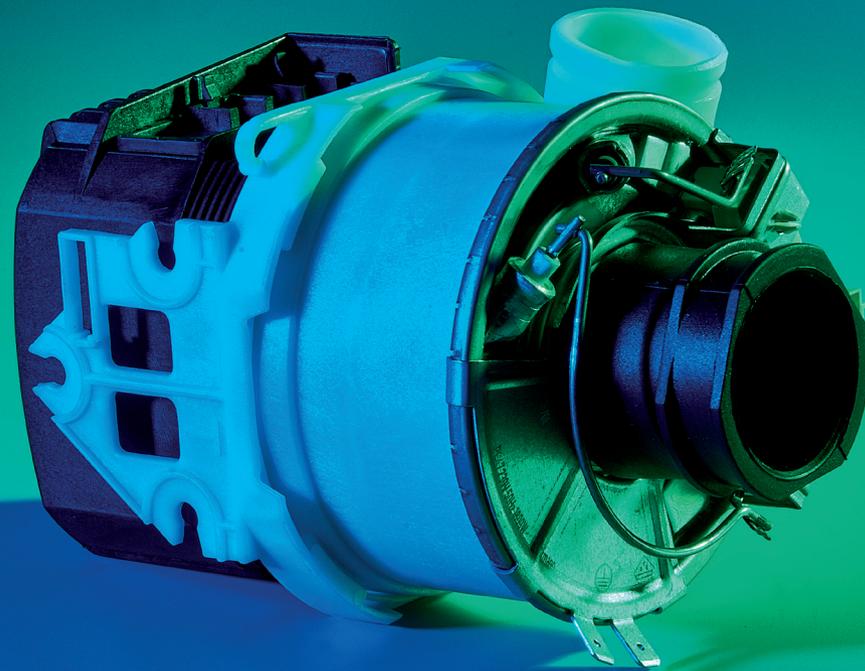
Special windings and stack heights are available.

Winding Options	Rated Voltage	Belt-drive	Tacho	Electrical Connector	Overload Protection	Rotation Direction	Weight
Al, Cu	200 V DC (DC phase control drive)	Poly-V-belt profile J	Claw pole generator with 8 pole pairs	RAST 5	Thermal Protector	CW / CCW	6.310 kg



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Dishwasher Motors



TEE's motor product range for dishwasher application has a compact structure. These compact motors give an optimum solution based on dishwasher machine specifications. Ideal motor design and production process enables the efficient and energy saver products.

Induction Motors

Compact structure of single phase induction motor gives the effective solution for dishwasher application. Supply voltage of motors can vary between 220 to 240 V. Also, supply frequency of motors is available for both 50 and 60 Hz. Induction motor which is used in dishwashers has an permanent split capacitor for both starting and normal operation.

Brushless DC Motors

To create best fit solutions for dishwashers, BLDC motor is an perfect alternative with different speed levels. Adjusting the speed of motor provides the dishwasher manufacturer lower noise level, higher efficiency and cost oriented solution. Motor, pump, driver and heater are all in one piece. Heater and driver sides are optional depending on customer needs.



Induction Type Dishwasher Machine Motor **IMD75E31L27**



REG.-Nr.A334

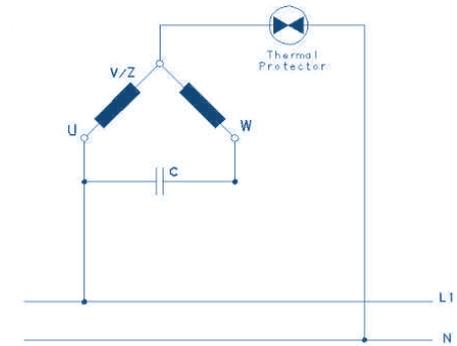
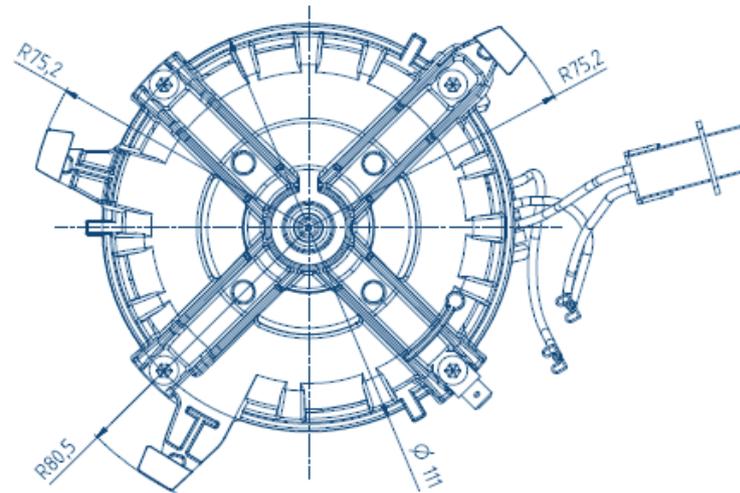
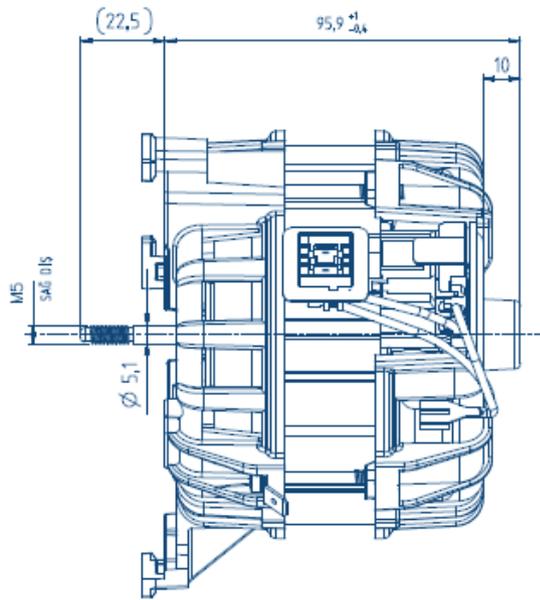
Application: AC

For fully automatic dishwasher machines up to 90 W output power.

Permanent capacitor.

Self cooling

Rated Voltage	Winding Options	Electrical Connector	Overload Protection	Rotation Direction	Capacitor
220/240 V AC 50 Hz 115V-60Hz, 220V-60Hz model are possible	Al, Cu	RAST 5	Thermal protector is used	CCW (CW is possible)	4 uF ±10% 450V 50/60 Hz 10.000h 28/85/21 P2 EN60252 VDE $\overline{\overline{\text{ }}}$



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Brushless Permanent Magnet AC or DC Type Dishwasher Machine Main Circulation Pump Motor **BLD350P8L15Y**



Application: BLDC or BLAC

For fully automatic dishwasher machines up to 90 W output power.

Permanent rare earth magnets

Wet rotor application. There is no sealing on the shaft for pump assembly and low startup torque

Electronic speed controlled motor without hall sensor, variable speed 2000 - 4000rpm

Trapezoidal or sinusoidal (FOC) drive technology (pure sine emf, THD 0)

Integrated electronic (*Electronic is optional) and integrated compact pump with motor

Totally enclosed rotor assembly against corrosion for wet motor

Low friction torque

Self cooling

3 phase stator winding

Low noise due to optimized lowest cogging torque

High efficiency

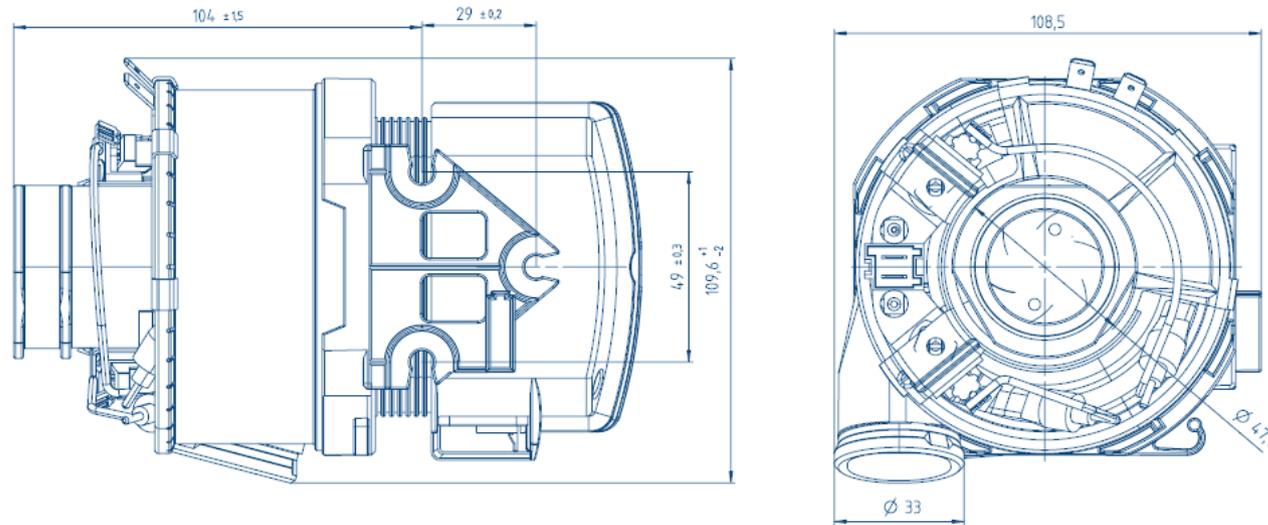
Stainless steel shaft

Integrated heater with pump (*Heater is optional)

Running at lower voltage, high startup torque

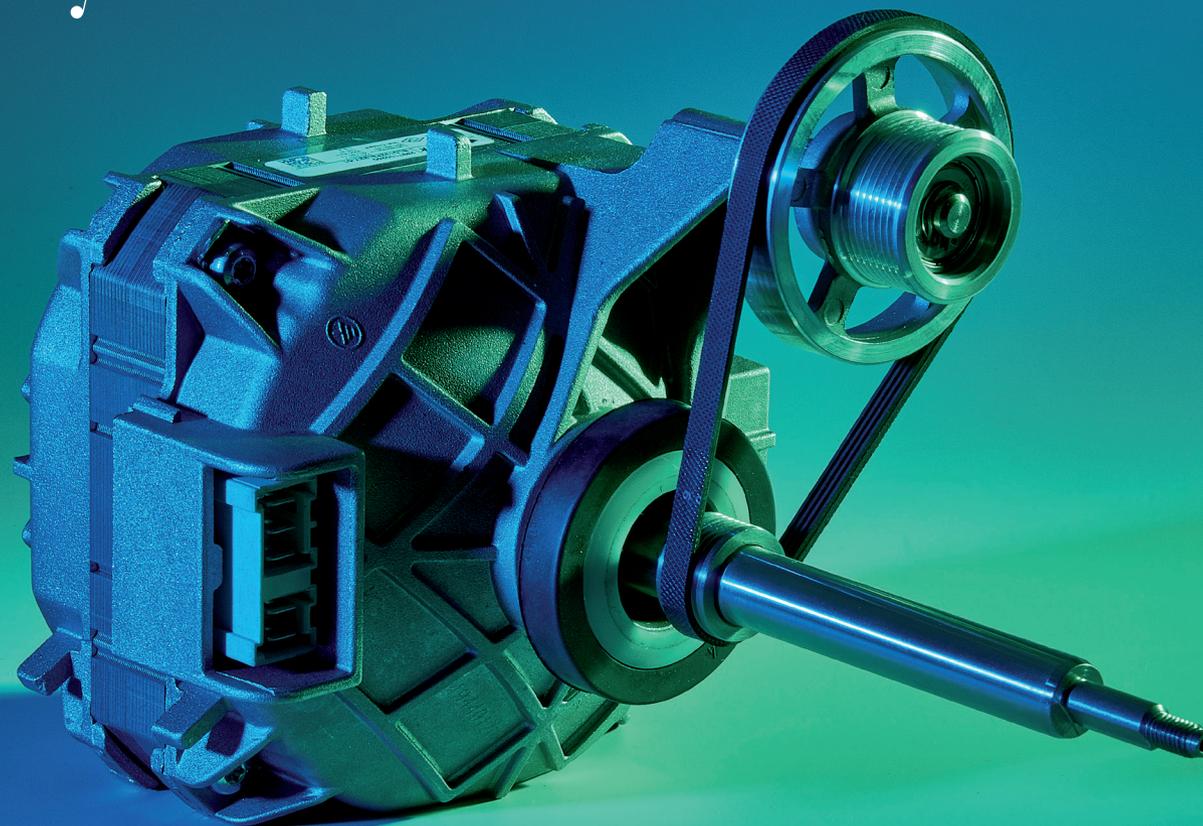
Flexible mounting on machine structure

Rated Voltage	Electrical Connector	Overload Protection	Duty Cycle	Weight
220/240V AC 50/60Hz 110/120V AC 60Hz is possible	RAST 5	Class A and Class B software (VDE)	Continuous	1 kg



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Tumble Dryers Motors



TEE Dryer Motors are designed considering the consumer needs. Connection types and endshield designs changes model by model. TEE offers to the customers new design solutions aimed application requirements.

Induction Motors

TEE produces single phase split capacitor two pole induction motors.

Brushless DC Motors

Decreasing the energy consumption of application creates difference for consumer. Low noise level and higher efficiency level are targeted successes of this technology.



Induction Type Dryer

Machine Motor IMT90E13L45

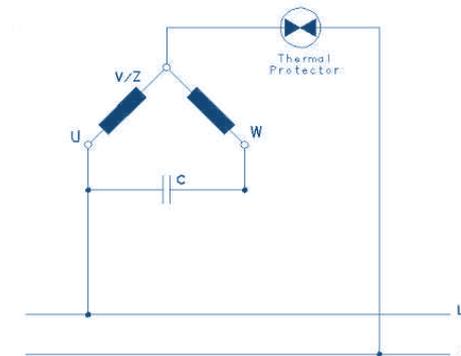
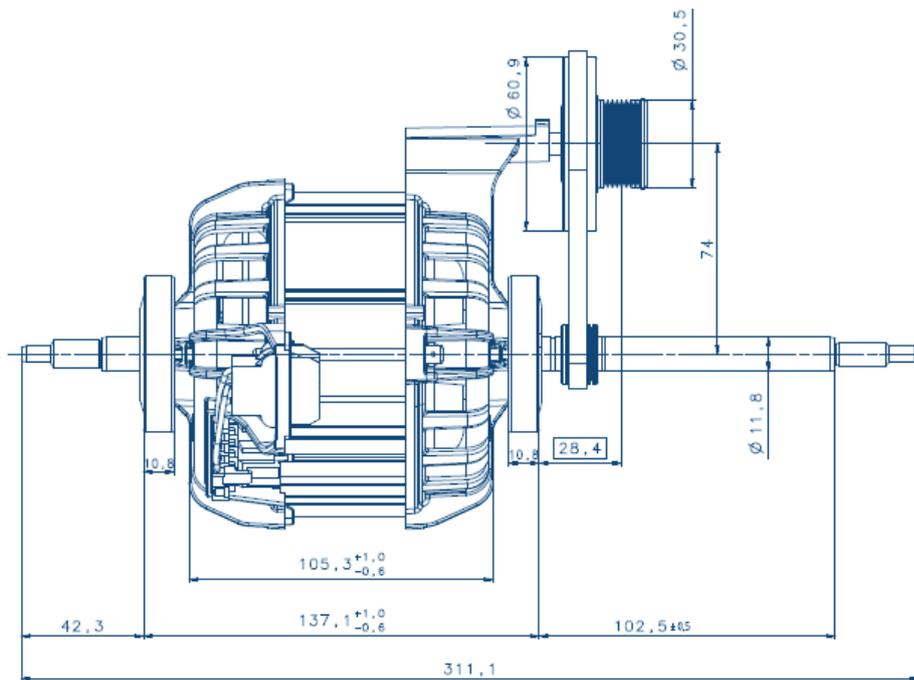


Application: AC

For fully automatic dryer machines

Self cooling

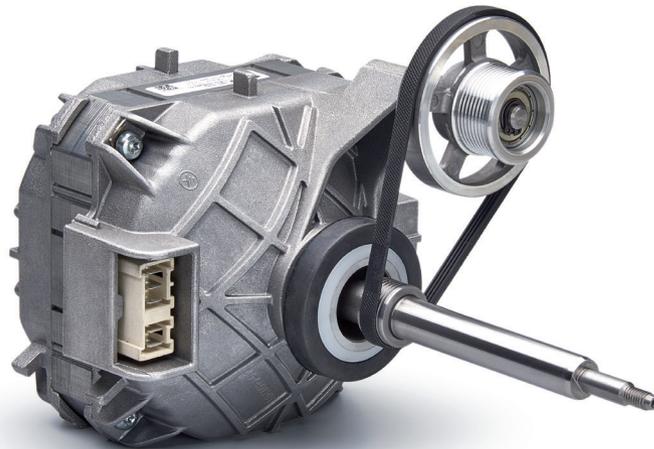
Rated Voltage	Winding Options	Overload Protection	Rotation Direction	Electrical Connector	Weight
220/240V AC 50Hz 115V-60Hz, 220V-60Hz model are possible	Al, Cu	Thermal protector is used	CCW and CW	RAST 5	3.658 kg



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Brushless Permanent Magnet Synchronous Motor for Dryer

BLD132P8L22Y



Application: BLAC PMSM for Dryer

For dryer application

450W Peak output power

Permanent magnets inserted to rotor lamination (IPM rotor)

Field Oriented Control for shaft torque and speed

Sinusoidal back emf waveform

No cable harness on the motor

Special endshield design for low noise

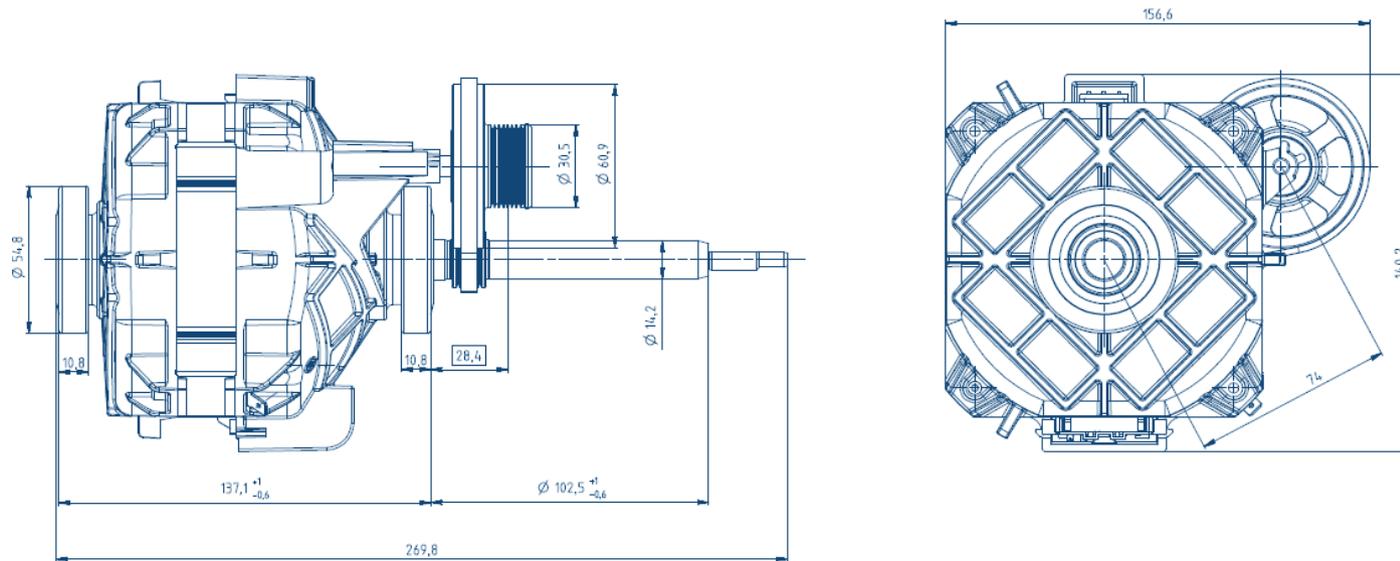
Ball bearing

Natural cooling motor construction

3 phase Y-connected stator fractional slot winding

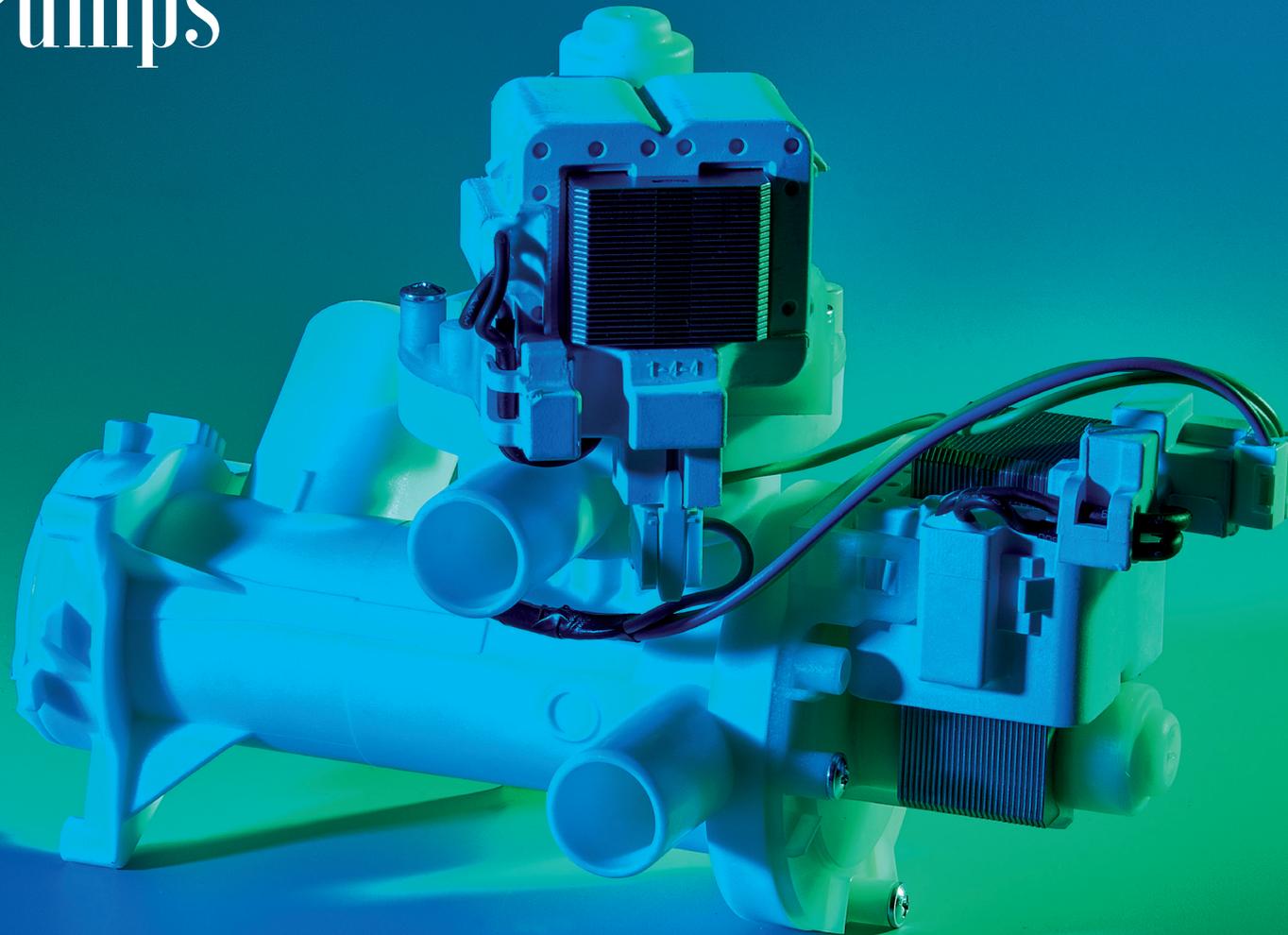
Low noise and optimized lowest cogging torque

Rated Voltage	Electrical Connector	Overload Protection	Duty Cycle	Weight	Tube Connection
DC Bus voltage 290V - 300V	RAST 5	Thermal protector on motor is optional	Continuous	2.9 kg	Belt-Pulley



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Drain Pumps



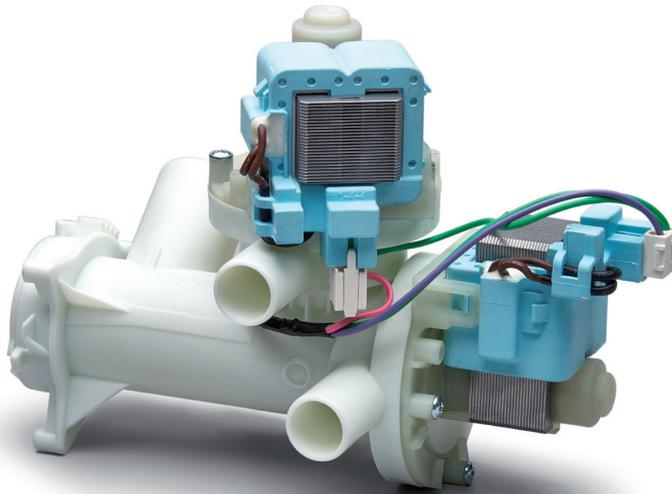
Both washing machine and dishwasher applications need drain pumps for circulation. Compact, powerful and especially cost effective drain pump solutions makes the application remarkable compared to other competitors.

Synchronous Motors

TEE's Drain Pumps are able to start up at 170 V and have a thermal protector to make application much more safe in case of abnormal working conditions.



Permanent Magnet Synchronous Type Discharge Pump Motor for Dishwasher Machines **SPW180230E31N**



REG.-Nr.A334

Application: AC

Discharge pump motor for fully automatic washing machines.

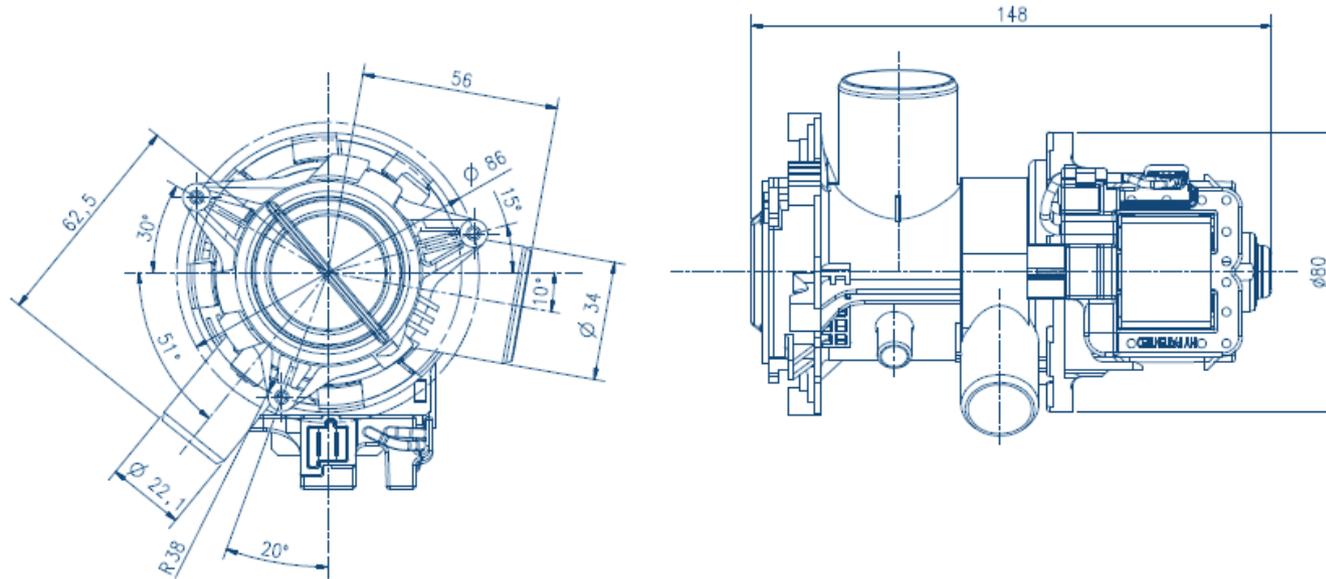
Permanent magnet

Self cooling

Line start up

Minimum start up voltage 170V AC

Winding Options	Rated Voltage	Electrical Connector	Overload Protection	Rotation Direction	Weight
Al	220/240V AC 50Hz	RAST 5	Empadance protection	CCW / CW	0.560 kg



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Washing Machine Motors

BLW132P8L22Y, BLW170P8L22Y, BLW090P850Y, BLW090P8L32Y, BLW072P8L42Y

Motor Type	Winding Options	Rated Voltage	Tacho	Insulation Class	Electrical Connector	Overload Protector	Duty Cycle	Rotation Direction	Belt-drive	Tub Connection	Weight
BLAC PMSM	Al, Cu	DC Bus Voltage 290-300 V	-	F	RAST 5	Thermal Protector on motor is optional	Continuous	CW/CCW	Poly-V-belt profile J	3 point fixation	2,3 -5,1 kg

UM676055T300

Motor Type	Winding Options	Rated Voltage	Tacho	Insulation Class	Electrical Connector	Overload Protector	Duty Cycle	Rotation Direction	Belt-drive	Tub Connection	Weight
Electronic Controlled Brush Type Washing Machine Motor	Al, Cu	200 V DC (DC phase control drive)	Claw pole generator with 8 pole pairs	F for Stator and Rotor, B for Tacho	RAST 5	Thermal Protector	-	CW/CCW	Poly-V-belt profile J	3/4 point fixation	6,310 kg

Dishwasher Motors

IME75E31L27

Motor Type	Winding Options	Rated Voltage Options	Insulation Class	Electrical Connector	Overload Protector	Duty Cycle	Rotation Direction	Weight
Induction Motor	Al, Cu	220/240V AC 50 Hz, 115V 60 Hz, 220V 60 Hz	F	RAST 5	Thermal Protector	Continuous	CW/CCW	2,236 kg

BLD350P8L15Y

Motor Type	Winding Options	Rated Voltage Options	Insulation Class	Electrical Connector	Overload Protector	Duty Cycle	Rotation Direction	Weight
BLDC/BLAC	Al	220/240V AC 50/60 Hz, 110/120V AC 60 Hz	F	RAST 5	Class A and Class B software (VDE)	Continuous	CW/CCW	1 kg

Tumble Dryer Motors

IMT90E13L45

Motor Type	Winding Options	Rated Voltage Options	Insulation Class	Electrical Connector	Overload Protector	Duty Cycle	Rotation Direction	Tub Connection	Weight
Induction Motor	Al, Cu	220/240V AC 50 Hz, 115V 60 Hz, 220V 60 Hz	F	RAST 5	Thermal Protector	Continuous	CW/CCW	Belt-Pulley	3,658 kg

BLD132P8L22Y

Motor Type	Winding Options	Rated Voltage Options	Insulation Class	Electrical Connector	Overload Protector	Duty Cycle	Rotation Direction	Tub Connection	Weight
BLAC PMSM	Al, Cu	DC Bus Voltage 290-300 V	F	RAST 5	Thermal Protector on motor is optional	Continuous	CW	Belt-Pulley	2,9 kg

Drain Pumps for Dishwasher and Washing Machine Applications

SPW180230E31N

Motor Type	Winding Options	Rated Voltage Options	Insulation Class	Electrical Connector	Overload Protector	Rotation Direction	Weight
Permanent Magnet Synchronous Motor	Al	220/240V AC 50 Hz	F	RAST 5	Empedance Protection	CW/CCW	0,56

Notes

Notes



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