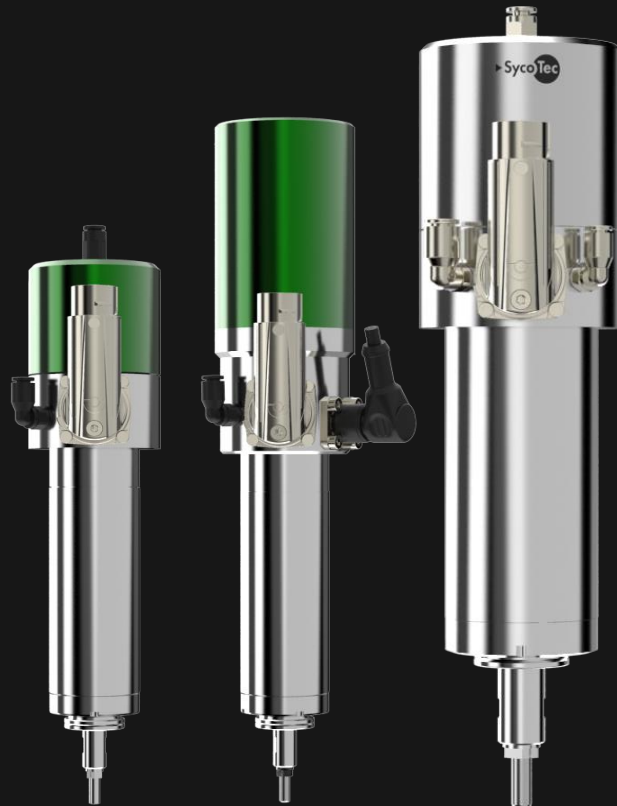


# PCB-ROUTING

MOTOR-SPINDLES



## RS 33-xC & RS 45-DC

The New Standard for PCB-Routing

Equipped with

# ESD2.0

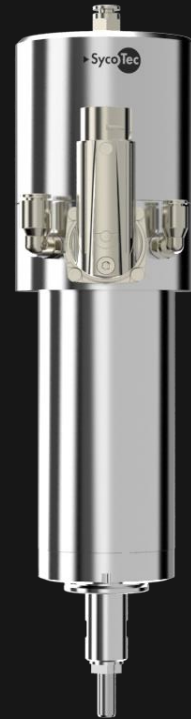
MAINTENANCE FREE ESD PROTECTION



The next revolution by

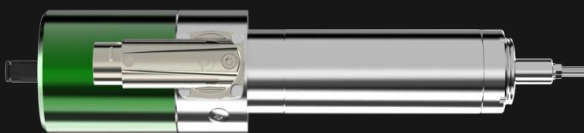
# MAIN FEATURES

- High Power and Speed** RS33: up to 1000 W and 80 000 rpm  
RS45: up to 1220 W and 60 000 rpm
- Automatic tool change** Only 4.5 bar air pressure for safe tool change
- DC Motor available** Higher Power, lower heating, longer life time and quiet operation
- Spindle Accuracy < 1µm** High Precision clamping system for perfect milling results
- Ceramic ball bearings** Approx. doubled life time compared to steel ball bearings. No damage due to ESD.
- ESD2.0** ⚡ Maintenance free and lifetime long ESD protection



## ESD2.0 ⚡

MAINTENANCE FREE ESD PROTECTION



- No wear and tear
- No exchange of carbon pins
- No resistance check necessary

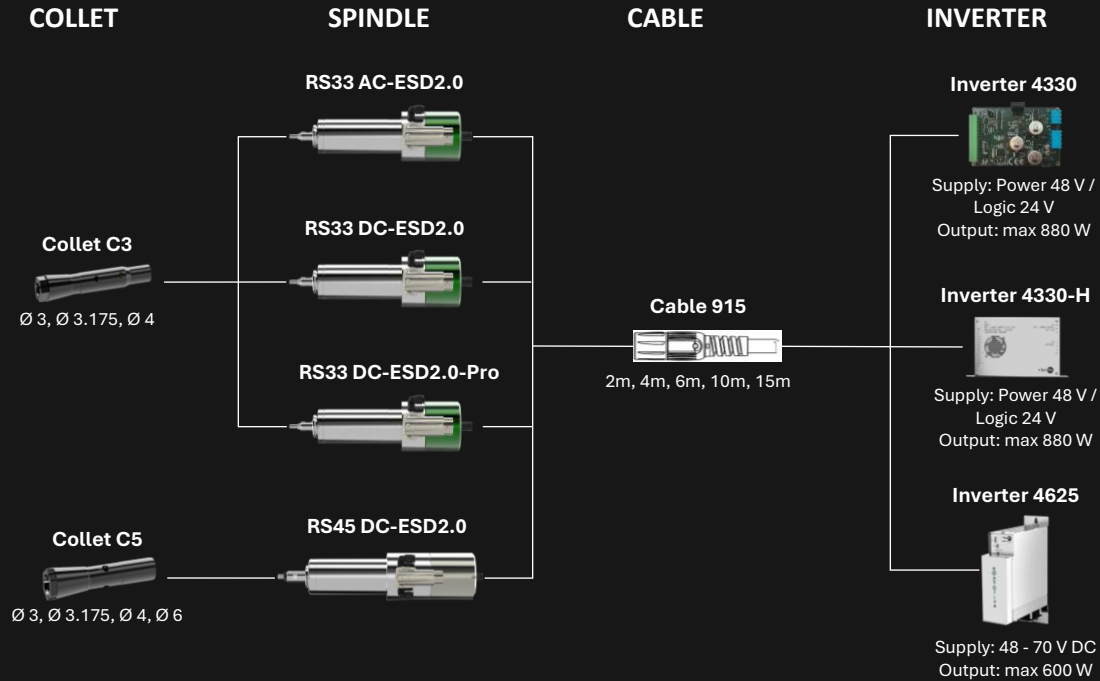
100 % safe ESD function

Automatic electric discharge at standstill and during rotation

## LIFETIME COMPARISON

Technology	ESD via steel ball bearings	ESD via carbon brush	ESD2.0
Lifetime Bearings	500 – 6000 hours	> 6000 hours	> 6000 hours
Lifetime ESD function	= ball bearings	> 3000 hours	unlimited

# EASY COMPATIBILITY



AIR SUPPLY

TOOL CHANGE: Only 4.5 bar (electrical tool change option also available)  
SEALING: No need for sealing air

COOLING

AC-MOTOR: Cooling via air or water  
DC-MOTOR: No cooling necessary

## RECOMMENDED USAGE

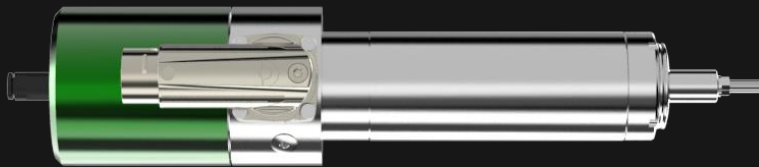
### STANDARD MACHINING (FR-4)

Type	Speed [rpm]	Power [W]	Tool [mm]	Tool change	Cooling	Sealing
RS 33 AC	80 000	860	Max Ø 4	Pneumatical	Air or water	Air / Airfree

### POWER MACHINING (FR-4 & Aluminum)

Type	Speed [rpm]	Power [W]	Tool [mm]	Tool change	Cooling	Sealing
RS 33 DC	60 000	800	Max Ø 4	Pneumatical	Uncooled	Airfree
RS 33 DC-Pro	80 000	1000	Max Ø 4	Pneumatical	Uncooled	Airfree
RS 45 DC	60 000	1220	Max Ø 6	Pneumatical	Uncooled	Air / Airfree

# RS33-AC-ESD



Part No. without sealing air connector 2.003.6839

Part No. with sealing air connector 2.004.0179

The well-known standard solution for FR-4

## Keyfacts

Speed	80 000 rpm
Tool change	Pneumatically direct
Power	S1: 570 W / max. 860 W

## Motor

Speed	80 000 rpm
Motor type	33-AC-02-80
Motor system	3~ Asynchronous
Frequency	1333 Hz
Voltage	49 V
Current	S1: 12 A / max 20 A
Power	S1: 570 W / max. 860 W
Torque	S1: 0.08 Nm / max. 0.12 Nm

## Bearing arrangement

Type	Ceramic ball bearings
Amount	2
Lubrication	Lifetime grease

## Clamping system

Collet type	C3 Delivered with $\varnothing$ 3.175mm collet
Clamping range	Max. $\varnothing$ 4.0 mm
Tool change	Pneumatically 4 – 6 bar
Run-out (cone)	$\leq$ 1 $\mu$ m
Run-out (tool)	$\leq$ 10 $\mu$ m – 15 mm after collet

## Sensors

Motor protection	KTY
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## Additional features

Cooling	Air or water via clamping bracket
ESD function	ESD 2.0 (maintenance-free)
Weight	$\sim$ 1.0 kg
Protection category	IP50 without sealing air IP55 with sealing air

## Connectors

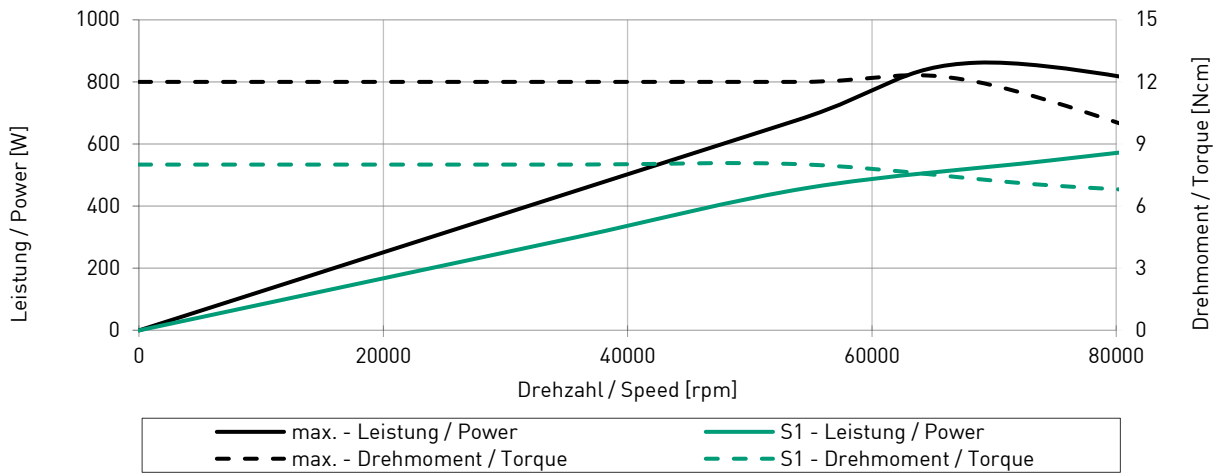
Power	915
Tool change	Hose $\varnothing$ 4.0
Sealing air	Hose $\varnothing$ 4.0

## Inverter

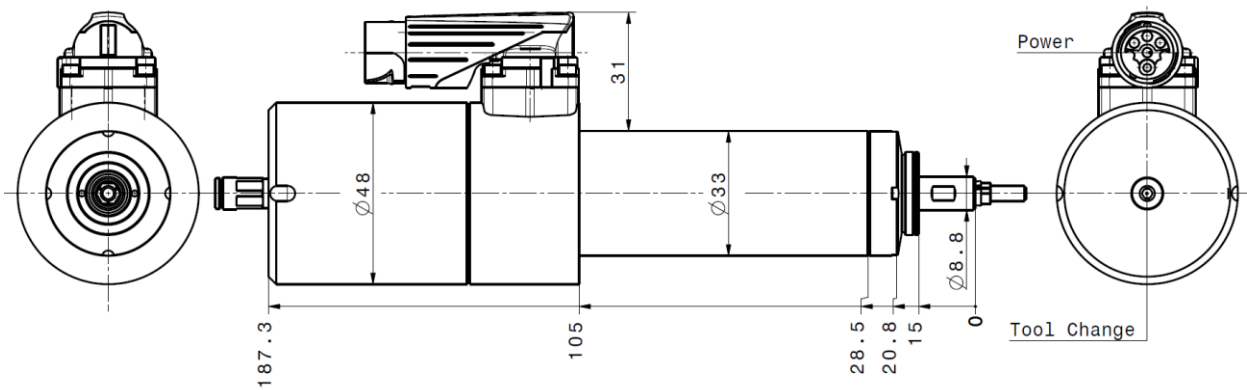
Recommendation	e@syDrive 4330, Sieb&Meyer SD2B+ or SD4B, BMR 0156
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# RS33-AC-ESD

## Performance diagram



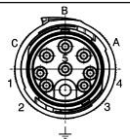
## Dimensions



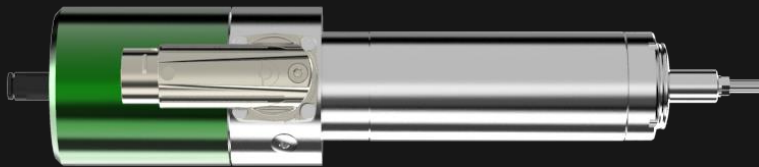
## Pin Assignment

### Power 915

Name	U	V	W	PE	Temp1	Temp2
Pin	A	B	C		1	2



# RS33-DC-ESD



Your economic high-torque solution for FR-4 and Aluminum

Part No.

2.003.6953

## Keyfacts

Speed	60 000 rpm
Tool change	Pneumatically direct
Power	S1: 450 W / max. 800 W

## Motor

Speed	60 000 rpm
Motor type	33-DC-02-NT
Motor system	3~ Synchronous (PMSM)
Frequency	1000 Hz
Voltage	32 V
Current	S1: 10 A / max 18 A – 20 s
Power	S1: 450 W / max. 800 W
Torque	S1: 0.078 Nm / max. 0.135 Nm

## Bearing arrangement

Type	Ceramic ball bearings
Amount	2
Lubrication	Lifetime grease

## Clamping system

Collet type	C3 Delivered with $\varnothing$ 3.175mm collet
Clamping range	Max. $\varnothing$ 4.0 mm
Tool change	Pneumatically 4 – 6 bar
Run-out (cone)	$\leq$ 1 $\mu$ m
Run-out (tool)	$\leq$ 10 $\mu$ m – 15 mm after collet

## Sensors

-

## Additional features

Cooling	Uncooled operation
ESD function	ESD 2.0 (maintenance-free)
Weight	~ 1.0 kg
Protection category	IP50 without sealing air

## Connectors

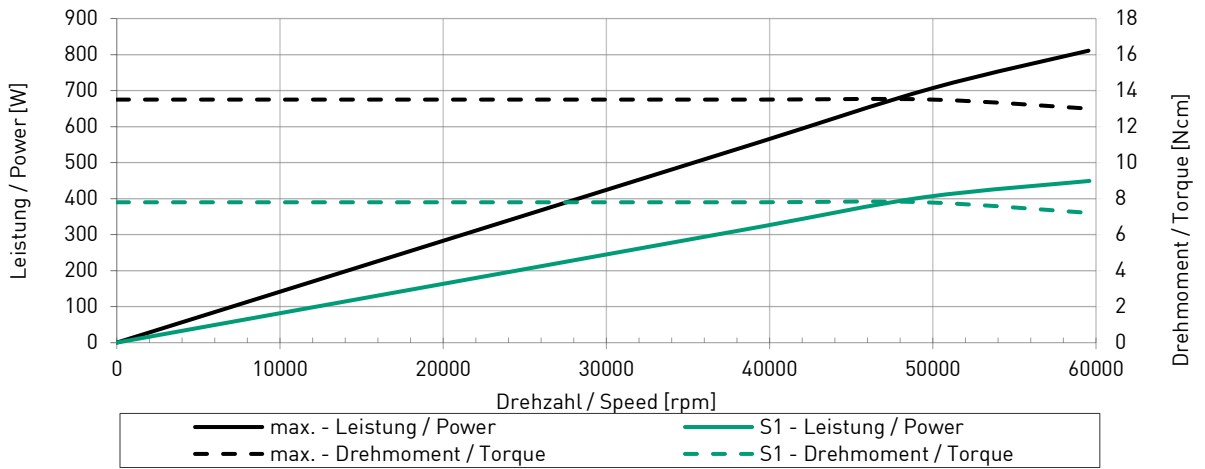
Power	915
Tool change	Hose $\varnothing$ 4.0

## Inverter

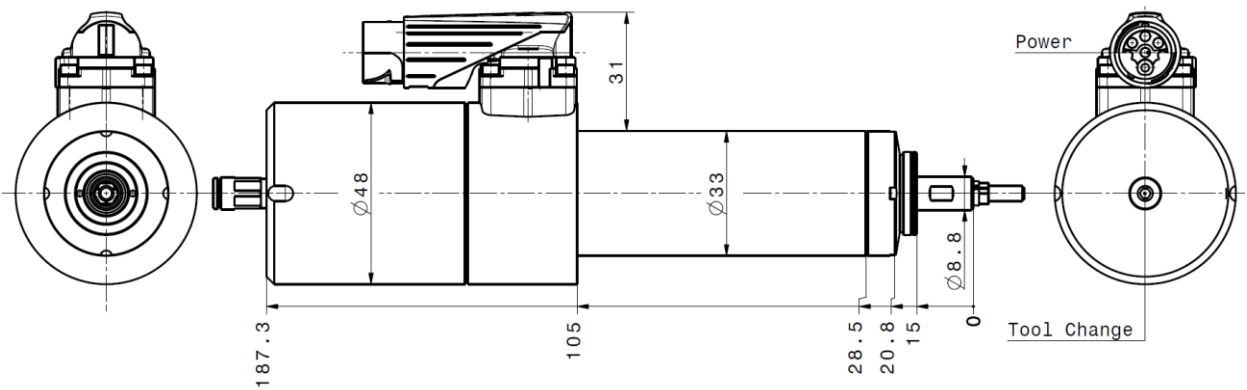
Recommendation	e@syDrive 4330, Sieb&Meyer SD2B+ or SD4B, BMR 0156
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# RS33-DC-ESD

## Performance diagram



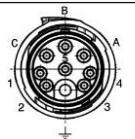
## Dimensions



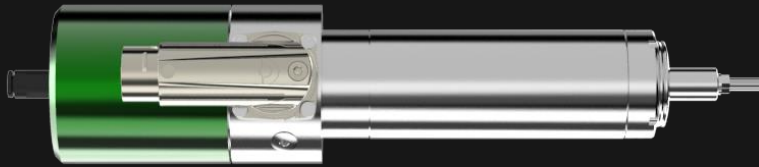
## Pin Assignment

Power 915

Name	U	V	W	PE
Pin	A	B	C	



# RS33-DC-ESD-Pro



Your high-speed solution for FR-4 and Aluminum.

Part No.

2.004.0170

## Keyfacts

Speed	80 000 rpm
Tool change	Pneumatically direct
Power	S1: 650 W / max. 1000 W

## Motor

Speed	80 000 rpm
Motor type	33-DC-02-NT-80
Motor system	3~ Synchronous (PMSM)
Frequency	1333 Hz
Voltage	41 V
Current	S1: 10 A / max 18 A – 20 s
Power	S1: 650 W / max. 1000 W
Torque	S1: 0.078 Nm / max. 0.135 Nm

## Bearing arrangement

Type	Ceramic ball bearings
Amount	2
Lubrication	Lifetime grease

## Clamping system

Collet type	C3 Delivered with $\varnothing$ 3.175mm collet
Clamping range	Max. $\varnothing$ 4.0 mm
Tool change	Pneumatically 4 – 6 bar
Run-out (cone)	$\leq$ 1 $\mu$ m
Run-out (tool)	$\leq$ 10 $\mu$ m – 15 mm after collet

## Sensors

-

## Additional features

Cooling	Uncooled operation
ESD function	ESD 2.0 (maintenance-free)
Weight	~ 1.0 kg
Protection category	IP50 without sealing air

## Connectors

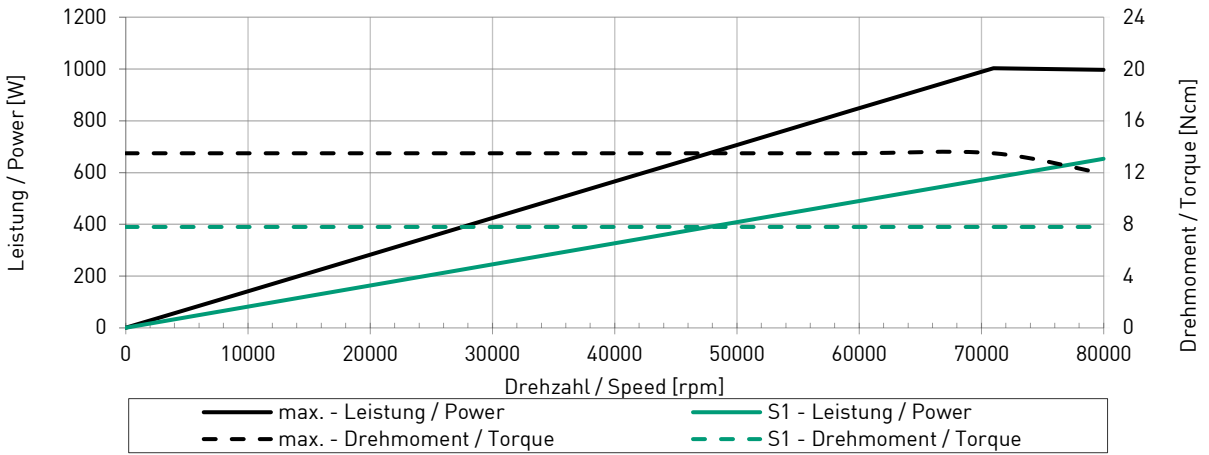
Power	915
Tool change	Hose $\varnothing$ 4.0

## Inverter

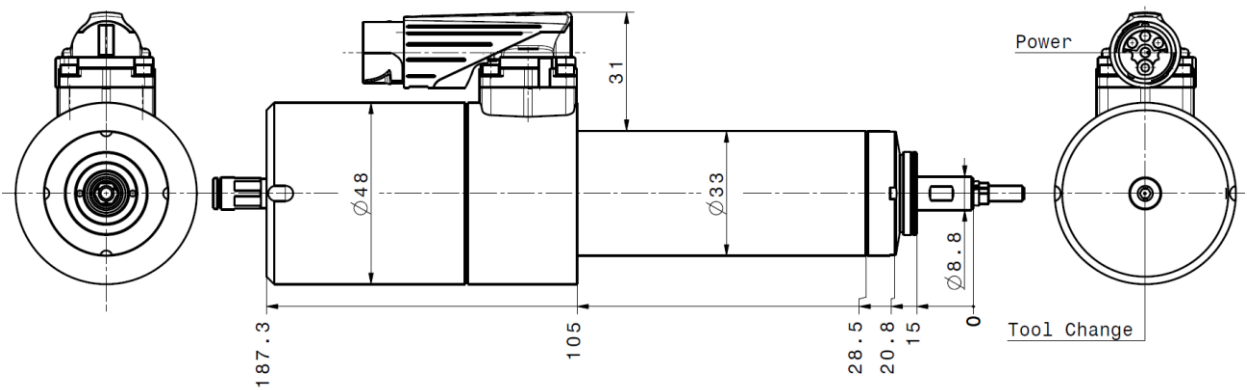
Recommendation	e@syDrive 4330, Sieb&Meyer SD2B+ or SD4B, BMR 0156
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# RS33-DC-ESD-Pro

## Performance diagram



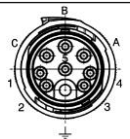
## Dimensions



## Pin Assignment

Power 915

Name	U	V	W	PE
Pin	A	B	C	



# RS45-DC-ESD



Maximum power and stiffness for all PCB-Applications.

Part No.

2.003.3280

## Keyfacts

Speed	60 000 rpm
Tool change	Pneumatically direct
Power	S1: 780 W / max. 1220 W

## Motor

Speed	60 000 rpm
Motor type	45-DC-03-60
Motor system	3~ Synchronous (PMSM)
Frequency	1000Hz
Voltage	35 V
Current	S1: 16 A / max 24 A – 60 s
Power	S1: 780 W / max. 1220 W
Torque	S1: 0.124 Nm / max. 0.201 Nm

## Bearing arrangement

Type	Ceramic ball bearings
Amount	2
Lubrication	Lifetime grease

## Clamping system

Collet type	C5 Delivered with $\varnothing$ 3.175mm collet
Clamping range	Max. $\varnothing$ 6.0 mm
Tool change	Pneumatically 4 – 6 bar
Run-out (cone)	$\leq$ 1 $\mu$ m
Run-out (tool)	$\leq$ 10 $\mu$ m – 20 mm after collet

## Sensors

Motor protection	PTC
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## Additional features

Cooling	Uncooled operation
ESD function	ESD 2.0 (maintenance-free)
Weight	~ 1.85 kg
Protection category	IP55 with sealing air

## Connectors

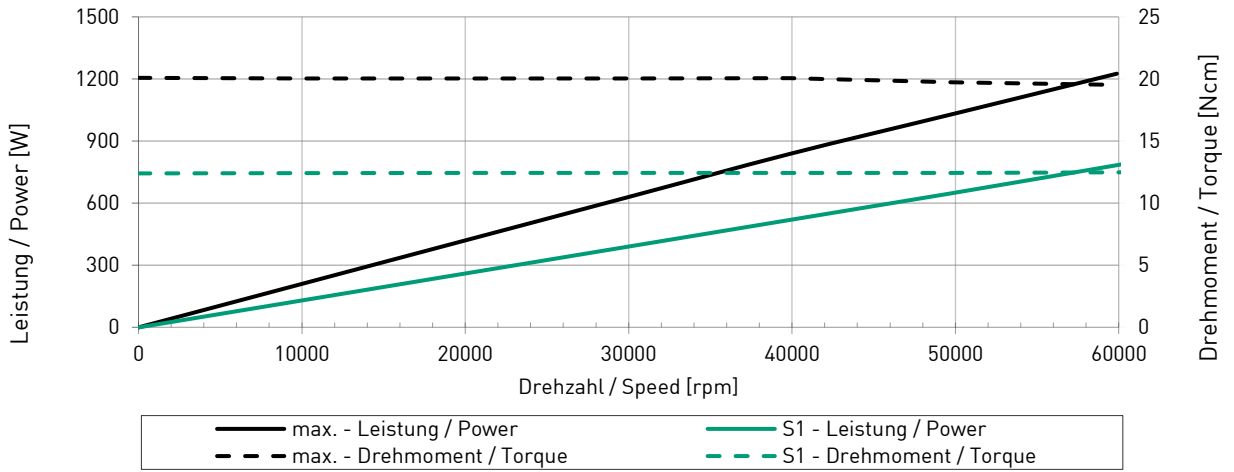
Power	915
Tool change	Hose $\varnothing$ 4.0
Sealing air	Hose $\varnothing$ 4.0
Cooling air	Hose $\varnothing$ 6.0

## Inverter

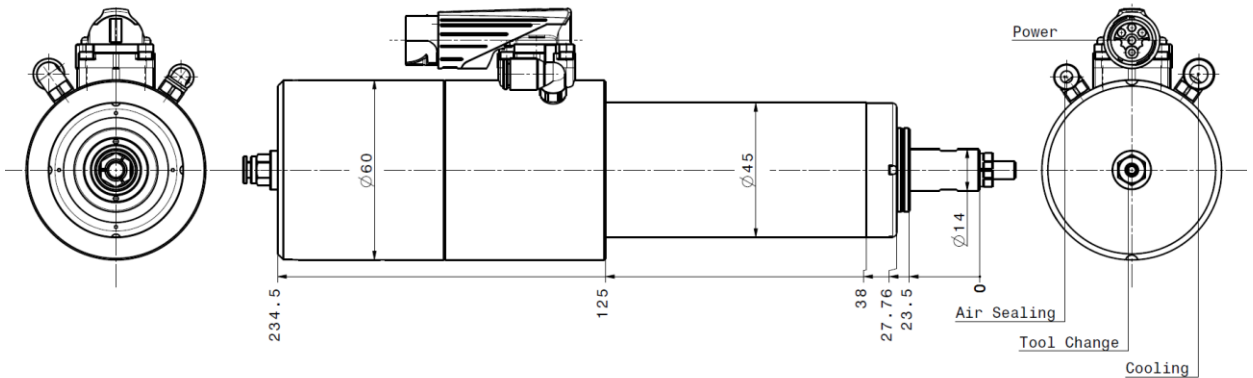
Recommendation	e@syDrive 4330, Sieb&Meyer SD2B+ or SD4B, BMR 0156
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# RS45-DC-ESD

## Performance diagram



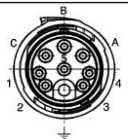
## Dimensions



## Pin Assignment

Power 915

Name	U	V	W	PE	Temp1	Temp2
Pin	A	B	C		1	2



# ACCESSORIES

## Inverter 4330

Power supply	48 V DC
Output Power	S1: 560 VA / max. 880 VA
Interfaces	3x digital output 2x digital input 1x analog input 1x temperature sensor 1x UART port



## Inverter 4625

Power supply	Max 70 V DC
Output Power	S1: 600 VA / max. 900 VA
Interfaces	2x relay switching output 7x digital input 1x analog input 1x analog output 2x STO 1x temperature sensor 1x CANopen 1x RS232



## Collet C3 (spindle RS33)

Type	Size	REF
C3 D3-C	Ø 3.0 mm	2.001.8913
C3 D3.175-C	Ø 3.175 mm	2.001.8914
C3 D4-C	Ø 4.0 mm	2.001.8915



## Collet C5 (spindle RS45)

Type	Size	REF
C5 D3-C	Ø 3.0 mm	2.003.3464
C5 D3.175-C	Ø 3.175 mm	2.003.7744
C5 D4-C	Ø 4.0 mm	2.003.3465
C5 D6-C	Ø 6.0 mm	2.003.3160



## Cable 915

Type	Length	REF
915	2 m	2.001.0778
915	6 m	2.001.0780
915	10 m	2.001.0781





PRECISION IN MOTION



[www.sycotec.eu](http://www.sycotec.eu)