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Network cable, Sercos III CAT5 (100 Mbps), 4-position, PVC/PVC, signal red RAL 3020, shielded, Plug straight M12 SPEEDCON / IP67, Coding: D, on Socket straight M12 SPEEDCON / IP67, Coding: D, Cable length: 2 m



Key Commercial Data

Packing unit	1 STK
Custom tariff number	85444210
Country of origin	Poland

Technical data

Dimensions

Length of cable	2 m
Ambient conditions	

Degree of protection	IP65 (M12 connector)
	IP67 (M12 connector)

General data

Rated current at 40°C	4 A
Rated voltage	250 V
Number of positions	4
Signal type/category	Sercos III CAT5 (IEC 11801), 100 Mbps
Standards/regulations	M12 connector IEC 61076-2-101

Characteristics head 1

Head type	Plug straight M12 SPEEDCON / IP67
No. of positions (pin connector pattern)	4



Technical data

Characteristics head 1

Coding	D (Data)
Color	black
Material (component)	CuSn (Contact)
	Ni/Au (Contact surface)
	PA (Contact carriers)
	TPU, hardly inflammable, self-extinguishing (Grip)
	Zinc die-cast, nickel-plated (Screw connection)
Insulation resistance	\geq 100 M Ω
Insertion/withdrawal cycles	≥ 100
Torque	0.4 Nm
Ambient temperature (operation)	-25 °C 90 °C

Characteristics head 2

Head type	Socket straight M12 SPEEDCON / IP67
No. of positions (pin connector pattern)	4
Coding	D (Data)
Color	black
Material (component)	CuSn (Contact)
	Ni/Au (Contact surface)
	TPU GF (Contact carriers)
	TPU, hardly inflammable, self-extinguishing (Grip)
	Zinc die-cast, nickel-plated (Screw connection)
Insulation resistance	\geq 100 M Ω
Insertion/withdrawal cycles	≥ 100
Torque	0.4 Nm
Ambient temperature (operation)	-25 °C 90 °C

Standards and Regulations

Standard designation	M12 connector
Standards/regulations	IEC 61076-2-101

Cable

Cable type	Sercos III
Cable type (abbreviation)	93К
UL AWM style	21694 (60°C / 600 V)
Signal type/category	Sercos III CAT5 (IEC 11801), 100 Mbps
Cable structure	1x4xAWG22/7; SF/TQ
Conductor cross section	4x 0.34 mm ²
AWG signal line	22

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Technical data

Cable

Wire colors White, yellow, blue, orange Type of pair shielding Aluminum-lined polyester foil Overall twist Star quad Shielding Timed copper braided shield Support signal red RAL 3020 Outer sheath thickness approx. 0.9 mm External cable diameter D 6.5 mm 30.2 mm Minimum bending radius, fixed installation 3 x D Winimum bending radius, fixed installation 7 x D Cable weight 68 kg/km Outer sheath, material PVC Material, inner sheath PVC Material, inner sheath PVC Material conductor insulation 2 0.5 GΩ*km Conductor resistance 2 0.0 GΩ*km Conductor resistance 2 0.0 0 mQ/m (at 10 Hz) Signal runtime 5.3 ns/m Coupling resistance 2 0.00 mQ/m (at 10 Hz) Test voltage Core/Core 2000 V (50 Hz, 1 min.) Test voltage Core/Shield 2000 V (50 Hz, 1 min.) Flame resistance According to UL 1885 (CSA FT 4) Resistance to oil Resistant to oil to a limitined extent Other r	Conductor structure signal line	7x 0.25 mm
Type of pair shielding Aluminum-lined polyester foil Overall twist Star quad Shielding Tinned copper braided shield Shielding Signal red RAL 3020 Outer sheath thickness approx. 0.9 mm External cable diameter D 6.5 mm ±0.2 mm Minimum bending radius, fixed installation 3 x D Minimum bending radius, fixed installation 7 x D Cable weight 68 kg/km Outer sheath, material PVC Material, inner sheath PVC Material conductor insulation PE Conductor meterial Tin-plated Cu litz wires Insulation resistance ≥ 0.5 GΩ'km Conductor resistance 100 Ω ±15 Ω (at 100 MHz) Signal runtime 5.3 ns/m Coupling resistance 20.00 mΩ/m (at 10 Hz) Signal runtime 2000 V (50 Hz, 1 min.) Flame resistance 2000 V (50 Hz, 1 min.) Flame resistance Wore inpedator Ouburg resistance 2000 V (50 Hz, 1 min.) Flame resistance According to UL 1681, Section 1200 Other resistance <	Core diameter including insulation	approx. 1.55 mm
Overall twist Star quad Shielding Tinned copper braided shield External sheath, color signal red RAL 3020 Outer sheath thickness approx. 0.9 mm External cable diameter D 6.5 mm ±0.2 mm Minimum bending radius, fixed installation 3 x D Minimum bending radius, fixed installation 7 x D Cable weight 68 kg/km Outer sheath, material PVC Material, inner sheath PVC Material conductor insulation PE Conductor material Tin-plated Cu litz wires Insulation resistance 2 0.5 GΩ ^r km Conductor resistance 2 120 Ω/km Wave impedance 100 Ω ±15 Ω (at 100 MHz) Signal runtime 5.3 ns/m Coupling resistance 2 0.00 mΩ/m (at 10 Hz) Signal runtime 5.3 ns/m Coupling resistance 2 0.00 v (50 Hz, 1 min.) Flame resistance According to UL 1681, Section 1200 Aber seistance to oil Resistant to oil to a limited extent Other resistance UV resistant According to UL 1581, Section 1200 A	Wire colors	White, yellow, blue, orange
Shielding Tinned copper braided shield External sheath, color signal red RAL 3020 Outer sheath thickness approx. 0.9 mm External cable diameter D 6.5 mm ±0.2 mm Minimum bending radius, fixed installation 3 x D Minimum bending radius, fixed installation 7 x D Cable weight 68 kg/km Outer sheath, material PVC Material conductor insulation PE Conductor metrial Tin-plated Cu litz wires Insulation resistance 2 0.5 GQ*km Conductor resistance 410 Q ±15 Q (at 100 MHz) Signal runtime 5.3 ns/m Coulding resistance 2 0.00 V (50 Hz, 1 min.) Test voltage Core/Core 2000 V (50 Hz, 1 min.) Flame resistance 2 0.00 V (50 Hz, 1 min.) Flame resistance 2 0.00 V (50 Hz, 1 min.) Flame resistance 2 0.00 V (50 Hz, 1 min.) Resistance to oil Resistance to oil Other resistance 40 °C 70 °C (cable, fixed installation) Aver on place to oil Resistance to oil Other mepstature (operation) 40 °C 70 °C (cable,	Type of pair shielding	Aluminum-lined polyester foil
External sheath, colorsignal red RAL 3020Outer sheath thicknessapprox. 0.9 mmExternal cable diameter D6.5 mm ±0.2 mmMinimum bending radius, fixed installation3 x DMinimum bending radius, fixed installation7 x DCable weight68 kg/kmOuter sheath, materialPVCMaterial, inner sheathPVCMaterial conductor insulationPEConductor materialTin-plated Cu litz wiresInsulation resistance≤ 0.5 GΩ'kmConductor resistance≤ 120 Ω/kmWave impedance100 Ω ±15 Ω (at 100 MHz)Signal runtime5.3 ns/mCoulding resistance≤ 20.00 mΩ/m (at 10 Hz)Test voltage Core/Shield2000 V (50 Hz, 1 min.)Flame resistanceAccording to UL 1685 (CSA FT 4)Resistance to oilResistant to oil to a limited extentOther reperature (operation)40 °C 70 °C (cable, fixed installation)Ambient temperature (installation)20 °C 60 °C	Overall twist	Star quad
Outer sheath thickness approx. 0.9 mm External cable diameter D 6.5 mm ±0.2 mm Minimum bending radius, fixed installation 3 x D Minimum bending radius, fixed installation 7 x D Cable weight 68 kg/km Outer sheath, material PVC Material, inner sheath PVC Material conductor insulation PE Conductor material Tin-plated Cu litz wires Insulation resistance ≥ 0.5 GΩ*km Conductor resistance ≤ 120 Ω/km Vare impedance 100 Ω ±15 Ω (at 100 MHz) Signal runtime 5.3 ns/m Coupling resistance ≤ 20.00 V (50 Hz, 1 min.) Test voltage Core/Core 2000 V (50 Hz, 1 min.) Flame resistance According to UL 168S (CSA FT 4) Resistance to oil Resistant to oil to a limited extent Other resistance UV resistant According to UL 1581, Section 1200 Arbient temperature (installation) 40 °C 70 °C (cable, fixed installation)	Shielding	Tinned copper braided shield
External cable diameter D6.5 mm ±0.2 mmMinimum bending radius, fixed installation3 x DMinimum bending radius, fixed installation7 x DCable weight68 kg/kmOuter sheath, materialPVCMaterial, inner sheathPVCMaterial conductor insulationPEConductor materialTin-plated Cu litz wiresInsulation resistance> 2 0.5 GΩ*kmConductor resistance< 120 Ω/km	External sheath, color	signal red RAL 3020
Minimum bending radius, fixed installation 3 x D Minimum bending radius, fixed installation 7 x D Cable weight 68 kg/km Outer sheath, material PVC Material, inner sheath PVC Material conductor insulation PE Conductor material Tin-plated Cu litz wires Insulation resistance ≥ 0.5 GΩ*km Conductor resistance ≤ 120 Ω/km Wave impedance 100 Ω ± 15 Ω (at 100 MHz) Signal runtime 5.3 ns/m Coupling resistance 2000 w (50 Hz, 1 min.) Test voltage Core/Core 2000 V (50 Hz, 1 min.) Flame resistance 2000 V (50 Hz, 1 min.) Flame resistance Vire sistant to oil to a limited extent Other resistance UV resistant to coil go UL 1581, Section 1200 Ambient temperature (operation) 40 °C 70 °C (cable, fixed installation) 40 °C 70 °C (cable, fixed installation) 20 °C 60 °C	Outer sheath thickness	approx. 0.9 mm
Minimum bending radius, flexible installation 7 x D Cable weight 68 kg/km Outer sheath, material PVC Material, inner sheath PVC Material conductor insulation PE Conductor material Tin-plated Cu litz wires Insulation resistance ≥ 0.5 GΩ*km Conductor resistance ≤ 120 Ω/km Wave impedance 100 Ω ± 15 Ω (at 100 MHz) Signal runtime 5.3 ns/m Coupling resistance ≤ 20.00 mΩ/m (at 10 Hz) Test voltage Core/Core 2000 V (50 Hz, 1 min.) Test voltage Core/Shield 2000 V (50 Hz, 1 min.) Flame resistance According to UL 1685 (CSA FT 4) Resistance to oil Resistant to oil to a limited extent Other resistance UV resistant According to UL 1581, Section 1200 Armbient temperature (operation) -40 ° C 70 °C (cable, fixed installation) -40 °C 70 °C (cable, fixed installation) -40 °C 70 °C (cable, fixel) listallation)	External cable diameter D	6.5 mm ±0.2 mm
Cable weight68 kg/kmOuter sheath, materialPVCMaterial, inner sheathPVCMaterial conductor insulationPEConductor materialTin-plated Cu litz wiresInsulation resistance ≥ 0.5 G Ω^* kmConductor resistance $\leq 120 \ \Omega/km$ Wave impedance100 $\Omega \pm 15 \ \Omega$ (at 100 MHz)Signal runtime5.3 ns/mCoupling resistance $\leq 20.00 \ mO/m$ (at 10 Hz)Test voltage Core/Core2000 V (50 Hz, 1 min.)Test voltage Core/Shield2000 V (50 Hz, 1 min.)Flame resistanceAccording to UL 1685 (CSA FT 4)Resistance to oilResistant to oil to a limited extentOther resistanceUV resistant According to UL 1581, Section 1200Ambient temperature (installation)40 °C 70 °C (cable, fixed installation)Ambient temperature (installation)20 °C 60 °C	Minimum bending radius, fixed installation	3 x D
Outer sheath, material PVC Material, inner sheath PVC Material conductor insulation PE Conductor material Tin-plated Cu litz wires Insulation resistance ≥ 0.5 GΩ*km Conductor resistance ≤ 120 Ω/km Wave impedance 100 Ω ± 15 Ω (at 100 MHz) Signal runtime 5.3 ns/m Coupling resistance ≤ 20.00 mΩ/m (at 10 Hz) Test voltage Core/Core 2000 V (50 Hz, 1 min.) Test voltage Core/Shield 2000 V (50 Hz, 1 min.) Flame resistance According to UL 1685 (CSA FT 4) Resistance to oil Resistant to oil to a limited extent Other resistance UV resistant According to UL 1581, Section 1200 Ambient temperature (operation) 40 °C 70 °C (cable, fixed installation) 40 °C 70 °C (cable, fixed installation) 40 °C 70 °C (cable, fixed installation)	Minimum bending radius, flexible installation	7 x D
Material, inner sheath PVC Material, inner sheath PVC Material conductor insulation PE Conductor material Tin-plated Cu litz wires Insulation resistance ≥ 0.5 GΩ*km Conductor resistance ≤ 120 Ω/km Wave impedance 100 Ω ±15 Ω (at 100 MHz) Signal runtime 5.3 ns/m Coupling resistance ≤ 20.00 mΩ/m (at 10 Hz) Test voltage Core/Core 2000 V (50 Hz, 1 min.) Test voltage Core/Shield 2000 V (50 Hz, 1 min.) Flame resistance According to UL 1685 (CSA FT 4) Resistance to oil Resistant to oil to a limited extent Other resistance UV resistant According to UL 1581, Section 1200 Ambient temperature (operation) 40 °C 70 °C (cable, fixed installation) 40 °C 70 °C (cable, flexible installation) 20 °C 60 °C	Cable weight	68 kg/km
Material conductor insulation PE Conductor material Tin-plated Cu litz wires Insulation resistance ≥ 0.5 GΩ*km Conductor resistance ≤ 120 Ω/km Wave impedance 100 Ω ±15 Ω (at 100 MHz) Signal runtime 5.3 ns/m Coupling resistance ≤ 20.00 mΩ/m (at 10 Hz) Test voltage Core/Core 2000 V (50 Hz, 1 min.) Test voltage Core/Shield 2000 V (50 Hz, 1 min.) Flame resistance According to UL 1685 (CSA FT 4) Resistance to oil Resistant to oil to a limited extent Other resistance UV resistant According to UL 1581, Section 1200 Ambient temperature (operation) 40 °C 70 °C (cable, fixed installation) 40 °C 70 °C (cable, flexible installation) 20 °C 60 °C	Outer sheath, material	PVC
Conductor materialTin-plated Cu litz wiresConductor material $\geq 0.5 \ G\Omega^* km$ Conductor resistance $\leq 120 \ \Omega/km$ Wave impedance $100 \ \Omega \pm 15 \ \Omega$ (at 100 MHz)Signal runtime $5.3 \ ns/m$ Coupling resistance $\leq 20.00 \ n\Omega/m$ (at 10 Hz)Test voltage Core/Core $2000 \ V$ (50 Hz, 1 min.)Test voltage Core/Shield $2000 \ V$ (50 Hz, 1 min.)Flame resistanceAccording to UL 1685 (CSA FT 4)Resistance to oilResistant to oil to a limited extentOther resistanceUV resistant According to UL 1581, Section 1200Ambient temperature (operation) $-40 \ ^{\circ}C \dots 70 \ ^{\circ}C$ (cable, fixed installation)Ambient temperature (installation) $-20 \ ^{\circ}C \dots 60 \ ^{\circ}C$	Material, inner sheath	PVC
Insulation resistance $\geq 0.5 \ G\Omega^* km$ Conductor resistance $\leq 120 \ \Omega/km$ Wave impedance $100 \ \Omega \pm 15 \ \Omega$ (at 100 MHz)Signal runtime $5.3 \ ns/m$ Coupling resistance $\leq 20.00 \ m\Omega/m$ (at 10 Hz)Test voltage Core/Core $2000 \ V (50 \ Hz, 1 \ min.)$ Test voltage Core/Shield $2000 \ V (50 \ Hz, 1 \ min.)$ Flame resistanceAccording to UL 1685 (CSA FT 4)Resistance to oilResistant to oil to a limited extentOther resistanceUV resistant According to UL 1581, Section 1200Ambient temperature (operation) $-40 \ ^{\circ}C \dots 70 \ ^{\circ}C$ (cable, fixed installation)Ambient temperature (installation) $-20 \ ^{\circ}C \dots 60 \ ^{\circ}C$	Material conductor insulation	PE
Conductor resistance ≤ 120 Ω/km Wave impedance 100 Ω ±15 Ω (at 100 MHz) Signal runtime 5.3 ns/m Coupling resistance ≤ 20.00 mΩ/m (at 10 Hz) Test voltage Core/Core 2000 V (50 Hz, 1 min.) Test voltage Core/Shield 2000 V (50 Hz, 1 min.) Flame resistance According to UL 1685 (CSA FT 4) Resistance to oil Resistant to oil to a limited extent Other resistance UV resistant According to UL 1581, Section 1200 Ambient temperature (installation) -40 °C 70 °C (cable, flexible installation) -20 °C 60 °C -20 °C 60 °C	Conductor material	Tin-plated Cu litz wires
Wave impedance100 Ω ±15 Ω (at 100 MHz)Signal runtime5.3 ns/mCoupling resistance≤ 20.00 mΩ/m (at 10 Hz)Test voltage Core/Core2000 V (50 Hz, 1 min.)Test voltage Core/Shield2000 V (50 Hz, 1 min.)Flame resistanceAccording to UL 1685 (CSA FT 4)Resistance to oilResistant to oil to a limited extentOther resistanceUV resistant According to UL 1581, Section 1200Ambient temperature (operation)-40 °C 70 °C (cable, fixed installation)-40 °C 70 °C (cable, flexible installation)-20 °C 60 °C	Insulation resistance	$\geq 0.5 \ G\Omega^* km$
Signal runtime 5.3 ns/m Coupling resistance ≤ 20.00 mΩ/m (at 10 Hz) Test voltage Core/Core 2000 V (50 Hz, 1 min.) Test voltage Core/Shield 2000 V (50 Hz, 1 min.) Flame resistance According to UL 1685 (CSA FT 4) Resistance to oil Resistant to oil to a limited extent Other resistance UV resistant According to UL 1581, Section 1200 Ambient temperature (operation) -40 °C 70 °C (cable, fixed installation) -20 °C 60 °C -20 °C 60 °C	Conductor resistance	\leq 120 Ω/km
Coupling resistance ≤ 20.00 mΩ/m (at 10 Hz) Test voltage Core/Core 2000 V (50 Hz, 1 min.) Test voltage Core/Shield 2000 V (50 Hz, 1 min.) Flame resistance According to UL 1685 (CSA FT 4) Resistance to oil Resistant to oil to a limited extent Other resistance UV resistant According to UL 1581, Section 1200 Ambient temperature (operation) -40 °C 70 °C (cable, fixed installation) -40 °C 70 °C (cable, flexible installation) -20 °C 60 °C	Wave impedance	100 Ω ±15 Ω (at 100 MHz)
Test voltage Core/Core2000 V (50 Hz, 1 min.)Test voltage Core/Shield2000 V (50 Hz, 1 min.)Test voltage Core/Shield2000 V (50 Hz, 1 min.)Flame resistanceAccording to UL 1685 (CSA FT 4)Resistance to oilResistant to oil to a limited extentOther resistanceUV resistant According to UL 1581, Section 1200Ambient temperature (operation)-40 °C 70 °C (cable, fixed installation)-40 °C 70 °C (cable, flexible installation)-40 °C 60 °C	Signal runtime	5.3 ns/m
Test voltage Core/Shield2000 V (50 Hz, 1 min.)Flame resistanceAccording to UL 1685 (CSA FT 4)Resistance to oilResistant to oil to a limited extentOther resistanceUV resistant According to UL 1581, Section 1200Ambient temperature (operation)-40 °C 70 °C (cable, fixed installation)-40 °C 70 °C (cable, flexible installation)	Coupling resistance	\leq 20.00 m Ω /m (at 10 Hz)
Flame resistance According to UL 1685 (CSA FT 4) Resistance to oil Resistant to oil to a limited extent Other resistance UV resistant According to UL 1581, Section 1200 Ambient temperature (operation) -40 °C 70 °C (cable, fixed installation) -40 °C 70 °C (cable, flexible installation) -40 °C 60 °C	Test voltage Core/Core	2000 V (50 Hz, 1 min.)
Resistance to oil Resistant to oil to a limited extent Other resistance UV resistant According to UL 1581, Section 1200 Ambient temperature (operation) -40 °C 70 °C (cable, fixed installation) -40 °C 70 °C (cable, fixed installation) -40 °C 70 °C (cable, fixed installation) Ambient temperature (installation) -20 °C 60 °C	Test voltage Core/Shield	2000 V (50 Hz, 1 min.)
Other resistance UV resistant According to UL 1581, Section 1200 Ambient temperature (operation) -40 °C 70 °C (cable, fixed installation) -40 °C 70 °C (cable, fixed installation) -40 °C 70 °C (cable, fixed installation) Ambient temperature (installation) -20 °C 60 °C	Flame resistance	According to UL 1685 (CSA FT 4)
Ambient temperature (operation) -40 °C 70 °C (cable, fixed installation) -20 °C 60 °C	Resistance to oil	Resistant to oil to a limited extent
-40 °C 70 °C (cable, flexible installation) Ambient temperature (installation) -20 °C 60 °C	Other resistance	UV resistant According to UL 1581, Section 1200
Ambient temperature (installation) -20 °C 60 °C	Ambient temperature (operation)	-40 °C 70 °C (cable, fixed installation)
		-40 °C 70 °C (cable, flexible installation)
Ambient temperature (storage/transport) -50 °C 70 °C	Ambient temperature (installation)	-20 °C 60 °C
	Ambient temperature (storage/transport)	-50 °C 70 °C

Drawings



Schematic diagram

Pin assignment M12 male connector, 4-pos., D-coded, male side

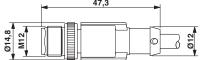
Cable cross section

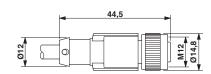


Sercos III [93K]

Contact assignment of the M12 connector and the M12 socket

Dimensional drawing





Dimensional drawing

Plug, M12 x 1, straight, shielded

M12 x 1 socket, straight, shielded

Classifications

eCl@ss

eCl@ss 4.1	27060306
eCl@ss 5.1	27060307
eCl@ss 6.0	27060390
eCl@ss 8.0	27279218
eCl@ss 9.0	27060311

ETIM

ETIM 4.0	EC002599
ETIM 5.0	EC001855

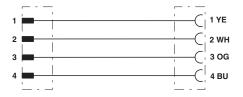
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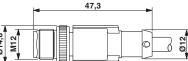
Schematic diagram



Pin assignment M12 socket, 4-pos., D-coded, female side

Circuit diagram







Accessories

Accessories

Protective cap

Sealing cap - PROT-M12 FS-PA-CHAIN - 1430873

M12 sealing cap made of plastic with fixing band, for sensor cables, for free M12 sockets



Screw plug - PROT-M12 MS-PA-CHAIN - 1430899

M12 sealing cap with fixing band, for sensor cables, for free M12 sockets

Safety locking

Locking clip - SAC-M12-EXCLIP-M - 1558988



Locking clip for the pin side of sensor/actuator cables with M12 connector and M12 connectors for assembly, for knurl diameter: 15 mm or for Allen key with a wrench size of 14 mm, prevents the disconnection of plug-in connections without tools

Locking clip - SAC-M12-EXCLIP-F - 1558991



Locking clip for the socket side of sensor/actuator cables with M12 connector and M12 connectors for assembly, for knurl diameter: 15 mm or for Allen key with a wrench size of 14 mm, prevents the disconnection of plug-in connections without tools

Screwdriver tools



Accessories

Adapter insert - TSD-M SAC-BIT ADAPTER - 1212600

Adapter bit for TSD-M...torque tools, E6.3-1/4" drive with 4 mm hexagon to accommodate SAC bits

Tool - SAC BIT M12-D15 - 1208432



Nut for assembling sensor/actuator cables with M12 connector and M12 connectors for assembly, with a knurl diameter of 15 mm, for 4 mm hexagonal drive

Torque tool

Torque screwdriver - TSD 04 SAC - 1208429



Torque screwdriver, with preset torque of 0.4 Nm and 4 mm hexagonal drive for M12 connectors

Torque screwdriver - TSD-M 1,2NM - 1212224



Torque screw driver, accuracy as per EN ISO 6789 standard, adjustable from 0.3 - 1.2 Nm

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