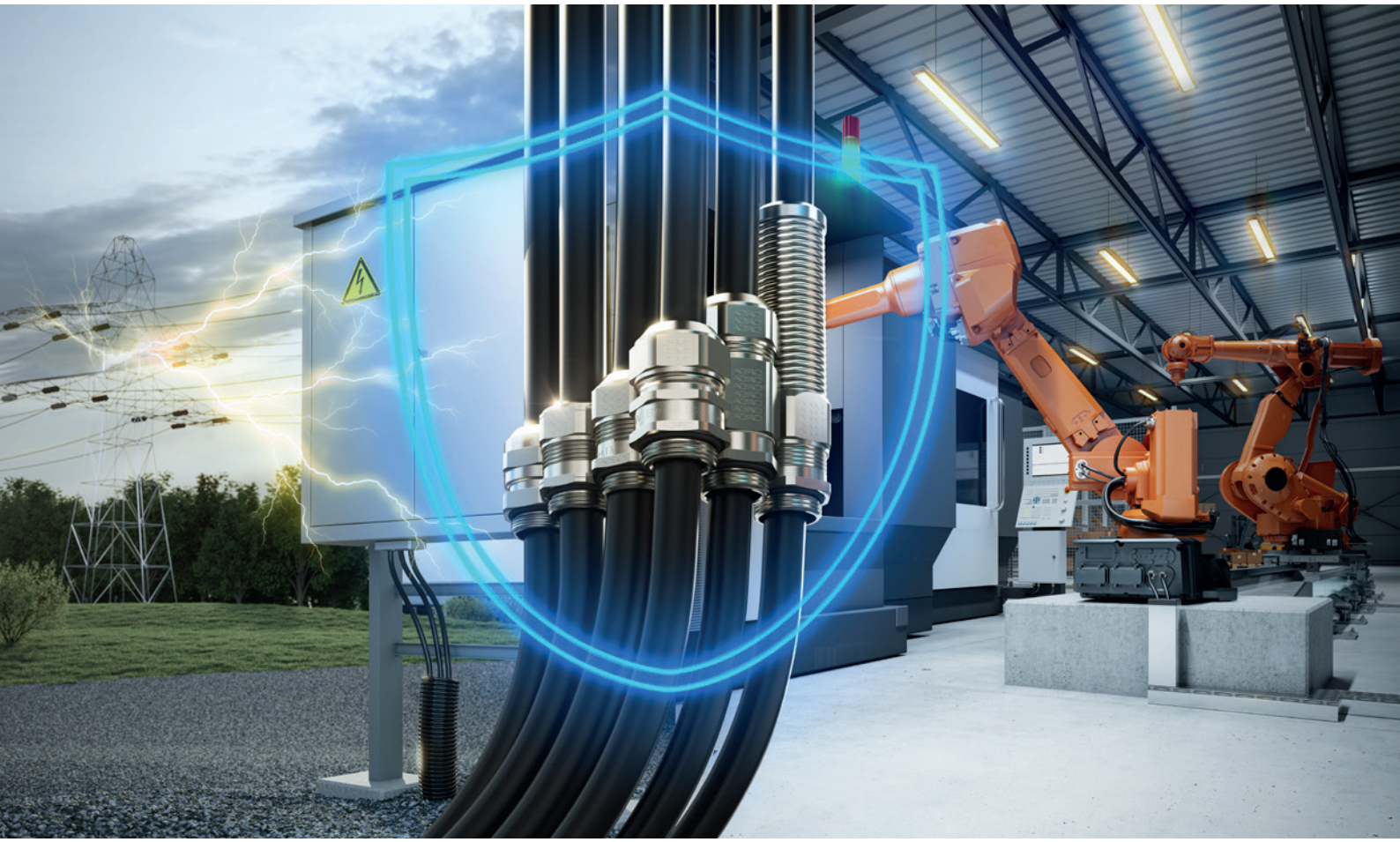
ECO
Electrical Contact Overlays

One platform. Three markets. One flexible EMC solution.



AGRO
Member of KAISER GROUP



EMC begins at the cable entry point.
Reliable shield contact. Quickly installed.

Electric motors, frequency converters and networked systems increase the demands relating to electromagnetic compatibility. A continuous, low-impedance connection between the cable shield and the housing is crucial. A poor contact can result in interference, malfunctions and costly rework.

With ECO, AGRO offers a modular platform for 360° shield contact. HL1, HL3 and HV cover the requirements of industry, railway and e-mobility. Common components reduce the number of versions and simplify procurement and stock-holding.

- Dynamic 360° shield contact
- Quick installation without special tools
- Integrated anti-rotation protection
- Feed-through of pre-assembled cables
- Three versions on one platform

Which version is right for your application?
The following pages show the differences.

Electrical Contact Overlays

Electrical Contact Overlays, or ECO for short, is the modular AGRO system for achieving reliable 360° shield contact.

With HL1, HL3 and HV, the right solution is available for industrial, railway and e-mobility applications. Shared components simplify selection, reduce the number of alternative designs and help to optimise procurement, stock-holding and installation.



One platform for three application areas
ECO combines different shield contacts and sealing types within a modular system. HL1, HL3 and HV are specifically tailored to the requirements of industry, railway and e-mobility.

Allowing feedthrough of pre-assembled cables
The large internal opening in the compression nut and lower part of all three ECO types allows for the feedthrough of pre-assembled cable lugs and connectors. This reduces the number of installation steps on site and protects existing cable assemblies.





Industry / Mechanical engineering

Industrial plants and modern manufacturing systems are heavily reliant on power electronics, frequency converters and sensitive control systems. EMC cable glands ensure reliable shield contact and prevent electromagnetic interference between machine components and control technology.

Energy generation / Energy technology

High electrical power levels and strong electromagnetic fields occur in power plants, wind turbines and photovoltaic systems. EMC cable glands ensure the safe dissipation of interference currents and protect measurement, control and protection systems against malfunctions.





Railway technology / Transport infrastructure

Railway systems and signalling equipment operate with complex electronics in safety-critical applications. EMC cable glands provide continuous shielding and help prevent interference in communication, control and signalling systems.

Automotive industry

Modern vehicles, especially electric and hybrid vehicles, have numerous electronic control units and high-voltage systems. EMC cable glands protect the vehicle's electronics from electromagnetic interference and help ensure the proper functioning of sensitive systems such as ADAS and battery management features.



Telecommunications / Network technology

Interference-free data transmission is crucial in data centres, mobile telecommunications and network infrastructures. EMC cable glands ensure consistent shielding of data and supply lines, minimising electromagnetic interference.



Aerospace

In aerospace and military applications, a high degree of reliability is demanded with respect to electromagnetic compatibility. EMC cable glands ensure the protection of highly sensitive avionics and communication systems, even under extreme environmental conditions.



Medical technology

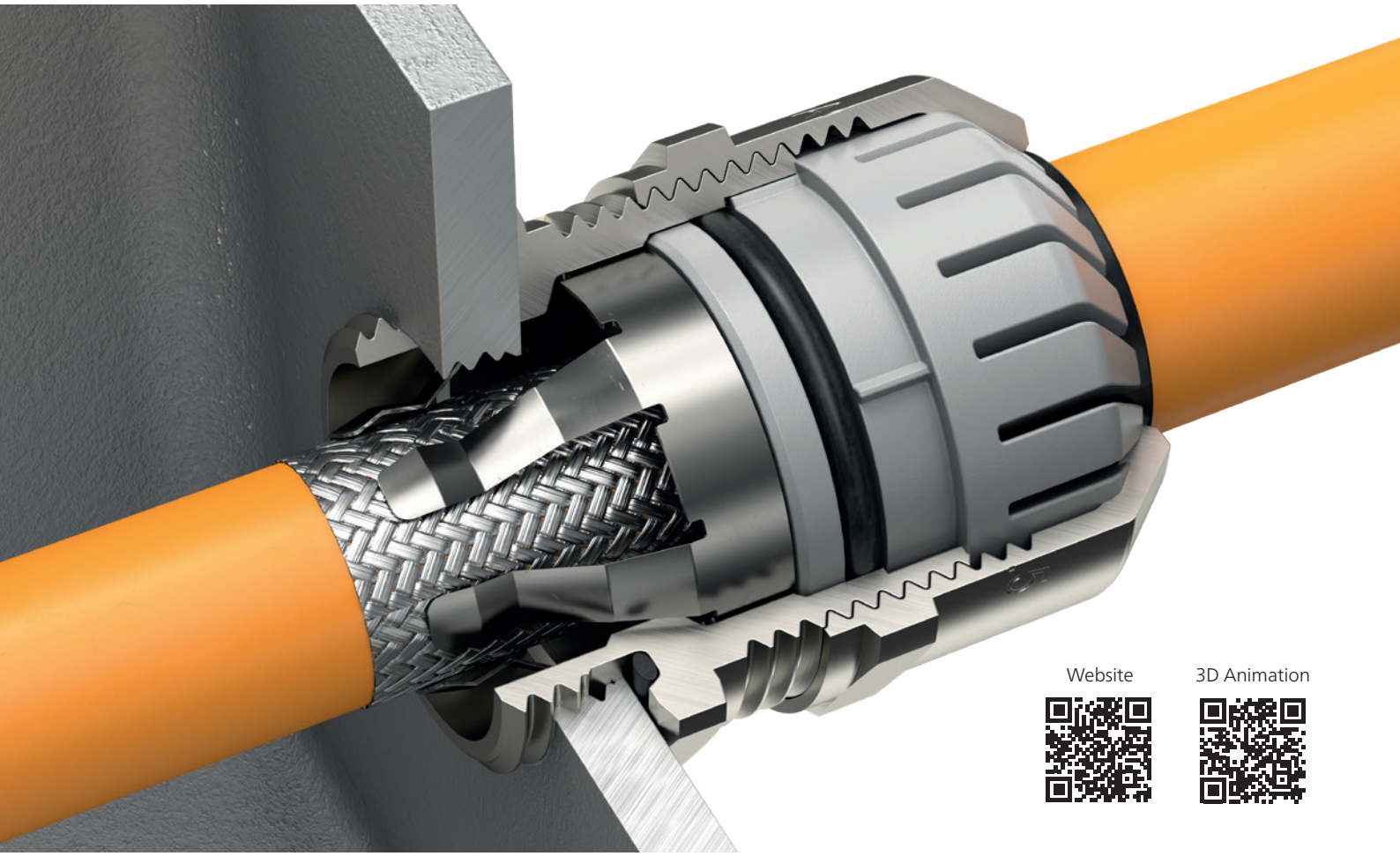
Medical devices such as MRI, CT and laboratory systems rely on precise electronic signals. EMC cable glands prevent electromagnetic interference and thus contribute to the reliable and accurate operation of diagnostic and therapeutic systems.



Building automation / Infrastructure technology

Modern building and security systems make use of numerous electronic components for applications such as fire-alarm, entry and control networks. EMC cable glands ensure interference-free signal transmission and increase the operational reliability of complex building systems.

Errors excepted. Subject to modifications.



Quickly installed. Securely connected.

ECO HL1: the solution for industrial applications

ECO HL1 was developed for industrial applications where ease of handling and short installation times are crucial. The segmental-ring seal with dust protection membrane ensures reliable sealing and strain relief.The dynamic contact spring establishes a uniform 360° contact with the cable shield. And its compact design is particularly suitable for control cabinets, machines, sensors and lighting.

Quick installation for improved efficiency
The user-friendly design reduces the number of required steps and facilitates reliable installation. No special tools are needed. This saves time in series assembly and reduces the effort required for installation and maintenance.

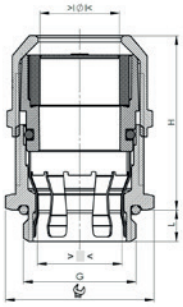
- Segmental ring technology for flexible shield contact
- Tool-free assembly
- Compact design for confined spaces
- High IP protection rating
- Ideal for series production and standard applications

Dynamic 360° shield contact
The dynamic contact spring ensures a continuous and enduringly secure connection to the cable shield. This reliably dissipates electromagnetic interference.

Compact and versatile
The compact design is also helpful where installation space is limited. Different clamping ranges facilitate flexible product selection for numerous industrial applications.

Short metric connection thread

Material:	Nickel-plated brass
Seal:	TPE
O-Ring:	NBR
Segmental sealing element:	Polyamid PA6
Contact spring:	Stainless spring steel 1.4310
Strain relief:	Type A according to EN 62444
Protection class	IP 66 / IP 68 (10 bar / 30 min.) / IP 69 / IP 69K
Operating temperature:	-40 °C to +100 °C



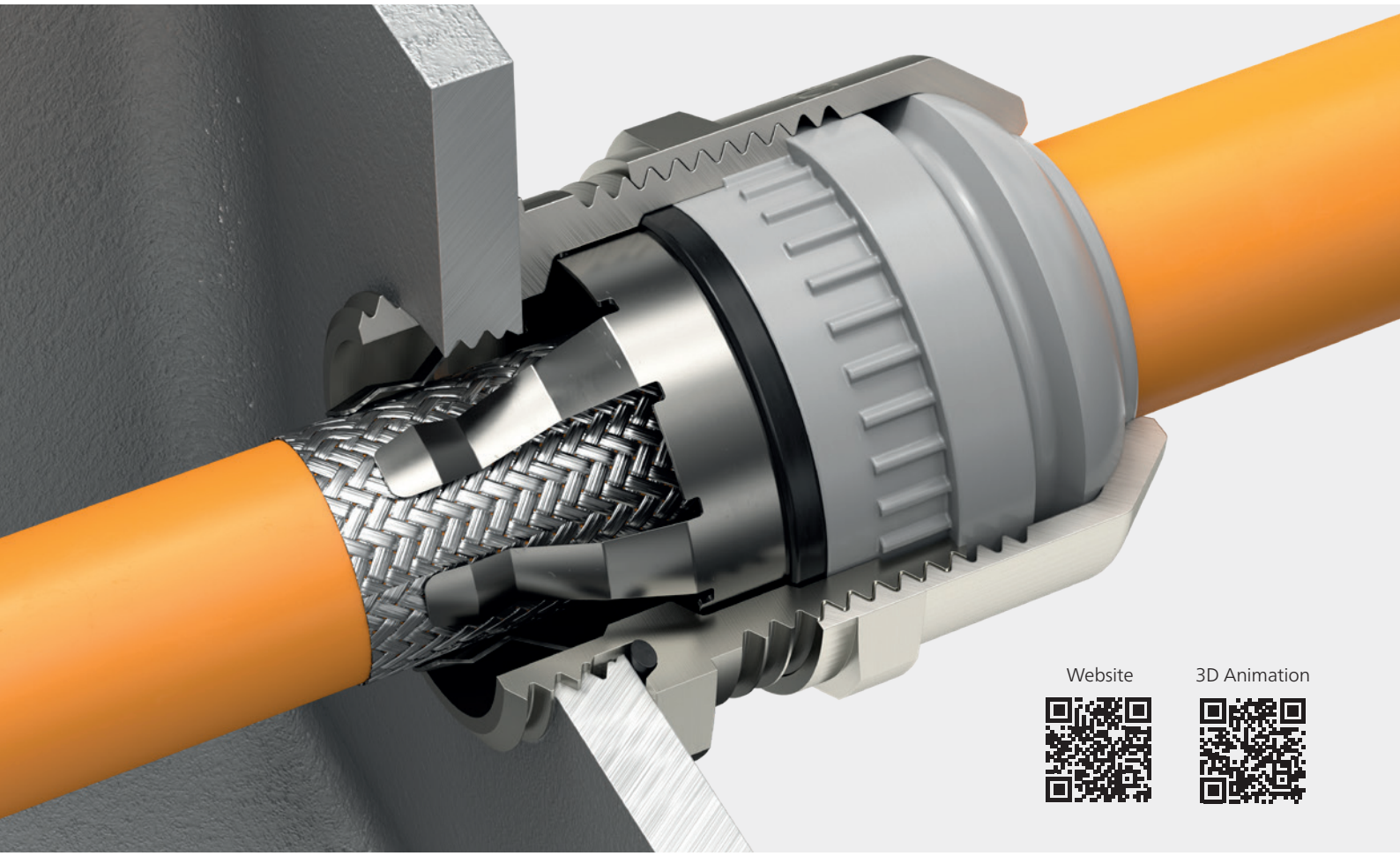
G	>|∅|< min mm	>|∅|< max mm	>|■|< mm	mm	H mm	L mm	Nm	Art.-No.	E-No.	
M16x1.5	7.0	9.5	5.0-9.5	18	32.0	5	4-5	**1087.17.095**	121188008	50
M20x1.5	7.0	13.0	5.0-13.0	24	36.0	6	6	**1087.20.130**	121188018	50
M25x1.5	12.0	17.5	8.0-17.5	30	39.0	7	9-10	**1087.25.175**	121188028	25
M32x1.5	13.5	21.0	12.0-21.0	36	42.0	8	15-20	**1087.32.210**	121188038	25
M40x1.5	20.5	28.5	19.0-28.5	46	51.0	8	20-30	**1087.40.285**	121188048	10



Long metric connection thread

G	>|∅|< min mm	>|∅|< max mm	>|■|< mm	mm	H mm	L mm	Nm	Art.-No.	E-No.	
M16x1.5	7.0	9.5	5.0-9.5	18	32.0	10	4-5	**1187.17.095**	121188058	50
M20x1.5	7.0	13.0	5.0-13.0	24	36.0	10	6	**1187.20.130**	121188068	50
M25x1.5	12.0	17.5	8.0-17.5	30	39.0	11	9-10	**1187.25.175**	121188078	25
M32x1.5	13.5	21.0	12.0-21.0	36	42.0	13	15-20	**1187.32.210**	121188088	25
M40x1.5	20.5	28.5	19.0-28.5	46	51.0	13	20-30	**1187.40.285**	121188098	10

Installation instructions



Safe against vibrations. Reliable in operation.

ECO HL3: the solution for railway applications

ECO HL3 combines a robust compression seal with a dynamic 360° shield contact. Its design is optimised for applications that are subject to vibrations, sudden loading and changing environmental conditions. This makes ECO HL3 particularly suitable for demanding applications in the railway sector.

Safe and reliable under demanding conditions
The compression technology ensures a uniform seal and reliable strain relief. The cable remains securely positioned even under mechanical stress.

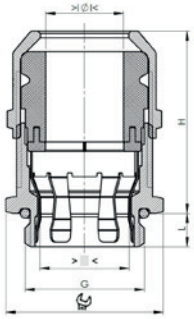
- Compression technology for reliable contact
- Resistant to vibrations, jolts and corrosion
- Tested according to EN 45545-2/-3 and NFPA 130
- Ideal for rail vehicles, robotics and medical technology

Designed to withstand vibrations and jolts
The robust design helps ensure a lasting reliable connection under dynamic conditions. This reduces the risk of contact interruptions and the need for unplanned rectification of faults.

Easy and reliable installation
The clever design helps ensure safe and reliable assembly, reducing errors during cable installation, maintenance and repair work.

Short metric connection thread

Material:	Nickel-plated brass
Seal:	TPE with railway certification
Supporting ring:	Polyamid PA6
O-Ring:	NBR
Contact spring:	Stainless spring steel 1.4310
Strain relief:	Type A according to EN 62444
Protection class:	IP 66 / IP 68 (10 bar / 30 min.) / IP 69 / IP 69K
Operating temperature:	-50 °C to +105 °C



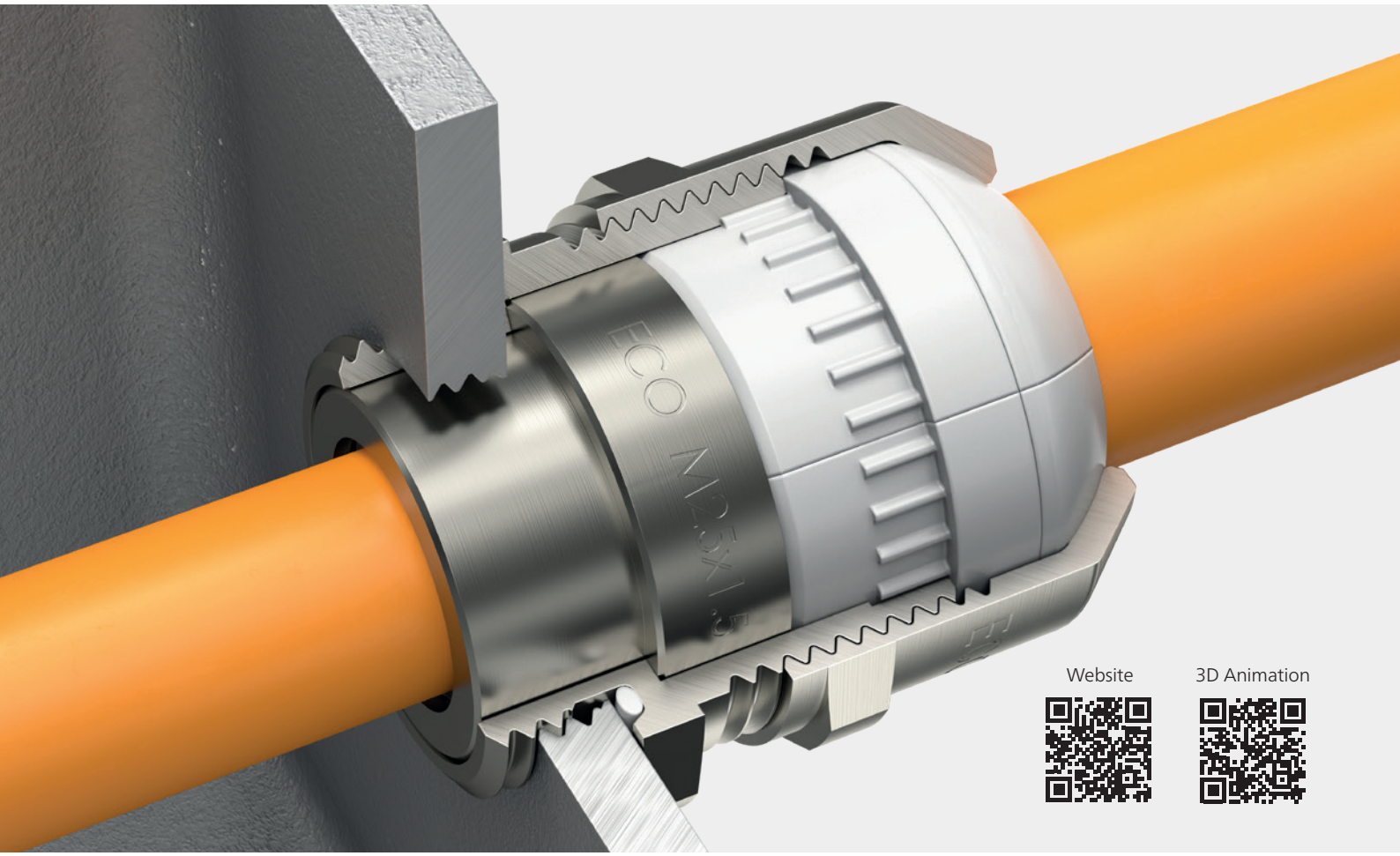
G	>|∅|< min mm	>|∅|< max mm	>|■|< mm	mm	H mm	L mm	Nm	Art.-No.	E-No.	
M16x1.5	6.0	8.0	5.0-8.0	18	31.5	5	3-5	**F1088.17.080**	121188158	50
M20x1.5	7.0	9.0	5.0-9.0	24	36.0	6	6-10	**F1088.20.090**	121188168	50
M20x1.5	8.0	11.0	5.0-11.0	24	36.0	6	7-10	**F1088.20.110**	121188178	50
M25x1.5	10.0	13.0	8.0-13.0	30	38.5	7	8-10	**F1088.25.130**	121188188	25
M25x1.5	12.0	16.0	8.0-16.0	30	38.5	7	8-10	**F1088.25.160**	121188198	25
M32x1.5	13.5	18.0	12.0-18.0	36	41.5	8	10-15	**F1088.32.180**	121188208	25
M32x1.5	16.0	21.0	12.0-21.0	36	41.5	8	10-15	**F1088.32.210**	121188218	25
M40x1.5	20.5	25.5	19.0-25.5	46	51.0	8	20	**F1088.40.255**	121188248	10
M40x1.5	23.0	28.5	19.0-28.5	46	51.0	8	20	**F1088.40.285**	121188258	10



Long metric connection thread

G	>|∅|< min mm	>|∅|< max mm	>|■|< mm	mm	H mm	L mm	Nm	Art.-No.	E-No.	
M16x1.5	6.0	8.0	5.0-8.0	18	31.5	10	3-5	**F1188.17.080**	121188268	50
M20x1.5	7.0	9.0	5.0-9.0	24	36.0	10	6-10	**F1188.20.090**	121188278	50
M20x1.5	8.0	11.0	5.0-11.0	24	36.0	10	7-10	**F1188.20.110**	121188288	50
M25x1.5	10.0	13.0	8.0-13.0	30	38.5	11	8-10	**F1188.25.130**	121188298	25
M25x1.5	12.0	16.0	8.0-16.0	30	38.5	11	8-10	**F1188.25.160**	121188308	25
M32x1.5	13.5	18.0	12.0-18.0	36	41.5	13	10-15	**F1188.32.180**	121188338	25
M32x1.5	16.0	21.0	12.0-21.0	36	41.5	13	10-15	**F1188.32.210**	121188348	25
M40x1.5	20.5	25.5	19.0-25.5	46	51.0	13	20	**F1188.40.255**	121188358	10
M40x1.5	23.0	28.5	19.0-28.5	46	51.0	13	20	**F1188.40.285**	121188368	10

Installation instructions



With large contact area. Designed for demanding applications.

ECO HV: the solution for e-mobility & offshore applications

ECO HV was developed for electrically and thermally demanding applications. The supporting ring and contact sleeve facilitate a generous 360° contact with the exposed cable shield. The robust design and temperature-resistant silicone seals are particularly suitable for dynamic applications in e-mobility, generators and offshore systems.

Generous shield contact area
The exposed cable shield is guided over the supporting ring and then enclosed by the contact sleeve. This creates a stable and continuous electrical connection.

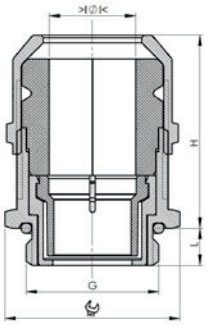
- Suitable for high currents of 120A
- Can be plugged and pre-assembled
- Resistant to vibrations, jolts and corrosion
- Shield contact via split sleeve
- IP 68 / IP 69K – ideal for electric vehicles, generators and offshore systems

Robust under dynamic loading
The contact and clamping sleeve ensures secure positioning of the cable shield. The design is intended for applications involving vibrations, sudden loads and mechanical stress.

For demanding temperature conditions
The silicone seal and silicone O-ring facilitate an operating temperature range of -50 °C to +140 °C. This makes the ECO HV suitable for demanding applications in the fields of e-mobility, generators and offshore systems.

Short connection thread, metric

Material:	Nickel-plated brass
Seal:	Silicone HCR
O-Ring:	Silicone HCR
Contact insert:	Nickel-plated brass
Support sleeve	PA GF18
Strain relief:	Type A according to EN 62444
Protection class:	IP 66 / IP 68 (10 bar / 30min.) / IP 69 / IP 6K9K
Operating temperature:	-50 °C to +140 °C
Vibration test:	EN 60068-2-6 / -2-64 / -2-14
Shock test according to:	EN 60068-2-27



G	>|∅|< min mm	>|∅|< max mm	>|■|< mm	mm	H mm	L mm	Nm	Art.-No.	E-No.	
M20x1.5	7.0	9.0	5.0-8.0	24	32.0	6	5-7	**1090.20.090**	121188538	50
M20x1.5	8.0	11.0	7.0-9.5	24	32.0	6	4-6	**1090.20.110**	121188548	50
M25x1.5	10.0	13.0	8.0-12.0	30	36.5	7	5-7	**1090.25.130**	121188558	25
M25x1.5	12.0	16.0	11.0-14.5	30	36.5	7	5-7	**1090.25.160**	121188568	25
M32x1.5	14.0	18.0	11.0-16.0	36	39.0	8	8-10	**1090.32.180**	121188578	25
M32x1.5	16.0	21.0	14.0-19.0	36	39.0	8	15	**1090.32.210**	121188588	25
M40x1.5	20.5	25.5	17.5-23.0	46	47.0	8	20	**1090.40.255**	121188598	10
M40x1.5	23.0	28.5	20.5-25.5	46	47.0	8	20	**1090.40.285**	121188608	10



Long connection thread, metric

G	>|∅|< min mm	>|∅|< max mm	>|■|< mm	mm	H mm	L mm	Nm	Art.-No.	E-No.	
M20x1.5	7.0	9.0	5.0-8.0	24	32.0	10	5-7	**1190.20.090**	121188638	50
M20x1.5	8.0	11.0	7.0-9.5	24	32.0	10	4-6	**1190.20.110**	121188648	50
M25x1.5	10.0	13.0	8.0-12.0	30	36.5	11	5-7	**1190.25.130**	121188658	25
M25x1.5	12.0	16.0	11.0-14.5	30	36.5	11	5-7	**1190.25.160**	121188668	25
M32x1.5	14.0	18.0	11.0-16.0	36	39.0	13	8-10	**1190.32.180**	121188678	25
M32x1.5	16.0	21.0	14.0-19.0	36	39.0	13	15	**1190.32.210**	121188688	25
M40x1.5	20.5	25.5	17.5-23.0	46	47.0	13	20	**1190.40.255**	121188698	10
M40x1.5	23.0	28.5	20.5-25.5	46	47.0	13	20	**1190.40.285**	121188708	10

Installation instructions

Systems and solutions
for professional cable entries.



Cable glands / Industry products

Cable glands of plastic, brass or stainless steel – of the highest quality and optimised for installation and use. The comprehensive range for trade and industry also includes products that are designed to meet special demands (EMC, Ex).



Multi-cable entries.

AGRO MCE Pro and MCE Syntec®. Innovative cable-entry solutions.



Cable protection conduits.

Products for applications in mechanical engineering, plant engineering, vehicle and rolling stock manufacturing, automation and energy technology.



Accessories.

A comprehensive range of accessories such as locknuts, edge protectors, reducers and increasers, sealing screws, and pressure balance and drainage elements complete the product line.

Technical information and advice

For further information about our products, system solutions and communication media, please visit our website: **www.agro.ch.**

Our team of technical advisors will be happy to answer any questions you may have or provide further information, and looks forward to speaking with you: **+41 (0) 62 889 47 47** · **info@agro.ch**

AGRO AG
CH-5502 Hunzenschwil, Switzerland
Tel. +41 (0) 62 889 47 47
www.agro.ch · info@agro.ch
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