

The background features a dark blue and black abstract graphic on the left with glowing blue lines and a bright light source. On the right, the Molex logo is displayed in red, with the tagline 'one company > a world of innovation' in black below it. A light blue world map is visible in the background behind the text.

molex[®]

one company > a world of innovation

Brad[®] mPm[®] DIN Valve Connector External Thread, Field Attachable

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Integrated Products Division, Industrial Business Unit***



External Thread, Field Attachable mPm[®] DIN Valve Connectors

Development Background



New generation external-thread DIN Valve Connectors with unsurpassed IP67 sealing properties and superior cable retention increase performance and reliability, simplify the manufacturing process and reduce overall applied costs for hydraulic, pneumatic and electromagnetic devices

- **DIN valve connectors conform to Industry Standard EN 175301-803 (formerly DIN 43659)**
- **This is the standard for a series of electrical connectors which are commonly used with solenoid valves, especially those used on valves in hydraulics and pneumatics**

Product Offering



■ Series/ sizes

- **121201** DIN Form A
- **121207** DIN Form A + Circuit
- **121202** DIN Form Industrial
- **121208** DIN Form Industrial + Circuit
- **121203** DIN Form B
- **121204** DIN Form C
- **121205** DIN Form Micro

■ Options

- Black, Gray or Transparent
- **AVAILABLE ALSO WITH ELECTRONICS !**

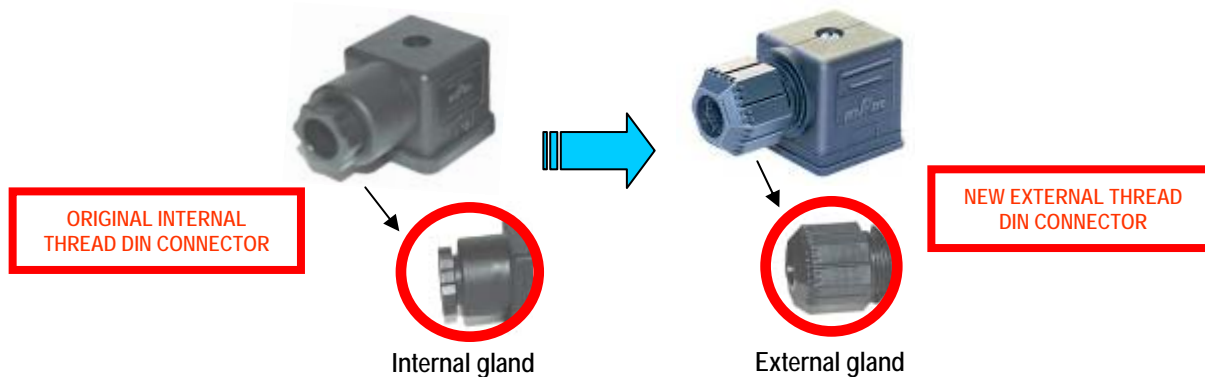


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Development Background



- Molex's innovative external-nut design reduces the number of individual components within the DIN valve connector to simplify assembly and mounting processes
- Since the housing of the new design does not protrude past the toe of the nut, the external width of the connector has not increased and thus has no impact on the customer's application



Development Background



- Traditional DIN connectors are supplied to the customer pre-assembled, requiring disassembly before terminating the cable is possible. The new generation of DIN connectors from Molex are supplied in single sets, or as bulk components, further reducing labour time and costs



Single bag, dismantled packaging

Development Background



- Standard circuitry options available include light-emitting diode (LED) and bi-polar LED indicators, blocking diodes to protect against overvoltage or peaks when switching off and voltage-dependent resistors (VDR) to protect supply and switch



DIN connector shown
with circuit

Markets and Applications



■ Industrial

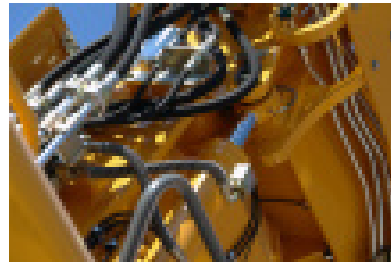
- Pneumatic valves
- Hydraulic valves
- Solenoid valves
- Pressure switches
- Transducers
- Cylinders

■ Factory automation

- Robotics
- Complex machine builders
- Food and beverage

■ Non-automotive transportation

- Garbage trucks
- On-vehicle crane and lifting equipment
- Used across all markets where signal and power connections are required to perform in a rugged environment



Hydraulics in construction equipment and garbage trucks

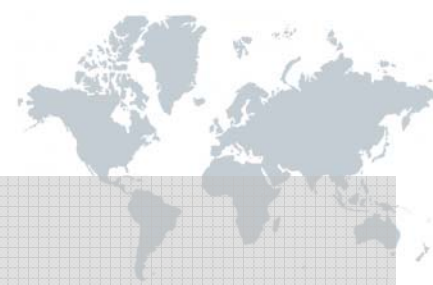


Robotics



Pressure valves

Features and Benefits



Features

- Ergonomic external-nut design
- Waterproof rating of IP67
- Accommodates PG9, PG11 cable and up to 9.00mm (.354”) outer cable diameter
- Integrated ‘self-retaining’ front gasket within the housing on Form A, Form B and Form Industrial

Benefits

- Provides greater and consistent torque for more uniform seal between connector and cable
- Cable retention force is increased by up to 115% over internal-nut designs for increased reliability
- Improved from IP65 for a greater range of application opportunities
- Customer inventory is reduced, contributing to cost savings
- Eliminates errors; installer cannot use the wrong size
- Ensures IP67 sealing properties are achieved
- Gasket cannot be misplaced during assembly

Features and Benefits



Features

- Internal volume of Form C housing increased by 30% with no change to external dimensions of connector
- Supplied in a 'ready-to-use' disassembled condition
- Plus / minus screw head on terminal

Benefits

- Improves handling, wire routing and speed of assembly over internal-nut version
- No impact on space required in a customer's application
- Saves the customer an estimated 20 seconds disassembly time per part
- Enables the use of air tools in a volume production environment
- A flat or Phillips-head screwdriver can be used by the installer in a field application

Competitive Information



Key Selling Benefits – Molex vs. Competing Product

- External thread DIN connectors are only available from Molex
- New generation external nut DIN valve connector from Molex provides greater cable retention of up to 115% and improved ergonomics versus the original internal nut design offered by competitors
- Improved sealing performance to IP67 for new external-thread design, compared with IP65 for the internal nut



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Competitive Information



Key Selling Benefits

- The external nut is significantly more flexible in its application than the internal nut
- The external nut allows the entire range of PG07, PG09 and PG 11 styles to be combined into 1 single part
- This enables the Customer to have more efficient inventory levels and improves lead times

CURRENT INTERNAL NUT				NEW EXTERNAL NUT	
CHARACTERISTICS		P/N		P/N	CHARACTERISTICS
PG9	profile gasket	IP65	C18209N21	1212010001	PG9+PG11 CAPTIVE GASKET IP67
PG9	flat gasket	IP65	C18209N22		
PG11	profile gasket	IP65	C18211N21		
PG11	flat gasket	IP65	C18211N22		
PG9	profile gasket	IP67	C18209N21P7		
PG9	flat gasket	IP67	C18209N22P7		
PG11	profile gasket	IP67	C18211N21P7		
PG11	flat gasket	IP67	C18211N22P7		

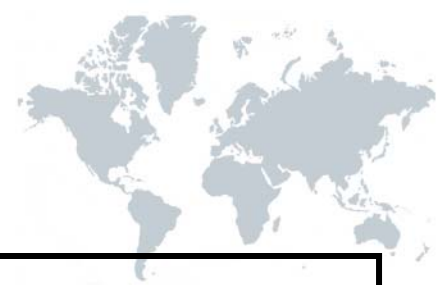
Competitive Information



Key Selling Benefits Cont'd

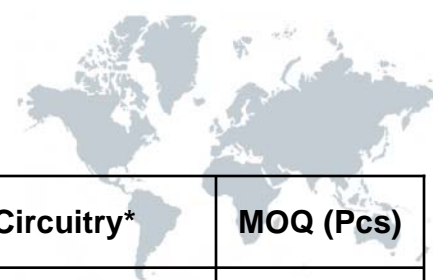
- The risk of possible Quality concerns due to incorrect styles being used with the wrong wire sizes are dramatically reduced
- Faster and more reliable application of the connector in the field will result in very significant applied cost savings
- The External thread nut and grommet supplied pre-assembled can save an estimated 20 seconds per installation; depending on the country of installation this can save between 0.14 & 0.21€ per connector

Specifications



Packaging	Single pack or bulk components
Voltage (max.)	AC Max. 250V DC Max. 300V
Current	16.0A
Operating Temperature – Gasket Material	Nitrile Rubber (NBR): -40°C to +90°C Silicone: -40°C to +125°C
Contact Resistance	≤ 4 m Ohm max.
Insulation Resistance	100 Megaohms min.
Max conductor	1.50mm ² / 16AWG
Protection Class	IP67 EN60529
Durability	50 cycles

Ordering Information



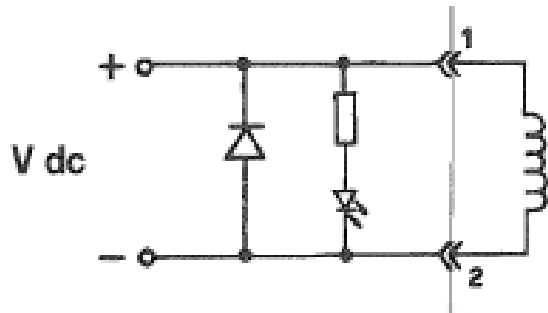
Order No.	Engineering No.	Form	Product Attribute	Packaging	Circuitry*	MOQ (Pcs)
1212010001	C28200N0R	DIN Form A	2-Pole	Single	-	100
1212010003	C28200N0RCN			Bulk		
1212010002	C28300N0R		3-Pole	Single		
1212070001	S28200TC320R	DIN Form A + Circuit	2-Pole	Single	Circuit C3 24V RED LED	
1212070004	S28200TC420R				Circuit C4 24V RED LED	
1212020001	C22200N0R	DIN Form Industrial	2-Pole	Single	-	
1212020002	C22200N0RCN			Bulk		
1212080001	S22200BC432RSN	DIN Form Industrial + Circuit	2-Pole	Bulk, mounted	Circuit C4 48V RED LED	
1212030001	C92200N0R	DIN Form B	2-Pole	Single	-	
1212040001	C25200N0R	DIN Form C	2-Pole	Single	-	300
1212040009	C25200N0RCN			Bulk		
1212040005	C25300N0R		3-Pole	Single		
1212050001	C29200N0R	DIN Form Micro	2-Pole	Single		
1212050009	C29200N0RCN			Bulk		
1212050005	C29300N0R		3-Pole	Single		

*Circuitry - please refer to schematic diagrams on following slide for details

Circuit Schematics

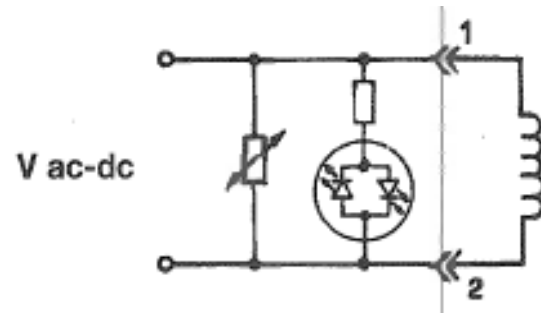


Circuit C3



With LED plus blocking diode to protect against overvoltage when switching off

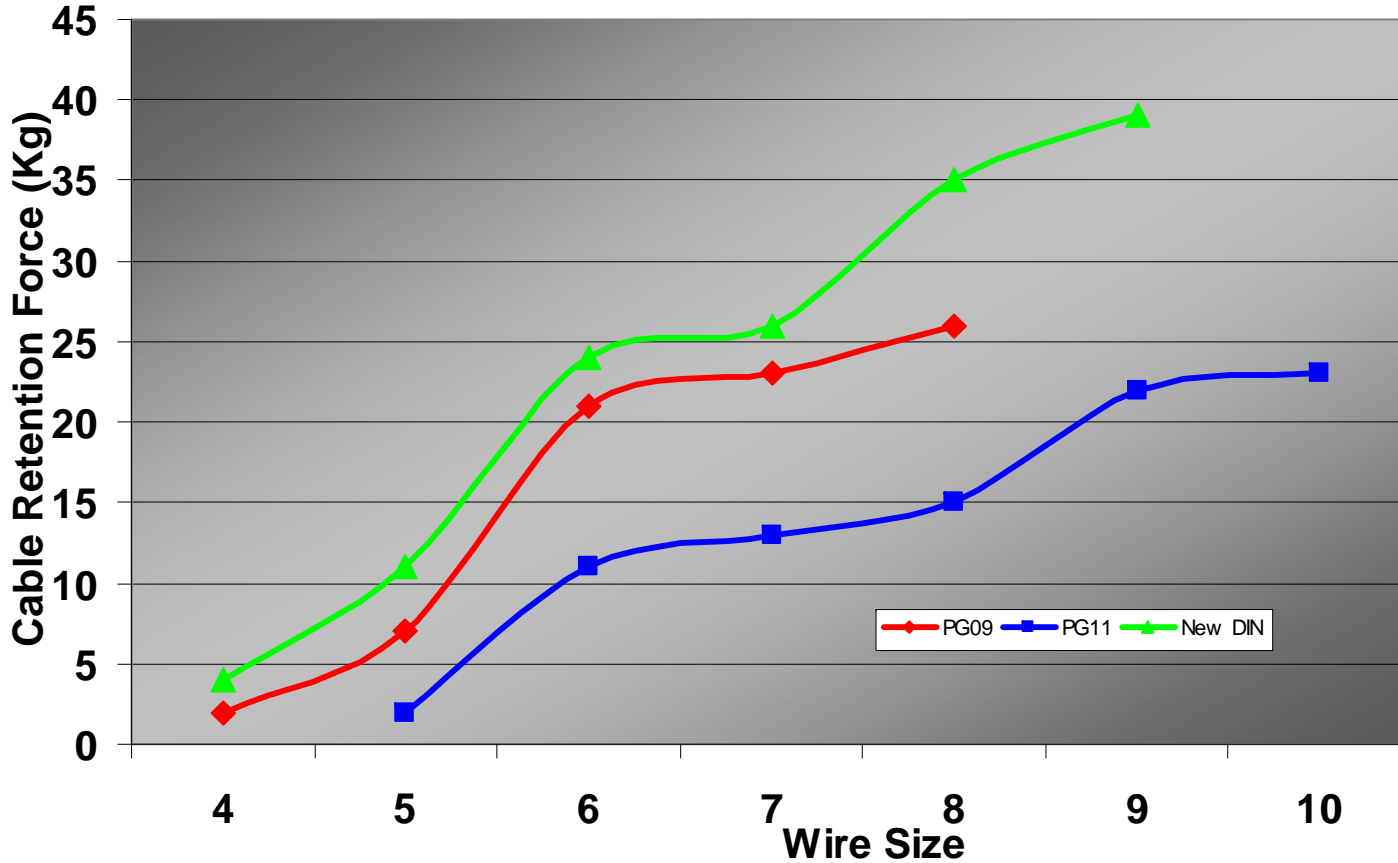
Circuit C4



*Bipolar LED and VDR to protect supply and switch
(The energy in the coil is limited by the VDR)*

Additional Product Features

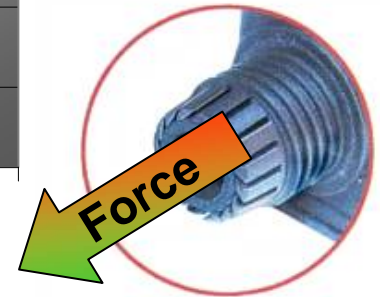
Mechanical Strength - Cable Pull Force



One size for ALL cable diameters!

4 to 9mm

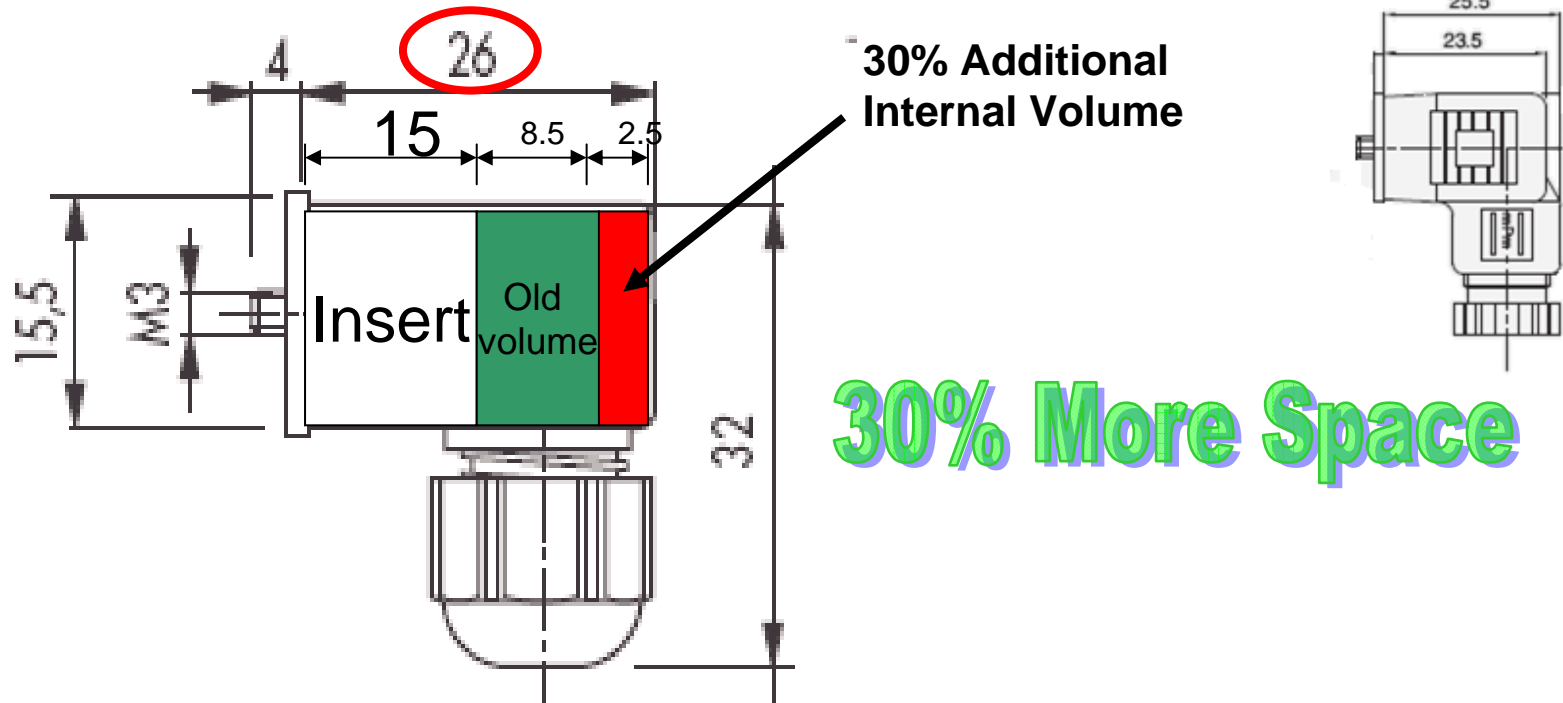
Current version
PG9 6 – 8 mm
PG11 8 -10 mm



The simple external gland nut (hand tight to 3Nm) produces a stronger, more reliable connection to the cable

Additional Product Features

Form C – Improved Ergonomics



30% More Space

- The NEW DIN connector has the same external dimensions of the current internal thread version

Additional Product Features



■ Captive gasket

- Incorporated the advantages of the profile gasket and the flat gasket into one



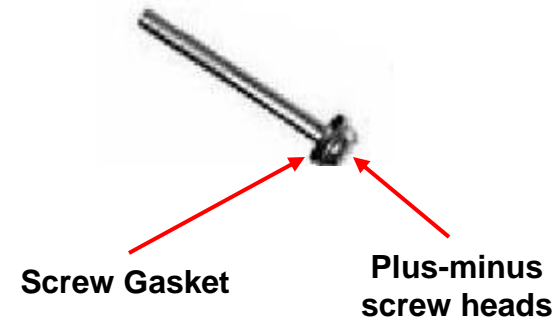
Captive Gasket

■ Central screw gasket

- Guarantees IP67 as a standard

■ Plus-Minus screw heads incorporated into the Insert

- Allows installer to use either a Philips or flat head screw driver



Additional Product Features

Laser Technology – Provides Flexibility

- The introduction of Laser marking technology provide greatly enhanced flexibility
- Opens up the possibilities of many features to all customers
 - Custom Logos
 - Customer Part numbers
 - Date & Bar codes
 - Circuit diagrams
 - Shorter lead times
 - Wider range of customized parts
 - Traceability



Interested in LEAN 6 Sigma and Reducing Waste ?



W	Waiting	- Reduced Lead Times - Faster machine Deployment	✓
O	Overproduction	- Reduced product variance allows for improved inventory levels,	✓
R	Rework	- Improved first time quality and repeatability ensures reduced requirement for rework or repair.	✓
M	Motion	- Reduced part numbers allow purchasing to process fewer transactions.	✓
P	Processing	- No longer necessary to dis-assemble prior to use - New packaging / pre-assembled delivery condition significantly reduces assembly steps	✓
I	Inventory	- 1 Part number displaces 8. Helping reduce leadtimes and thus further reducing inventory levels.	✓
I	Intellect	- Reduced variance requires less intelct to ensure correct product is purchased / applied.	✓
T	Transportation	- No longer necessary to dis-assemble the connector before application.	✓



- The External Nut Design Reduces the 8 most common forms of Waste “WORMPIIT”



Thank You!
Questions?



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