

Climate
Control

IMI TA

TA-Smart-Dp



Smart valves

2-way Smart electronic differential pressure controller with flow, temperature and power measurement capabilities

TA-Smart-Dp

The ultrasonic flow measurement technology combined with unique actuation algorithms capabilities provide best-in-class control performances. TA-Smart-Dp is designed to keep a stable differential pressure over the load. This enables accurate and stable conditions to provide superior control valve authority for modulating control valves, additionally it can limit noise and simplify the balancing procedure. Its compact arrangement and simple set-up reduces installation and commissioning time.



Key features

Precise and stable differential pressure control

Delivers desired differential pressure ensuring accurate balancing.

Optional cloud connection

Easy remote access to data and configuration parameters allows to verify and adjust system performance.

High measurement accuracy

High flow and temperature measurement accuracies in all configurations (medium type, and temperature) for all flow regimes.

Compactness and limited number of components

Reduces installation time and space requirements facilitating retrofit installation.

Convenient, reliable setup

Fully customizable and commissionable using Bluetooth enabled smart device reducing commissioning and diagnostic time.

Easy diagnostics

Continuous measurement (flow, temperature, power...) enables accurate error identification in system hydraulics.

Versatility in communication

Digital (key Bus protocols and MQTT) and Analog (0(2)-10 VDC or 0(4)-20 mA).

Technical description

Application:

Heating and cooling systems.

Functions:

Differential pressure control
 Pre-setting Δp over the load (Δp_L)
 Measuring (Δp_L)
 Reading (flow, power, energy, supply/return temperature, ΔT , position)
 Manual override (via HyTune app)
 Mode, status and position indication
 Valve blockage protection
 Valve clogging detection
 Error safe position
 Diagnostic
 Logging
 Delayed start-up

Dimensions:

DN 15-125

Pressure class:

DN 15-50: PN 25
 DN 65-125: PN 16, PN 25

Differential pressure (Δp_V):

Max. differential pressure ($\Delta p_{V_{max}}$):
 400 kPa = 4 bar
 Closing pressure: 600 kPa = 6 bar
 $\Delta p_{V_{max}}$ = The maximum allowed pressure drop over the valve to fulfill all stated performances.

Setting range, differential pressure

Dp sensor:
 10-100 kPa
 40-400 kPa
 Max. differential pressure (Δp_{burst}):
 500 kPa = 5 bar
 1200 kPa = 12 bar
 Δp_{burst} = Maximum differential pressure that may be applied to the sensor.

Flow range:

The flow ranges ($q_{setmin} - q_{nom}$) for different dimensions:
 DN 15: 160 - 1200 l/h
 DN 20: 380 - 1900 l/h
 DN 25: 540 - 2700 l/h
 DN 32: 920 - 4600 l/h
 DN 40: 1560 - 7800 l/h
 DN 50: 2680 - 13400 l/h
 DN 65: 5800 - 29000 l/h
 DN 80: 8640 - 43200 l/h
 DN 100: 14200 - 71000 l/h
 DN 125: 22400 - 112000 l/h
 Minimum controllable flows ($q_{contr.min}$)
 DN 15 0.33% of q_{nom} , DN 20-125 0.5% of q_{nom} .
 q_{setmin} = Minimum settable flow.
 q_{nom} = Maximum settable flow.

Measurement accuracy:

Flow:

Water: From 2% accuracy at 100% of q_{nom} to 2.4% accuracy at 5% of q_{nom} (according MID-Class 2 EN1434).

Water+glycol: From 3% accuracy at 100% of q_{nom} to 4% accuracy at 5% of q_{nom} (according to MID-Class 3 EN1434). (see "Flow accuracy").

Temperature difference:

±0.1 K @ $\Delta T = 6$ K (for cooling)±0.15 K @ $\Delta T = 10$ K (for heating)±0.2 K @ $\Delta T = 20$ K (for heating)

Dp sensor:

<2.5 kPa for 10-100 kPa sensor

<10 kPa for 40-400 kPa sensor

Temperature:

Max. working temperature: 110°C

Min. working temperature: -10°C

Operating environment: 0°C – +50°C (5-95%RH, non-condensing)

Storage environment: -20°C – +70°C (5-95%RH, non-condensing)

Dp sensor:

Max. working temperature: 80°C

Min. working temperature: -15°C

Operating environment: -15°C – +80°C (5-95%RH, non-condensing)

Storage environment: -40°C – +80°C (5-95%RH, non-condensing)

Media:

Water or neutral fluids, water-glycol mixtures (0-57%).

Leakage rate:

DN 15-50: Leakage rate <0.01% of q_{nom} with correct flow direction (Class IV according to EN 60534-4)

DN 65-125: Tight sealing with correct flow direction (Class V according to EN 60534-4)

Supply voltage:

24 VAC/VDC ±15%.

Frequency 50/60 Hz ±3 Hz.

Dp sensor:

18-33 VDC or 24 VAC +15/-10 % (0-10 V)

NOTE: 24 VAC/VDC power supply must be provided only with safety isolating transformer according to EN 61558-2-6.

Power consumption:

DN 15-50:

Operation: < 4.0 W (24 VDC); < 5.6 VA (24 VAC)

Standby: < 1.9 W (24 VDC); < 3.3 VA (24 VAC)

DN 65-80:

Operation: < 5.8 W (24 VDC); < 10 VA (24 VAC)

Standby: < 1.9 W (24 VDC); < 3.3 VA (24 VAC)

DN 100-125:

Operation: < 7.7 W (24 VDC); < 10.8 VA (24 VAC)

Standby: < 1.9 W (24 VDC); < 3.3 VA (24 VAC)

Input signal:

By BACnet/Modbus

Output signal:

BACnet/Modbus

0(2)-10 VDC, max. 8 mA, min. 1.25 k Ω .

Dp sensor: 0-10 V

Wireless:

Bluetooth Low Energy (BLE)

Thread

Temperature sensor cable:

DN 15-50: 3 m halogen free

DN 65-125: 5 m halogen free

10 m halogen free cable on request.

Dp sensor cable:1.5 m, 3x0.25 mm², PVC, PG7.**Ingress protection:**

IP54

Dp sensor: IP65

(according to EN 60529)

Protection class:

(according to EN 61140)

III (SELV)

Material:

DN 15-50:

Valve body: AMETAL®

Valve insert: AMETAL®

Valve plug: AMETAL® and PTFE

Spindle: Stainless steel

Spindle seal: EPDM O-ring

Internal plastic parts: PPS

Springs: Stainless steel

O-rings: EPDM

Temperature housing: AMETAL®.

DN 65-125:

Valve body: Ductile iron EN-GJS-400-15

Valve insert: Ductile iron EN-GJS-400-15 and brass

Valve plug: Stainless steel and EPDM

O-ring

Valve seat: Stainless steel

Spindle: Stainless steel

Spindle seal: EPDM

Springs: Stainless steel

O-rings: EPDM

SmartBox (DN 15-125):

Cover: PC/ABS, red.

Housing: PC/ABS, TPE.

Actuators:

DN 15-50:

Cover: PC/ABS GF8, white RAL 9016, grey RAL 7047.

Housing: PA GF40.

Swivelling nut: Nickel-plated brass.

DN 65-125:

Cover: PBT, orange RAL 2011, grey RAL 7043.

Bracket: Alu EN44200

Cables: Halogen free

Dp sensor:

Sensor housing: Stainless steel

X8CrNiS18-9 (No 1.4305 EN 10 088-3).

Membrane: Ceramic

Sealing: EPDM

AMETAL® is the dezincification resistant alloy of IMI.

Surface treatment:

DN 15-50: Non treated

DN 65-125: Electrophoretic painting

Pipe connection:

DN 15-50: External thread according to ISO 228.

DN 65-125: Flanges according to EN-1092-2, type 21. Face to face length according to EN 558, series 1.

Certifications and directives:

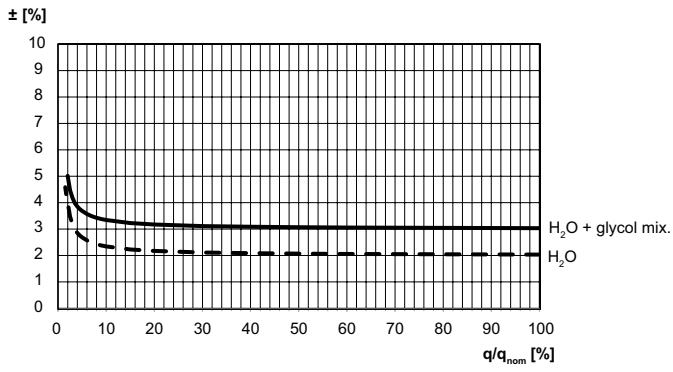
EMC-D. 2014/30/EU: EN 60730-1, -2-14. Product standards EN 60730-x.

PED: 2014/68/EU

Dp sensor:

CE certification EN 61326-2-3.

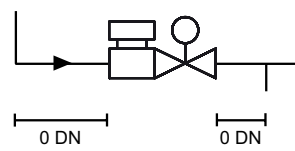
Flow accuracy



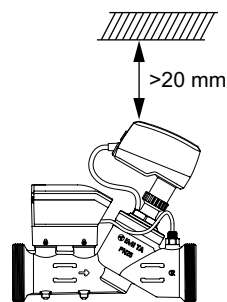
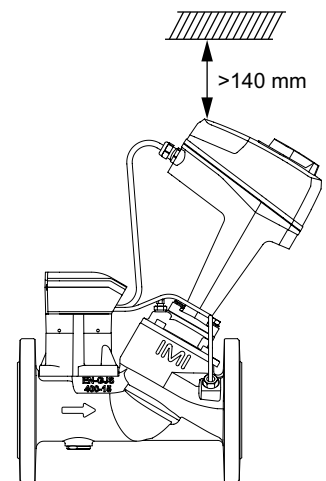
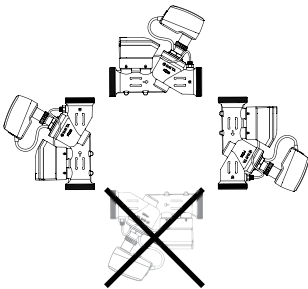
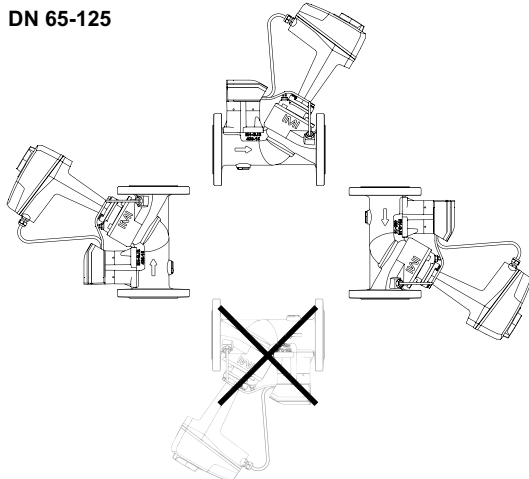
Installation

DN 15-50

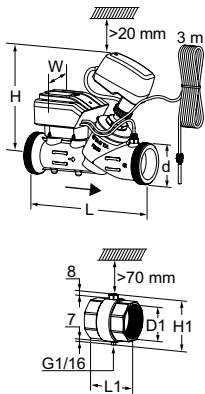
DN 65-125

DN 15-50

DN 65-125


Note: Free space is required above the actuator/temperature sensor pocket for easy mounting/dismounting.

DN 15-50

DN 65-125

DN 15-50

DN 65-125


Articles



TA-Smart-Dp DN 15-50

Including temperature housing and 3 m temperature sensor cable.
External threads according to ISO 228.

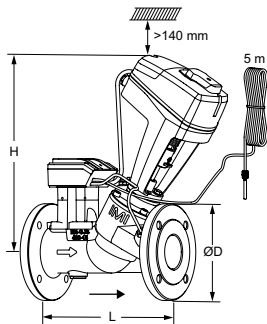
| DN | d | L | H | W | Kvs | Kg | EAN | Article No |
|----|--------|-----|-----|----|------|-----|---------------|--------------|
| 15 | G3/4 | 167 | 173 | 97 | 1,90 | 1,4 | 7318794178281 | 322232-00015 |
| 20 | G1 | 180 | 174 | 97 | 3,15 | 1,6 | 7318794178014 | 322232-00020 |
| 25 | G1 1/4 | 187 | 174 | 97 | 4,35 | 1,8 | 7318794178021 | 322232-00025 |
| 32 | G1 1/2 | 200 | 199 | 97 | 7,28 | 2,1 | 7318794178038 | 322232-00032 |
| 40 | G2 | 218 | 198 | 97 | 12,3 | 3,0 | 7318794178045 | 322232-00040 |
| 50 | G2 1/2 | 239 | 198 | 97 | 21,2 | 3,9 | 7318794178052 | 322232-00050 |

Temperature housing incl. temperature sensor pocket and capillary pipe connection

Included in TA-Smart-Dp DN 15-50.
Internal threads according to ISO 228.

| DN | D1 | L1 | H1 |
|-----|--------|----|----|
| 15* | G1/2 | 48 | 55 |
| 20* | G3/4 | 60 | 56 |
| 25 | G1 | 62 | 61 |
| 32 | G1 1/4 | 70 | 71 |
| 40 | G1 1/2 | 70 | 77 |
| 50 | G2 | 78 | 89 |

*) Can be connected to smooth pipes by KOMBI compression coupling.



TA-Smart-Dp DN 65-125

Including temperature sensor pocket and 5 m temperature sensor cable.
Free space >70 mm is required above the temperature pocket.
Flanges according to EN-1092-2, type 21.

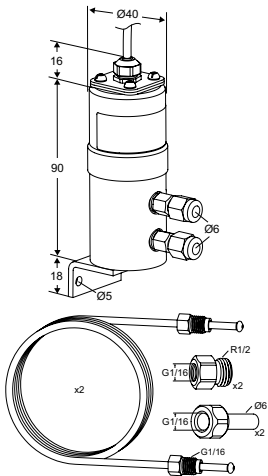
| DN | Number of bolt holes | ØD | L | H | Kvs | Kg | EAN | Article No |
|--------------|----------------------|-----|-----|-----|-----|----|---------------|--------------|
| PN 16 | | | | | | | | |
| 65 | 4 | 185 | 290 | 377 | 49 | 17 | 7318794178069 | 322232-01265 |
| 80 | 8 | 200 | 310 | 380 | 73 | 19 | 7318794178076 | 322232-01280 |
| 100 | 8 | 220 | 350 | 438 | 120 | 29 | 7318794178083 | 322232-01290 |
| 125 | 8 | 250 | 400 | 444 | 190 | 35 | 7318794178090 | 322232-01291 |
| PN 25 | | | | | | | | |
| 65 | 8 | 185 | 290 | 377 | 49 | 17 | 7318794178106 | 322232-01365 |
| 80 | 8 | 200 | 310 | 380 | 73 | 19 | 7318794178113 | 322232-01380 |
| 100 | 8 | 235 | 350 | 438 | 120 | 29 | 7318794178120 | 322232-01390 |
| 125 | 8 | 270 | 400 | 444 | 190 | 35 | 7318794178137 | 322232-01391 |

→ = Flow direction

Kvs = m³/h at a pressure drop of 1 bar and fully open valve.

Dp sensor set

1 differential pressure sensor, 2x1 m capillary pipes $\varnothing 6$ mm with G1/16 connections, 2 transitions nipples G1/16xG1/2, 2 transitions nipples G1/16x $\varnothing 6$.



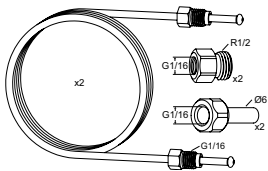
| | Δp_{burst} | Kg | EAN | Article No |
|-------------------|--------------------|------|---------------|--------------|
| 10-100 kPa | 500 kPa | 0,43 | 5902276817656 | 325020-10008 |
| 40-400 kPa | 1200 kPa | 0,43 | 5902276817663 | 325020-10009 |

Δp_{burst} = Maximum differential pressure that may be applied to the sensor.

Connection set

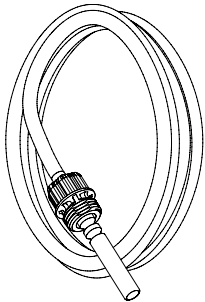
2x1 m capillary pipes $\varnothing 6$ mm with G1/16 connections, 2 transitions nipples G1/16xG1/2, 2 transitions nipples G1/16x $\varnothing 6$.

(Without Dp sensor. Only compatible with IMI type of Dp sensor)



| | EAN | Article No |
|--|---------------|--------------|
| | 5902276817670 | 326040-10001 |

Accessories


Temperature sensor

Included in TA-Smart/Fail-safe/-Dp.

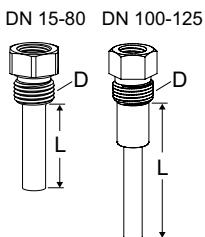
Tool for exchanging temperature sensor is included.

| For DN | Length [m] | EAN | Article No |
|--------|------------|---------------|--------------|
| 15-25 | 3 | 7318794178229 | 322230-01106 |
| 32-50 | 3 | 7318794173705 | 322230-01100 |
| 65-125 | 5 | 7318794173804 | 322230-01101 |

Temperature sensor pocket

Included in TA-Smart/Fail-safe/-Dp DN 65-125.

For mounting directly on pipe. Free space >70 mm is required above the temperature sensor pocket.

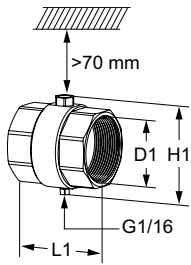


| For DN | D | L | EAN | Article No |
|---------|------|----|---------------|--------------|
| 15-25 | G1/4 | 14 | 7318794174603 | 322230-00401 |
| 15-25 | G1/2 | 14 | 7318794178199 | 322230-00403 |
| 32-80 | G1/4 | 30 | 7318794174009 | 322230-00400 |
| 32-80 | G1/2 | 30 | 7318794178205 | 322230-00404 |
| 100-125 | G3/8 | 58 | 7318794178175 | 322230-00402 |

Temperature housing incl. temperature sensor pocket and capillary pipe connection

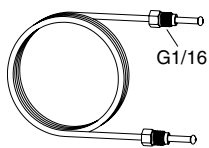
Included in TA-Smart-Dp DN 15-50.

To be ordered separately if the pipe size does not match the valve size.
Internal threads according to ISO 228.



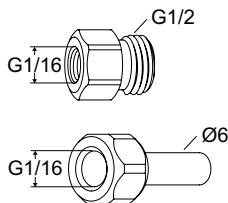
| DN | D1 | L1 | H1 | EAN | Article No |
|-----|--------|----|----|---------------|--------------|
| 15* | G1/2 | 48 | 55 | 7318794178298 | 322230-00015 |
| 20* | G3/4 | 60 | 56 | 7318794174900 | 322230-00020 |
| 25 | G1 | 62 | 61 | 7318794175006 | 322230-00025 |
| 32 | G1 1/4 | 70 | 71 | 7318794171404 | 322230-00032 |
| 40 | G1 1/2 | 70 | 77 | 7318794171503 | 322230-00040 |
| 50 | G2 | 78 | 89 | 7318794171602 | 322230-00050 |

*) Can be connected to smooth pipes by KOMBI compression coupling.



Capillary pipe

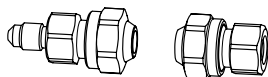
| L | EAN | Article No |
|-----|---------------|------------|
| 1 m | 7318793661500 | 52 265-301 |



Transition nipple

For capillary pipe with G1/16 connection.

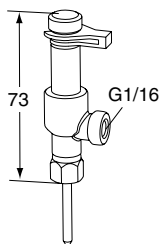
| | EAN | Article No |
|------------|---------------|--------------|
| G1/16xG1/2 | 5902276817878 | 326040-10003 |
| G1/16xØ6 | 5902276817861 | 326040-10002 |



Extension kit for capillary pipe

Complete with connections for 6 mm pipe

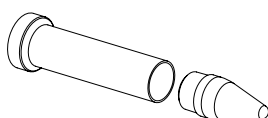
| | EAN | Article No |
|--|---------------|------------|
| | 7318793781505 | 52 265-212 |



Measuring point, two-way

For connection of capillary pipe while permitting simultaneous use of our balancing instrument.

| | EAN | Article No |
|--|---------------|------------|
| | 7318793784100 | 52 179-200 |



Service tool

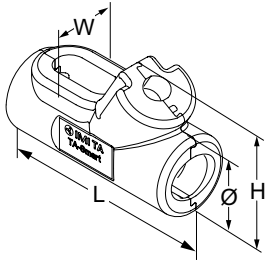
| | EAN | Article No |
|------------------------------------|---------------|--------------|
| For exchange of temperature sensor | 7318794178144 | 322033-00000 |
| For exchange of TA-Slider cable | 7318794178151 | 322033-00001 |

Insulation

For heating and non-condensing cooling applications.

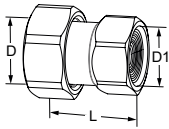
Material: EPP.

Fire class: E (EN 13501-1), B2 (DIN 4102).



| For DN | L | H | W | Ø | EAN | Article No |
|--------|-----|-----|-----|-----|---------------|--------------|
| 15 | - | - | - | - | - | - |
| 20 | 215 | 112 | 76 | 69 | 5902276819681 | 322230-00620 |
| 25 | 225 | 119 | 86 | 82 | 5902276819698 | 322230-00625 |
| 32 | 238 | 153 | 92 | 96 | 5902276819438 | 322230-00632 |
| 40 | 256 | 168 | 110 | 114 | 5902276819360 | 322230-00640 |
| 50 | 284 | 183 | 134 | 143 | 5902276819377 | 322230-00650 |

Connections

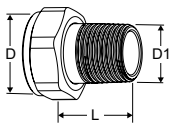


With internal thread

Threads according to ISO 228. Thread length according to ISO 7-1.

Swivelling nut. Brass

| Valve DN | D | D1 | L* | EAN | Article No |
|----------|--------|--------|------|---------------|------------|
| 15 | G3/4 | G1/2 | 31,5 | 5902276820038 | 52 009-815 |
| 15 | G3/4 | G3/4 | 36,5 | 5902276820045 | 52 009-915 |
| 20 | G1 | G3/4 | 33,5 | 5902276820052 | 52 009-820 |
| 20 | G1 | G1 | 39,5 | 5902276820069 | 52 009-920 |
| 25 | G1 1/4 | G1 | 39 | 5902276820076 | 52 009-825 |
| 25 | G1 1/4 | G1 1/4 | 43 | 5902276820083 | 52 009-925 |
| 32 | G1 1/2 | G1 1/4 | 42 | 5902276820090 | 52 009-832 |
| 32 | G1 1/2 | G1 1/2 | 46 | 5902276820106 | 52 009-932 |
| 40 | G2 | G1 1/2 | 50 | 5902276820113 | 52 009-840 |
| 40 | G2 | G2 | 53 | 5902276820120 | 52 009-940 |
| 50 | G2 1/2 | G2 | 50 | 5902276820137 | 52 009-850 |
| 50 | G2 1/2 | G2 1/2 | 58 | 5902276820144 | 52 009-950 |

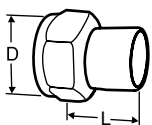


With external thread

Threads according to ISO 7-1.

Swivelling nut. Brass

| For DN | D | D1 | L* | EAN | Article No |
|--------|--------|--------|------|---------------|-------------|
| 15 | G3/4 | R1/2 | 29 | 4024052516612 | 0601-02.350 |
| 20 | G1 | R3/4 | 32,5 | 4024052516810 | 0601-03.350 |
| 25 | G1 1/4 | R1 | 35 | 4024052517015 | 0601-04.350 |
| 32 | G1 1/2 | R1 1/4 | 38,5 | 4024052517213 | 0601-05.350 |

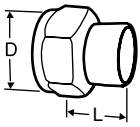


Welding connection

Swivelling nut. Brass/Steel 1.0045 (EN 10025-2)

| For DN | D | Pipe DN | L* | EAN | Article No |
|--------|--------|---------|----|---------------|------------|
| 15 | G3/4 | 15 | 36 | 7318792748509 | 52 009-015 |
| 20 | G1 | 20 | 40 | 7318792748608 | 52 009-020 |
| 25 | G1 1/4 | 25 | 40 | 7318792748707 | 52 009-025 |
| 32 | G1 1/2 | 32 | 40 | 7318792748806 | 52 009-032 |
| 40 | G2 | 40 | 45 | 7318792748905 | 52 009-040 |
| 50 | G2 1/2 | 50 | 50 | 7318792749001 | 52 009-050 |

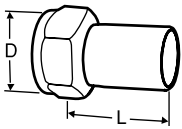
*) Fitting length (from the gasket surface to the end of the connection).



Soldering connection

Swivelling nut. Brass/gunmetal CC491K (EN 1982)

| For DN | D | Pipe Ø | L* | EAN | Article No |
|--------|--------|--------|----|---------------|------------|
| 15 | G3/4 | 15 | 13 | 7318792749308 | 52 009-515 |
| 15 | G3/4 | 16 | 13 | 7318792749407 | 52 009-516 |
| 20 | G1 | 18 | 15 | 7318792749506 | 52 009-518 |
| 20 | G1 | 22 | 18 | 7318792749605 | 52 009-522 |
| 25 | G1 1/4 | 28 | 21 | 7318792749704 | 52 009-528 |
| 32 | G1 1/2 | 35 | 26 | 7318792749803 | 52 009-535 |
| 40 | G2 | 42 | 30 | 7318792749902 | 52 009-542 |
| 50 | G2 1/2 | 54 | 35 | 7318792750007 | 52 009-554 |



Connection with smooth end

For connection with press coupling.

Swivelling nut. Brass/AMETAL®

| For DN | D | Pipe Ø | L* | EAN | Article No |
|--------|--------|--------|----|---------------|------------|
| 15 | G3/4 | 15 | 39 | 7318793810601 | 52 009-315 |
| 20 | G1 | 18 | 44 | 7318793810700 | 52 009-318 |
| 20 | G1 | 22 | 48 | 7318793810809 | 52 009-322 |
| 25 | G1 1/4 | 28 | 53 | 7318793810908 | 52 009-328 |
| 32 | G1 1/2 | 35 | 59 | 7318793811004 | 52 009-335 |
| 40 | G2 | 42 | 70 | 7318793811103 | 52 009-342 |
| 50 | G2 1/2 | 54 | 80 | 7318793811202 | 52 009-354 |

*) Fitting length (from the gasket surface to the end of the connection).



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