



NICO PRESSURE GAUGES

PGN SERIES

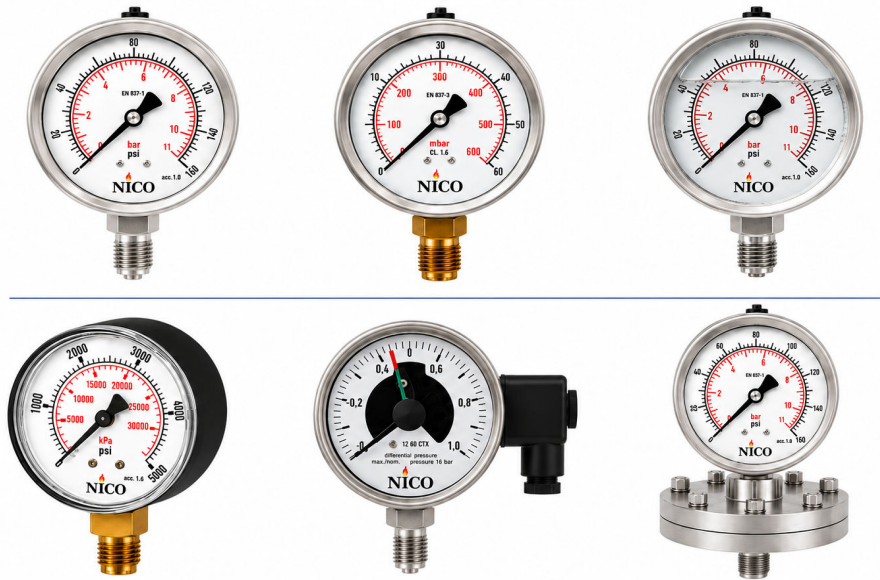


Nikan Sanat Khavarmianeh

2024
Edition 2.2



NICO PGN Series



PRESSURE MEASUREMENT · PRODUCT CATALOG

PGN Series

Pressure Gauges

A complete family of mechanical pressure gauges to EN 837-1 / 837-3 — Bourdon, capsule and diaphragm elements, economic, heavy-duty liquid-filled, safety-pattern and contact versions for every pressure indication and switching duty.

7 MODELS
ONE FAMILY

PGN10

PGN11

PGN12

PGN13

PGN14

PGN15

PGN21

EN 837-1

0...1600 bar

Pressure Measurement – Sensing Elements

NICO PGN gauges indicate pressure mechanically, with no power required, using one of three proven sensing elements selected by pressure range and medium.

Element	Principle	Best for	NICO models
Bourdon tube	Curved tube straightens under pressure	Medium–high pressure (0.6...1600 bar)	PGN10 · 13 · 14 · 15 · 21
Capsule	Welded diaphragm capsule deflects	Very low pressure (mbar), gas/air	PGN11
Diaphragm	Clamped diaphragm deflects, isolates medium	Low pressure, corrosive/viscous	PGN12

Accuracy, Range & Filling

- **Accuracy class (EN 837-1):** Class 1.0 (NS100/160), 1.6 and 2.5 — the smaller the number, the more accurate.
- **Range selection:** choose so the normal working pressure sits around mid-scale (≈25...75% of full scale) for accuracy and long life.
- **Dry vs liquid-filled:** a glycerine/silicone fill damps vibration and pulsation, lubricates the movement and prevents condensation (see PGN14).
- **Safety pattern:** a solid front and blow-out back (PGN15) protect the operator on high-pressure points.

Advantages of the PGN Family

- ✓ Direct local indication — no power required, easy to read.
- ✓ Stainless-steel wetted parts for corrosion resistance (PGN10/12/14/15/21).
- ✓ Wide range coverage and proven, robust mechanical movement.
- ✓ Field-serviceable, very low maintenance and long service life.

Selection rule

Pick the **element** by pressure and medium (Bourdon / capsule / diaphragm), the **wetted material** by corrosion, **filling** by vibration, and the **safety pattern / contacts** by the duty. Set the range so working pressure is mid-scale.

Construction & Materials

Across the stainless-steel models (PGN10, 12, 14, 15, 21) the wetted parts are 316L and the case is 304 / 316Ti; PGN13 uses economic copper-alloy wetted parts in a steel case for non-corrosive service.

Part	Material
Case	SS 304 / 316Ti (PGN13: steel)
Bourdon / element	SS 316L (PGN13: copper alloy)
Movement	Stainless steel
Process connection	SS 316L (PGN13: brass)
Window	Laminated safety glass (NS100/160) · polycarbonate (NS63)
Ring	Bayonet, stainless steel

Media isolation

For aggressive, hot, viscous or crystallising media, combine any PGN gauge with a **diaphragm seal (DST40 Series)** and, for steam, a **syphon (ACC52)**; for pulsation add a **snubber (ACC50)**. See the Accessories chapter.

The PGN Family

Seven models share the EN 837-1 platform and differ by sensing element, material and function:

Model	Name	Element / type	Typical duty
PGN10	Industrial Bourdon Pressure Gauge	Bourdon tube · stainless steel	Oil & gas
PGN11	Capsule Pressure Gauge	Capsule element · low pressure	Gas & air low pressure
PGN12	Diaphragm (Flanged) Pressure Gauge	Diaphragm element · flanged	Chemical process
PGN13	Economic Bourdon Pressure Gauge	Bourdon · copper alloy	Water & utilities
PGN14	Heavy-Duty Liquid-Filled Gauge	Bourdon · liquid-filled	Hydraulic power units
PGN15	Safety-Pattern Pressure Gauge	Solid front · blow-out back	High-pressure process
PGN21	Contact Pressure Gauge	Bourdon + electrical contacts	Pump protection

Quick Selection — Which Model?

Model	When to choose this model
PGN10	The stainless-steel industrial Bourdon gauge for oil, gas, petrochemical and process service.
PGN11	Stainless-steel capsule gauge for very low pressures — gas, air, vacuum and filter monitoring.
PGN12	Flanged diaphragm gauge for low pressures and corrosive or viscous media, to EN 837-3.
PGN13	Economic copper-alloy Bourdon gauge for general, non-corrosive water, air and compressor service.
PGN14	Liquid-filled heavy-duty gauge for vibration, shock and pulsation — hydraulics and machinery.
PGN15	Safety-pattern gauge with solid front and blow-out back for high-pressure and hazardous points.
PGN21	Gauge with adjustable electrical contacts for alarm and control — pump, compressor, filter and boiler duties.

PGN10

Bourdon tube · stainless steel

Industrial Bourdon Pressure Gauge

The stainless-steel industrial Bourdon gauge for oil, gas, petrochemical and process service.



Application Overview

The PGN10 is a rugged all-stainless-steel Bourdon-tube pressure gauge built to EN 837-1 for demanding process industries. With 316L wetted parts and a 304/316Ti case it suits oil & gas, petrochemical, refining and water/wastewater service, available dry or liquid-filled.

Operating Principle

A C-shaped Bourdon tube deflects (tends to straighten) under pressure; the motion is transmitted through the movement to the pointer. This is the most widely used mechanical pressure-sensing principle for medium-to-high pressure.

Technical Specifications

Technical Specifications	
Type	Bourdon tube, stainless steel
Nominal size	Ø63 / 100 / 160 mm
Accuracy	NS63 Class 1.6; NS100/160 Class 1.0
Ranges	0...0.6 bar up to 0...1600 bar (+ vacuum / compound)
Wetted parts	Stainless steel 316L
Case	SS 304 / 316Ti, bayonet ring
Window	Laminated safety glass (NS100/160)
Connection	G¼B, G½B, ¼/½ NPT (lower / back)
Filling	Dry (S1 safety) or glycerine / silicone
Medium temp.	up to +200 °C (dry)
Ingress protection	IP65 (IP66 for ranges ≥ 20 bar)

Recommended Applications

Oil & gas

Petrochemical

Refining

Water & wastewater

General process

Limitations & Where Not to Use

- For strong vibration / pulsation use the liquid-filled PGN14.
- For very low pressure (mbar) use the capsule PGN11.
- For corrosive or viscous media use the diaphragm PGN12 or a diaphragm seal.

Advantages

- ✓ All-stainless construction for corrosion resistance
- ✓ Wide range up to 1600 bar
- ✓ Dry or liquid-filled
- ✓ S1 blow-out safety back

Model Selection Guide

Choose for general stainless-steel process pressure indication across oil & gas, petrochemical and water service in the 0.6...1600 bar range.

Questions the Sales Engineer Should Ask

1. What is the normal working and maximum pressure (to set the range)?
2. Is there vibration or pulsation (filled vs dry)?
3. Is the medium corrosive/viscous (SS vs diaphragm seal)?
4. Required nominal size, connection and accuracy class?

Quick Selection Summary

Criterion	Guidance
Choose when	SS process gauge, 0.6...1600 bar
Avoid when	Vibration → PGN14; mbar → PGN11; corrosive → PGN12

Ordering Code

Example order code: **PGN10-100-A-G3-LR-DY-B100**

Field-by-field

1. **PGN10** — Industrial Bourdon gauge
2. **100** — Ø100 mm dial
3. **A** — Accuracy Class 1.0
4. **G3** — G½B connection
5. **LR** — Lower, radial
6. **DY** — Dry (no filling)

7. B100 — Range 0...10 bar

The complete option matrix is given in the “Ordering Code System” chapter.

Accessories & Options

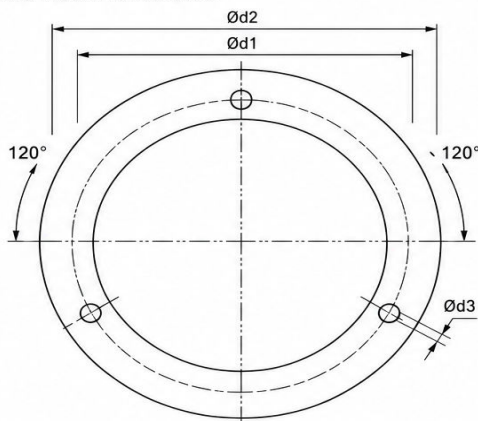
Compatible accessories: diaphragm seals (DST40 Series), syphon (ACC52), snubber (ACC50), gauge saver (ACC51) and isolation valves / manifolds — see the “Compatible Accessories & Diaphragm Seal Solutions” chapter. Ordering options and documentation (ATEX, oxygen-clean, dual scale, mark pointer, inspection certificate EN 10204-3.1) are specified in the Ordering Code section.

Installation & Maintenance Notes

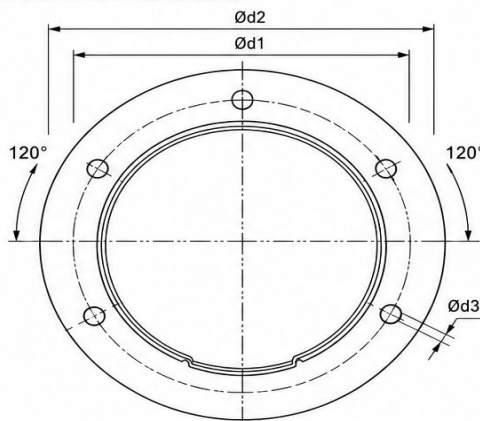
- Set the range so working pressure is around mid-scale (≈25...75% of full scale).
- Add a snubber / syphon for pulsation or hot media; use a diaphragm seal for corrosive media.
- Protect against overpressure; verify against a reference periodically.

DIMENSIONS IN MM [IN]

● PANEL MOUNTING FLANGE



● SURFACE MOUNTING FLANGE



NS	Dimensions in mm [in]			
	Recommended panel cutout	d1	d2	d3
63 [2 ½"]	Ø 67 ±0.3 / Ø 2.6 [Ø 2.64 ±0.01 / Ø 0.10]	75 [2.95]	85 [3.35]	3.6 [0.14]
100 [4"]	Ø 104 ±0.5 / Ø 4.1 [Ø 4.04 ±0.02 / Ø 0.16]	117 [4.60]	132 [5.20]	4.8 [0.19]
160 [6"]	Ø 164 ±0.5 / Ø 6.5 [Ø 6.46 ±0.02 / Ø 0.26]	178 [7.01]	196 [7.72]	5.8 [0.23]

(i) All dimensions are approximate and subject to change without notice.

PGN11

Capsule element · low pressure

Capsule Pressure Gauge

Stainless-steel capsule gauge for very low pressures — gas, air, vacuum and filter monitoring.



Application Overview

The PGN11 uses a capsule measuring element for accurate indication of very low pressures in the millibar range. It is the right choice for gas and air pressures, vacuum, laboratory and filter-monitoring duties where a Bourdon tube is not sensitive enough.

Operating Principle

Two corrugated diaphragms welded together form a capsule; very low pressure inside it produces a measurable deflection that drives the pointer — far more sensitive than a Bourdon tube at low pressure.

Technical Specifications

Technical Specifications	
Type	Capsule element, stainless steel
Nominal size	Ø100 / 160 mm
Accuracy	Class 1.6
Ranges	low-pressure mbar ranges (e.g. 0...25 mbar up to 0...600 mbar)
Wetted parts	Stainless steel
Connection	G¼B, G½B (lower / back)
Filling	Dry
Medium	gas / air, clean, non-clogging
Ingress protection	IP54 / IP65

Recommended Applications

Gas & air low pressure

Vacuum

Laboratory

Filter monitoring

Cleanroom / HVAC

Limitations & Where Not to Use

- Low-pressure (mbar) only – not for medium/high pressure (use PGN10).
- Not suitable for viscous, clogging or condensing liquids.
- Protect against overpressure beyond the capsule range.

Advantages

- ✓ High sensitivity at very low pressure
- ✓ Stainless construction
- ✓ Stable, repeatable low-pressure reading

Model Selection Guide

Choose for clean gas/air or vacuum measurement in the millibar range where Bourdon gauges lack sensitivity.

Questions the Sales Engineer Should Ask

1. What is the low-pressure range (mbar) and medium (gas/air)?
2. Is overpressure possible (protection needed)?
3. Nominal size and connection?
4. Is the medium clean and non-condensing?

Quick Selection Summary

Criterion	Guidance
Choose when	Low gas/air pressure, mbar range
Avoid when	Medium/high pressure → PGN10; liquids → PGN12

Ordering Code

Example order code: **PGN11-100-B-G2-LR-DY-0100**

Field-by-field

1. **PGN11** — Capsule gauge
2. **100** — Ø100 mm dial
3. **B** — Accuracy Class 1.6
4. **G2** — G $\frac{1}{4}$ B connection
5. **LR** — Lower, radial
6. **DY** — Dry
7. **0100** — Range 0...100 mbar

The complete option matrix is given in the "Ordering Code System" chapter.

Accessories & Options

Compatible accessories: diaphragm seals (DST40 Series), syphon (ACC52), snubber (ACC50), gauge saver (ACC51) and isolation valves / manifolds — see the “Compatible Accessories & Diaphragm Seal Solutions” chapter. Ordering options and documentation (ATEX, oxygen-clean, dual scale, mark pointer, inspection certificate EN 10204-3.1) are specified in the Ordering Code section.

Installation & Maintenance Notes

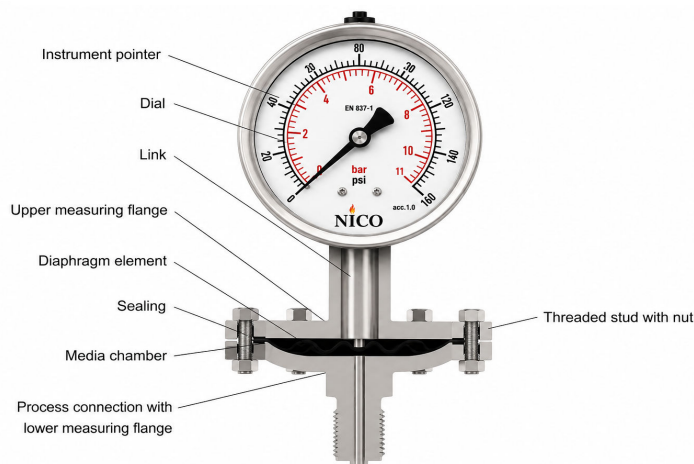
- Set the range so working pressure is around mid-scale ($\approx 25\ldots 75\%$ of full scale).
- Add a snubber / syphon for pulsation or hot media; use a diaphragm seal for corrosive media.
- Protect against overpressure; verify against a reference periodically.

PGN12

Diaphragm element · flanged

Diaphragm (Flanged) Pressure Gauge

Flanged diaphragm gauge for low pressures and corrosive or viscous media, to EN 837-3.



Application Overview

The PGN12 uses a diaphragm measuring element with a flanged process connection, built to EN 837-3. The large diaphragm and open flange make it ideal for corrosive, viscous, crystallising or contaminated media at low to medium pressure in chemical and petrochemical service.

Operating Principle

A clamped diaphragm deflects under pressure; the motion drives the pointer. The diaphragm isolates the mechanism from the medium and resists clogging, making it suitable for difficult fluids.

Technical Specifications

Technical Specifications	
Type	Diaphragm element, stainless steel
Standard	EN 837-3
Nominal size	Ø100 / 160 mm
Accuracy	Class 1.6
Ranges	low pressure mbar up to 0...25 bar
Wetted parts	Stainless steel 316L (special alloys on request)
Connection	Flange — specify DN / PN
Filling	Dry or filled
Medium	corrosive, viscous, contaminated liquids and gases
Ingress protection	IP65

Recommended Applications

Chemical process

Petrochemical

Corrosive media

Viscous / crystallising media

Wastewater

Limitations & Where Not to Use

- Low-to-medium pressure only (up to ~25 bar) — for higher pressure use PGN10.
- Confirm wetted-material compatibility with the medium.
- Flange face and gasket must suit the process.

Advantages

- ✓ Handles corrosive, viscous and clogging media
- ✓ Large diaphragm, open flush connection
- ✓ Isolates the mechanism from the medium

Model Selection Guide

Choose for low/medium pressure on corrosive, viscous or contaminated media where a Bourdon gauge would clog or corrode.

Questions the Sales Engineer Should Ask

1. What is the medium (corrosivity / viscosity / solids)?
2. Flange size (DN) and rating (PN)?
3. Pressure range and required wetted material?
4. Dry or filled, and accuracy class?

Quick Selection Summary

Criterion	Guidance
Choose when	Corrosive/viscous, low-medium pressure
Avoid when	High pressure → PGN10; clean gas mbar → PGN11

Ordering Code

Example order code: **PGN12-160-B-FL-LR-GL-B016-C31**

Field-by-field

1. PGN12 — Diaphragm flanged gauge
2. 160 — Ø160 mm dial
3. B — Accuracy Class 1.6
4. FL — Flange connection
5. LR — Lower, radial

- 6. GL — Glycerine-filled
- 7. B016 — Range 0...1.6 bar
- 8. C31 — Cert. EN 10204-3.1

The complete option matrix is given in the “Ordering Code System” chapter.

| Accessories & Options

Compatible accessories: diaphragm seals (DST40 Series), syphon (ACC52), snubber (ACC50), gauge saver (ACC51) and isolation valves / manifolds — see the “Compatible Accessories & Diaphragm Seal Solutions” chapter. Ordering options and documentation (ATEX, oxygen-clean, dual scale, mark pointer, inspection certificate EN 10204-3.1) are specified in the Ordering Code section.

| Installation & Maintenance Notes

- Set the range so working pressure is around mid-scale ($\approx 25\ldots 75\%$ of full scale).
- Add a snubber / syphon for pulsation or hot media; use a diaphragm seal for corrosive media.
- Protect against overpressure; verify against a reference periodically.

PGN13

Bourdon · copper alloy

Economic Bourdon Pressure Gauge

Economic copper-alloy Bourdon gauge for general, non-corrosive water, air and compressor service.



Application Overview

The PGN13 is a cost-effective Bourdon gauge with copper-alloy internals and a steel case for general-purpose, non-corrosive applications such as water, air, compressors and machinery. It delivers reliable indication where stainless steel is not required.

Operating Principle

A copper-alloy Bourdon tube deflects under pressure to drive the pointer — the same proven principle as PGN10 but with economic copper-alloy wetted parts for non-corrosive media.

Technical Specifications

Technical Specifications	
Type	Bourdon tube, copper alloy
Nominal size	Ø40 / 50 / 63 / 100 mm
Accuracy	Class 1.6 / 2.5
Ranges	0...1 bar up to 0...400 bar
Wetted parts	Copper alloy / brass
Case	Steel / chrome-plated
Connection	G¼B, ¼/½ NPT (lower / back)
Filling	Dry or glycerine
Medium	non-corrosive gases & liquids
Ingress protection	IP41 / IP54

Recommended Applications

Water & utilities

Compressed air

Compressors

Machinery

HVAC

Limitations & Where Not to Use

- Non-corrosive media only — for corrosive media use the all-SS PGN10/PGN12.
- Lower environmental protection than the SS models.
- Not for aggressive or high-purity media.

Advantages

- ✓ Economical for general service
- ✓ Proven Bourdon reliability
- ✓ Wide range up to 400 bar

Model Selection Guide

Choose for budget-sensitive, non-corrosive water/air/compressor indication where stainless steel is not required.

Questions the Sales Engineer Should Ask

1. Is the medium non-corrosive (brass-compatible)?
2. Pressure range and nominal size?
3. Dry or filled?
4. Connection type and location?

Quick Selection Summary

Criterion	Guidance
Choose when	Non-corrosive water/air, economy
Avoid when	Corrosive media → PGN10/PGN12

Ordering Code

Example order code: **PGN13-063-B-N3-LR-DY-B100**

Field-by-field

1. **PGN13** — Economic Bourdon gauge
2. **063** — Ø63 mm dial
3. **B** — Accuracy Class 1.6
4. **N3** — ½ NPT connection
5. **LR** — Lower, radial
6. **DY** — Dry
7. **B100** — Range 0...10 bar

The complete option matrix is given in the "Ordering Code System" chapter.

Accessories & Options

Compatible accessories: diaphragm seals (DST40 Series), syphon (ACC52), snubber (ACC50), gauge saver (ACC51) and isolation valves / manifolds — see the “Compatible Accessories & Diaphragm Seal Solutions” chapter. Ordering options and documentation (ATEX, oxygen-clean, dual scale, mark pointer, inspection certificate EN 10204-3.1) are specified in the Ordering Code section.

Installation & Maintenance Notes

- Set the range so working pressure is around mid-scale ($\approx 25\ldots 75\%$ of full scale).
- Add a snubber / syphon for pulsation or hot media; use a diaphragm seal for corrosive media.
- Protect against overpressure; verify against a reference periodically.

PGN14

Bourdon · liquid-filled

Heavy-Duty Liquid-Filled Gauge

Liquid-filled heavy-duty gauge for vibration, shock and pulsation – hydraulics and machinery.



Application Overview

The PGN14 is a liquid-filled (glycerine or silicone) heavy-duty Bourdon gauge engineered for high-vibration, shock and pulsating service such as hydraulics, compressors and machinery. The fill fluid damps the pointer, lubricates the movement and prevents internal condensation.

Operating Principle

A Bourdon tube drives the pointer while the liquid-filled case damps vibration and pulsation, giving a stable, readable pointer and protecting the movement under harsh dynamic conditions.

Technical Specifications

Technical Specifications	
Type	Bourdon tube, liquid-filled case
Nominal size	Ø63 / 100 / 160 mm
Accuracy	Class 1.0 / 1.6
Ranges	0...1 bar up to 0...1000 bar
Wetted parts	Stainless steel 316L
Case / filling	SS case, glycerine or silicone fill
Connection	G¼B, G½B, ¼/½ NPT
Benefit	vibration / pulsation damping, no condensation
Medium temp.	up to +100 °C (filled)
Ingress protection	IP65 / IP66

Recommended Applications

Hydraulic power units

Compressors

Machinery & plant

Pulsating / vibrating lines

Mobile equipment

Limitations & Where Not to Use

- For static, vibration-free service a dry PGN10 is more economical.
- Observe the fill-fluid temperature limits.
- Silicone fill for low-temperature / oxygen-free needs (confirm compatibility).

Advantages

- ✓ Vibration & pulsation damping
- ✓ Lubricated movement, longer life
- ✓ No internal condensation / fogging
- ✓ Up to 1000 bar

Model Selection Guide

Choose wherever vibration, shock or pulsation would make a dry gauge unreadable or shorten its life.

Questions the Sales Engineer Should Ask

1. Is there vibration, shock or pulsation at the point of measurement?
2. Working/max pressure and range?
3. Glycerine or silicone fill (temperature)?
4. Nominal size, connection and accuracy?

Quick Selection Summary

Criterion	Guidance
Choose when	Vibration / pulsation / hydraulics
Avoid when	Static service → dry PGN10

Ordering Code

Example order code: **PGN14-100-B-G3-LR-GL-BD00**

Field-by-field

1. PGN14 — Heavy-duty liquid-filled gauge
2. 100 — Ø100 mm dial
3. B — Accuracy Class 1.6
4. G3 — G $\frac{1}{2}$ B connection
5. LR — Lower, radial

6. GL — Glycerine-filled

7. BD00 — Range 0...400 bar

The complete option matrix is given in the “Ordering Code System” chapter.

Accessories & Options

Compatible accessories: diaphragm seals (DST40 Series), syphon (ACC52), snubber (ACC50), gauge saver (ACC51) and isolation valves / manifolds — see the “Compatible Accessories & Diaphragm Seal Solutions” chapter. Ordering options and documentation (ATEX, oxygen-clean, dual scale, mark pointer, inspection certificate EN 10204-3.1) are specified in the Ordering Code section.

Installation & Maintenance Notes

- Set the range so working pressure is around mid-scale ($\approx 25\ldots 75\%$ of full scale).
- Add a snubber / syphon for pulsation or hot media; use a diaphragm seal for corrosive media.
- Protect against overpressure; verify against a reference periodically.

PGN15

Solid front · blow-out back

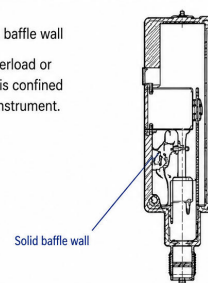
Safety-Pattern Pressure Gauge

Safety-pattern gauge with solid front and blow-out back for high-pressure and hazardous points.



EN 837-1 – S3 (SAFETY PATTERN) SOLID FRONT DESIGN

- Solid front with solid baffle wall
- In the event of an overload or failure, the pressure is confined to the inside of the instrument.



Application Overview

The PGN15 is a safety-pattern gauge per EN 837-1 (S3) with a solid front wall, laminated safety glass and a blow-out back. In the event of element failure, pressure is released to the rear, protecting the operator. It is intended for high-pressure and hazardous process points, with an ATEX option.

Operating Principle

A Bourdon element drives the pointer inside a safety case: a solid dividing wall between the element and the dial plus a blow-out back direct any overpressure release away from the operator at the front.

Technical Specifications

Technical Specifications	
Type	Bourdon tube, safety pattern (solid front)
Nominal size	Ø100 / 160 mm
Accuracy	Class 1.0 / 1.6
Ranges	0...1 bar up to 0...1600 bar
Wetted parts	Stainless steel 316L
Case	SS, solid front + blow-out back
Window	Laminated safety glass
Connection	G½B, ½ NPT (lower / back)
Options	ATEX, glycerine / silicone fill
Ingress protection	IP65 / IP66

Recommended Applications

High-pressure process

Hazardous / manned points

Oil & gas

Test benches

Compressor / gas systems

Limitations & Where Not to Use

- Keep the blow-out back unobstructed (do not wall-mount tight against the back).
- For non-safety-critical points the standard PGN10 is sufficient.
- ATEX version required only for classified areas.

Advantages

- ✓ Operator safety — solid front + blow-out back
- ✓ Laminated safety glass
- ✓ High-pressure capability
- ✓ ATEX option

Model Selection Guide

Choose for high-pressure or operator-facing points where a safety pattern (solid front / blow-out back) is required.

Questions the Sales Engineer Should Ask

1. Is operator safety / high pressure the driver (safety pattern)?
2. Working/max pressure and range?
3. Is the area classified (ATEX)?
4. Dry or filled, size and connection?

Quick Selection Summary

Criterion	Guidance
Choose when	High pressure / operator safety
Avoid when	Low-risk points → PGN10

Ordering Code

Example order code: **PGN15-100-A-G3-LR-DY-B160-EX+C31**

Field-by-field

1. PGN15 — Safety-pattern gauge
2. 100 — Ø100 mm dial
3. A — Accuracy Class 1.0
4. G3 — G $\frac{1}{2}$ B connection
5. LR — Lower, radial

6. DY — Dry

7. B160 — Range 0...16 bar

8. EX+C31 — ATEX + Cert. 3.1

The complete option matrix is given in the “Ordering Code System” chapter.

Accessories & Options

Compatible accessories: diaphragm seals (DST40 Series), syphon (ACC52), snubber (ACC50), gauge saver (ACC51) and isolation valves / manifolds — see the “Compatible Accessories & Diaphragm Seal Solutions” chapter. Ordering options and documentation (ATEX, oxygen-clean, dual scale, mark pointer, inspection certificate EN 10204-3.1) are specified in the Ordering Code section.

Installation & Maintenance Notes

- Set the range so working pressure is around mid-scale ($\approx 25\ldots 75\%$ of full scale).
- Add a snubber / syphon for pulsation or hot media; use a diaphragm seal for corrosive media.
- Protect against overpressure; verify against a reference periodically.

PGN21

Bourdon + electrical contacts

Contact Pressure Gauge **FLAGSHIP**

Gauge with adjustable electrical contacts for alarm and control – pump, compressor, filter and boiler duties.



Application Overview

The PGN21 is the flagship of the family: a stainless-steel Bourdon gauge with adjustable electrical contacts that switch at set pressures for alarm and control. It combines local indication with automatic switching for pump protection, compressor start/stop, filter alarms and boiler control.

Operating Principle

A Bourdon element drives the indicating pointer; adjustable set-point pointers carry contacts (magnetic snap-action, inductive or electronic) that open or close as the indicating pointer reaches the set pressure – giving local reading plus switching in one device.

Technical Specifications

Technical Specifications	
Type	Bourdon gauge with electrical contacts
Nominal size	Ø100 / 160 mm
Accuracy	Class 1.0 / 1.6
Contact types	SN magnetic snap, IN inductive (ATEX), EL electronic PNP
Functions	NO / NC / CO; 1, 2 or 3 contacts
SN rating	≤250 V, ≤1.5 A, ≤50 VA; hysteresis 2...4% span
Setting range	20...80% of full scale
Wetted parts	Stainless steel 316L
Electrical connection	cable socket PG11 / M20×1.5, 6 terminals + PE
Ingress protection	IP54 (IP65 when filled)
Options	ATEX (IN contacts), filling

Recommended Applications

Pump protection

Compressor start/stop

Filter-clog alarm

Boiler / steam control

Hi/Lo alarm

Control panels

Limitations & Where Not to Use

- SN contacts: no ATEX, max 2 contacts — for hazardous areas use IN (inductive) contacts.
- Respect contact electrical ratings; use a relay/contactors for higher loads.
- Set points within 20...80% of full scale.

Advantages

- ✓ Local indication plus switching in one device
- ✓ Three contact technologies (SN / IN / EL)
- ✓ Adjustable set points
- ✓ ATEX with inductive contacts

Model Selection Guide

Choose where a single device must both indicate pressure and switch an alarm/control output at set pressures.

Questions the Sales Engineer Should Ask

1. How many set points and which function (NO/NC/CO)?
2. What is the switched load (select SN/IN/EL)?
3. Is the area classified (ATEX → IN contacts)?
4. Range, size, connection and filling?

Quick Selection Summary

Criterion	Guidance
Choose when	Indication + alarm/control switching
Avoid when	Indication only → PGN10; pure switch → PGNS10

Ordering Code

Example order code: **PGN21-100-A-G3-LR-DY-B100-SN-NC-2**

Field-by-field

1. PGN21 — Contact pressure gauge
2. 100 — Ø100 mm dial
3. A — Accuracy Class 1.0
4. G3 — G½B connection
5. LR — Lower, radial

- 6. DY — Dry
- 7. B100 — Range 0...10 bar
- 8. SN — Magnetic snap-action
- 9. NC — Normally closed
- 10. 2 — 2 contacts

The complete option matrix is given in the “Ordering Code System” chapter.

Wiring / Output Options

Contacts are wired to the terminal block (6 screw terminals + PE) via a PG11 / M20×1.5 cable gland. Magnetic snap-action (SN) contacts switch ≤ 250 V / ≤ 1.5 A / ≤ 50 VA directly; for higher loads switch a relay or contactor. Inductive (IN) contacts feed an isolating amplifier and are suitable for ATEX areas; electronic (EL) contacts provide a PNP DC output (10...30 V, ≤ 100 mA).

Accessories & Options

Compatible accessories: diaphragm seals (DST40 Series), syphon (ACC52), snubber (ACC50), gauge saver (ACC51) and isolation valves / manifolds — see the “Compatible Accessories & Diaphragm Seal Solutions” chapter. Ordering options and documentation (ATEX, oxygen-clean, dual scale, mark pointer, inspection certificate EN 10204-3.1) are specified in the Ordering Code section.

Installation & Maintenance Notes

- Set the range so working pressure is around mid-scale ($\approx 25\ldots 75\%$ of full scale).
- Add a snubber / syphon for pulsation or hot media; use a diaphragm seal for corrosive media.
- Protect against overpressure; verify against a reference periodically.

Common Technical Specifications

The following applies across the PGN family; element, material and ranges vary by model.

PGN Family – Technical Data	
Standard	EN 837-1 (EN 837-3 for diaphragm PGN12)
Nominal size	Ø63 / 100 / 160 mm (Ø40 / 50 for PGN13)
Accuracy class	1.0 / 1.6 / 2.5 (model & size dependent)
Measuring ranges	0...0.6 bar up to 0...1600 bar; vacuum & compound (model dependent)
Case / wetted material	SS 304 / 316Ti case, 316L wetted (PGN13: CS + copper alloy)
Window	Laminated safety glass (NS100/160), polycarbonate (NS63)
Process connection	G¼B, G½B, ¼/½ NPT, M20×1.5; flange (PGN12)
Connection location	Lower (radial), lower back, centre back (NS63)
Case design	Dry or liquid-filled (glycerine / silicone)
Ambient temperature	-40...+60 °C (dry/silicone); -20...+60 °C (glycerine)
Medium temperature	up to +200 °C dry; +100 °C filled
Ingress protection	IP65 (IP66 for higher ranges); IP54/IP65 for PGN21

Specifications are indicative and subject to change without notice; confirm exact values against the official datasheet before order. Accuracy values refer to EN 837-1 reference conditions.

Ordering Code System

General format: **PGN[xx]-[A Size]-[B Accuracy]-[C Connection]-[D Location]-[E Filling]-[M Wetted]-[K Case]-[H Range]-[F Options]** — the [F] Options field is appended only when one or more options are required. PGN21 adds three contact fields after [H] Range: type · function · number.

EXAMPLE — STANDARD **PGN10-100-A-G3-LR-DY-S6-S4-B100**
 Ø100 mm · Class 1.0 · G½B · lower radial · dry · SS 316 wetted · SS 304 case · 0...10 bar
 EXAMPLE — CONTACT (PGN21) **PGN21-100-B-G3-LR-GL-S6-S4-B016-SN-NC-2**
 ... glycerine-filled, magnetic snap-action (SN) · normally closed (NC) · 2 contacts

[A] Nominal size 040 Ø40 mm (PGN13) 050 Ø50 mm (PGN13) 063 Ø63 mm 100 Ø100 mm 160 Ø160 mm	[B] Accuracy class A Class 1.0 B Class 1.6 C Class 2.5 XX Special accuracy	[C] Process connection G1 G¾B G2 G¼B G3 G½B M20 M20×1.5 N2 ¼ NPT N3 ½ NPT R3 R½ FL Flange (PGN12) XX Special connection
[D] Connection location LR Lower, radial (standard) LB Lower back CB Centre back (NS63)	[E] Case / filling DY Dry GL Glycerine-filled SI Silicone-filled	[M] Wetted parts material S6 SS 316 M0 Monel HC Hastelloy C276 DX Duplex stainless steel SD Super duplex stainless steel PT PTFE coated / lined XX Special material
[K] Case material S4 SS 304 S6 SS 316 CS Carbon steel XX Special material	[H] Range code 0100 0...100 mbar B016 0...1.6 bar B100 0...10 bar B160 0...16 bar B250 0...25 bar B000 0...400 bar XXXX Special range	[F] Options EX ATEX Ex C31 Insp. cert. EN 10204-3.1 O2 Oxygen-clean service MP Mark (set) pointer DS Dual scale XX Special option

PGN21 — Contact execution

appended as [Type]·[Function]·[No.]

CONTACT TYPE

SN Magnetic snap-action
IN Inductive (ATEX Ex ia)
EL Electronic (PNP DC)
XX Special contact type

SWITCH FUNCTION

NO Normally open
NC Normally closed
CO Change-over

NUMBER OF CONTACTS

1 Single contact
2 Double contact
3 Triple contact
X Special configuration

Special executions

Special materials, case constructions, process connections, pressure ranges, accuracy classes, contact types and customer-specific executions are available through special ordering codes.

Range coding — millibar ranges use 4 digits (e.g. 0100 = 0...100 mbar); bar ranges use B + value (e.g. B016 = 0...1.6 bar, B100 = 0...10 bar). The full standard range table is given on each model datasheet; vacuum and compound ranges are ordered as XXXX.

Installation Guidelines

1. Select the range so the normal working pressure sits around **mid-scale** ($\approx 25\ldots 75\%$ of full scale).
2. Use a liquid-filled gauge (PGN14) or a snubber where vibration or pulsation is present.
3. Protect against overpressure and pressure spikes with a snubber / restrictor.
4. For hot, corrosive or viscous media, fit a diaphragm seal (DST40 Series) and/or a syphon.
5. Mount so the dial is readable; support the line, do not use the gauge as a wrench point.
6. For safety-pattern gauges (PGN15), keep the blow-out back clear of obstruction.

Accessories

Accessory	Code	Function
Diaphragm seal (DST40 Series)	DST40	Isolates corrosive, viscous or hot media
Syphon (pigtail / coil)	ACC52	Cools steam / hot media before the gauge
Pressure snubber	ACC50	Damps pressure surge and pulsation
Overpressure restrictor	—	Limits spikes to protect the element
Mounting bracket / panel clamp	—	Surface or panel mounting

Maintenance & Troubleshooting

Symptom	Likely cause	Action
Pointer does not return to zero	Overpressure / mechanism fatigue	Verify against a reference; replace if outside its accuracy class
Erratic / vibrating pointer	Vibration or pulsation	Use a liquid-filled gauge (PGN14) or fit a snubber
Fogging inside the window (dry gauge)	Temperature cycling / condensation	Use a liquid-filled version (PGN14)
Reading drifts over time	Mechanism wear or process spikes	Recalibrate; add overpressure protection
Corroded connection / wetted parts	Incompatible material for the medium	Select SS wetted parts or a diaphragm seal

Compatible Accessories & Diaphragm Seal Solutions

NICO offers a complete accessory ecosystem that lets every PGN gauge be installed, protected and isolated to international engineering practice — pressure protection, isolation valves, manifolds and diaphragm-seal systems.

Common ordering codes

Connection: G2=G $\frac{1}{2}$ · G3=G $\frac{3}{4}$ · N2= $\frac{1}{2}$ NPT · N3= $\frac{3}{4}$ NPT | Material: S6=SS316 · S4=SS304 · CS=carbon steel | Option: XX=standard · O2=oxygen-clean · C31=cert 3.1.

Pressure Protection Accessories

ACC50 — Pressure Snubber



Damps pressure pulsation and spikes from pumps, compressors and fast-acting valves, protecting the gauge movement and greatly extending its service life.

- Type: porous-metal or adjustable piston
- Material: SS316
- Pressure: up to 400 bar
- Temperature: -20...+150 °C
- Connection: $\frac{1}{2}$ NPT or G $\frac{1}{2}$ (male × female)

Order code: **ACC50-PS-N2-S6-XX** ACC50-[TYPE]-[CONN]-[MAT]-[OPT]

1. **ACC50** — Pressure snubber
2. **PS** — Adjustable piston (PR=porous, FX=fixed orifice)
3. **N2** — $\frac{1}{2}$ NPT male×female
4. **S6** — SS316
5. **XX** — Standard (O2=oxygen-clean)

ACC51 — Pressure Equalizer / Gauge Saver



An automatic overpressure protector: it shuts off when pressure exceeds the set point, isolating the gauge from spikes, and re-opens automatically when pressure returns to normal.

- Type: adjustable or fixed set point
- Material: SS316
- Pressure: up to 1000 bar
- Temperature: -20...+150 °C
- Connection: $\frac{1}{2}$ NPT or G $\frac{1}{2}$ (male × female)

Order code: **ACC51-AD-G2-S6-XX** ACC51-[SET]-[CONN]-[MAT]-[OPT]

1. **ACC51** — Gauge saver
2. **AD** — Adjustable set point (FX=fixed)
3. **G2** — G $\frac{1}{2}$ male×female
4. **S6** — SS316
5. **XX** — Standard

ACC52 – Syphon



Cools steam and hot media before they reach the gauge by trapping a condensate/liquid buffer, available in pigtail (coil) or U-form.

- Form: pigtail (coil) or U-form
- Material: SS316 or carbon steel
- Pressure: up to 400 bar
- Temperature: up to +400 °C
- Connection: ½ NPT or G½

Order code: **ACC52-PG-G2-S6-XX** ACC52-[FORM]-[CONN]-[MAT]-[OPT]

1. **ACC52** – Syphon
2. **PG** – Pigtail/coil (UF=U-form)
3. **G2** – G½
4. **S6** – SS316 (CS=carbon steel)
5. **XX** – Standard

Isolation & Instrument Valves

ACC56 — Root Valve



Primary process-isolation valve installed directly on the process tap, allowing the gauge/manifold to be isolated and removed without shutting down the line.

- Type: ball / needle / OS&Y
- Material: SS316
- Pressure: up to 420 bar
- Temperature: -20...+200 °C
- Connection: ½ NPT (male × female)

Order code: **ACC56-BV-N2-S6-XX** ACC56-[TYPE]-[CONN]-[MAT]-[OPT]

1. ACC56 — Root valve
2. BV — Ball (NV=needle, OS=OS&Y)
3. N2 — ½ NPT male×female
4. S6 — SS316
5. XX — Standard

ACC57 — Needle Valve



Fine throttling and isolation valve for gauge and instrument lines, giving precise shut-off and protection during pressurisation.

- Type: straight or angle pattern
- Material: SS316
- Pressure: up to 420 bar
- Temperature: -20...+200 °C
- Connection: ½ NPT

Order code: **ACC57-ST-N2-S6-XX** ACC57-[TYPE]-[CONN]-[MAT]-[OPT]

1. ACC57 — Needle valve
2. ST — Straight (AN=angle)
3. N2 — ½ NPT
4. S6 — SS316
5. XX — Standard

Instrument Manifolds

Manifolds combine isolation, equalisation and venting into one compact block for gauges and transmitters.

ACC53 — 2-Way Manifold



Block-and-bleed manifold for single-pressure gauges and transmitters — one isolation valve plus one vent/test valve.

- Configuration: block + vent (2-valve)
- Material: SS316
- Pressure: up to 420 bar
- Temperature: -20...+200 °C
- Mounting: direct or remote

Order code: **ACC53-FF-N2-S6-DM** ACC53-[PORT]-[CONN]-[MAT]-[MOUNT]

1. ACC53 — 2-way manifold
2. FF — Female×Female ports (FM=female×male)
3. N2 — ½ NPT
4. S6 — SS316
5. DM — Direct mount (RM=remote)

ACC54 — 3-Way Manifold



Three-valve manifold (block + equalise + vent) for gauge and static/DP service, allowing isolation, equalisation and venting.

- Configuration: block + equalise + vent (3-valve)
- Material: SS316
- Pressure: up to 420 bar
- Temperature: -20...+200 °C
- Mounting: direct or remote

Order code: **ACC54-FF-N2-S6-DM** ACC54-[PORT]-[CONN]-[MAT]-[MOUNT]

1. ACC54 — 3-way manifold
2. FF — Female×Female ports
3. N2 — ½ NPT
4. S6 — SS316
5. DM — Direct mount

ACC55 — 5-Way Manifold



Five-valve manifold (two block + equalise + two vent/test) for differential-pressure transmitters, enabling safe zero-check and calibration.

- Configuration: 2 block + equalise + 2 vent/test (5-valve)
- Material: SS316
- Pressure: up to 420 bar
- Temperature: -20...+200 °C
- Mounting: remote (bracket)

Order code: **ACC55-FF-N2-S6-RM** ACC55-[PORT]-[CONN]-[MAT]-[MOUNT]

1. ACC55 — 5-way manifold
2. FF — Female×Female ports
3. N2 — ½ NPT
4. S6 — SS316
5. RM — Remote mount

Diaphragm Seal Systems – DST40

DST40 diaphragm seals isolate the PGN gauge from aggressive, viscous, crystallising, hot or hygienic media. A flexible diaphragm transmits pressure through a fill fluid to the gauge, protecting the element while preserving accuracy.

Ordering structure

DST40-[TYPE]-[DIAPHRAGM]-[FILL]-[UPPER]-[LOWER]-[OPT] — TYPE T/F/S/I/H/C · DIAPHRAGM S6=316L, HC=Hastelloy C, TA=Tantalum, PT=PTFE-coated · FILL SI=silicone, GL=glycerine, HL=halocarbon (O₂), FG=food-grade · UPPER instrument conn (G2/N2) · LOWER process conn (G2/N2, flange D16/A15, TC Tri-Clamp, IL in-line) · OPT XX, FR=flushing ring, C1/C2/C5=capillary length.

DST40-T – Threaded Diaphragm Seal



General-purpose threaded diaphragm seal that isolates the gauge from corrosive, viscous or contaminated media.

- Connection: threaded ½/¾ NPT or G
- Diaphragm: SS316L (Hastelloy/Tantalum optional)
- Fill: silicone / glycerine
- Temperature: -20...+200 °C (direct)

Order code: **DST40-T-S6-SI-G2-N2-XX**

DST40-F – Flanged (Flush) Diaphragm Seal



Flanged flush-mounted seal for slurry, viscous, crystallising and contaminated media; the flush diaphragm resists clogging.

- Connection: flange DIN/ANSI (flush)
- Diaphragm: SS316L / PTFE-coated
- Fill: silicone
- Use: slurry, viscous, crystallising

Order code: **DST40-F-S6-SI-G2-D16-FR**

DST40-S – Sanitary Diaphragm Seal



Hygienic seal with Tri-Clamp connection, crevice-free 316L surface and food-grade fill for food, dairy and pharma.

- Connection: Tri-Clamp / DIN 11851
- Diaphragm: SS316L, Ra ≤0.8 µm
- Fill: food-grade
- CIP / SIP capable

Order code: **DST40-S-S6-FG-G2-TC-XX**

DST40-I – In-Line Diaphragm Seal



In-line seal mounted directly in the pipe for clean flowing liquids, with minimal pressure loss and no dead leg.

- Connection: in-line / wafer
- Diaphragm: SS316L
- Fill: silicone
- Use: clean flowing liquids

Order code: **DST40-I-S6-SI-G2-IL-XX**

DST40-H – High-Pressure Diaphragm Seal



Robust threaded seal for high-pressure and hydraulic service where standard seals are not rated.

- Connection: high-pressure threaded
- Diaphragm: SS316L
- Fill: silicone
- Pressure: high-pressure rated

Order code: **DST40-H-S6-SI-G2-N2-XX**

DST40-C – Capillary Seal System



Remote seal connected to the gauge by a capillary, for high-temperature, hard-to-reach or vibrating points, with temperature compensation.

- Connection: any DST40 form + capillary
- Capillary: 1 / 2 / 5 m
- Diaphragm: SS316L
- Fill: silicone (temperature-compensated)

Order code: **DST40-C-S6-SI-G2-D16-C2**

Diaphragm Seal Selection Guide

Select the seal type by the medium and connection, the diaphragm by corrosion, and the fill fluid by temperature and service:

Medium / condition	Recommended	Diaphragm	Fill fluid
Corrosive acids	DST40-T / F	Hastelloy C / Tantalum	Silicone
Viscous / slurry / crystallising	DST40-F	SS316L / PTFE-coated	Silicone
Food / dairy / pharma (hygienic)	DST40-S	SS316L (Ra ≤0.8 µm)	Food-grade
Clean flowing liquid, low loss	DST40-I	SS316L	Silicone
High pressure / hydraulic	DST40-H	SS316L	Silicone
High temp / remote / vibration	DST40-C	SS316L	Silicone (temp-comp.)
Oxygen service	DST40-T / F	SS316L	Halocarbon (O ₂)

Selection tip

For temperatures or locations beyond a directly-mounted seal, use the **DST40-C capillary system**; specify the shortest practical capillary and account for temperature compensation. Add a **flushing ring (FR)** for media that tend to deposit on the diaphragm.

Gauge × Accessory Compatibility Matrix

Recommended pairing of each PGN gauge with the accessory ecosystem:

Gauge	ACC50	ACC51	ACC52	ACC53	ACC54	ACC55	ACC56	ACC57	DST40
PGN10	✓	✓	✓	○	○	—	✓	✓	✓
PGN11	○	○	—	○	○	—	✓	✓	✓
PGN12	○	○	○	○	○	—	✓	✓	✓✓
PGN13	✓	○	✓	○	○	—	✓	✓	○
PGN14	✓✓	✓	✓	○	○	—	✓	✓	✓
PGN15	✓	✓	✓	○	○	—	✓	✓	✓
PGN21	✓	✓	✓	○	○	—	✓	✓	✓

Note on manifolds

Manifolds (ACC53 / ACC54 / ACC55) are primarily intended for transmitters, differential-pressure service and special installations. With a direct-mounted gauge they are used only on a case-by-case basis, and the 5-way manifold (ACC55) is reserved for DP transmitters.

✓✓ specially recommended · ✓ compatible · ○ on a case-by-case basis · — not recommended. Confirm thread/rating compatibility against the official datasheet before order.

Installation Assembly Concept

A typical fully-protected gauge assembly, from the process tap up to the gauge. **Not all of these components are used at the same time** — the final selection and the order of components depend on the service, temperature, pulsation and medium. A clean, non-pulsating water point may need only a root valve, while severe service may use the full chain.



How to read it

Build the assembly top-down to the service: corrosive/viscous media → add the **DST40 seal**; spikes → **ACC51 gauge saver**; pulsation → **ACC50 snubber**; steam/hot → **ACC52 syphon**; always provide an **ACC56 root valve** for isolation.

Typical Envelope Dimensions

Typical envelope dimensions for the accessory ecosystem (mm) and approximate weight (kg). Exact dimensions depend on the configured options and must be confirmed against the official dimensional drawing.

Preliminary — not for fabrication

Official NICO dimensional drawings are not yet released. The figures below are **typical envelope dimensions for guidance only**; final dimensions must be confirmed against the official NICO dimensional drawing before fabrication, ordering or installation.

Equipment	Code	Height / Length	Width / Hex / Ø	Process port	Weight ≈ (kg)
ACC50 Snubber	ACC50	L 55	Hex 22	½ NPT	0.12
ACC51 Gauge Saver	ACC51	L 72	Hex 27	½ NPT	0.25
ACC52 Syphon (pigtail)	ACC52	H 100	Coil Ø50	½ NPT	0.30
ACC53 2-Way Manifold	ACC53	120	40 × 60	½ NPT	0.8
ACC54 3-Way Manifold	ACC54	150	40 × 60	½ NPT	1.0
ACC55 5-Way Manifold	ACC55	180	40 × 60	½ NPT	1.4
ACC56 Root Valve	ACC56	L 90	Hex 27	½ NPT	0.40
ACC57 Needle Valve	ACC57	L 80	Hex 22	½ NPT	0.30
DST40-T Threaded Seal	DST40-T	H 60	Ø80	½ NPT	0.6
DST40-F Flanged Seal	DST40-F	per flange	per DN	Flange	per DN
DST40-S Sanitary Seal	DST40-S	H 55	Ø64	Tri-Clamp	0.5
DST40-I In-Line Seal	DST40-I	per line	per DN	In-line	per DN
DST40-H HP Seal	DST40-H	H 70	Ø80	½ NPT	0.7
DST40-C Capillary Seal	DST40-C	+ capillary	Ø80	per form	+ capillary

All dimensions are indicative and subject to change without notice; confirm against the official NICO dimensional drawing before fabrication or installation.



PGN — Pressure Gauge Family

PGN10

Industrial Bourdon Pressure Gauge

PGN11

Capsule Pressure Gauge

PGN12

Diaphragm (Flanged) Pressure Gauge

PGN13

Economic Bourdon Pressure Gauge

PGN14

Heavy-Duty Liquid-Filled Gauge

PGN15

Safety-Pattern Pressure Gauge

PGN21

Contact Pressure Gauge





☎ Tel: +98 21 65020398
+98 21 65020374

☎ Fax: +98 21 65020361

☎ Factory Add.: Block 34, End of 6th St., Payam Special Economic Zone, Karaj, Iran

☎ Office Add.: Block 2, First Floor, No. 3, Farhadih deadend, Tohid St., Tehran, Iran

☎ Whats App No.: +989109660710

☎ Mail: info@nikaansanat.com

☎ Web: www.nikaansanat.com