

# Industrial Enclosures for Harsh Environments

User Manual

Series 30D, 30S, 38D, 38S, 42D, 42S, 52D, 52S

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# Introduction

Developed and tested by APG Vision, this enclosure was designed to protect your device(s) in harsh, industrial environments. Follow this guide for instructions on assembling and maintaining the enclosure while ensuring the performance of the integrated component.

## Warranty Statement

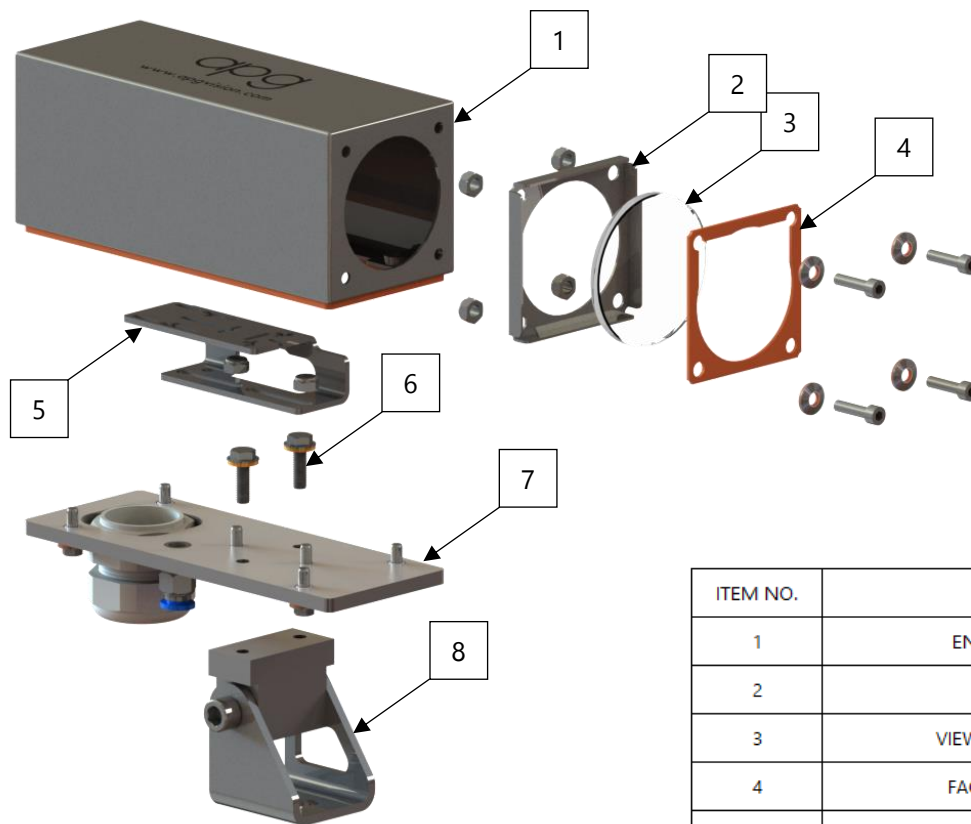
APG Vision LLC (APG) warrants the equipment manufactured by it to be free from defects in materials and workmanship under normal use and service; its obligation under this warranty being limited to replacing at its facility any product, part, or parts which shall, within one (1) year after delivery of such equipment to the original purchaser, be returned, and which APG's examination shall disclose at its sole discretion to have been defective. This one (1) year warranty is forfeited by tampering, modifying, or altering the APG product in any way that is beyond the scope of provided instructions for routine inspection, care, and installation of integrated components. APG expressly disclaims any express or implied warranty of merchantability or fitness for a particular purpose. APG shall have no liability for damages, direct or consequential, on account of defective materials or workmanship. APG reserves the right to make changes in design, or to make additions to, or improvements in, its products without imposing any obligation upon itself to install them on its products previously installed. APG may provide assistance in the form of recommendations, engineering or technical information, and advice but such information is furnished only as an accommodation and APG shall have no liability for incomplete, faulty, or inaccurate advice, recommendations, or assistance, negligent or otherwise. APG accepts responsibility for the warranty of integrated components that are purchased and installed at its facility, subject to their terms and limitations. Returns or replacements of parts and/or products may be subject to shipping, handling, replacement, and/or restocking fees. Some regions do not allow limitations on how long an implied warranty lasts or allow exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights, which vary region to region.

# Protection Rating

For added protection and to meet FDA/Food-Grade standards, our **S Series** enclosures are rated **NEMA 6 / IP68**, guaranteed to be dust tight as well as protecting against continuous liquid immersion. S Series enclosures are constructed and fastened with Corrosion-Resistant 316 Stainless Steel.

For a lower cost option, our **D Series** enclosures are constructed with a 304 Stainless Steel body and an anodized aluminum base. D Series enclosures are rated **NEMA 4 / IP65** to be dust-tight and protect from low pressure water jets.

All gaskets are made from a silicone rubber, Viton™ rubber, or EPDM foam. The viewport window may be a clear acrylic with a scratch-resistant coating applied to either side, or durable glass.



ITEM NO.	DESCRIPTION
1	ENCLOSURE BODY
2	FACEPLATE
3	VIEWPORT / WINDOW
4	FACEPLATE GASKET
5	MOUNTING ARM
6	M6 X 20MM ENCLOSURE MOUNTING BOLTS
7	ENCLOSURE BASE
8	PAN & TILT ASSEMBLY

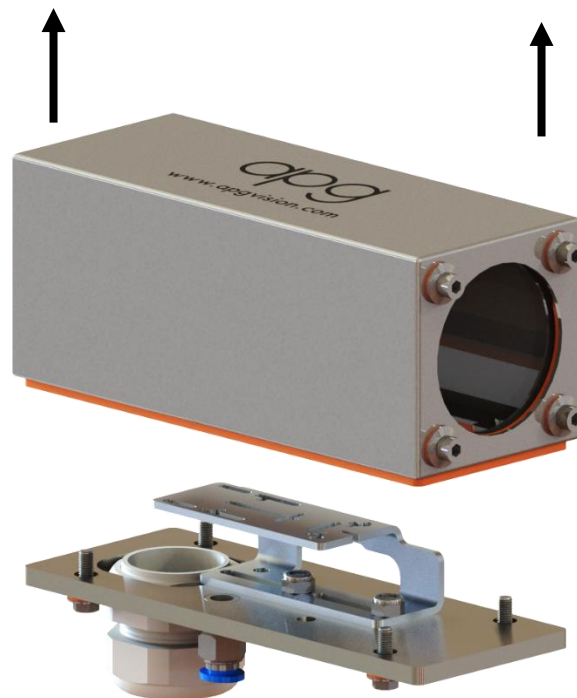
# Installation Instructions

You may need the following tools:

- 2.5 Hex for M3 Socket Head
- 4mm Hex for M5 Socket Head
- 8mm Socket (and Open-End) for M5 Hex Head
- 10mm Socket for M6 Hex Head

## 1. Preparing the Enclosure

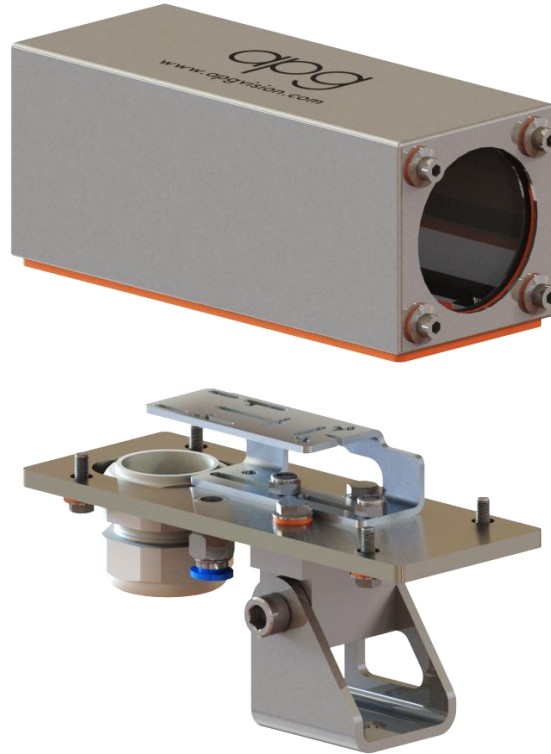
- Loosen the M5 flanged hex head bolts around the base of the enclosure. These will remain attached to the base by O-rings.
- Do not remove any fasteners around the viewport unless to replace a damaged window. These will be 5mm hex nuts on the inside of the enclosure.



## 2. Mounting the Enclosure

- a. Two, M6x1 20mm long bolts run through the center base of the enclosure to secure an optional APG Pan & Tilt mounting assembly. This would allow you to adjust the pitch and yaw of the enclosure to the desired orientation.

Note: For some enclosures, a Pan & Tilt mount may already be installed with your enclosure.



## 3. Installing Your Component(s) into the Enclosure

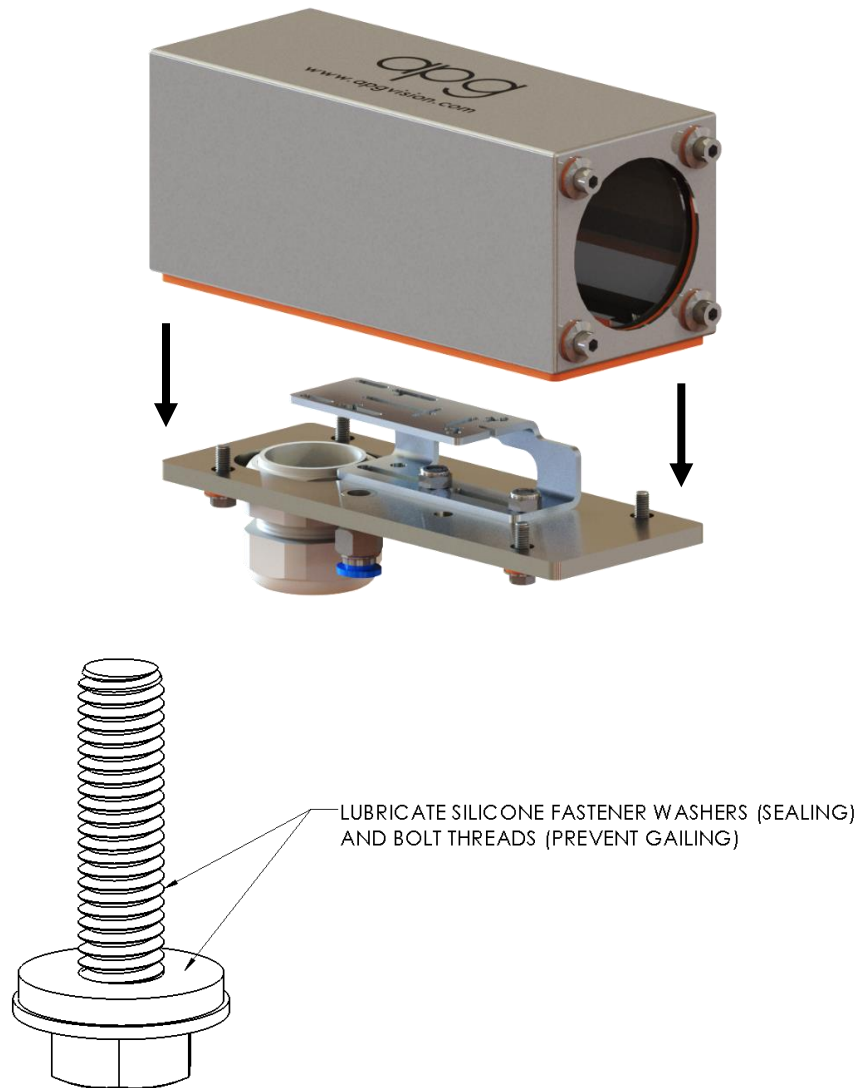
- a. Align the mounting holes on your camera or sensor with the mounting arm in the enclosure.
- b. Secure your device to the mounting arm using the fasteners provided with your device or the optional bolts included with the enclosure.
- c. By loosening the two M5 hex nuts at the base of the mounting arm you may adjust the distance of your device from the viewport.

Note: For some mounting arms you may need to first remove it from the base, then secure your device and reattach the arm to the base of your enclosure.

## 4. Refer to the Cable Gland Instructions at the end of this manual for proper milling of Cable Gland Insert and cable(s) installation.

## 5. Sealing the Enclosure

- With your component(s) installed in the enclosure, reinstall the protective enclosure body using the bolts removed in Step 2.
- Refer to the Fastener Torque Specifications on Page 8 to prevent damage to your enclosure and to meet an IP68 rating.



## 6. Optional Air-Cooling

- If your enclosure is equipped with a Push-to-Connect tube fitting, make sure your air supply is clean and dry. Long air lines can accumulate moisture in humid environments.
- Recommended supply air pressure is **2-5 PSIA (0.138-0.345 Bar)**.
- Additionally, your enclosure may include an Air Curtain Faceplate Gasket to keep dust and moisture off the viewport.

Note: With an Air Curtain Faceplate the enclosure will become unsealed. If maintaining the seal and air blow-off is desired, ask our sales team about an External Air Curtain.

# Temperature Tolerance

The listed temperature ranges are for reference only. Exceeding these values may result in compromising the liquid tight enclosure and permanently damaging the material. Stainless Steel and Nickel-plated Brass Cable Gland Bodies are available if your application exceeds these materials' tolerances.

Polyethylene: -4° to 200° F  
EPDM Foam: -40° to 250° F  
Polycarbonate: -4° to 285° F  
TPE Split Insert: -20° to 285° F  
Viton™ Rubber: -20° to 400° F  
Silicone: -100° to 400° F

# Cleaning and Maintenance

## Stainless Steel:

When cleaning the stainless-steel body of your enclosure be sure to avoid bleach and cleaners with chlorine as these will stain and damage the surface. Additionally, steel wool and brushes should be avoided to preserve the polished finish.

## Aluminum:

Anodized aluminum parts may require abrasive cleaning with gentle cleaning products such as soap and water. Harsh cleaning products may react with unfinished aluminum parts.

## Acrylic / Polycarbonate:

Although your acrylic window comes with an anti-abrasion coating, it is important to routinely clean the surface to maintain visibility. APG recommends a plastic/acrylic cleaning solution, otherwise use soap and water with a microfiber towel.

DO NOT use ammonia, acetone, or alcohol-based cleaners; this will crack and weaken the acrylic.

## Glass:

It is important to routinely clean the surface of your enclosure's window to maintain visibility. For glass, make sure the surface is wet before cleaning to avoid scratching the surface. A microfiber towel is recommended for wiping down the surface when you are finished washing.

# Fastener Torque Specifications

To properly fasten components of our enclosures, determine the fastener size (M5 or M6, typically) and the material of the gasket being compressed (Silicone, EDPM Foam, or Viton). Lubrication is applied to all tapped threads during assembly and reapplication is suggested if component is being reassembled. Powered drivers may cause galling and are not recommended.

## M5 Fasteners

- |                     |           |         |
|---------------------|-----------|---------|
| • Silicone Gasket:  | 6.0 lb.in | 0.6 N.m |
| • EDPM Foam Gasket: | 4.0 lb.in | 0.5 N.m |
| • Viton Gasket:     | 8.0 lb.in | 0.9 N.m |

## M6 and 1/4 Inch Fasteners

- |                     |            |         |
|---------------------|------------|---------|
| • Silicone Gasket:  | 8.0 lb.in  | 0.9 N.m |
| • EDPM Foam Gasket: | 4.0 lb.in  | 0.5 N.m |
| • Viton Gasket:     | 10.0 lb.in | 1.1 N.m |

## External Acrylic Viewport \*

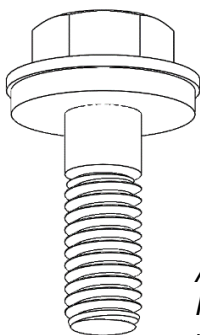
- |                     |           |         |
|---------------------|-----------|---------|
| • Silicone Gasket:  | 4.0 lb.in | 0.5 N.m |
| • EDPM Foam Gasket: | 4.0 lb.in | 0.5 N.m |
| • Viton Gasket:     | 4.0 lb.in | 0.5 N.m |

## Body Weld Studs

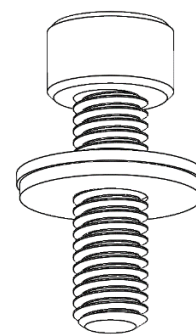
- |                  |                  |                |
|------------------|------------------|----------------|
| • M5:            | 15.6 lb.in (MAX) | 1.75 N.m (MAX) |
| • M6 & 1/4 Inch: | 26.4 lb.in (MAX) | 3.00 N.m (MAX) |

\* External acrylic viewports are susceptible to cracking around the corners if over-torqued. To meet enclosure IP rating requirements and prevent damage to the viewport, follow these torque specifications.

**Note:** The maximum torque suggested for your application is to prevent over-compression of the gasket which may damage the material and compromise the seal of the enclosure. If you are unsure of the torque you are applying to a fastener, bolt down until the gasket begins to expand from under the head of the fastener then back off one eighth turn.



*APG Custom  
Flanged-Hex Head  
with Gasket*



*Fastener with  
Bonded Sealing  
Washer Gasket*



# Cable Gland Instruction

To correctly use the **Cable Gland**, determine the diameter(s) of the cable(s) you want to run into the enclosure. Select an end drill (best) or drill bit of the **same** diameter or up to **20 thousandths larger**. See the next page for protection level based on hole diameter versus cable diameter. While the **Cable Gland** is assembled, mill or drill a hole for each cable centered on the split line in the **Split Insert**.

**Note:** To get the cleanest hole, do the following:

1. Use an end mill.
2. Mill from the Crown Nut side.
3. When milling the hole, back out and clean the mill flutes frequently (every 1/4" depth).
4. Chill down the end mill before milling each hole.

To install the cable(s), unscrew the **Crown Nut** and remove the **Split Insert**. Slide the cable connector through the hole in the **Crown Nut**, then through the hole in the **Cable Gland** body. Join the two sides of the **Split Insert** around the cable and press the **Split Insert** back into the **Cable Gland** body. Tighten the **Crown Nut** back on the body.

And you are finished! You should now have a liquid tight seal around the cable without having to remove or replace the cable connector.

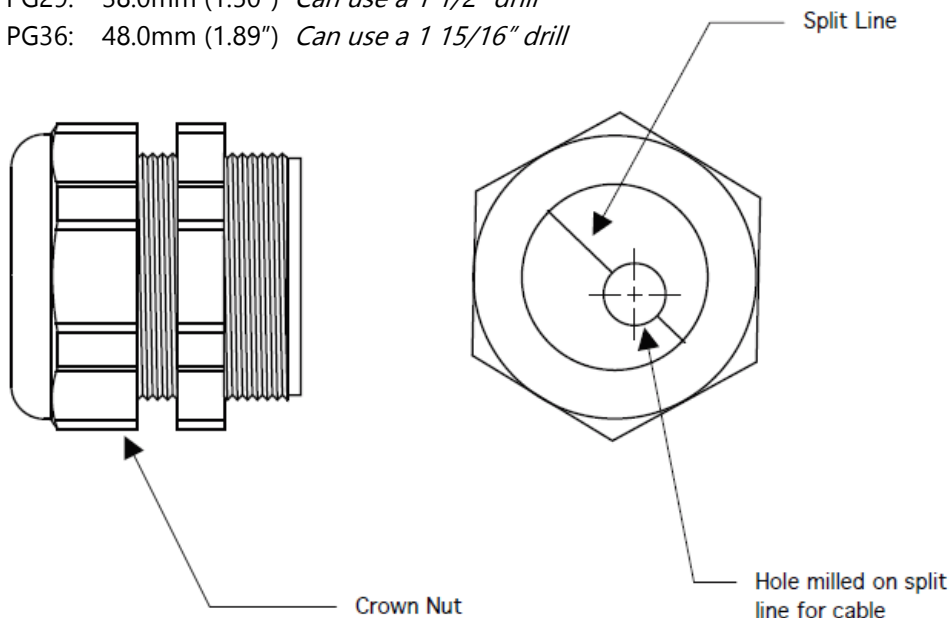
**Note:** For bulkhead installations, drill or punch the following mounting hole sizes:

PG16: 23.5mm (0.93") *Can use a 15/16" drill*

PG21: 29.3mm (1.15") *Can use a 1 3/16" drill*

PG29: 38.0mm (1.50") *Can use a 1 1/2" drill*

PG36: 48.0mm (1.89") *Can use a 1 15/16" drill*



**Note:**

When cutting holes in the PG16 Split Insert, an end mill is recommended. Drills work poorly in this size.

# Replacement/Addition Cable Glands

PG16, PG21, PG29, and PG36 cable glands are available separately for running your cables through bulkheads, enclosure sides, etc.

Standard Series (All cable glands are RoHS compliant)

Part Number	Description
PG16-04-01-01-03	PG16 Lock Ring, Polyamide Body, TPE Insert, Polyethylene Seal, Nickel Plated Nut
PG21-04-01-01-03	PG21 Lock Ring, Polyamide Body, TPE Insert, Polyethylene Seal, Nickel Plated Nut
PG29-04-01-01-01	PG29 Lock Ring, Polyamide Body/Crown Nut, TPE Insert, Polyethylene Seal
PG36-04-01-01-01	PG36 Lock Ring, Polyamide Body/Crown Nut, TPE Insert, Polyethylene Seal

Protection Rating: IP68; NEMA 4X

If Cable Diameter = Insert Hole Diameter

Protection Rating: IP65; NEMA 3

If Cable Diameter is up to 10% less than Insert Hole Diameter

## Torque Recommendations      lbf-in. (Nm)

The listed torque values are for reference only. Due to wide range of cable insulation materials used and the varying degrees of hardness between material types, torque values for Dome Nuts may vary depending on the cable jacket's characteristics. APG recommends that applied torques be determined empirically by testing the actual cable and Cord Grip used.

External Thread Size	Non-Metallic Cord Grip	External Thread/Lock Nut	Metallic Cord Grip
	Dome Nut		Dome Nut
PG16	44.0 (5.0)	44.0 (5.0)	66.0 (7.5)
PG21	66.0 (7.5)	66.0 (7.5)	88.0 (10.0)
PG29	66.0 (7.5)	66.0 (7.5)	88.0 (10.0)
PG36	66.0 (7.5)	66.0 (7.5)	88.0 (10.0)

