Optical Displacement Gage | **os5100**
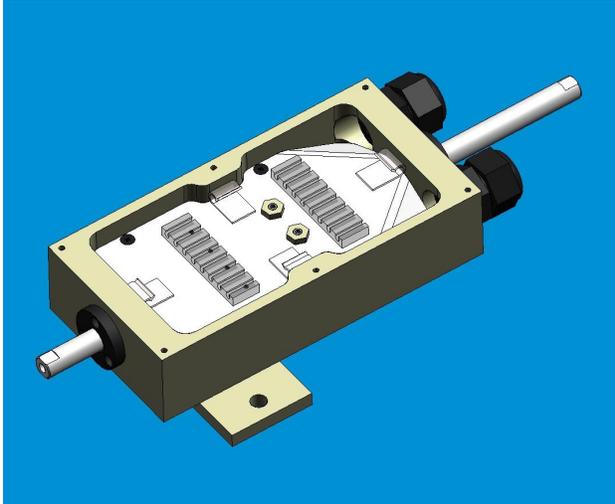
Figure 1 – os5100-xxxx/xxxx-64-FS Gage
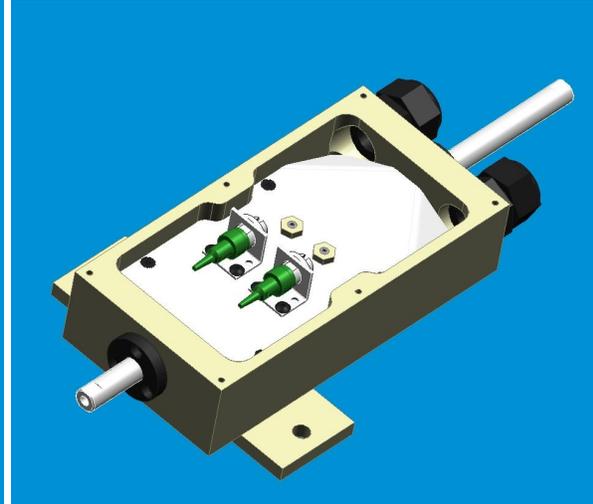
Figure 2 . os5100-xxxx/xxxx-64-FC

Introduction:

This installation guide provides additional details regarding the installation configuration of the os5100 displacement gage. This gage is designed to measure 50 mm range. Additional accessories are discussed below to assist in performing a successful installation and obtain the most accurate data while protecting the gage from possible damage.

Preparation:

The surface must be properly prepared prior to mounting the gage. The surface should be clean and flat where the mounting bracket is to be attached. The component that is to be monitored must move in a direction perpendicular to the axis of the gage. If there is variation in the movement, then a universal joint option should be included in the installation. If it is possible for the travel to extend beyond 50 mm then a safety disconnect should be included in the installation. Both devices can be included in the installation if required.

Gage Installation:

- Position the gage on the surface to monitored including any accessory devices.

- Mark the hole locations for the gage then remove the gage and drill two holes for the gage. The gage mount will accept 1/4 or M6 screws.

- Secure the gage in place. Tighten to substrate securely to prevent any movement.

- Determine the range of displacement to be measured and the current relative position of the two parts. Adjust the probe such that the relative position of the probe matches the current displacement between the two parts to be monitored.

- Mark the location of holes required for the probe tip and drill holes. Attach Angle Mount or other attachment plate if used.

- Secure probe to moving substrate with a M5 screw. If a universal joint is not used, be sure that as the substrate moves it does not cause binding in the probe. (See Figure 3 below for a typical installation.) When using a universal joint and/or a safety disconnect, screws are included to easily connect them together. Tighten securely. It is recommended that a threadlocker (ex. Loctite 242) material be used to prevent them from working loose.
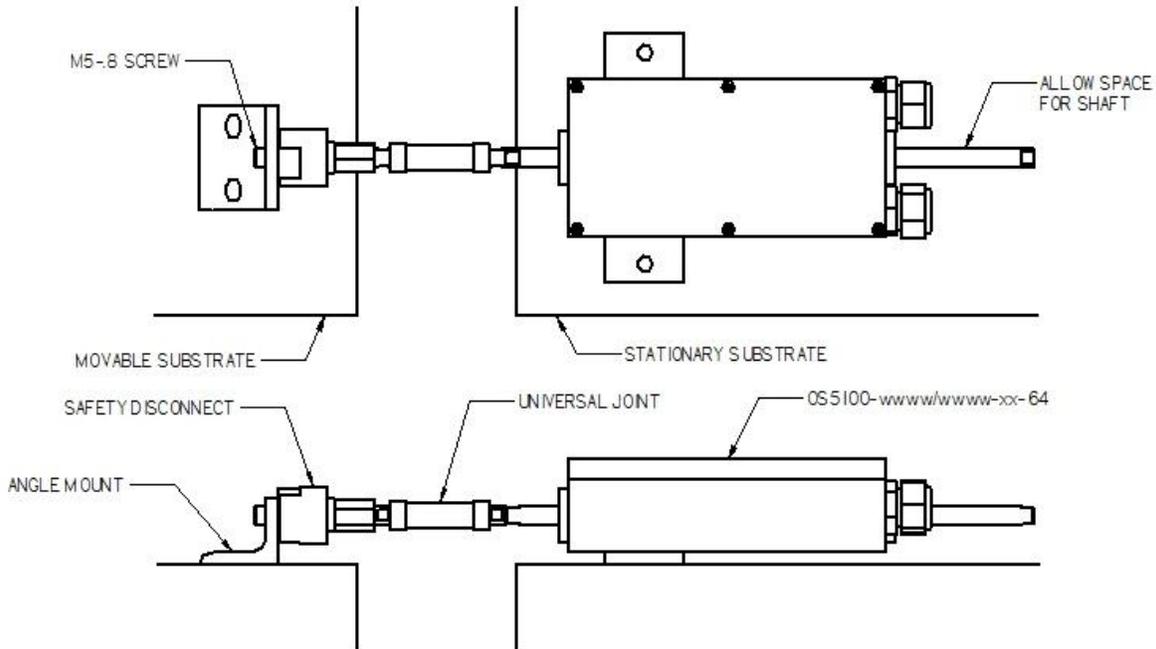
Figure 3 . os5100 Hypothetical Installation

Mechanical Protection:

For many installations mechanical protection will be needed to protect the gage from the environment. Environmental option 64 is best suited for indoor applications and should avoid direct high pressure water sprays. If this environment does exist consider using environmental option 67 or provide shielding to protect the gage from direct spray. Environmental option 67 is also best suited for use in dirty and abrasive conditions. If option 64 is used both probe ends should be protected from dirt and abrasive particles.

Optical Connections:

The os5100 gage is a pass through design that allows connection to the gage inside of the enclosure eliminating the need for a separate junction box. To access the connections, remove the six screws using a 2.5mm hex driver.

- Fusion Splice Option FS . This option allows the user to fusion splice the two fiber ends directly to the main cables connecting to other gages (see Figure 1). The cable glands will accept cables from 3 to 7 mm diameter.
    - Remove the cable jacket to expose the desired buffered fibers. Insert the fiber and cable though the glands and tighten using a 22mm or 7/8+wrench. Note that the cable glands are designed to form a seal only. Mechanical clamping of the cable should be provided outside of the gage to support the cable.
    - Prepare to splice the fibers. Approximately one meter of buffered fiber on each end is provided for fusion splicing. Based on the installation location and accessibility to a fusion splicer cut off as much excess fiber as possible to minimize the amount of fiber needed to be coiled up inside of the enclosure.
    - Install a splice sleeve on one fiber; prepare the fiber ends and fusion splice. Position the splice sleeve and heat. The splice sleeve should have a shrunk diameter of approximately 3 mm to fit the splice sleeve holder properly.
    - Coil the fiber into the trays insuring that there are no sharp bends in the fiber. Tape may be used as necessary to insure that the fibers are held in place.
    - Install the cover insuring that the oring gasket is in place and that no fibers will get pinched. Tighten all screws.

- FC/APC Connector Option FC . This option allows the user to connect directly to the gage with FC/APC connectors. The connectors will be connected to the FC/APC adapters as shown in figure 2. The cable glands will accept cable diameters from 3 to 7 mm diameter.
    - o Remove the cap nuts from the cable glands and remove the cable glands from the gage.
    - o Remove the seal using a pin as shown in figure 4 below.

9.5 to 9.9 mm Dia. Pin

Figure 4 . Removing Seal with Pin

    - o Use a larger pin to open up the end of the gland body to make it easier to reinstall the seal.

13.5mm

Figure 5 . Cable Gland Body

    - o Use a sharp utility knife to slit the seal as shown in figure 6.
    - o Slip the seal over the cable behind the connector oriented such that the small diameter end is pointed towards the cap. See figure 6 below.
    - o Remove pin from gland body and Insert connectorized cable.
    - o Push the seal back into the body. Be sure that the slit is aligned and mated together uniformly and is properly seated in the body. Screw on cap by hand.

Figure 6 . os3155 Weld Locations

- o Insert connector into gage and screw in cable gland. Tighten with wrench.
- o Clean and attach connector to gage.
- o Clamp cable in gland by tightening gland cap. Once seal makes contact with cable jacket, tighten one full turn to seal gland around cable.
- o Repeat for other cable.
- o Install the cover insuring that the oring gasket is in place. Tighten all screws.

Hook up displacement gage to instrument and verify that all optical connections are good. Add mechanical protection for the gage as may be required based on the environment that the gage is installed in.