

# Installation Instructions

## Double Wall Couplings (DPC) and Test Tubes (TTT and TCT)

**IMPORTANT:** Please read these warnings and assembly instructions completely and carefully before starting. Failure to do so may cause product failure, or result in environmental contamination due to liquid leakage into the soil, creating hazardous spill conditions.

**WARNING-DANGER:** Using electrically operated equipment near gasoline or gasoline vapors may result in a fire or explosion, causing personal injury and property damage. Be sure that the working area is free from such hazards, and always use proper precautions.

### Double Wall Couplings

Double Wall Couplings require the use of the OPW FCS coupling machine for proper installation of the double wall swivel couplings onto the ends of the flexible supply piping sections. Double wall swivel couplings require the use of the correct face plate for the coupling machine that accommodates the 1-1/2", 2", 3" and 4" couplings.

**NOTICE:** Using the OPW FCS coupling machine with couplings or piping not manufactured by OPW FCS will void the coupling machine warranty. Installing OPW FCS couplings and piping with coupling machines manufactured by others will void our piping warranty.

### Coupling Machine Set-up

Place the coupling machine on a dry, flat and clean area. Use a heavy-duty exterior type extension cord with a proper ground plug.

- Step 1:** Remove cover and install under the base.
- Step 2:** Install the correct faceplate.
- Step 3:** Install the correct threaded shaft.
- Step 4:** Install the correct size swage kit.
- Step 5:** Open the vent plug.
- Step 6:** Plug in machine with proper extension cord.

**WARNING:** Connect the coupling machine to a properly grounded outlet only. Failure to do so could cause electrical shock resulting in injury or death.

**WARNING:** The OPW FCS Coupling Machine is not intrinsically safe and must be operated in an open area free from gasoline vapors.

**IMPORTANT:** Connect the coupling machine to a properly grounded outlet only. Piping must be held vertically throughout the coupling process.

### Protective Coupling Caps

Before beginning the coupling process, remove the protective plastic cap from the end of the coupling body and place it on top of the coupling machine making sure it is kept clean of sand and gravel. After the pipe end has been coupled, immediately replace the plastic cap onto the end of the coupling.

### Swage Kits

Different size and types of flexible pipe couplings require the use of different size Swage Kits. These Swage Kits include a swage, a swage shaft and a faceplate. The swage is drawn through the inside of the Double Wall Swivel Coupling to internally expand it. The faceplate positions and secures the coupling to the top of the coupling machine during the swaging cycle.

The following swage kits are available for the double wall Swivel Fittings:

Product Number	Description
CSK-0150S	Swivel Swage Kit - 1.5"
CSK-0200S	Swivel Swage Kit - 2.0"
CSK-0300S	Swivel Swage Kit - 3.0"
CSK-0400S	Swivel Swage Kit - 4.0"

**NOTICE:** The dust covers that are supplied with the couplings should be kept on all couplings both before and after the coupling process. This precaution will lessen the possibility of damage and contamination from dirt, sand and debris. If dust covers are not available, cover the ends of the couplings with duct tape or a plastic bag.

### Positioning the Swivel Pipe Coupling

To position the coupling, install the appropriate size faceplate and then unscrew and remove the tapered swage from the threaded shaft. Lubricate the inside of the coupling insert with lithium grease. Insert the pipe coupling assembly over the threaded shaft and seat it onto the face plate.

### 4" Coupling Only

Prior to coupling the pipe, inspect the O-Ring in the ferrule. Be sure it is clean and free of any debris.

When swaging, insert the threaded part of the coupling onto the face plate. Fit the ferrule over the barbed end of the insert. Be sure the shoulder end of the ferrule goes on first. The ferrule should seat on the insert stop (similar to an SPC).

### Installing the Tapered Swage

Thread the tapered swage onto the threaded shaft until it meets the back opening of the pipe coupling assembly. Apply a very light coating of white lithium grease or metal assembly paste around the swage at this stage.

**NOTICE:** Do not use silicone-based lubricants to lubricate the swage. Only white lithium grease should be applied around the swage. Do not use lubricants or sealants in or around the end of the pipe.

#### Inserting Pipe into Coupling

For 1.5" pipe, measure 1.25" from the end of the pipe and mark it off with a pen (for 2", 3" and 4" pipe, measure 1.5" from the end of the pipe and mark it off with a pen). Insert the end of a flexible pipe section inside the pipe coupling until it bottoms out. The couple ferrule should line up with the mark.

**IMPORTANT:** In Loop System applications, keep the hole for the test port that is on the outside of the collar pointed towards the inside curl of the pipe. This will insure the coupling is in the proper position for the test assembly once inside the sump. For non-Loop System applications, position the holes for the test port facing the top of the sump before tightening. Inspect the entire assembly, prior to switching on the machine, for the following:

- o Swivel nuts are flush against the base plate.
- o The coupling and pipe are totally vertical.

#### Swaging Cycle

To begin the swaging cycle, turn the switch to the DOWN position. Once the tapered swage passes through the pipe coupling assembly, the motor will turn off. Remove the couple pipe section. Turn the switch to the UP position to allow the shaft to return to the starting position.

**NOTICE:** Make sure that the pipe is in a vertical position and that the coupling swivel nut is flush against the face-plate at all times during the swaging cycle.

#### Coupling Inspection

Inspect the installed pipe coupling assembly and pipe, inside and out, to make sure there was no damage to the insert, ferrule, swivel nut or pipe during the swaging operation. Always replace the protective coupling cap after the coupling has been swaged onto the pipe end.

**NOTICE:** Before and after the coupling process, the protective coupling cover should be kept on the coupling. This precaution will lessen the possibility of damage and contamination by dirt, sand and debris that could compromise the sealing process.

**IMPORTANT:** Connect the coupling machine to a properly grounded outlet only. Piping must be held vertically throughout the coupling process.

**IMPORTANT:** Using this coupling machine with pipe or couplings other than those manufactured by OPW FCS will void the product warranty.

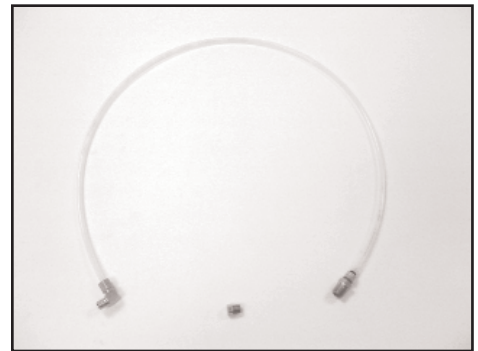
**IMPORTANT - 4" ONLY:** When attaching the coupling to a fitting, be sure to use a very viscous thread sealant (use Gasolia PC-30 or an equivalent).

#### Interstitial Tube Assemblies

The Double Wall Swivel Couplings attached to the ends of the flexible supply pipe sections have threaded (1/8" NPT) interstitial access ports on their ferrule for connection to Interstitial Tube Assemblies that come in various lengths. All tube assemblies are fitted on each end with 1/8" NPT brass compression fittings.

#### Test Tubes

Test Tubes are connected to the Double Wall Swivel Couplings located within tank sumps and the last dispenser sump in a series piping run. These 36" (900mm) long tubing assemblies are used to provide a means of air pressure integrity testing of the pipe interstitial space after installation. They can be cut to any desired length. They are used as another means of testing the interstitial space when installed inside a terminating dispenser sump. When not used for testing purposes, they may be plugged or left open depending on the pipe interstitial monitoring application.



#### Connector Tubes

Connector Tubes are connected to the double wall swivel couplings located within dispenser sumps and are 12" long. Installed inside junction dispenser sumps, connector tubes are used to interconnect the interstice of one pipe section to the next by bypassing the junction safety valve or other fittings such as a "Tee".



**Interstitial Tube Connections for installation of Interstitial Tubes if tubes are to be taken out after install testing:**

The steps required for temporarily connecting the connector tubes and/or test tubes to the threaded interstitial access ports of the double wall swivel couplings is as follows:

**Step 1:** Apply Teflon tape to only the NPT threads of the adapter.

**Step 2:** Thread the adapter into the NPT threaded interstitial access port.

**Step 3:** Cut the tube evenly to the desired length

**Step 4:** Slide the compression nut onto the tubing

**Step 5:** Slide the ferrule onto the tubing

**Step 6:** Insert tube end into preinstalled adapter

**Step 7:** Slide down and thread on compression nut to adapter by hand

**Step 8:** Complete tightening compression nut with a 1/2" wrench

**Interstitial Tube Connections for installation of Interstitial Tubes if tubes are to remain on coupling after install testing:**

The steps required for permanently connecting the connector tubes and/or test tubes to the threaded interstitial access ports of the double wall swivel couplings is as follows:

**Step 1:** Apply a gas grade pipe dope to the NP threads of the adapter.

**Step 2:** Thread the adapter into the NPT threaded interstitial access port.

**Step 3:** Cut the tube evenly to the desired length

**Step 4:** Slide the compression nut onto the tubing

**Step 5:** Slide the ferrule onto the tubing

**Step 6:** Insert tube end into preinstalled adapter

**Step 7:** Slide down and thread on compression nut to adapter by hand

**Step 8:** Complete tightening compression nut with a 1/2" wrench

**Notice:** OPW Fueling Containment Systems products must be used in compliance with applicable federal, state, provincial, and local laws and regulations. Product selection should be based on physical specifications and limitations and compatibility with the environment and material to be handled. OPW Fueling Containment Systems makes no warranty of fitness for a particular use. All illustrations and specifications in this literature are based on the latest production information available at the time of publication. Prices, materials, and specifications are subject to change at any time, and models may be discontinued at any time, in either case, without notice or obligation.

**Standard Product Warranty:** OPW Fueling Containment Systems warrants that products sold by it are free from defects in materials and workmanship for a period of one year from the date of manufacture by OPW. Proof of purchase may be required. For any product certified to California 2001 standards\*, FlexWorks by OPW Fueling Containment Systems warrants that products sold by it are free from defects in material and workmanship for a period of one year from date of manufacture or one year from date of registration of installation not to exceed 15 months from date of manufacture by OPW. As the exclusive remedy under this limited warranty, OPW Inc. will at its sole discretion, repair, replace, or issue credit for future orders for any product that may prove defective within the one year date of manufacture period (repairs, replacements, or credits may be subject to prorated warranty for remainder of the original warranty period, complete proper warranty claim documentation required.) FlexWorks by OPW Fueling Containment Systems further guarantees that all FlexWorks primary pipe is free from defects in materials and workmanship for a period of ten (10) years from the date of manufacture. Any FlexWorks primary pipe proven to be defective in materials or workmanship within said 10-year period will, at OPW FCS's option, be repaired or replaced, or credit will be given for future orders. OPW FCS will bear the reasonable labor costs associated with the repair or replacement of non-conforming FlexWorks primary pipe when such pipe has been used exclusively in a complete FlexWorks Retractable System. Any defect will be corrected promptly upon written notification to FlexWorks by OPW, Inc. at P.O. Box 405003 Cincinnati, Ohio 45240, attention Customer Service Manager. This warranty shall not apply to any product that has been altered in any way, which has been repaired by any other person than a service representative authorized by FlexWorks by OPW FCS or when failure is due to misuse, improper installation or maintenance. OPW FCS shall have no liability whatsoever for special, incidental, or consequential damages to any party, and shall have no liability for the cost of labor, freight, excavation, clean-up, downtime, removal, reinstallation, loss of profit, or any other cost or charges. \*Products certified to the California 2001 standards will have an OPW registration card enclosed/attached to the product. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, AND SPECIFICALLY THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THERE ARE NO WARRANTIES, WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF.

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