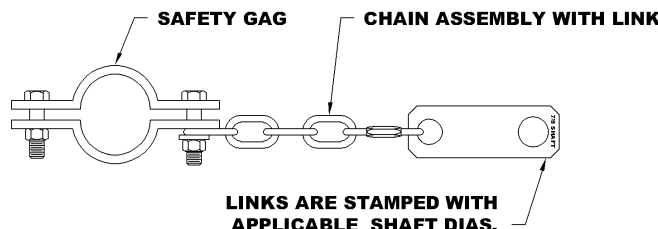


INSTALLATION INSTRUCTIONS FOR SAFETY GAGS & PIPE RESTRAINTS



SAFETY GAG INSTALLATION PROCEDURE:

REFER TO APPROPRIATE OPERATING PROCEDURES FOR THE TEST PLUG BEING UTILIZED, SEE TABLE 1 BELOW

1. Install Safety Gag pipe clamp onto pipe being tested. If pipe od is running heavy and nut/chain can not be installed onto the bolt as shown in the diagram above, relocate the chain to between the (2) clamp halves. This is an acceptable method of assembly as long as the chain does not interfere with the gag clamping on the pipe od. Safety Gags are to be installed with some slack so that movement of the shaft is not prohibited as pressure increases during testing.

WARNING! GRIPTIGHT® TEST PLUGS ARE DESIGNED TO BE SELF-SEALING AND SELF-GRIPPING, WHICH FACILITATE BOTH THE SEAL AND THE GRIPPER TO BECOME TIGHTER AS PRESSURE INCREASES. THE EXTRA SQUEEZE OF THE SEAL AND GRIPPER CAUSED BY THE TEST PRESSURE CAN BE DETECTED AS MINOR MOVEMENT OF THE SHAFT. INSTALLING THE SAFETY GAG WITH A TIGHT CHAIN MAY LIMIT OR PREVENT THE SMALL MOVEMENT OF THE GRIPTIGHT SHAFT AS PRESSURE IS INCREASING, AND SUBSEQUENTLY LIMIT OR PREVENT THE SELF-SEALING AND SELF-GRIPPING FEATURE OF OUR GRIPTIGHT TEST PLUGS.

2. Tighten bolts to insure slippage will not occur.
3. Insert test plug into tube/pipe. Follow appropriate operating procedures for the plugs being utilized, and install plugs per recommended torque values using a calibrated torque wrench.
4. Prior to pressurizing the system, slip the link over the shaft end. 8" and larger are equipped with two chain and Link assemblies. The Links are stamped with the shaft sizes they can accommodate. Each link can do at least (2) sizes of shafts. Insure you have the appropriate Link set-up. Unscrew the chain connector and switch the Link around if necessary.

WARNING! THE AMOUNT OF SLACK IN THE CHAIN AS WELL AS THE POSITION OF THE INSTALLED PLUG SHOULD BE OBSERVED FROM A SAFE DISTANCE TO INSURE NO APPRECIABLE MOVEMENT OF THE PLUG HAS OCCURRED. SHOULD MOVEMENT BE NOTED, THE TEST SHOULD BE STOPPED AND ALL PRESSURE RELEASED IMMEDIATELY.

5. Continue with appropriate operating procedures.

Table 1. Operating Procedures for Various Plug Types

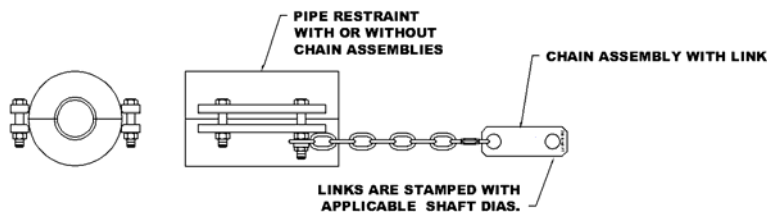
PLUG TYPE	OPERATING PROCEDURES
SQUATLINE II	DC2509
GRIPTIGHT TEST PLUGS	DC2510
GRIPTIGHT TEST PLUGS 10" AND LARGER	DC2520



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PIPE RESTRAINT INSTALLATION PROCEDURE:

REFER TO APPROPRIATE OPERATING PROCEDURES FOR THE TEST PLUG BEING UTILIZED, SEE TABLE 1 ON PAGE 1

1. Install Pipe restraint onto pipe being tested. If pipe od is running heavy and nut/chain can not be installed onto the bolt as shown in the diagram above, relocate the chain to between the (2) restraint halves. This is an acceptable method of assembly as long as the chain does not interfere with the restraint clamping on the pipe od. The Pipe restraint should be installed over the seal and gripper area of the plug to prevent pipe/tube expansion. Measure the distance on your plug and transfer to the outside of the pipe to insure correct placement. Pipe Restraints are to be installed with some slack so that movement of the shaft is not prohibited as pressure increases during testing.

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2. Tighten bolts if present, to insure slippage will not occur.
3. Insert test plug into tube/pipe. Follow appropriate operating procedures for the plugs being utilized, and install plugs per recommended torque values using a calibrated torque wrench.
4. Prior to pressurizing the system, if chain and link assemblies are present, slip the link over the shaft end. 8" and larger are equipped with two chain and Link assemblies. The Links are stamped with the shaft sizes they can accommodate. Each link can do at least (2) sizes of shafts. Insure you have the appropriate Link set-up. Unscrew the chain connector and switch the Link around if necessary.

WARNING! THE AMOUNT OF SLACK IN THE CHAIN AS WELL AS THE POSITION OF THE INSTALLED PLUG SHOULD BE OBSERVED FROM A SAFE DISTANCE TO INSURE NO APPRECIABLE MOVEMENT OF THE PLUG HAS OCCURRED. SHOULD MOVEMENT BE NOTED, THE TEST SHOULD BE STOPPED AND ALL PRESSURE RELEASED IMMEDIATELY.

5. Continue with appropriate operating procedures.

Note: Slip-on collar type pipe restraints do not have bolts or chain assemblies. After step 1, proceed to step 5.

QUESTIONS? Contact EST Group Customer Service at any of the following locations with questions.

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EST Group is a business unit of Curtiss-Wright Flow Control Company. **EST Group** provides a complete range of repair products, services and replacement parts covering the life cycle of tubular heat exchangers and condensers; additionally EST Group provides products and services to facilitate pressure testing pipe, piping systems, pressure vessels and their components. Visit EST Group on the Internet at <http://estgroup.cwfc.com>.



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