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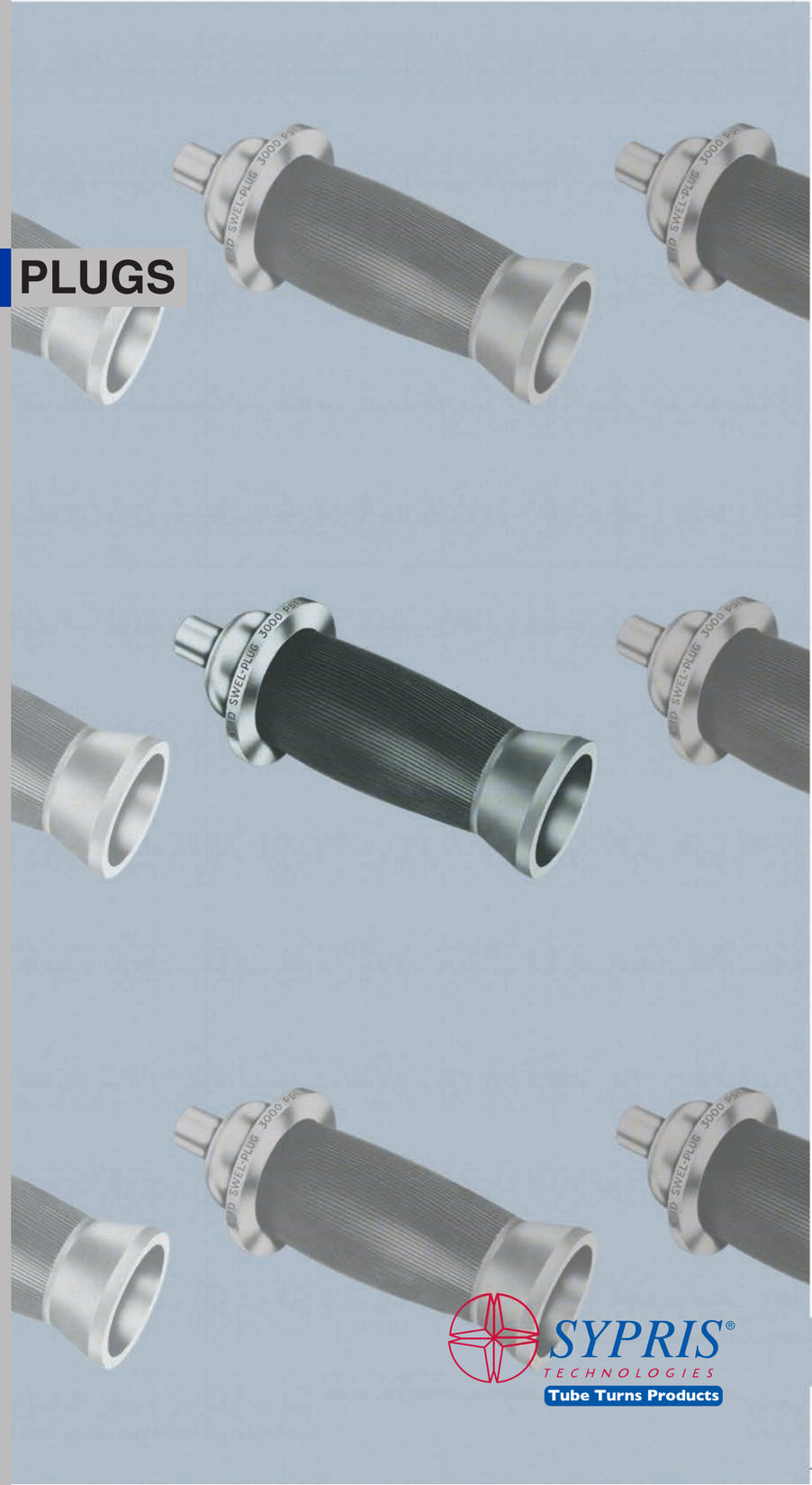
# SWEL PLUGS

**Swel Plug Pressure Testers for Hydrostatic Testing of Pipelines and Piping Assemblies**




SYPRIS®
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FOR FASTER, EASIER AND MORE ECONOMICAL TESTING OF PIPELINES AND PIPING ASSEMBLIES

TUBE TURNS' SWEL-PLUG PRESSURE TESTER is a rugged, positive-grip end closure that speeds up and simplifies hydrostatic testing of pipelines and piping assemblies. Developed scientifically as a time- and money-saver.

# SWEL PLUGS

**ADVANTAGES OF TUBE TURN DESIGNS**

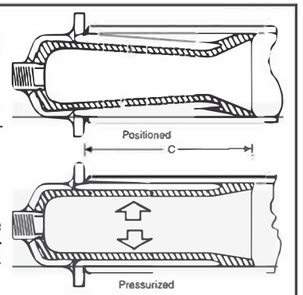
- It can be installed or removed in minutes and used over and over.
- It is remarkably versatile and each size can handle a wide range of pipe ID's and wall thicknesses.
- It eliminates the need to attach welding caps, blind flanges, plate blanks, etc. as end seals for each test.
- It does not require elaborate fixturing or constant adjusting of external clamps and screws.
- It can be used with any test pressure from atmospheric to 3000 psi.

Performance and dependability have been proven at numerous field installations and the SWEL-PLUG Pressure Tester is being used more and more frequently by pipeline contractors and piping fabricators, by mechanical contractors and maintenance departments, by gas utilities and petroleum refineries, by pipe and tube mills, etc.

**EASY TO USE**

A principal advantage of the SWEL-PLUG Pressure Tester is the ease with which it can be used. There are no caps to weld on and then cut off, no clamps to tighten and retighten, no gaskets to position and no threads to align. The pipe need not be end beveled, either; it can even have torch-cut square ends.

It is suggested that a steel sleeve, equal in length to the length of "C" dimension, should be slid over the outside diameter of plastic or rubber pipe to prevent expansion of the tube which could result in test failure and damage to container and/or tester.




And when the test is finished, the SWEL-PLUG Pressure Tester can be removed with a minimum of effort because its grip to the pipe walls slackens automatically as internal pressure is relieved.

Installation and removal are one-man operations, thanks to the compact, one-piece construction of the SWEL-PLUG Pressure Tester.

There is no need for special grinding of the pipe I.D. While it works best in seamless pipe, the SWEL-PLUG Pressure Tester performs even in pipe that has a raised I.D. weld bead-although there may be some leakage of the testing medium until pressure is high enough (usually about 100 psi) to bring about sealing of pronounced internal ridges.

**DOES NOT DAMAGE PIPE I.D.**

Since the SWEL-PLUG Pressure Tester provides full-length gripping, there is no single-point gouging of the pipe walls as is often associated with screw- or clamp-type testing devices. There are no deep scratches or sharp notches that could serve as stress raisers and potential weak spots.

Significantly, too, welding bevels are not dented or chipped during the test, and costly, time-consuming re-machining of pipe ends is not necessary.

**UNMATCHED VERSATILITY**

Unlike some designs, the SWEL-Plug Pressure Tester can handle more than one pipe I.D. or wall thickness. For instance, a 4" Model 4032 Pressure Tester can be used for testing pipe with Standard through Extra Strong wall thicknesses and 4" tubing of the various gauges falling within this I.D. range.

SWEL-PLUG Pressure Testers have been used with forged, cast, rolled and welded, and extruded pipe, and with such piping materials as carbon, low-alloy and stainless steels, aluminum, fiberglass, polyethylene and other plastics-even with rubber and canvas hose.

Contained media have included ordinary tap, demineralized and salt water; air; natural gas; oil sludge and municipal sewage; and operating temperatures have ranged from 20F to 150F.

While the SWEL-PLUG Pressure Tester normally is used in hydrostatic testing, it also has been employed in tests using air or other gases for pressurizing. The sealing ability of SWEL-PLUG Pressure Testers depends upon the condition of the tester and the I.D. of the pipe being tested; thus a gas tight seal cannot be guaranteed. An accumulation of leaking gases can be hazardous and special safety precautions prescribed universally for all types of testing with gases should be observed when SWEL-PLUG Pressure Testers are being used with gases. Added end restraints must be provided by the user for such tests.

Caution should be observed also when the pipe being tested is made of a material having a low coefficient of friction or when the testing medium has lubricating qualities greater than those of water. In such instances, it is necessary to provide some type of end restraint until the pressure-actuated ribs of the SWEL-PLUG Pressure Tester have established firm contact with the pipe I.D.

**HOW IT WORKS**

A metal-to-metal gripping surface is provided by longitudinal, flexible steel ribs that are joined to an end cap and a base ring by fusion weld. At the opposite end, the ribs are embedded in a full-length elastic liner at the base of a flared seal cup, thereby restraining and controlling rib movement. When a SWEL-PLUG Pressure Tester is positioned and the base ring is butted against the pipe end, the seal cup comes into full circumferential contact with the pipe wall to establish and initial pressure seal. As test pressure is introduced and builds up, the elastic liner expands, forcing the ribs against the pipe I.D. and generating a progressively stronger gripping force; the higher the internal pressure, the tighter the grip. With release of pressure, the liner returns to its original shape and the ribs simultaneously relax their grip to the pipe wall.

The gripping action and holding power of a properly positioned SWEL-PLUG Pressure Tester are direct functions of internal pressure, and performance and reliability are not dependent upon mechanical adjustments.

SWEL-PLUG Pressure Testers are manufactured and inventoried in normal NPS sizes 3/4" thru 12" and are rated for 3000 psi.

Size selection of a SWEL-PLUG Pressure Tester should be based on the I.D. - not outside diameter - of the pipe to be tested. A 12" Part No. 4032, for example, is good for pipe ID's ranging from 11.608 to 12.024. A convenient reference table is provided below for the determination of the appropriate Pressure Tester size and part number.

# PLUG USE & DIMENSIONS

*Caution: Sealing ability of SWEL-PLUG Pressure Testers depend on the condition of the tester and the I.D. of the pipe being tested. This device is not guaranteed for zero leakage and should not be used unless adequate precautions are taken by the user to safely handle any leakage of contained fluid that might develop. Long time tests where undetected leaking gases can accumulate require special care by the user. Added end restraints must be provided by the user when testing with air or other compressible fluid.*

| Nom. Pipe Size | Part No. | PIPE SIZE RANGE Min. I.D. | PIPE SIZE RANGE Max. I.D. | INSERTION LENGTH C | COUPLING SIZE Center | COUPLING SIZE Vent | APPROX. WT. LBS. (KGM) |
|---|---|---|---|---|---|---|---|
| 3/4 (20) | 4032 | 0.742 (18.85) | 0.824 (20.96) | 2.91 (73.9) | 3/8 (10) | - - - | 0.5 (.227) |
| 1 (25) | 4033 | 0.825 (20.96) | 0.949 (24.13) | 3.62 (91.9) | 3/8 (10) | - - - | 0.5 (.227) |
| | 4032 | 0.950 (24.13) | 1.050 (26.70) | 3.62 (91.9) | 3/8 (10) | - - - | 0.5 (.227) |
| | 4031 | 1.051 (26.70) | 1.162 (29.54) | 3.62 (91.9) | 3/8 (10) | - - - | 0.5 (.227) |
| 1-1/4 (32) | 4033 | 1.163 (29.54) | 1.274 (32.39) | 4.38 (111.3) | 3/8 (10) | - - - | 1.0 (.454) |
| | 4032 | 1.275 (32.39) | 1.385 (35.20) | | | | |
| | 4031 | 1.386 (35.20) | 1.494 (37.97) | | | | |
| 1-1/2 (40) | 4032 | 1.495 (37.97) | 1.620 (41.17) | 4.88 (124.0) | 1/2 (15) | - - - | 1.5 (.680) |
| | 4031 | 1.621 (41.17) | 1.761 (44.75) | | | | |
| 2 (50) | 4033 | 1.762 (44.75) | 1.911 (48.56) | 5.56 (141.2) | 1/2 (15) | - - - | 2.5 (1.13) |
| | 4032 | 1.912 (48.56) | 2.067 (52.52) | | | | |
| | 4031 | 2.068 (52.52) | 2.190 (55.65) | | | | |
| 2-1/2 (65) | 4033 | 2.191 (55.65) | 2.320 (58.95) | 6.94 (176.3) | 1/2 (15) | - - - | 3.5 (1.59) |
| | 4032 | 2.321 (58.95) | 2.490 (63.24) | | | | |
| | 4031 | 2.491 (63.24) | 2.679 (68.07) | | | | |
| 3 (80) | 4033 | 2.680 (68.07) | 2.872 (72.97) | 8.13 (206.5) | 1/2 (15) | - - - | 6.0 (2.72) |
| | 4032 | 2.873 (72.97) | 3.068 (77.95) | | | | |
| | 4031 | 3.069 (77.95) | 3.273 (83.15) | | | | |
| 3-1/2 (90) | 4032 | 3.274 (83.15) | 3.548 (90.14) | 9.13 (231.9) | 3/4 (20) | - - - | 9 (4.08) |
| | 4031 | 3.549 (90.14) | 3.730 (94.76) | | | | |
| 4 (100) | 4032 | 3.731 (94.76) | 4.055 (103.0) | 10.12 (2.57) | 3/4 (20) | | 9.5 (4.31) |
| | 4031 | 4.056 (103.0) | 4.380 (111.3) | | | | 12.5 (5.67) |
| 5 (125) | 4033 | 4.381 (111.3) | 4.706 (119.5) | 12.13 (308.1) | 1 (25) | - - - | 18 (8.16) |
| | 4032 | 4.707 (119.6) | 5.047 (188.2) | | | | 17.5 (7.94) |
| | 4031 | 5.048 (128.3) | 5.327 (135.3) | | | | 29 (13.2) |
| 6 (150) | 4033 | 5.328 (135.3) | 5.638 (143.2) | 13.00 (330.2) | 1 (25) | 1/4 (6) | 28 (12.7) |
| | 4032 | 5.639 (143.2) | 6.099 (154.9) | | | | 30 (13.6) |
| | 4031 | 6.100 (154.9) | 6.560 (166.6) | | | | 43 (19.5) |
| 8 (200) | 4034 | 6.561 (166.6) | 7.021 (178.3) | 17.00 (431.8) | 1 (25) | 1/4 (6) | 50 (22.7) |
| | 4033 | 7.022 (178.4) | 7.484 (190.1) | | | | 46 (20.9) |
| | 4032 | 7.485 (190.1) | 8.015 (203.6) | | | | 72 (32.7) |
| | 4031 | 8.016 (203.6) | 8.546 (217.1) | | | | 95 (43.1) |
| 10 (250) | 4034 | 8.547 (217.1) | 9.077 (230.6) | 19.87 (504.7) | 2*(50) | 1/4 (6) | 86† (39.0) |
| | 4033 | 9.078 (230.6) | 9.607 (244.0) | | | | 94† (42.6) |
| | 4032 | 9.608 (244.0) | 10.107 (256.7) | | | | 96† (43.5) |
| | 4031 | 10.108 (256.7) | 10.607 (269.4) | | | | 135† (61.2) |
| 12 (300) | 4032 | 11.608 (294.8) | 12.024 (305.4) | 24.06 (611.1) | 2*(50) | 1/4 (6) | 188† (85.3) |
| | 4031 | 12.025 (305.4) | 12.441 (316.0) | | | | 263† (119) |

All dimensions in inches. (MM)
*Larger sizes center couplings available on request.
†Fitted with integral, self-balancing lifting ring.

**Materials:**
Couplings – A105
Cap – A234 WPB
Base Ring – A515 GR 70
Ribs – Carbon Steel
Cup & Liner – PVC (operating temperature range +20°F to +150°F)

All sizes have one center coupling; vent couplings are provided as follows: in sizes 3/4" thru 5", none; 6" thru 10", one; 12", two vent couplings positioned 180° apart.

SYPRIS TECHNOLOGIES
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