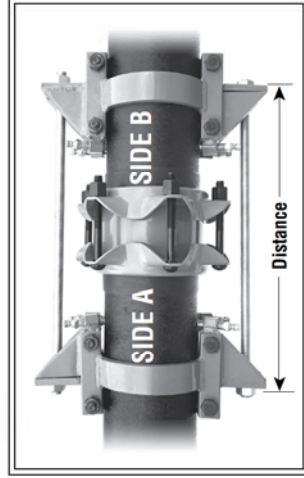


STAR National Products Restraining System Specifications and Ordering Information

The STAR National Products joint-restraining system can be used to its best advantage when the installer has a full understanding of the manufacturer's recommended procedures and installation techniques.

STAR National Products anchored joint restraints can be supplied as shown below, or mixed and matched in any combination to suit your piping system needs. Material specifications and product requirements are listed below.

NOTE: Always follow the proper installation instructions and warnings when using any STAR National Products or Dresser® joint restraining products.



Specification Information Required

The following general specs are required for all joint restraint product inquiries:

1. Specify STAR National Products restraint style required for both Side A & Side B.
2. Specify pipe type being used (steel, ductile or cast iron) for Side A & Side B.
3. Specify working pressure and maximum test pressure of your particular piping system.
4. Specify pipe diameter and thrust load requirements.
5. Specify rod length required: Available in 40", 50", and 60" as well as custom lengths per application.
6. Specify rod material: (carbon steel, galvanized, zinc plated or stainless steel). Rod diameters are available in sizes 3/4", 1", 1-1/4" and 1-1/2". Pipe diameter and line pressure specs will determine the number and size of rods required per joint.
7. Specify flange type (size & pressure class) and plate material required (carbon steel or stainless steel).

NOTE: Consult Dresser Engineering Department for further information.

STAR National Products, Inc. was established in 1984 and is headquartered in Columbus, Ohio. STAR National Products anchor restraint system components meet ANSI B18.6.2, ANSI B1.1 and ASTM A588, Grade B; A325, Type 3 standards for flanged and mechanical joint systems.

Note: TieBolt® and TieAnchor® are registered trademarks, and TiePlate™ is a trademark of STAR National Products, Inc., Columbus, OH. Dresser® is a registered trademark of Dresser, Inc., Dallas, TX.

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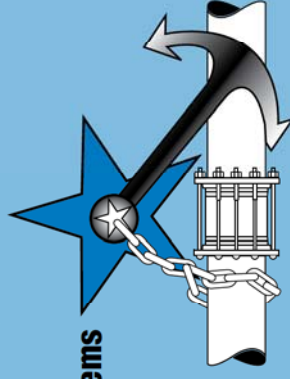
Form No. STAR 6-04
Rev. 3-98/01.5M



Piping Specialties

STAR National Products Tie-Anchor® Joint Restraint System

Steel Restraining Products for Water & Industrial Piping Systems



The Time-Proven Method for Restraining Piping Systems



STAR National Products

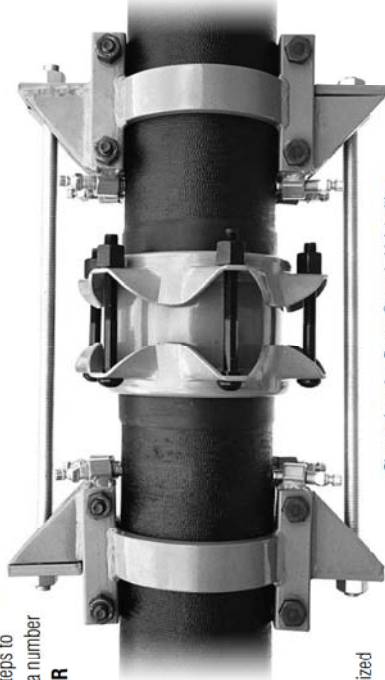
Anchor Restraint System Product Overview

The modern, safe, economical answer to prevent pipe joint separation...

During the installation of above ground and below ground piping systems, it is often necessary to take steps to restrain the pipe from joint separation. While a number of different methods have been used, the **STAR**

National Products anchor restraining techniques have been proven to be both reliable and economical, eliminating the many disadvantages inherent in other pipe joint restraining methods.

Today's joint restraint problems are becoming more complex. Whether steel, cast or ductile iron, the **STAR National Products** joint anchor restraint system offers a wide range of flexibility and adaptability, and can be customized to meet most field construction requirements.



Shown above is a Dresser® coupled joint with a STAR National Products Tie-Anchor® Restraint.



The STAR National Products anchor restraining system offers these specific advantages:

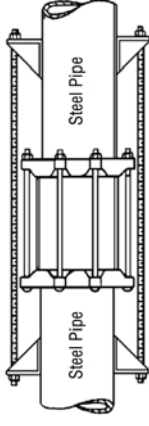
- All coupled pipe joints are **MECHANICALLY LOCKED** together
- Proper installation can be determined by **VISUAL** checking
- All restraint connections are performed **DURING** pipe installation
- Easy adaptation to various situations and pipe sizes
- Substantial savings over other restraining methods

Restraining Harness Configurations

Joint restraint styles shown below may be mixed and matched in various combinations to satisfy your restraint requirements according to pipe type and application.

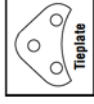
Style 440 Joint Harness

For use restraining steel or stainless steel pipe joint connections



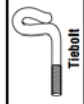
Style 441 TiePlate™

For restraining flanged connections on steel or ductile iron piping systems



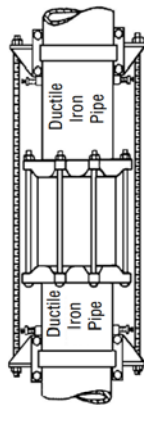
Style 442 TieBolt®

For restraining flanged or mechanical joint connections on steel or ductile iron piping systems



Style 443 TieAnchor®

For restraining joint connections on ductile iron or cast iron piping systems



The STAR National Products restraint system eliminates problems inherent in other restraining methods such as:

- The additional cost in labor of returning to work area for pouring concrete thrust blocks
- Concrete can adhere to fittings or hydrants and make it difficult to spot leaks or remove fittings or hydrants at a later date
- There is no way to determine whether the joint is properly restrained until tested
- Some pipe locations are inaccessible to concrete trucks
- Blocking is impossible in sand, fill, or weak banks