







MULTIFIX STEEL TEST PLUGS USER MANUAL



MFSTP

The Multifix Steel Test Plug by Plugline is a durable, versatile tool for sealing and testing pipe ends or openings. Its top and bottom flange system, secured by bolts, compresses a rubber seal for a reliable closure. Ergonomic handles ensure easy handling, while the integrated bypass system allows precise flow control during operations.



I. GENERAL PRODUCT INFORMATION

a. Main Parts of MFSTP

Essential Part information for further elaboration in later descriptions.



Part Specification		
ltem	Part	Material
1	Bottom Plate	S355JR
2	Top Plate	S355JR
3	Rubber	Natural Rubber
4	Threaded Pipe	S195T
5	Сар	Plastic
6	Handle	S306
7	Bolts	S306





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- 1. Bottom Plate (S355JR): Engineered from high-strength S355JR steel, the bottom plate ensures exceptional durability and stability, forming a reliable foundation for assembled components under significant loads.
- 2. **Top Plate (S355JR) :** Constructed from robust S355JR steel, the top plate ensures reliable structural support and secure connections, designed to withstand high mechanical stresses.
- Rubber (Natural Rubber) : Crafted with premium natural rubber, this component delivers superior elasticity and sealing efficiency, crucial for vibration absorption and maintaining airtight seals.
- **4. Threaded Pipe (S195T) :** Fabricated using S195T steel, this threaded pipe offers dependable strength and longevity, ideal for fluid transfer and mechanical system integration.
- 5. **Cap (Plastic) :** Manufactured from high-quality plastic, the cap provides lightweight, corrosion-resistant sealing, ensuring easy maintenance and reliable system closure.
- 6. Handle (S306): Made from corrosion-resistant S306 stainless steel, the handle combines ergonomic design with strength, ensuring efficient handling and operation.
- Bolts (S306): Precision-engineered from S306 stainless steel, these bolts deliver high tensile strength and corrosion resistance, ensuring secure fastening in demanding environments.

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II. INTRODUCTION

• This booklet is the operator's user manual for MFSTP. The booklet must be read carefully to ensure safe and efficient operation. The safety suggestions, principles, and guidelines set forth in this manual pertain to the utilization of all Plugline pipe plugs. Every Plugline product is thoughtfully designed, engineered, and examined, prioritizing safety. However, Plugline cannot foresee or manage the countless workplace variables that may impact safety and usage circumstances. Consequently, you must also assume responsibility for safety! Always prioritize and exercise safety when operating a pipe plug.



- In the event that you encounter any equipment conditions that could potentially compromise your safety or that of others, or if you are uncertain about the correct usage, refrain from using the equipment. Should you have any inquiries or suspect the presence of any atypical conditions not covered in this booklet, consult your supervisor or safety director prior to proceeding. Noncompliance with these safety guidelines, as well as those set forth by federal, state, or local governments, may lead to severe consequences, including fatality, significant bodily harm, and property damage.
- Ascertain whether the area constitutes a confined space. Consult the Occupational Safety and Health Administration guidelines on safe entry into confined spaces for reference.

III. GENERAL SAFETY RULES

- MFMFSTP must only be used by individuals who are adequately trained and capable of complying with the user manual instructions.
- Use standard and proper equipment.
- Maximum back pressure must not be exceeded.
- The plug must be used only in cylindrical pipes.
- Unquestionably, the environment's and users' safety must be guaranteed.
- Wearing work attire, boots, gauntlets, a hard hat, and goggles is required when operating the MFSTP.





Failure to use proper safety equipment or to secure the job site may result in death or serious bodily injury!

Competent Individual :

A competent individual is someone who, as a result of their professional education and experience, possesses adequate knowledge in the domain of mechanical plugs and is well-versed in the pertinent occupational health and safety regulations, as well as accident prevention measures. This individual is generally familiar with cutting-edge standards and technical regulations, enabling them to evaluate the secure operational conditions of the mechanical plug.



• Do not enter the danger zone when the plug is in use.





Never enter the danger zone! The danger zone exists in front of the plugged pipe opening in an area which expands outwardly in a cone shape.

IV. RULES FOR UTILITY

• In every use of MFSTP, check if there are any torn, cut surfaces or any chemical damages.



- Refer to your supplier in case of doubt.
- Check all accessories used while placing the MFSTP.
- While tightening the MFSTP, it must be guaranteed that the maximum back pressure is not exceeded.
- Maximum back pressure and usable diameter has been indicated on the label on the MFSTP.
- Always measure the pipe diameter and use a proper MFSTP.
- Before the MFSTP is placed in the pipe, the pipe needs to be removed from undesired substances such as burrs, soil, nails, glass, and chemicals.
- Do not overtighten bolts or nuts, as this may cause distortion or damage to the plug components and affect its functionality.



V. INSTALLATION AND OPERATION OF MFSTP

A. Necessary Preparations Before Use

- 1. Before each use, check the MFSTP and accessories.
 - In every use of MFSTP, check if there are any torn, cut surfaces or any chemical damages.
 - The control valve (if any) and connecting hoses shall not show any damage.
 - Properly clean the pipeline before installing MFSTP. Clean any debris or foreign substances which may reduce back pressure holding capability from the pipe before the plug is installed.



- Failure to properly clean pipe may cause Plug dislodgement or plug failure which may result in death, serious bodily injury and/or property damage!

- 2. Clean the pipe before use.
 - Remove mud, sand, stones, and sharp objects before you push the sealing plug into the pipe.
- 3. Make sure that the MFSTP is of the correct size!
 - Every Mechanical stopper or test plug has a minimum and maximum size range and a maximum allowable back pressure rating. (Select the right size)
- 4. Wear protective clothing and use personal protective equipment.
- 5. Confirm that the plug is adequately supported or braced, especially in cases where back pressure is significant, to avoid displacement during operation.
- 6. Check that all bolts, nuts, and flanges are free of damage and properly lubricated, ensuring they will function correctly during installation and operation.





B. Insertion of MFSTP in the Pipe

1. Position the Plug at the Pipe Opening

The first step of the installation process is the correct positioning of the plug inside the pipeline or cleanout tee.

• Alignment:

- Carefully position the MFSTP at the pipe opening, ensuring that the bottom flange and rubber seal are aligned with the pipe's internal diameter.
- The sealing surface of the rubber must fully contact the pipe's wall without gaps or misalignment to ensure an effective seal and prevent uneven pressure distribution.

2. Hand-Tighten the Bolts

Once the plug is properly positioned, begin securing it by lightly tightening the bolts by hand.

• Tightening Action:

- o Hand-tighten the bolts located on the top flange evenly to draw the bottom flange upward, compressing the rubber seal.
- o Follow a criss-cross tightening pattern to apply uniform pressure across the sealing surface.



3. Apply Torque for Sealing

After initial hand-tightening, use a wrench or spanner to apply the necessary torque for creating a secure seal.

Torque Specification:

- Tighten each bolt in a criss-cross pattern to the specified torque level, ensuring uniform compression of the rubber seal.
- Specific torque levels depend on the plug size and operating pressure; refer to the product documentation or consult your supplier for these values.

Note: Uneven torque application may lead to improper sealing or leaks during operation. Check and re-torque if necessary.

4. Mechanical Blocking for High-Pressure Applications

In systems with pressurized media, additional safety measures are necessary.

• Install Blocking Devices :

- For high-pressure systems, install mechanical blocking devices or anchors to prevent the plug from shifting under load.
- The coefficient of friction between the rubber and the pipe material may not be sufficient to hold the plug in place when subjected to internal pressure without external support.

5. Final Checks Before Operation

- Seal Inspection :
 - Ensure the rubber seal is fully compressed and the wingnut or T-handle is secured tightly. There should be no visible gaps between the seal and the pipe wall.
 - o Double-check that the plug is fully inserted and locked in position.



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Pressure Monitoring :

 Monitor the internal pipeline pressure to ensure it remains within the rated pressure capacity of the plug before activating the system.

6. Hydrostatic Testing (Recommended)

Safety Testing :

• Use hydrostatic testing (water testing) to verify the plug's sealing integrity in a safe, controlled environment. Water is less compressible than air, reducing the risk of explosive failure during testing.

C. Removal of MFSTP from the Pipe

The removal of the Multifix Steel Test Plug (MFSTP) must be done carefully to ensure safety and to prevent damage to both the plug and the pipeline. Follow the steps below to properly and safely remove the MFSTP:

1. Pressure Release and System Depressurization

• Step 1: Confirm Pressure Release

- Before starting the removal process, ensure all internal pressure within the pipeline is fully released, including any residual back pressure acting on both sides of the plug.
- Use pressure gauges to verify that there is no remaining pressure in the system to prevent accidental ejection of the plug.



- Failure to release pressure can result in sudden plug ejection, which may lead to severe injury or damage to the pipeline.

- Step 2: Drain the Pipeline (If Required)
 - If the pipeline contains liquid, drain it completely before attempting to remove the plug to avoid creating pressure differentials during removal.

Loosening the Bolts

• Step 1: Gradual Loosening

- Using a wrench or spanner, begin loosening the bolts on the top flange gradually in a criss-cross pattern.
- Loosen the bolts evenly to allow the compression of the rubber seal to release in a controlled manner, preventing sudden pressure changes or binding of the plug.
- Step 2: Equal Release of Pressure on the Sealing Surface
 - Ensure the rubber seal decompresses evenly around the entire circumference of the pipe as the bolts are loosened.
 - Monitor the plug's movement and ensure it loosens uniformly without any binding or shifting.

3. Removing the Plug

- Once the bolts are fully loosened, carefully pull the MFSTP away from the pipe opening.
- o Check for any residual debris or resistance during removal and address it to avoid damaging the plug or pipe.



4. Inspection and Cleaning After Removal

- o Inspect the rubber seal, flanges, and bolts for any wear, cuts, or damage that may have occurred during operation.
- Clean the MFSTP thoroughly, removing any mud, dirt, or chemical residues before storing it.

VI. MAITENANCE AND STORAGE

- 1. Maintenance:
- Step 1 : Clean the Plug

After removing the MFSTP, clean all components thoroughly using mild soap and water :

- Rubber Seal :
 - Clean the rubber seal to remove any debris, dirt, or residue that may have accumulated during operation.
 - Ensure the surface is free of contaminants to maintain sealing performance.
- Brides et Boulons :
 - Essuyez les brides supérieure et inférieure pour enlever toute saleté, graisse ou résidu chimique pouvant causer la corrosion ou nuire à leur bon fonctionnement.
 - Nettoyez les boulons et les filets pour éviter toute accumulation de saleté ou dommages aux filetages.

• Step 2 : Inspect for Damage

Carefully inspect all components for signs of wear, damage, or deformation :

- Rubber Seal :
 - Look for cuts, abrasions, cracks, or signs of chemical degradation that may compromise the seal's integrity.
 - Replace the seal if any damage is found.
- Flanges :
 - Check the flanges for deformation, dents, or corrosion. Ensure they are flat and undamaged for proper operation.
- Bolts and Threads :
 - Inspect the bolts and threads for wear, stripping, or deformation.
 - Verify that the bolts move freely and can be tightened uniformly during the next use.
- 2. Storage :
- Temperature Control: Store the plug in an environment where the temperature is consistently between +10°C and +30°C. Temperature extremes can adversely affect the material properties of the plug.
- Moisture Avoidance : Do not store the plug in wet or damp environments. Excessive moisture can lead to corrosion
 or degradation of the plug components.
- Light Exposure : Protect the plug from direct exposure to sunlight or other intense light sources, which can cause
 material degradation or compromise the integrity of the plug.
- Isolation from Contaminants : Ensure the plug does not remain in contact with metals, other plugs, or chemicals for prolonged periods. Such contact can lead to chemical reactions or material degradation, compromising the plug's functionality and safety.



VII. WARRANTY CONDITIONS

Limited Warranty

Manufacturer warrants the Goods to be free from defects in material and workmanship for one (1) year from the date of the original invoice, subject to the terms and conditions set forth herein. At its sole discretion, Manufacturer will repair or replace defective Goods at no cost to Buyer. This warranty is non- transferable and applies only to Goods used, maintained, and stored as intended. This warranty excludes labor, removal, and installation costs. It does not apply to Goods subjected to misuse, mishandling, misapplication, neglect, overinflation, unauthorized adjustments or repairs, or circumstances beyond the intended use. This warranty is only valid if the installation procedures, utilization, and commissioning recommendations have been respected. Any modification to the product, including but not limited to alteration, extension, or replacement of any part of the product, shall automatically void the product warranty.

Warranty Claims

Buyer must submit claims in writing within thirty (30) days of discovering the alleged breach of warranty. Obvious defects in the product can only be taken into account if notified in writing within two (2) weeks of the original invoice date of the Goods. To obtain warranty service, Buyer must return the defective Goods to Manufacturer, freight prepaid, for inspection. Freight collect shipments will be refused.

Limitation of Liability

Manufacturer's liability for its Goods (whether under the theories of breach of contract or warranty, negligence, or strict liability) shall be limited to repairing, replacing, or refunding the purchase price of defective Goods. Manufacturer is not liable for consequential, indirect, incidental, special, or economic damages, including without limitation personal injury, death, or property damage, resulting from misuse, mistreatment, overinflation, or other carelessness.

Safety Information and Buyer's Obligations

Buyer must follow provided instructions and receive proper training for the safe use of Plugline products. Buyer is responsible for ensuring all components are accurate, functional, and in good condition before use. Adequate safeguards must be in place against potential failure modes.

Indemnification

Buyer agrees to indemnify, defend, and hold harmless Manufacturer from and against any and all losses, liabilities, damages, claims, or expenses, including reasonable attorneys' fees, arising out of or in connection with Buyer's misuse, mishandling, misapplication, neglect, overinflation, unauthorized adjustments or repairs, or other carelessness of the Goods.



Force Majeure

Manufacturer shall not be liable for any delay or failure to perform its obligations under this Agreement if such delay or failure is due to causes beyond its reasonable control, including, but not limited to, acts of God, natural disasters, labor disputes, government actions, epidemics or pandemics, or transportation disruptions.

Entire Agreement and Disclaimer

This document constitutes the entire agreement between Manufacturer and Buyer with respect to the Goods and supersedes all prior or contemporaneous understandings, representations, negotiations, and agreements, whether oral or written, with respect to the subject matter hereof. No other warranties, representations, or liabilities, express or implied, apply, including without limitation any implied warranties of merchantability, fitness for a particular purpose, or freedom from claims for infringement. Manufacturer strictly disclaims any further representations, warranties, or liabilities relating to the condition or use of the Goods.

Governing Law and Dispute Resolution

This Agreement shall be governed by and construed in accordance with the laws of the jurisdiction in which Manufacturer is located, without regard to its conflict of laws principles. Any disputes arising out of or in connection with this Agreement shall be resolved by binding arbitration in the same jurisdiction, in accordance with the rules of the applicable arbitration organization. The prevailing party in any arbitration shall be entitled to recover reasonable attorneys' fees and costs.

Shipping and Insurance Costs

In the event of a warranty claim, Buyer shall be responsible for shipping and handling charges, packaging, return postage, and insurance for the exchange of a defective item. Such repair or replacement is subject to verification of the defect or malfunction and proof of purchase confirmed by showing the model number on the original dated sales receipt. The product that has been notified of the defect, with a description of the individual defects and an express warranty claim, for which a warranty has been granted, will be exchanged and delivered free of charge as a new or refurbished product. The delivery of the product will be a new delivery or next delivery.