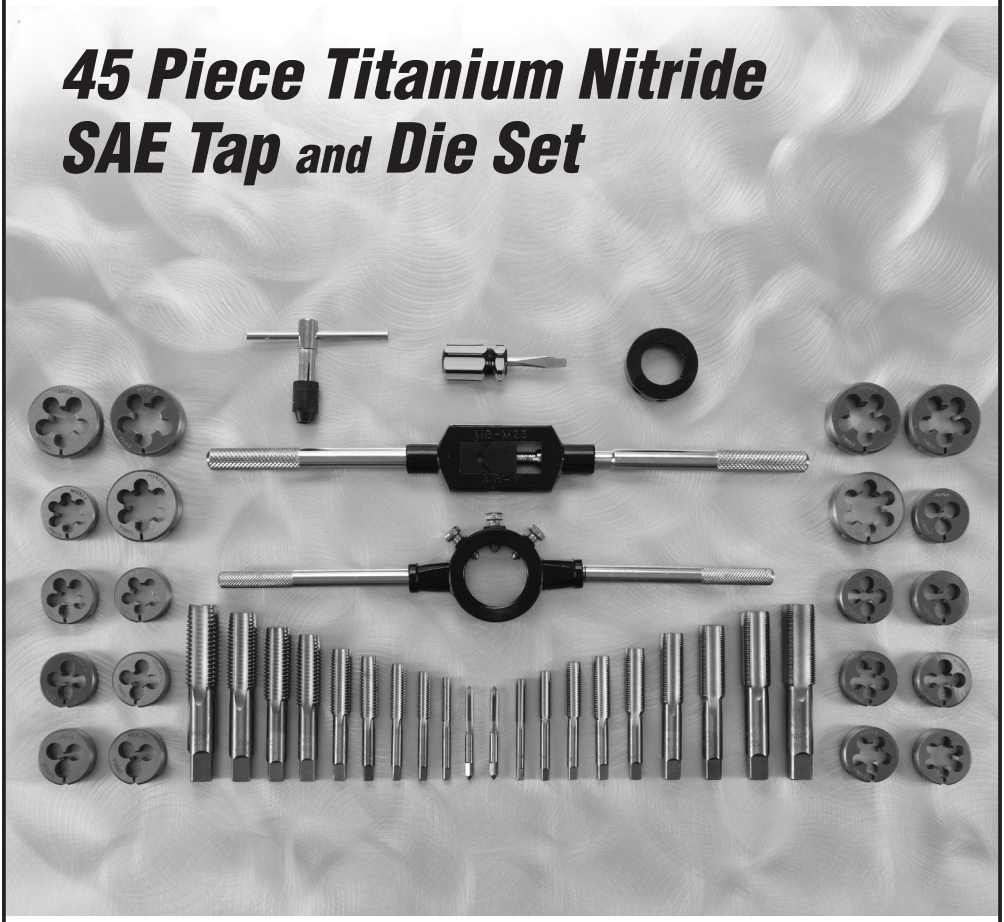
Owner's Manual & Safety Instructions

Save This Manual Keep this manual for the safety warnings and precautions, assembly, operating, inspection, maintenance and cleaning procedures. Write the product's serial number in the back of the manual near the assembly diagram (or month and year of purchase if product has no number).
Keep this manual and the receipt in a safe and dry place for future reference.

PITTSBURGH®

ITEM 60685

45 Piece Titanium Nitride SAE Tap and Die Set



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Email our technical support at: tech@harborfreight.com

When unpacking, make sure that the product is intact and undamaged. If any parts are missing or broken, please call 1-800-444-3353 as soon as possible.

Diagrams within this manual may not be drawn proportionally. Due to continuing improvements, actual product may differ slightly from the product described herein. Tools required for assembly and service may not be included.

⚠WARNING

Read this material before using this product. Failure to do so can result in serious injury. SAVE THIS MANUAL.

Important Safety Information

1. Wear ANSI-approved safety goggles and heavy-duty work gloves during use.
2. Keep bystanders out of the area during use.
3. Do not use when tired or when under the influence of drugs or medication.
4. This product is not a toy. Do not allow children to play with or near this item.
5. Use as intended only.
6. Keep work area clean and well lit.
7. Inspect before every use; do not use if parts are loose or damaged. Do not use cracked or chipped tap/die.
8. Keep the handles clean, dry, and free from oil and grease at all times.
9. The flutes on these tools are sharp and can cut you. Handle with care.
10. Do not use any high-speed means, such as a lathe or drill press, to cut threads with these Taps and Dies. High-speed use will void the warranty and may overheat the tool, causing loss of heat-treatment and premature failure.
11. Taps and Dies are heat-treated, and not designed to be sharpened. After considerable use and with corrosion buildup these tools may lose their cutting edge.
12. Use clamps (not included) or other practical ways to secure and support the workpiece to a stable platform. Holding the work by hand or against your body is unstable and may lead to loss of control.
13. Do not apply excessive force on the cutters. Allow the tool to do the work. Use cutting oil when tapping or threading hard materials.

Before using either taps or dies, test the material to determine that it is not hardened by attempting to mark it with a file:

- If the material marks with a file, material should be cuttable.
- If the material will not mark with a file, do not cut threads to avoid tool damage.

Tap Instructions

TAPS are used to cut (tapping) or clean (chase) internal threads into a pre-drilled hole, such as in a nut or component part.

1. To cut an internal thread, first select the tap of the desired size and have lubricating or cutting oil ready for use.
2. The proper hole size is very important to successfully cut good threads. An oversized hole will result in shallow threads, and poor holding power. An undersized hole may cause the tap to wear prematurely or break. The correct hole size is marked on the shank of each tap.
3. Insert the square end of the Tap into the Tap Wrench, turn the threaded side of the Tap Wrench to secure the Tap firmly.
4. **Precisely align the tap with the direction of the hole. THIS IS ESSENTIAL.** The first cut will help determine the accuracy of the entire finished thread.
5. Start turning the Tap clockwise, keeping the Tap aligned with the hole. As the Tap turns, it will bite into the metal and create threads.
6. After every 1/4 to 1/2 turn of progress, depending on material hardness, rotate the Tap counterclockwise an equal amount to prevent chips from building up in the hole and breaking the tap.
7. Lubricate amply with cutting oil while tapping. Proper lubrication will result in smoother threads, and increased tool life. Continue tapping until the Tap passes through the workpiece, or the desired thread depth is reached.
8. Carefully thread the tap out backwards and clean out any chips from the hole.

Die Instructions

DIES are used to cut (threading) or clean (chase) external threads, such as on a screw or threaded rod.

NOTE: It will be easier to start the Die correctly if the end of the work material is slightly chamfered with a grinder or file (not included).

1. Select the proper Die size for the rod to be threaded. The Die can be no larger than the rod stock, and should be .005″ to .010″ smaller. Oversized rod stock may damage the die, and will make turning it difficult. Slightly undersized rod stock makes turning the die easier, and will result in good threads for most applications.
2. Secure the workpiece in a vise or other fixture (not included). Ensure that the workpiece will not move or turn while it is being threaded. Note that the workpiece may be damaged by the vise during the threading process. When possible, thread the workpiece before cutting it to the final length to eliminate the damaged area.
3. Insert the Die into the Die Wrench.

Note: An adapter ring is provided for the smaller die sizes.

4. Align the groove on the side of the Die with the Screw on the Die Holder. Tighten the screw using the included Screwdriver. Use the Screw on side of the Die Wrench to secure the Die firmly in place.

5. Place the chamfered side of the Die onto the workpiece, being careful to **precisely align the Die perpendicular to the rod**.
6. Begin turning the Die clockwise. The cutting edges will begin to bite into the material, and the Die will begin to thread itself onto the rod.
7. As you progress, apply lubrication, using a high-quality cutting oil. As with the Tap, reverse the Die to clear the shavings after every 1/4 to 1/2 turn of progress, depending on material hardness. Continue this forward and back process, using proper lubrication, until you have cut the desired length of threads.
8. Then turn the Die counterclockwise completely off the rod.

Maintenance

1. Clean immediately after use and apply a light layer of oil or grease to prevent corrosion.
2. Store tools in the provided case in a secure location, out of the reach of children, to protect them from moisture.

Note: The carbon steel parts of this set are susceptible to corrosion. Even light corrosion may reduce effectiveness.

Limited 90 Day Warranty

Harbor Freight Tools Co. makes every effort to assure that its products meet high quality and durability standards, and warrants to the original purchaser that this product is free from defects in materials and workmanship for the period of 90 days from the date of purchase. This warranty does not apply to damage due directly or indirectly, to misuse, abuse, negligence or accidents, repairs or alterations outside our facilities, criminal activity, improper installation, normal wear and tear, or to lack of maintenance. We shall in no event be liable for death, injuries to persons or property, or for incidental, contingent, special or consequential damages arising from the use of our product. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation of exclusion may not apply to you. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS.

To take advantage of this warranty, the product or part must be returned to us with transportation charges prepaid. Proof of purchase date and an explanation of the complaint must accompany the merchandise. If our inspection verifies the defect, we will either repair or replace the product at our election or we may elect to refund the purchase price if we cannot readily and quickly provide you with a replacement. We will return repaired products at our expense, but if we determine there is no defect, or that the defect resulted from causes not within the scope of our warranty, then you must bear the cost of returning the product.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

Specifications

Tap & Die Scale	SAE			
Material	Titanium Nitride Coated Alloy Steel			
Tap & Die Sizes	1/4″-20	1/4″-28	5/16″-18	5/16″-24
	3/8″-16	3/8″-24	7/16″-14	7/16″-20
	1/2″-13	1/2″-20	9/16″-12	9/16″-18
	5/8″-11	5/8″-18	3/4″-10	3/4″-16
	7/8″-9	7/8″-14	1″-8	1″-14

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