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**en** User Manual

**3M Abrasive Systems Division**
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**English**
**Original Instructions**

# GRINDERS, TYPE-27 INSTRUCTION MANUAL
# 101 mm (4 in.) - 113 mm (4 1/2 in.)
# 12,000 RPM

## Important Safety Information

Please read, understand and follow all safety information contained in these instructions prior to the use of this tool.
Retain these instructions for future reference.

## Intended Use

These pneumatic tools are intended for use in industrial locations, and used only by skilled, trained professionals in accordance with the instructions in this manual. These pneumatic tools are designed to be used with the appropriate size Type 27 Wheel for grinding metals. They should only be used for such grinding applications and within their marked capacity and ratings. Only accessories specifically recommended by 3M should be used with these tools. Use in any other manner or with other accessories could lead to unsafe operating conditions.

Do not operate tool in water or in an excessively wet application.
Do not use disc pads that have a Max RPM less than the tool Max RPM rating.
Tools shall be inspected periodically to verify that ratings, markings, and labels are legible. Contact 3M Company to obtain replacement labels.

| **Explanation of Signal Word Consequences** |
|---|
| ⚠ **WARNING:** Indicates a potentially hazardous situation which, if not avoided, may result in death or serious injury and/or property damage. |
| ⚠ **CAUTION:** Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury and/or property damage. |
| ⚠ **NOTICE:** Indicates a situation which, if not avoided, could result in property damage. |

| **Summary of device labels containing Safety and Conformity information** | |
|---|---|
| *Marking* | *Description* |
| CE | Summary of device Conformity and Certification Marks |
|  | ⚠ **WARNING:** READ AND UNDERSTAND INSTRUCTION MANUAL BEFORE OPERATING TOOL. |
|  | EYE PROTECTION |
|  | HEARING PROTECTION |
|  | APRON PROTECTION |
|  | DUST MASK PROTECTION |
|  | FACE SHIELD PROTECTION |
|  | GLOVE PROTECTION |
| 6.2 Bar / 90 Psig max. | MAXIMUM INPUT PRESSURE |
| 12,000 r/min | MAXIMUM ROTATIONAL SPEED |

Read the Safety Data Sheets (SDS) before using any materials.



Contact the suppliers of the workpiece materials and abrasive materials for copies of the SDS if one is not readily available.

### ⚠ WARNING!

Exposure to DUST generated from workpiece and/or abrasive materials can result in lung damage and/or other physical injury.
Use dust capture or local exhaust as stated in the SDS. Wear government-approved respiratory protection and eye and skin protection.

Failure to follow this warning can result in serious lung damage and/or physical injury.



## ⚠ WARNING

**To reduce the risks associated with impact from abrasive product or tool breakup, sharp edges, hazardous pressure, rupture, vibration and noise:**

- Read, understand and follow the safety information contained in these instructions prior to the use of this tool. Retain these instructions for future reference.
- Only personnel who are properly trained should be allowed to service this tool.
- Practice safety requirements. Work alert, have proper attire, and do not operate tools under the influence of alcohol or drugs.
- Operators and other personnel must always wear protection for eyes, ears, and respiratory protection when in the work area or while operating this product. Follow your employer's safety policy for PPE's and/or ANSI Z87.1 or local/national standards for eyewear and other personal protective equipment requirements.
- Wear leather apron or other protective apparel, taking into consideration the type of work being done.
- Never exceed marked maximum input pressure (90psi / .62Mpa / 6.2Bars).
- Proper eye protection must be worn at all times.
- Tool is not to be operated in the presence of bystanders.
- If you notice any abnormal noise or vibration when operating the product, immediately discontinue its use and inspect for worn or damaged abrasive product or accessories. Correct or replace the suspect component. If abnormal noise or vibration still exists, return the tool to 3M for repair or replacement. Refer to warranty instructions.
- Never operate this tool without all guards or safety features in place and in proper working order.
- Prior to use, ensure guard is oriented to protect the operator from flying fragments and is properly secured.
- Make sure the tool is disconnected from its air source before servicing, inspecting, maintaining, cleaning, and before changing abrasive product.
- Only use wheel retainers (flanges) and wheel arbors supplied by 3M.
- Never use this tool with Type 1 wheels or cut-off wheels.
- Prior to use, or if dropped or jammed, inspect wheel retainers and wheel arbors and abrasive product for possible chips, cracks or other damage, and insure the abrasive product is correctly secured. If damaged, or if safety labels cannot be read, replace with new abrasive product, wheel retainers, wheel arbors, and/or labels available from 3M.
- Never use a damaged grinder until it has been repaired.
- Never over-ride or disable the safety features of the start-stop control such that it is in the on position.
- Use only with mounting hardware recommended by 3M; check with 3M for mounting hardware requirements.
- If the tool is jammed, shut off the tool and ease it free. Ensure the abrasive product is correctly secured.
- Never allow this tool to be used by children or other untrained people.
- Do not leave an unattended tool connected to air source.

**To reduce the risks associated with skin abrasion, burns, cutting & severing, impact or entrapment:**

- Never install grinding wheels in a grinder tool which is unguarded.
- Keep hands, hair, and clothing away from the cutting part of the tool.
- Wear suitable protective gloves while operating tool.
- Do not touch the rotating parts during operation for any reason.
- Do not force tool or use excessive force when using tool.

**To reduce the risks associated with vibration:**

- If any physical hand/wrist discomfort is experienced, work should be stopped promptly to seek medical attention. Hand, wrist and arm injury may result from repetitive work, motion and overexposure to vibration.

**To reduce the risks associated with loud noise:**

- Always wear hearing protection while operating this tool. Follow your employer's safety policy or local/national standards for personal protective equipment requirements

**To reduce the risks associated with fire or explosion:**

- Do not operate the tool in explosive atmospheres, such as in the presence of flammable liquids, gases, or dust. The abrasives are able to create sparks when working material, resulting in the ignition of the flammable dust or fumes.
- Refer to SDS of material being worked as to potential for creating fire or explosion hazard.

**To reduce the risks associated with hazardous dust ingestion or eye/skin exposure:**

- Use appropriate respiratory and skin protection, or local exhaust as stated in the SDS of the material being worked on.

**To reduce the risks associated with hazardous voltage:**

- Do not allow this tool to come into contact with electrical power sources as the tool is not insulated against electrical shock.

## ⚠ CAUTION!

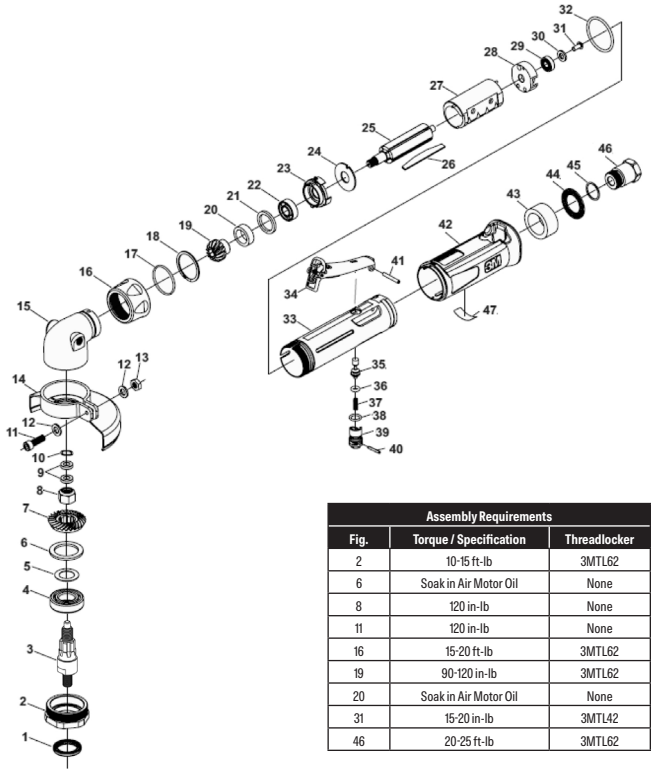
**To reduce the risks associated with whipping or hazardous pressure/rupture:**

- Ensure supply hose is oil resistant and is properly rated for required working pressure.
- Do not use tools with loose or damaged air hoses or fittings.
- Be aware that incorrectly installed hoses and fittings might unexpectedly come loose at any time and create a whipping/impact hazard.

**To reduce the risks associated with flying off of accessory parts:**

- Use care in attaching abrasive product and mounting hardware; following the instructions to ensure that they are securely attached to the tool before use.
- Never point this product in the direction of yourself or another person, or start tool unintentionally.
- Never over-tighten accessory fasteners.

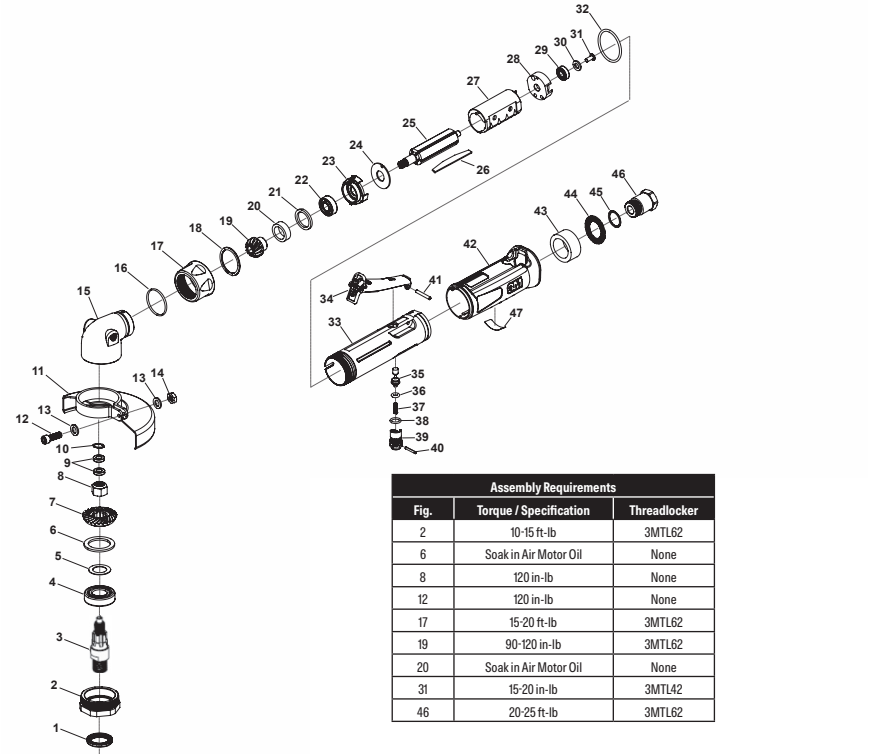
# PARTS LIST FOR PN 28403, 12000 RPM, 4" GRINDER, TYPE-27 (SERIES C)




| Assembly Requirements | | |
|---|---|---|
| **Fig.** | **Torque / Specification** | **Threadlocker** |
| 2 | 10-15 ft-lb | 3MTL62 |
| 6 | Soak in Air Motor Oil | None |
| 8 | 120 in-lb | None |
| 11 | 120 in-lb | None |
| 16 | 15-20 ft-lb | 3MTL62 |
| 19 | 90-120 in-lb | 3MTL62 |
| 20 | Soak in Air Motor Oil | None |
| 31 | 15-20 in-lb | 3MTL42 |
| 46 | 20-25 ft-lb | 3MTL62 |

| Fig | 3M PN | Description | Qty |
|---|---|---|---|
| 1 | 87431 | Grease Seal (21" x 29" x 4") | 1 |
| 2 | 87420 | Bearing Retainer | 1 |
| 3 | 87432 | 3/8"-24 Spindle Shaft | 1 |
| 4 | 30367 | Ball Bearing (17" x 35" x 10") | 1 |
| 5 | 06648 | Gear Spacer | 1 |
| 6 | 87419 | Felt Washer (Output) | 1 |
| 7 | 87421 | Spiral Bevel Gear 12,000 RPM | 1 |
| 8 | 87417 | 7/16"-20 Nylon Nut | 1 |
| 9 | 55144 | Ball Bearing 0.500" x 0.25" x 0.125" | 2 |
| 10 | 87426 | Wave Disc Spring (0.494" x 0.377" x 0.009") | 1 |
| 11 | 66767 | Socket Cap Screw | 1 |
| 12 | 66766 | Washer | 2 |
| 13 | 55083 | 1/4"-20 Hex Nut | 1 |
| 14 | 87433 | 4" Type 27 Guard | 1 |
| 15 | 87418 | Angle Head | 1 |
| 16 | 87423 | Clamp Nut | 1 |
| 17 | 55079 | O-Ring (1.19" x 0.063") | 1 |
| 18 | 87424 | Spiral Retaining Ring | 1 |
| 19 | 87422 | Spiral Bevel Gear 12,000 RPM | 1 |
| 20 | 87429 | Felt Washer (Input) | 1 |
| 21 | 06652 | Angle Head Spacer | 1 |
| 22 | 06510 | Ball Bearing (3/8" x 7/8" x 9/32") | 1 |
| 23 | 28992 | Front End Plate | 1 |
| 24 | 29004 | Font Wear Plate | 1 |
| 25 | 06562 | Rotor (5 Slot) | 1 |
| 26 | 28979 | Vane Kevlar 1 HP (Set of 5) | 1 |
| 27 | 06563 | Cylinder | 1 |
| 28 | 28981 | Rear Endplate | 1 |
| 29 | 06508 | Ball Bearing (1/4" x 5/8" x 0.1961") | 1 |
| 30 | 06567 | Washer (0.251" x 0.468" x 0.063)" | 1 |
| 31 | 06568 | Screw #8-32 x 3/8" | 1 |
| 32 | 06609 | O-Ring (1.38" x 0.094") | 1 |
| 33 | 28977 | Steel Housing 1 HP | 1 |
| 34 | 06642 | Lever Assembly | 1 |
| 35 | 28980 | Trigger Valve | 1 |
| 36 | 28983 | O-Ring | 1 |
| 37 | 06614 | Spring | 1 |
| 38 | 06620 | O-Ring | 1 |
| 39 | 06627 | Air Regulator | 1 |
| 40 | 06616 | Pin | 1 |
| 41 | 87402 | Roll Pin | 1 |
| 42 | 28978 | Housing Cover 1 HP | 1 |
| 43 | 29006 | Muffler | 1 |
| 44 | 28982 | Diffuser Screen | 1 |
| 45 | 29007 | O-Ring | 1 |
| 46 | 28991 | 3/8" NPT Bushing | 1 |
| 47 | 87126 | Label | 1 |
| Not shown | 55082 | Lower Wheel Flange | 1 |
| Not shown | 55085 | Upper Wheel Flange | 1 |
| Not shown | 55081 | Spanner Wrench | 1 |
| Not shown | 06524 | 5/8" Wrench | 1 |

# PARTS LIST FOR PN 28405, 12000 RPM, 4 1/2" GRINDER, TYPE-27 (SERIES C)




| Assembly Requirements | | |
|---|---|---|
| **Fig.** | **Torque / Specification** | **Threadlocker** |
| 2 | 10-15 ft-lb | 3MTL62 |
| 6 | Soak in Air Motor Oil | None |
| 8 | 120 in-lb | None |
| 12 | 120 in-lb | None |
| 17 | 15-20 ft-lb | 3MTL62 |
| 19 | 90-120 in-lb | 3MTL62 |
| 20 | Soak in Air Motor Oil | None |
| 31 | 15-20 in-lb | 3MTL42 |
| 46 | 20-25 ft-lb | 3MTL62 |

| Fig | 3M PN | Description | Qty |
|---|---|---|---|
| 1 | 87431 | Grease Seal (21" x 29" x 4") | 1 |
| 2 | 87420 | Bearing Retainer | 1 |
| 3 | 87416 | 5/8"-11 Spindle Shaft | 1 |
| 4 | 30367 | Ball Bearing (17" x 35" x 10") | 1 |
| 5 | 06648 | Gear Spacer | 1 |
| 6 | 87419 | Felt Washer (Output) | 1 |
| 7 | 87421 | Spiral Bevel Gear 12,000 RPM | 1 |
| 8 | 87417 | 7/16"-20 Nylon Nut | 1 |
| 9 | 55144 | Ball Bearing 0.500" x 0.25" x 0.125" | 2 |
| 10 | 87426 | Wave Disc Spring (0.494" x 0.377" x 0.009") | 1 |
| 11 | 87437 | 4.5" Type 27 Grinder Guard | 1 |
| 12 | 66767 | 1/4"-20 x 3/4" Screw | 1 |
| 13 | 66766 | Washer | 2 |
| 14 | 55083 | Hex Nut | 1 |
| 15 | 87418 | Angle Head | 1 |
| 16 | 55079 | O-Ring (1.19" x 0.063") | 1 |
| 17 | 87423 | Clamp Nut | 1 |
| 18 | 87424 | Spiral Retaining Ring | 1 |
| 19 | 87422 | Spiral Bevel Gear 12,000 RPM | 1 |
| 20 | 87429 | Felt Washer (Input) | 1 |
| 21 | 06652 | Angle Head Spacer | 1 |
| 22 | 06510 | Ball Bearing (3/8" x 7/8" x 9/32") | 1 |
| 23 | 28992 | Front End Plate | 1 |
| 24 | 29004 | Font Wear Plate | 1 |
| 25 | 06562 | Rotor (5 Slot) | 1 |

| Fig | 3M PN | Description | Qty |
|---|---|---|---|
| 26 | 28979 | Vane Kevlar 1 HP (Set of 5) | 1 |
| 27 | 06563 | Cylinder | 1 |
| 28 | 28981 | Rear Endplate | 1 |
| 29 | 06508 | Ball Bearing (1/4" x 5/8" x 0.1961") | 1 |
| 30 | 06567 | Washer (0.251" x 0.468" x 0.063") | 1 |
| 31 | 06568 | Screw #8-32 x 3/8" | 1 |
| 32 | 06609 | O-Ring (1.38" x 0.094") | 1 |
| 33 | 28977 | Steel Housing 1 HP | 1 |
| 34 | 06642 | Lever Assembly | 1 |
| 35 | 28980 | Trigger Valve | 1 |
| 36 | 28983 | O-Ring | 1 |
| 37 | 06614 | Spring | 1 |
| 38 | 06620 | O-Ring (0.364" x 0.070") | 1 |
| 39 | 06627 | Air Regulator | 1 |
| 40 | 06616 | Pin | 1 |
| 41 | 87402 | Roll Pin | 1 |
| 42 | 28978 | Housing Cover 1 HP | 1 |
| 43 | 29006 | Muffler | 1 |
| 44 | 28982 | Diffuser Screen | 1 |
| 45 | 29007 | O-Ring | 1 |
| 46 | 28991 | 3/8" NPT Bushing | 1 |
| 47 | 87126 | Label | 1 |
| Not shown | 06589 | Wheel Flange | 2 |
| Not shown | 55115 | Spanner Wrench | 1 |
| Not shown | 06524 | 5/8" Wrench | 1 |

# Product Configuration/Specifications:

| Model Number | Speed RPM | Spindle (in.) | Product Net WT. kg. (lb.) | Height mm (in.) | *Noise Level dBA Pressure (Power) | **Vibration Level $m/s^2$ ($ft/s^2$) | **Uncertainty K $m/s^2$ ($ft/s^2$) | Series Designation |
|---|---|---|---|---|---|---|---|---|
| 28403 | 12,000 | 3/8-24 T-27 | 1.60 (3.53) | 108 (4.25) | 83.0 (94.6) | 3.24 (10.63) | 0.04 (0.13) | C |
| 28405 | 12,000 | 5/8-11 T-27 | 1.71 (3.78) | 108 (4.25) | 83.7 (95.3) | 6.61 (21.67) | 0.26 (0.85) | C |

* Declared noise levels; measurements carried out in accordance with standard EN ISO 15744:2008.
** Declared vibration levels in accordance with EN ISO 28927-1:2009.

**IMPORTANT NOTE:** The noise and vibration values stated in the table are from laboratory testing in conformity with stated codes and standards and are not sufficient risk evaluation for all exposure scenarios. The actual exposure values and amount of risk or harm experienced to an individual is unique to each situation and depends upon the surrounding environment, the way in which the individual works, the particular material being worked, work station design, as well as upon the exposure time and the physical condition of the user. 3M™ cannot be held responsible for the consequences of using declared values instead of actual exposure values for any individual risk assessment.

# Operating / Maintenance Instructions

**PRIOR TO THE OPERATION**
The tool is intended to be operated as a hand held tool. It is always recommended that while using the tool, operators stand on a solid floor, in a secure position with a firm grip and footing. Be aware that the tool can develop a torque reaction. See the section "SAFETY PRECAUTIONS".

Use a clean lubricated air supply that will give a measured air pressure at the tool of 6.2 bar (90 psig) when the tool is running with the lever fully depressed. It is recommended to use an approved 10 mm (3/8 in) x 8 m (25 ft) maximum length airline. Connect the tool to the air supply as shown in Figure 1. Do not connect the tool to the airline system without an easily accessible air shut off valve. It is strongly recommended that an air filter, regulator and lubricator (FRL) be used as shown in Figure 1 as this will supply clean, lubricated air at the correct pressure to the tool. In any case appropriate air pressure regulators shall be used at all times while operating this tool where the supply pressure exceeds the marked maximum of the tool. Details of such equipment can be obtained for your tool distributor. If such equipment is not used, the tool should be manually lubricated. To manually lubricate the tool, disconnect the airline and put 2 to 3 drops of suitable pneumatic motor lubricating oil into the air inlet of the tool. Lubricants for pneumatic tools with kinematic viscosity at 40°C between 22 and 46 $mm^2/s$ (per standard ASTM D445) are recommended. Reconnect tool to the air supply and run tool slowly for a few seconds to allow air to circulate the oil. If the tool is used frequently, lubricate it on a daily basis or lubricate it if the tool starts to slow or lose power. It is recommended that the air pressure at the tool be 6.2 bar (90 psig) while the tool is running so the maximum RPM is not exceeded. The tool can be run at lower pressures but should never be run higher than 6.2 bar (90 psig). If run at lower pressure the performance of the tool is reduced.

| Recommended Airline Size - Minimum | | Recommended Maximum Hose Length | | Air Pressure | | |
|---|---|---|---|---|---|---|
| 10mm | 3/8 in | 8 meters | 25 feet | Maximum Working Pressure | 6.2 bar | 90psig |
| | | | | Recommended Minimum | NA | NA |

For Series C grinders, the angle head and gears have been designed to last the life of the tool without periodic maintenance. When rebuilding or repairing the tool, lubricate angle head with Castrol Longtime PD 00 grease or equivalent lithium thickener, NCGI Grade 00 grease, 1 tsp approximate quantity.

## Safety Precautions

1. Read all instructions before using this tool. All operators must be fully trained in its use and aware of these safety rules.
2. The tool RPM should be checked on a regular basis (at shift change).
3. Make sure the tool is disconnected from the air supply. Select a suitable abrasive grinding wheel and secure it to the mounting shaft using the wheel retainer and wheel arbor supplied with the tool. Be careful to center the grinding wheel on the wheel retainer and or arbor before tightening the wheel retainer nut. Do not over tighten the wheel retainer or you will crack the wheel.
4. Always wear required safety equipment when using this tool.
5. Always remove the air supply to the tool before fitting, adjusting or removing the abrasive grinding wheel.
6. Always adopt a firm footing and grip and be aware of torque reaction developed by the tool.
7. Use only 3M approved spare parts.
8. Always ensure the material being worked is firmly fixed to avoid movement.
9. Check hose and fittings regularly for wear. Do not carry the tool by its hose; always be careful to prevent the tool from being started when carrying the tool with the air supply connected.
10. Dust can be highly combustible. Keep working area clean.
11. If tool is serviced or rebuilt check to ensure that the maximum tool RPM is not exceeded and that there is no excessive tool vibration.
12. Do not exceed maximum recommended air pressure. Use safety equipment as recommended.
13. Prior to installing any abrasive grinding wheel, always check that its marked maximum operating speed is equal or higher than the rated speed of this tool.
14. The tool is not electrically insulated. Do not use where there is a possibility of contact with live electricity, gas pipes, and/or water pipes.
15. Take care to avoid entanglement with the moving parts of the tool with clothing, ties, hair, cleaning rags or loose hanging objects. If entangled, stop air supply immediately to avoid contact with moving tool parts.
16. Keep hands clear of the spinning grinding wheel during use.
17. If the tool appears to malfunction, remove from use immediately and arrange for service and repair.
18. Do not allow the tool to free spin without taking precautions to protect any persons or objects from the rupture of the abrasive grinding wheel.
19. Immediately release the start handle in the event of any disruption of pressure; do not attempt to re-start until the disruption has been corrected.
20. When tool is not in use, store in a clean, dry environment free of debris and in a manner that ensures that the grinding wheel is not damaged.
21. Fixture workpiece such that the grinding cut slot is kept at a constant or increasing width during the operation.
22. Operate tool in a well lit work area.
23. Recycle or dispose of tool according to Local, State, and Federal regulations.
24. Whenever performing maintenance procedures, use care to avoid exposure to any hazardous substances deposited on the tool as a result of work processes. Also, refer to warnings related to dust exposure.
25. Ensure that the abrasive product is correctly mounted and tightened before use and run the tool at no-load speed for at least 1 min in a safe position; stop immediately if considerable vibration or other defects are detected and determine the cause of these defects.
26. Whenever universal twist couplings (claw couplings) are used, lock-pins shall be installed and whip check safety cables shall be used to safeguard against possible hose-to-tool and hose-to-hose connection failure.

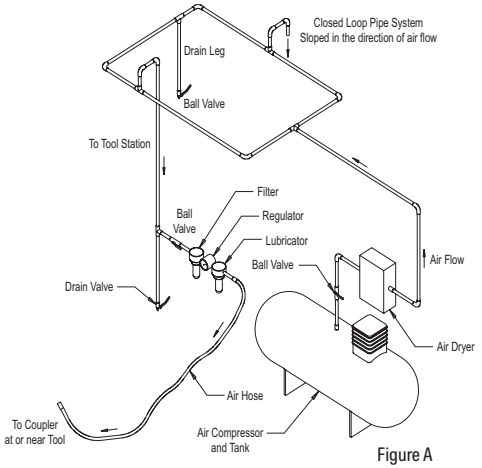


Figure A

## 3M™ Type 27 Grinding Wheels and Accessories

3M Type 27 Grinding Wheels and Accessories are designed specifically for use on the 3M Type 27 Grinders.

See 3M ASD Accessories to Optimize Performance catalog 61-5002-8098-9 and Engineered Metalworking Solutions catalog 61-5002-8097-1 for additional accessories.

## Related Products

Choose from full line of 3M™ quality abrasives and these complimentary accessories to optimize tool performance.

| Tool Spindle Thread Size Adapters | | | |
|---|---|---|---|
| **3M PN** | **UPC PN** | **Description** | **Size (in)** |
| 00009 | 22970 | No. 9 Disc Holder Adapter | 5/8-11 EXT 3/8-24 INT |
| 00009 | 22971 | No. 9 Disc Holder Adapter with M10 Thread | 5/8-11 EXT M10-1.25 INT |

Refer to ANSI B7.1-2000 Safety Requirements for Use, Care and Protection of Abrasive Wheels and ISO/EN 12413 Safety. Requirements for Bonded Abrasive Products for proper abrasive wheel applications.

## 3M™ Fibre Discs and Accessories

3M Fibre Discs and Accessories are designed specifically for use on the 3M Type 27 Grinders and Sanders.

| Fibre Disc Mounting Accessories | | | |
|---|---|---|---|
| **3M PN** | **UPC PN** | **Description** | **Size (in)** |
| 28442 | 28442 | Disc Pad Hub For Short Shaft Tools | 2 1/2 x 3/8-24 INT |
| 28476 | 28476 | Low Profile Disc Pad Hub | 2 1/2 x 5/8-11 INT |
| 28443 | 28443 | Disc Pad Face Plate Ribbed, Extra Hard Red | 4 1/2 |

## 3M™ Disc Pad Accessories

3M Disc Pad Accessories are designed specifically for use on the 3M Type 27 Grinders and Sanders.

| Disc Pad Accessories | | | |
|---|---|---|---|
| **3M PN** | **UPC PN** | **Description** | **Size (in)** |
| 02286 | 56479 | Roloc™ Cool Running Disc Pad for 3/8-24 Spindle | 4 x 3/8-24 INT |
| 28474 | 28474 | Roloc™ Disc Pad, Hard for 3/8-24 Spindle | 4 x 3/8-24 INT |
| 28475 | 28475 | Roloc™ Disc Pad, Extra Hard for 3/8-24 Spindle | 4 x 3/8-24 INT |
| 28473 | 28473 | Roloc™ Cool Running Disc Pad for 5/8-11 Spindle | 4 x 5/8-11 INT |
| 83489 | 83489 | Roloc™ Disc Pad, Hard for 5/8-11 Spindle | 4 x 5/8-11 INT |
| 83980 | 83980 | Roloc™ Disc Pad, Extra Hard for 5/8-11 Spindle | 4 x 5/8-11 INT |

# Type 27 Wheel Mounting Hardware and Usage

Type 27 Grinding Wheels are also known as Depressed Center Grinding Wheels. They have a dish shaped center to allow the lower mounting hardware or flange to be recessed into the wheel. This allows the wheel to be used in a nearly flat orientation when needed.

Model 28403 has a 3/8"-24 spindle to be used with Type 27 Grinding Wheels with 3/8" center holes (CH).

Model 28405 has a 5/8"-11 spindle and can use wheels with either 16 mm or 7/8" center holes (CH).

Model 28403 can accommodate an adapter to change the spindle to 5/8"-11 spindle to allow the use of wheels with either 16 mm or 7/8" center holes (CH).

Refer to ANSI B7.1-2000 Safety Requirements for Use, Care and Protection of Abrasive Wheels and ISO/EN 12413 Safety Requirements for Bonded Abrasive Products for proper abrasive wheel applications.

MOUNTING 3/8" CENTER HOLE TYPE 27 WHEELS

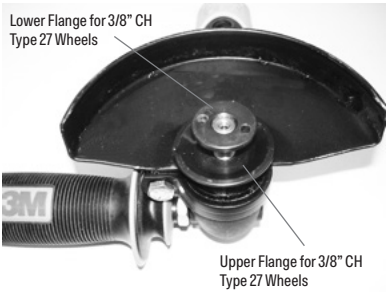



Figure 1

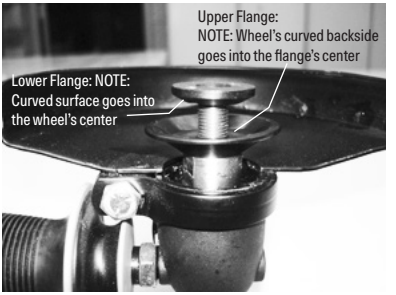



Figure 2

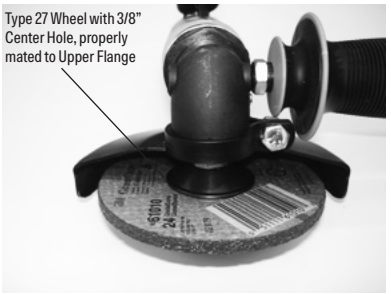



Figure 3a

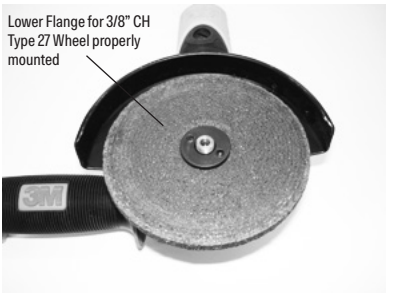



Figure 3b

MOUNTING 7/8" CENTER HOLE TYPE 27 WHEELS

Type 27 Wheels with 7/8" center holes (CH) may use flat flanges that have a 7/8" lip to center the wheel.

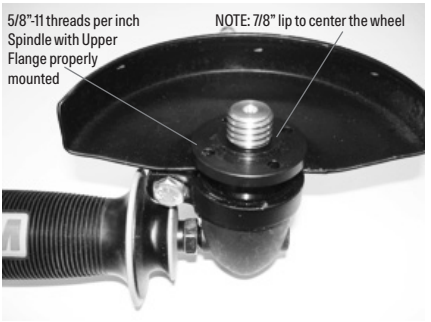



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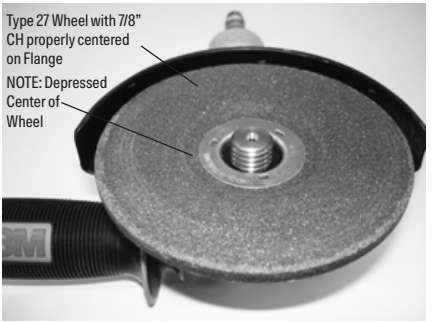



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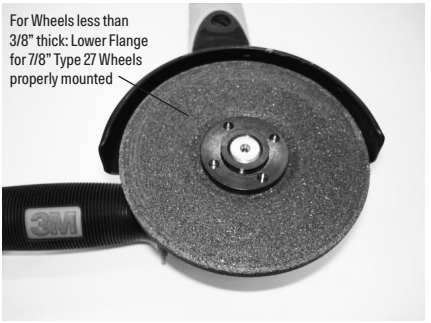



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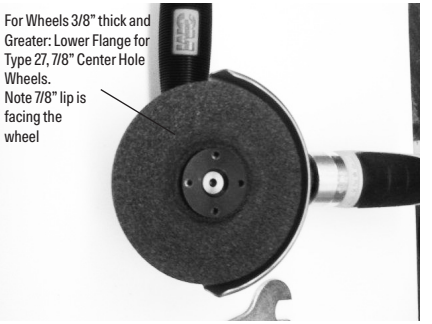



Figure 6A




Figure 6B

DUAL SIZE FLANGES FOR 3/8-24 SPINDLE TOOLS

Models 28403 and 28413 can take a Dual Size Flange Set to allow the use of wheels with either 16 mm or 7/8" center holes (CH).

NOTE: Both flanges must face the wheel with the same size lip inserted in the wheel's center hole.

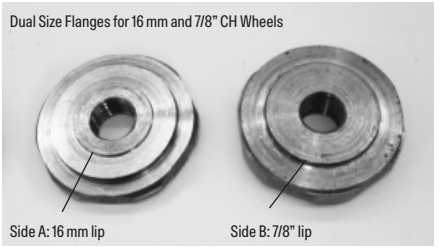



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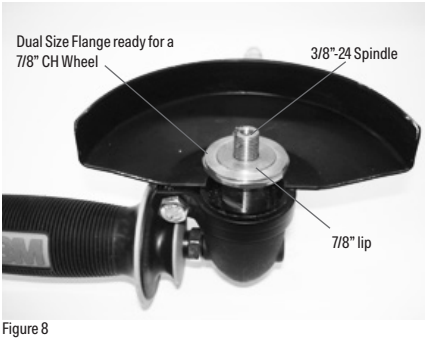



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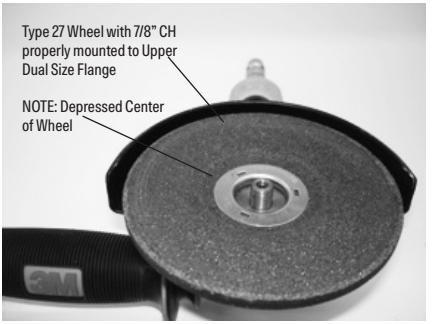



Figure 9

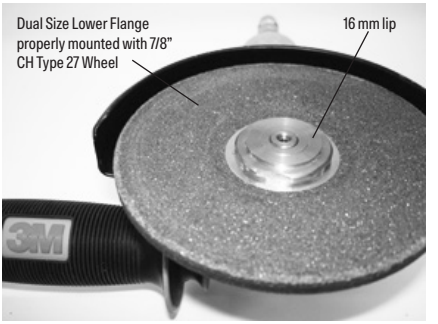



Figure 10

## 3M™ Fibre Disc Mounting Hardware and Usage

Fibre Discs are a non-bonded abrasive disc, (not a wheel) and may be mounted to Grinders for some similar metal working applications as Type 27 Wheels.

FIBRE DISC MOUNTING HUBS AND DISC PLATES

The Hub attaches to the spindle of the tool. It provides a mounting base for the Disc Pad Face Plate.




Figure 11

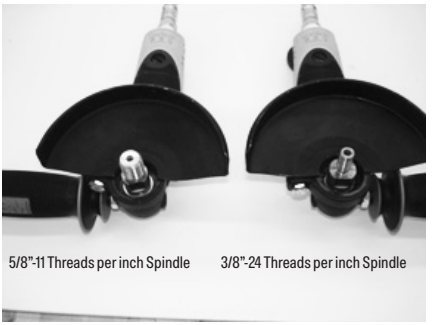



Figure 12




Figure 13

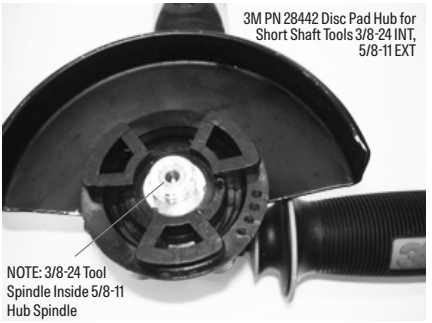



Figure 14

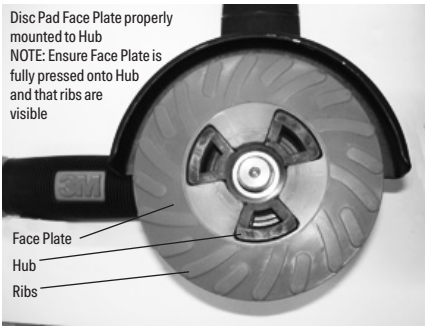



Figure 15

DISC RETAINER NUT AND TN QUICK CHANGE CENTER THREADED FIBRE DISCS

Fibre Discs can be held in place by a Disc Retainer Nut or by a pre-installed threaded center hub on the Fibre Disc itself (TN Quick Change System).

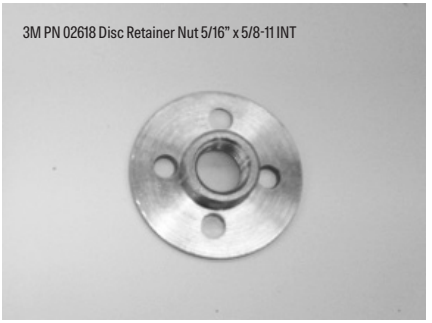



Figure 16

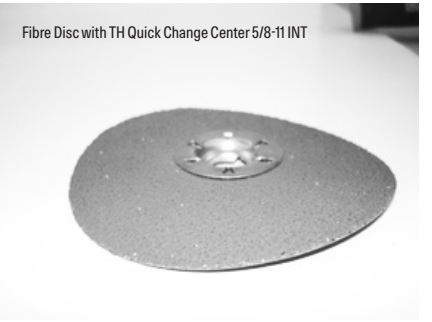



Figure 17

NOTE: Endure TN Quick Change Disc or Disc Retainer Nut are fully tightened onto the 5/8-11 spindle.

NOTE: A Disc Retainer Nut is not required if a TN Quick Change disc is mounted.

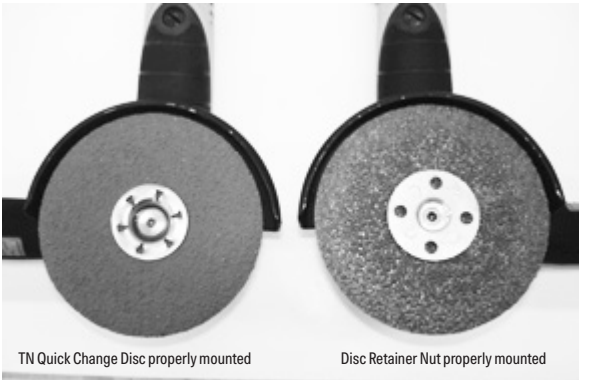



Figure 18

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**Product Repair after Warranty Has Expired:** Repair of 3M Abrasive Power tools that are not under warranty is available through 3M or a 3M Authorized Tool Repair Representative. Contact your 3M Abrasive Power Tool Distributor for details, or call 1-800-362-3550.

**For 3M Product Information Call:**
800-3M HELPS (800-364-3577) toll free
651-737-6501 direct dial

## EC Declaration of Conformity

CE

**Manufacturers Name:** 3M, Abrasive Systems Division
**Manufacturers Address:** 3M Center, Building 223-6N-02
St Paul, MN USA 55144

**Does hereby declare under our sole responsibility that the machinery described below complies with those applicable essential health and safety requirements of the Machinery Directive 2006/42/EC; together with all amendments to date.**

**Descriptions:** 3M™ Grinder 28403, T27, 4 inch, 3/8-24 EXT, 1 HP, 12,000 RPM
3M™ Grinder 28405, T27, 4.5 inch, 5/8-11 EXT, 1 HP, 12,000 RPM

**Model Number:** 28403, 28405

**Serial Number Range:** DTYDDDS –Z####, where:
DT = Manufacturing Location Code
Y = Last Digit of Year of Production
DDD = Sequential Day of the Year of Production
S = The Shift During Which the Product was Produced
Z = Series Designation
#### = Four Sequential Numbers Starting Over at 0001 when 9999 is Reached

**The following standards have either been referred to, or complied with, in full or in part as relevant:**

| | |
|---|---|
| EN ISO 12100:2010 | Safety of machinery. General principles for design. Risk assessment and risk reduction |
| EN ISO 11148-7:2012 | Hand-held non-electric power tools – Safety Requirements – Part 7: Grinders |
| EN ISO 28927-1:2009 | Hand-held portable power tools - Test methods for evaluation of vibration emission - Part 1: Angle and vertical grinders |
| EN ISO 15744:2008 | Hand-held non-electric power tools. Noise measurement code. Engineering method (grade 2) |

**Full Name of responsible person.**
Betty Z. Mei **Position:** Technical Director

**Signature:** Betty Z. Mei **Date:** 8/1/2017
St. Paul, Minnesota, USA

**Full Name and address of individual responsible to compile technical file within the Community:**
Ms. Anne Keese – Senior Engineer Product Steward, R&D Service, 3M Deutschland GmbH, Carl-Schurz-Strasse 1, D41453 Neuss, Germany

3M

**Abrasive Systems Division**
3M Center
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