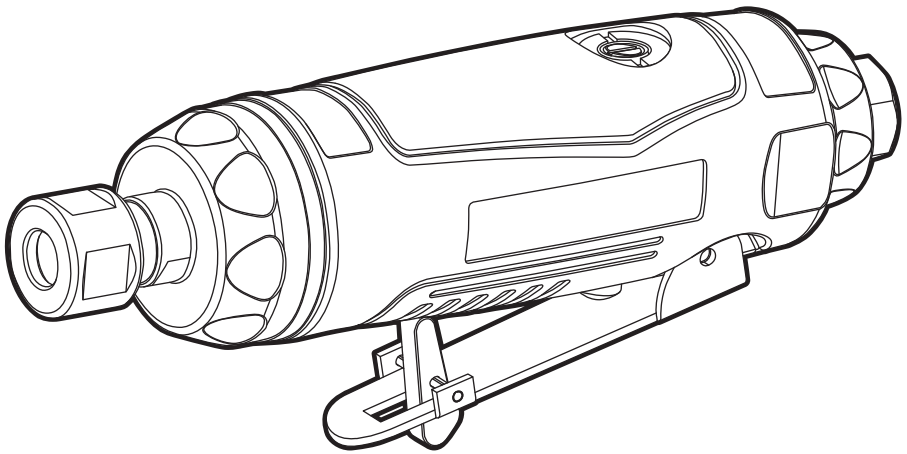
RA-DG14-B

AIR DIE GRINDER
OPERATOR'S MANUAL
ORIGINAL INSTRUCTIONS



Important!

It is essential that you read the instructions in this manual before operating this machine.

Subject to technical modifications.

DESCRIPTION

1. Collet
2. Collet nut
3. Spindle/Collet seat
4. Trigger lock pin
5. Trigger
6. Valve pin
7. Air inlet
8. Nitto style coupler
9. Grinding head
10. Wrench
11. Air regulator adj. knob

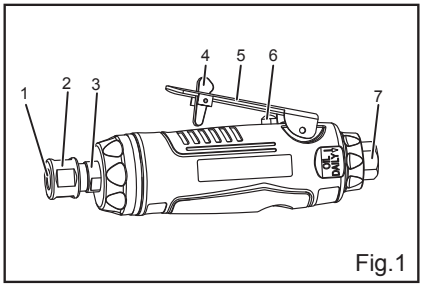


Fig.1

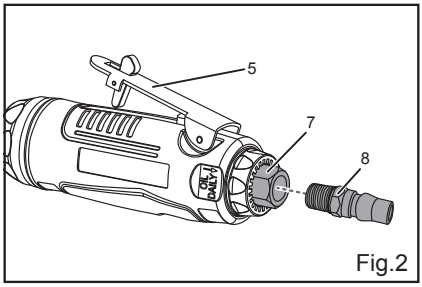


Fig.2

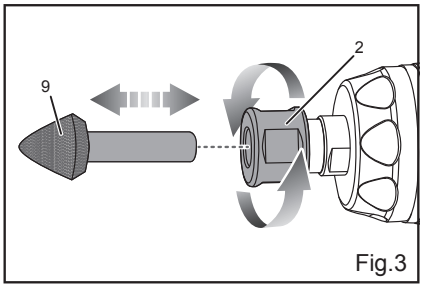


Fig.3

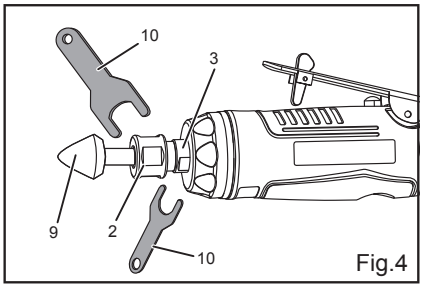


Fig.4

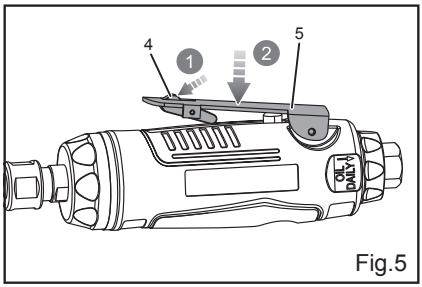


Fig.5

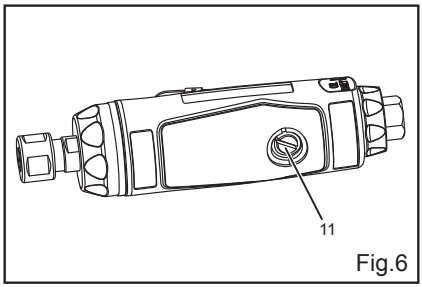


Fig.6

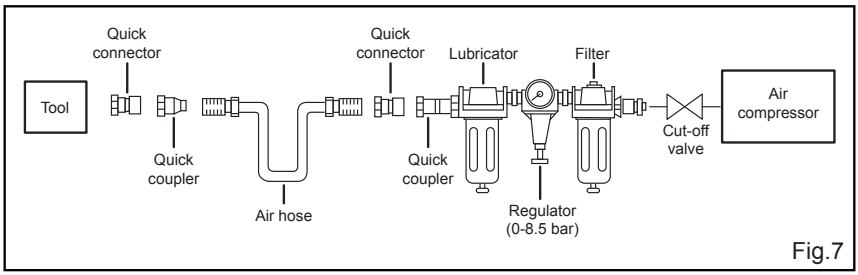


Fig.7

GENERAL SAFETY RULES

- For multiple hazards, read and understand the safety instructions before installing, operating, repairing, maintaining, changing accessories on, or working near, the grinder. Failure to do so can result in serious bodily injury.
- Only qualified and trained operators should install, adjust or use the die grinder.
- Do not modify this die grinder. Modifications can reduce the effectiveness of safety measures and increase the risks to the operator.
- Do not discard the safety instructions; give them to the operator.
- Do not use the die grinder if it has been damaged.
- Tools shall be inspected periodically to verify that the ratings and markings required by this part of ISO 11148 are legibly marked on the tool. The employer/user shall contact the manufacturer to obtain replacement marking labels when necessary.
- Check the speed and make a simple check of the vibration level after each service.
- Special care has to be taken when assembling the speed governor or protective devices.
- Check the speed after each service in relevant cases.
- The spare parts would not affect the health and safety of the operator.

PROJECTILE HAZARDS

- Be aware that the failure of the work piece, or accessories, or even of the inserted tool itself, can generate high-velocity projectiles.
- Always wear impact-resistant eye protection during operation of the die grinder or when changing accessories on the tool. The grade of protection required should be assessed for each use.
- Ensure that the work piece is securely fixed.
- Check regularly that the speed of the die grinder is not higher than that marked on it. These speed checks shall be carried out without the abrasive product mounted and in accordance with the instructions given by the manufacturer.
- Ensure that sparks and debris resulting from use do not create a hazard.
- Disconnect the grinder from the energy supply before changing abrasive product and servicing.
- The risks to others should also be assessed at this time.

ENTANGLEMENT HAZARDS

Choking, scalping and/or lacerations can occur if loose clothing, personal jewelry, neck wear, hair or gloves are not kept away from the tool and accessories.

OPERATING HAZARDS

- Avoid contact with the rotating spindle and inserted tool to prevent cutting of hands and other body parts.
- Use of the tool can expose the operator's hands to hazards, including cuts and abrasions and heat. Wear suitable gloves to protect hands.
- Operators and maintenance personnel shall be physically able to handle the bulk, weight and power of the tool.
- Hold the tool correctly; be ready to counteract normal or sudden movements and have both hands available.
- Maintain a balanced body position and secure footing.
- Release the start-and-stop device in the case of an interruption of the energy supply.
- Use only lubricants recommended by the manufacturer.
- Personal protective safety glasses shall be used; suitable gloves and protective clothing are recommended.
- A rotary file shall not be operated at a speed exceeding the rated speed.
- For overhead work, wear a safety helmet.
- Be aware that there is a running-on of the rotary inserted tool after the start-and-stop device has been released.
- Warnings shall be given against the risk of explosion or fire due to the material being processed.

Note: For turbine die grinders, the stopping time can be of the order of several seconds.

REPETITIVE MOTIONS HAZARDS

- When using a die grinder to perform work-related activities, the operator can experience discomfort in the hands, arms, shoulders, neck or other parts of the body.
- While using a die grinder, the operator should adopt a comfortable posture whilst maintaining a secure footing and avoiding awkward or off-balance postures. The operator should change posture during extended tasks; this can help avoid discomfort and fatigue.
- If the operator experiences symptoms such as persistent or recurring discomfort, pain, throbbing, aching, tingling, numbness, burning sensations or stiffness, these warning signs should not be ignored. The operator should tell the employer and consult a qualified health professional.

ACCESSORY HAZARDS

- Disconnect the die grinder from the energy supply before fitting or changing the inserted tool or accessory.
- Use only sizes and types of accessories and consumables that are recommended by the die grinder manufacturer; do not use other types or sizes of accessories or consumables.

- Avoid direct contact with the inserted tool during and after use as it can be hot or sharp.
- The maximum operating speed of the inserted tool shall equal or exceed the rated speed marked on the tool.
- Never mount a grinding wheel, cut-off wheel or router cutter on a die grinder. A grinding wheel that bursts can cause very serious injury or death.
- Do not use mounted wheels which are chipped or cracked or which could have been dropped.
- Use only permitted inserted tools of the correct shaft diameter.
- Pay attention to the fact that the permitted speed of the mounted point has to be lowered due to the increase of the length of the shaft between the end of the collet and the mounted point (overhang). Make sure that the minimum gripping length of 10 mm is observed (see Figure 1 and the recommendations of the manufacturer of mounted points).
- Be aware of the risk of mismatching the diameter of the shaft of the mounted point and that of the collet.

WORKPLACE HAZARDS

- Slips, trips and falls are major causes of workplace injury. Be aware of slippery surfaces caused by use of the tool and also of trip hazards caused by the air line or hydraulic hose.
- Proceed with care in unfamiliar surroundings. There can be hidden hazards, such as electricity or other utility lines.
- The die grinder is not intended for use in potentially explosive atmospheres and is not insulated against contact with electric power.
- Ensure that there are no electrical cables, gas pipes, etc., which can cause a hazard if damaged by use of the tool.

DUST AND FUME HAZARDS

- Dust and fumes generated when using die grinders can cause ill health (for example cancer, birth defects, asthma and/or dermatitis); risk assessment and implementation of appropriate controls for these hazards are essential.
- Risk assessment should include dust created by the use of the tool and the potential for disturbing existing dust.
- Operate and maintain the die grinder as recommended in these instructions, to minimize dust or fume emissions.
- Direct the exhaust so as to minimize disturbance of dust in a dust-filled environment.
- Where dust or fumes are created, the priority shall be to control them at the point of emission.
- All integral features or accessories for the collection, extraction or suppression of airborne dust or fumes should be correctly used and maintained in accordance with the manufacturer's instructions.
- Select, maintain and replace the consumable/inserted tool as recommended in the instructions, to prevent an unnecessary increase in dust or fumes.
- Use respiratory protection in accordance with the employer's instructions and as required by occupational health and safety regulations.
- Working in certain materials creates emission of dust and fumes, causing a potentially explosive environment.

NOISE HAZARDS

- Exposure to high noise levels can cause permanent, disabling hearing loss and other problems, such as tinnitus (ringing, buzzing, whistling or humming in the ears). Therefore, risk assessment and implementation of appropriate controls for these hazards are essential.
- Appropriate controls to reduce the risk may include actions such as damping materials to prevent work pieces from “ringing”.
- Use hearing protection in accordance with employer's instructions and as required by occupational health and safety regulations.
- Operate and maintain the die grinder as recommended in the instruction handbook, to prevent an unnecessary increase in the noise level.
- Select, maintain and replace the consumable/inserted tool as recommended in the instruction handbook, to prevent an unnecessary increase in noise.
- If the die grinder has a silencer, always ensure that it is in place and in good working order when the die grinder is being operated.

VIBRATION HAZARDS

The information for use shall draw attention to vibration hazards that have not been eliminated by design and construction and remain as residual vibration risks. It shall enable employers to identify the circumstances in which the operator is likely to be at risk from vibration exposure. If the vibration-emission value obtained using ISO 28927-12 does not adequately represent the vibration emission in the intended uses (and foreseeable misuses) of the machine, additional information and/or warnings shall be supplied to enable the risks arising from vibration to be assessed and managed.

- Exposure to vibration can cause disabling damage to the nerves and blood supply of the hands and arms.
- Wear warm clothing when working in cold conditions and keep your hands warm and dry.
- If you experience numbness, tingling, pain or whitening of the skin in your fingers or hands, stop using the die grinder, tell your employer and consult a physician.
- Operate and maintain the die grinder as recommended in the instruction handbook, to prevent an unnecessary

increase in vibration levels.

- Select, maintain and replace the consumable/inserted tool as recommended in the instruction handbook, to prevent an unnecessary increase in vibration levels.
- Support the weight of the tool in a stand, tensioner or balancer if possible.
- Hold the tool with a light but safe grip, taking account of the required hand reaction forces, because the risk from vibration is generally greater when the grip force is higher.
- An improperly mounted or damaged inserted tool can cause excessive vibration levels.

ADDITIONAL SAFETY INSTRUCTIONS FOR PNEUMATIC POWER TOOLS

- Air under pressure can cause severe injury.
- Always shut off air supply, drain hose of air pressure and disconnect tool from air supply when not in use, before changing accessories or when making repairs.
- Never direct air at yourself or anyone else.
- Whipping hoses can cause severe injury. Always check for damaged or loose hoses and fittings.
- 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 connection failure.
- Do not exceed the maximum air pressure stated on the tool.
- Never carry an air tool by the hose.

SYMBOLS


Safety alert


CE conformity

Please read and understand all instructions before operating the product, follow all warnings and safety instructions.


Please read the instructions carefully before starting the product.


Wear eye protection.


Wear ear protection.

Lubricate with air tool oil daily.

SPECIFICATIONS

Grinder cap	6.35 mm (1/4”)
No-load speed	23,000/min
Air consumption	128.5 L/min (4.5 cfm)
Maximum working pressure	6.3 bar (90 psi)
Air inlet size	6.35 mm (1/4”)
Air hose ID	9.52 mm (3/8")
Weight	0.54 kg
A weighted sound pressure level	86.1dB(A), k=3dB
Sound power level	97.1dB(A), k=3dB
Vibration value	2.9 m/s^2
Uncertainty	1.1 m/s^2

Noise emission values are in accordance with EN ISO 4871 and EN ISO 15744.

Vibration emission values are in accordance with EN12096 and EN28662-1.

APPLICATION

The product is ideal for light weld grinding, porting and polishing applications. The durable and lightweight composite housing design also helps reduce vibration. It has a lever lock throttle for safety. Any other use is forbidden.

The product can be used for all kinds of mold, metal products and handicrafts, the manufacturing of circuit boards, blank finishing and grinding finishing.

The product is great for high speed grinding, porting, smoothing, general polishing and deburring.

The composite-material housing is lightweight and easy to use.

RESIDUAL RISKS

Even if you are operating this product in accordance with all the safety requirements, potential risks of injury and damage remain. The following dangers can arise in connection with the structure and design of this product:

1. Health defects resulting from vibration and noise emission if the product is being used over long periods of time or not adequately managed and properly maintained.
2. Injuries and damage to property due to broken cutting attachments or the sudden impact of hidden objects during use.

3. Danger of injury and property damage caused by flying objects.

AIR SUPPLY AND OPERATION

- Ensure air valve (or trigger) is in the “off” position before connecting to the air supply.
- Connect the product to the air hose.
- Press the trigger to operate the product.
- The air regulator controls the amount of air flow entering the rotor. Turn the air regular adjustment knob to decrease/increase the speed of the product.
- Do not use any additional force upon the tool.
- Do not allow the product to free run for an extended period of time as this will shorten its life.
- There is a risk of mismatching the diameter of the shaft of mounted point and that of the collet.
- There is a risk of excessive vibration levels due to improper mounting or damaged insert tool.
- There is a risk of running on of the inserted tool after the start and stop device has been released.
- Only permitted insert tools of the correct shaft diameter are used.
- Cutting-off wheels and routing cutter wheels shall not be used.
- Release the start and stop device in the case of an interruption of the air supply.
- Disconnect the product from the air supply before changing accessories or making adjustments.
- Required air pressure of 6.3 bar (90 psi), and an air flow according to specifications.
- Insert the grinder head to the collet nut.
- Tighten the collet nut for securing grinder head by the provided wrench.
- Before operation, ensure the inserted tool is fixed in the product.

⚠ WARNING

Ensure the air supply is clean and does not exceed 6.3 bar (90 psi) while operating the product. Too high an air pressure and unclean air will shorten the product's life due to excessive wear, and may be dangerous causing damage and/or personal injury.

LUBRICATION

An automatic in-line filter-regulator-lubricator is recommended (Fig. 7) as it increases product life and keeps the product in sustained operation. The in-line lubricator should be regularly checked and filled with air tool oil.

Proper adjustment of the in-line lubricator is performed by placing a sheet of paper next to the exhaust ports and holding the throttle open for approximately 30 seconds. The lubricator is properly set when a light stain of oil collects on the paper. Excessive amounts of oil should be avoided.

If it becomes necessary to store the product for an extended period of time (overnight, weekend, etc.), it should receive a generous amount of lubrication at that time. The product should be run for approximately 30 seconds to ensure oil has been evenly distributed throughout the product. The product should be stored in a clean and dry environment.

- It is most important that the product be properly lubricated by keeping the air line lubricator filled and correctly adjusted. Without proper lubrication the product will not work properly and parts will wear prematurely.
- Use correct lubricant in the air line lubricator. The lubricator should be of low air flow or changing air flow type, and should be kept filled to the correct level. Use only recommended lubricants, specially made for pneumatic applications. Substitutes may harm the rubber compounds in the product's O-rings and other rubber parts.

IMPORTANT!

See Figure 7.

If a filter/regulator/lubricator is not installed on the air system, air operated tools should be lubricated at least once a day or after 2 hours of work with 2 - 6 drops of oil, depending on the work environment, directly through the male fitting in the tool housing.

LOADING AND OPERATION

⚠ WARNING

Drain the air tank daily. Water in the air line will damage the tool.

- Clean the air inlet filter weekly.
- Line pressure should be increased to compensate for unusually long air hoses (over 8 metres). The minimum hose diameter should be 6.35 mm (1/4”) I.D. and the fittings must have the same inside dimensions.
- Keep hose away from heat, oil and sharp edges. Check hose for wear, and make sure that all connections are secure.
- Use the tool only for its intended purpose.

MAINTENANCE

- Keep the product safe by regular maintenance.
- Always keep your air tool clean and lubricated. Daily lubrication is essential to avoid internal corrosion and

possible failure.

- Maintenance shall be performed weekly.
- Drain the air tank daily. Water in the air line will damage the product.
- If the product cannot be used anymore, make sure to dispose of it so as not to impose hazards on people and the environment.
- Air tool white oil is recommended for lubrication.
- Only lubricants recommended by the manufacturer should be used.

TROUBLESHOOTING

⚠ WARNING

If any of the following symptoms appears during operation, stop using the tool immediately, or serious personal injury could result. Only qualified persons or an authorised service centre can perform repairs or replacement of the tool.

Disconnect tool from the air supply before attempting repair or adjustment. When replacing O-rings or cylinder, lubricate with air tool oil before assembly.

PROBLEM: Tool runs at normal speed but fails under load.

POSSIBLE CAUSES

- Motor parts are worn.
- Cam clutch is worn or sticking due to lack of lubricant.

REMEDIES

- Lubricate clutch housing.
- Check for excess clutch oil. Clutch cases need only be half full. Overfilling can cause drag on high speed clutch parts, i.e. a typical oiled/lubricated tool requires 14.20 ml (1/2 ounce) of oil.

  Grease lubrication

  NOTE: Heat usually indicates insufficient grease in chamber. Severe operating conditions may require more frequent lubrication.

PROBLEM: Tool runs slowly. Air flows slightly from exhaust.

POSSIBLE CAUSES

- Motor parts are jammed with dirt particles.
- Air regulator is in closed position.
- Air flow is blocked by dirt.

REMEDIES

- Check air inlet filter for blockage.
- Pour air tool lubricating oil into air inlet as per instructions.
- Operate tool in short bursts quickly reversing rotation back and forth where applicable.
- Repeat above as needed.

PROBLEM: Tool will not run. Air flows freely from exhaust.

POSSIBLE CAUSE

One or more motor vanes are stuck due to material build up.

REMEDIES

- Pour air tool lubricating oil into air inlet.
- Operate tool in short bursts of forward and/or reverse rotation where applicable.
- Tap motor housing gently with a plastic mallet.
- Disconnect the air supply. Free the motor by rotating drive shank manually where applicable.
- If the product remains jammed, return to the service centre.

PROBLEM: Tool will not shut off.

POSSIBLE CAUSE

'O' rings throttle valve is dislodged from seat inlet valve.

REMEDY

Replace the 'O' ring.

NOTE: Repairs should be carried out by a qualified person.

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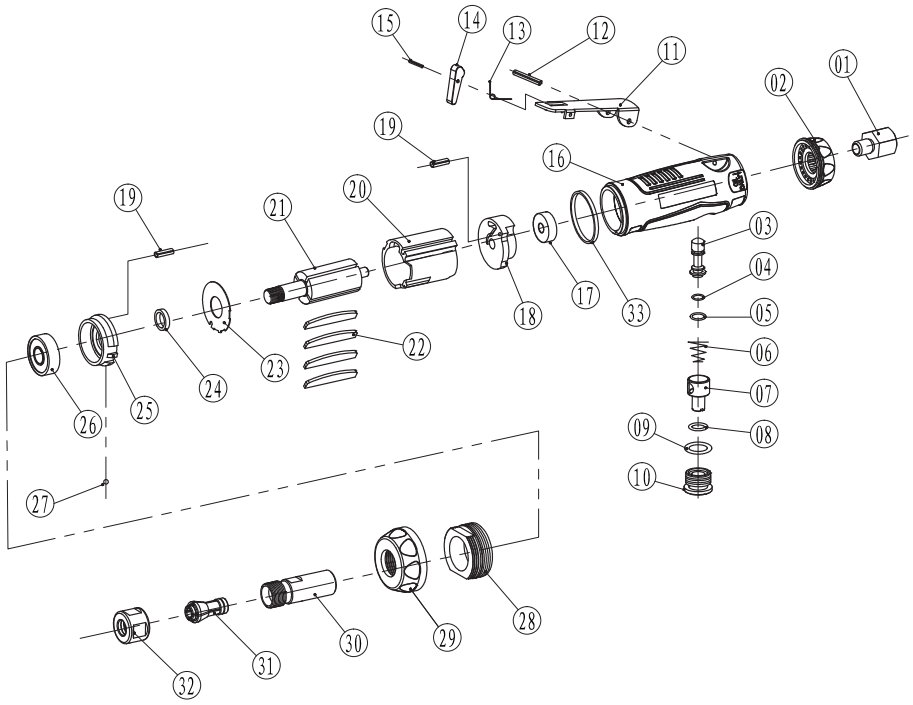
PARTS LIST



No.	Description	No.	Description	No.	Description	No.	Description
01	Air inlet	10	Screw cap	19	Bolt 2 x 6	28	Retainer ring
02	Muffle cover	11	Trigger	20	Cylinder	29	Front plate
03	Valve stem	12	Roll pin 3 x 14	21	Rotor	30	Collet seat
04	O-ring 4.8 x 1.6	13	Spring	22	Rotor blade	31	Collet
05	O-ring 5.6 x 2	14	Trigger lock pin	23	Washer	32	Collet screw
06	Spring	15	Roll pin 2 x 18	24	Bushing	33	Washer
07	Air regulator	16	Gun body	25	Front cap		
08	O-ring 7 x 2	17	Bearing 626Z	26	Bearing 6000Z		
09	O-ring 12 x 3	18	Cylinder cap	27	Steel ball dia.=2		

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