## 21AA82, 21AA84, 21AA85, 21AA86, 21AA87, 21AA88, 21AA92 and 21AA93

#### Please read and save these instructions.

**Operating Instructions & Parts Manual** 

Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with instructions could result in personal injury and/or property damage! Retain instructions for future reference.

# **Speedaire**<sup>®</sup> **Die Grinders**

#### Description

Speedaire® die grinders are designed for cleaning tire molding, porting and general high-speed polishing and grinding in confined areas. These lightweight units feature built-in comfort grip, adjustable air regulator, safety throttle lever, rear exhaust with silencer, and low operational noise.



#### Specifications:

Model No.	Free Speed (RPM)	Collet Size (Inch)	Horsepower (HP)	Air Inlet (NPT)	Hose Size (Inch)	Average Air Consumption (CFM)	Length (Inch)	Weight (Lbs)
21AA82	20,000	1/4	0.35	1/4"	3/8	4	6-1/2	1.1
21AA84	18,000	1/4	0.5	1/4"	3/8	4	7-3/8	1.5
21AA85	22,000	1/4	0.5	1/4"	3/8	4	13	2.2
21AA86	22,000	1/4	0.5	1/4"	3/8	4	6-11/16	1.2
21AA87	22,000	1/4	0.5	1/4"	3/8	4	7-3/8	1.5
21AA88	22,000	1/4	0.5	1/4"	3/8	4	6-3/4	1.5
21AA92	56,000	1/8	0.1	1/4"	1/4	1.5	5-1/4	0.25
21AA93	70,000	1/8	0.1	1/4"	1/4	1.5	7-1/8	0.31

\* Recommended Air Pressure at 90 PSI (6.2 Bar)

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## 21AA82, 21AA84, 21AA85, 21AA86, 21AA87, 21AA88, 21AA92 and 21AA93

## Speedaire<sup>®</sup> Die Grinders

Always operate, inspect and maintain this tool in accordance with American National Standards Institute Safety Code of Portable Air Tools (ANSI B186.1) and any other applicable safety code and regulations. Always wear impact-resistant eye and face protection when operating or performing maintenance on the tool. Always wear hearing protection when using this tool. High sound levels can cause permanent hearing loss. Use hearing protection as recommended by your employer or OSHA regulation.

WARNING

#### Unpacking

When unpacking the unit, carefully look for any damage that may have occurred during transit. Check for loose, missing or damaged parts.

#### **General Safety Information**

#### 1. For Additional Safety Information Consult:

Your employer, union, and/or trade association. US Department of Labor (OSHA); www.osha.gov. "Safety Code For Portable Air Tools" (B186.1)

#### 2. Entanglement Hazards

Keep away from rotating spindle and accessory. Do not wear jewelry or loose clothing. Scalping can occur if hair is not kept away from the tool and accessories. Choking can occur if neckwear is not kept away from tool and accessories.

#### 3. Workplace Hazards

Slip/Trip/Fall is a major cause of serious injury or death. Beware of excess hose left on the walking or work surface. High sound levels can cause permanent hearing Joss. Use hearing protection as recommended by your employer or OSHA regulation (see 29 CFR part 1910).

Maintain a balanced body position and secure footing. Repetitive work motions, awkward positions and exposure to vibration can be harmful to hands and arms. If numbness, tingling, pain or whitening of the skin occurs, stop using tool and consult a physician. Avoid inhaling dust or handling debris from the work process which can be harmful to your health. Use dust extraction and wear respiratory protective equipment when working with materials which produce airborne particles. This tool is not intended for use in explosive atmospheres and is not insulated for contact with electric power sources. Potentially explosive atmospheres can be caused by dust and fumes resulting from sanding or grinding. Use dust extraction or suppression system

which is suitable for the material being processed.

Some dust created by power sanding, sawing, grinding, drilling and other construction activities contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. Some examples of these chemicals

are: – Lead from lead based paints – Crystalline silica bricks and cement and other masonry

products

– And Arsenic and chromium from chemically-treated rubber Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: work in a well ventilated area, and work with approved safety equipment, such as dust masks that are specially designed to filter out microscopic particles. For professional use only.



Some dust created by power sanding, sawing, grinding, drilling, and other construction activities contains chemicals known to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are :

- . Lead from Lead-based paints
- . Crystalline silica from bricks and cement and other masonry products, and
- . Arsenic and chromium from chemically-treated lumber.

Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals : work in a well-ventilated area, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles.



# Speedaire<sup>®</sup> Die Grinders

## **Piping System**

Air mains and lines should be large enough to avoid excessive pressure loss under conditions of maximum flow.

In air lines, as in aftercoolers, water is continually precipitated as the air cools. For this reason pipe lines should be provided with a means of draining or trapping this water before it reaches the hose outlets.

It is advisable to pitch the mains in the direction of air flow so that both gravity and air flow will carry the water to traps or water legs located at frequent intervals. These should be drained regularly and never allowed to become full and inoperative. Use of automatic traps will eliminate manual draining and the possibility of traps becoming full.

However traps which drain to sewers can waste a considerable amount of air unless regularly inspected and kept in good working order. Provision for quick and positive inspection of operation and for leakage should be made when traps are installed.

Three-way cocks or stop and waste cocks in the drains are usually provided for this purpose.

To aid in preventing condensed moisture from reaching the tools, down pipes or hose connections should never be taken directly from the bottom of air pipes or mains.

Connection should be made at the top of the main and a long radius return bend used.

Leaders, valves and hose conections should be large enough to pass the maximum amount of air required by the tool or tools on the line. This is particularly important if manifolds, from which several hose lines run, are used. **Pioes & Fittings** 

#### **Oil Daily Here** Regulator Ston Valve Coupling Tailpiece Adaptor Tailpiece Adaptor FEE dat and off Whip Hose > 500mm Adaptor Coupling Oilé Main Hose Whin Hose Air Supply Drain Daily

#### Air Regulators

Clean, dry, lubricated air at the proper pressure is the most important requirement for proper operation of air tools. Speedaire® tools are designed to operate at 90 PSI unless otherwise specified.

#### Installation

On installations where the piping system does not provide clean, dry air, the use of filters at hose connection points is recommended. A good filter, kept properly drained, will remove nearly all entrained water whereas a poor one is practically useless. Most filters do not have adequate water storage capacity and, unless provided with an auxiliary storage receiver or automatic trap, soon cease to function.

#### Operation

- Supply tool with 90PSI of clean, dry air. Higher pressure drastically reduces tool life. Connect tool to air line using pipe, hose, and fitting sizes. Do not install a quick coupler directly into the grinder throttle handle.
- Use only mounted wheels or tire buffing accessories with adequate speed rating and the correct shaft diameter. Grinding accessory's rated speed must be equal to or greater than the speed of the die grinder.

#### Lubrication

Use an air line lubricator with Mobil Almo 525 air tool oil (model 4ZF22), adjusted to two (2) drops per minute. If an air line lubricator cannot be used, add air motor oil to the inlet once a day.

#### **Moisture Elimination**

The amount of moisture carried by compressed air varies as the temperature of the air drops after compression. As the temperature drops, water is precipitated. In order to eliminate as much water as possible, compressors should be equipped with intercoolers, aftercoolers, and full size receivers. These should be kept drained and in good working condition.

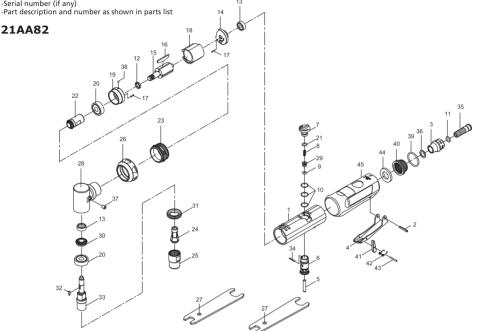
#### **Compressor Intake**

Locate the intake to obtain the coolest, driest and cleanest air available. Intakes should be of ample size and as direct as possible. Avoid steam pipes, escaping steam and dusty or wet locations (as near roofs, floors, ground, etc...). When practical, take air from out-of-door on the north side of the building. Provide proper screening and protection. Intake filters of suitable size should be used.



#### 24 hours a day - 365 days a year

Please provide following information: -Model number -Serial number (if any)



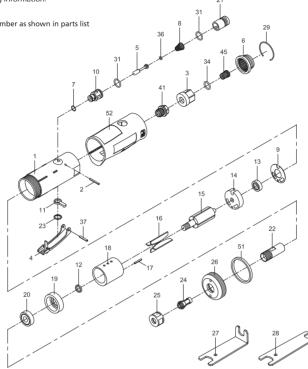
Ref.		Part		Ref.		Part	
No.	Description	No.	Qty.	No.	Description	No.	Qty.
1	Motor Housing	* * *	1	24	Collet	PN21AA406G	1
2	Lever Pin	* * *	1	25	Collet Nut	PN21AA407G	1
3	Air Inlet	* * *	1	26	Front Cap	* * *	1
4	Throttle Lever	* * *	1	27	Spanner	* * *	2
5	Valve Shaft	* * *	1	28	Head	PN21AA408G	1
6	Valve	* * *	1	29	Throttle Valve	* * *	1
7	Knob	PN21AA399G	1	30	Beve Gear	* * *	1
8	Spring	PN21AA400G	1	31	Lock Ring	* * *	1
9	O-Ring	PN21AA135G	1	32	Key	* * *	1
10	O-Ring	* * *	3	33	Spindle	* * *	1
11	O-Ring	PN21AA221G	1	34	Spring Pin	* * *	1
12	Rotor Spacer	* * *	1	35	Fixed Shaft	* * *	1
13	Bal Bearing	* * *	2	36	Washer	* * *	1
14	Rear End Plate	* * *	1	37	OI Cap	PN21AA409G	1
15	Rotor	* * *	1	38	Steel Ball	* * *	1
16	Vane	PN21AA403G	4	39	O-Ring	PN21AA215G	1
17	Spring Pin	* * *	2	40	Deflector	* * *	1
18	CyInder	PN21AA405G	1	41	Safety Bar	* * *	1
19	Front End Plate	* * *	1	42	Spring	* * *	1
20	Bal Bearing	* * *	2	43	Spring Pin	* * *	1
21	O-Ring	* * *	1	44	Damping Material	* * *	1
22	Pinion Gear	* * *	1	45	Grip	* * *	1
23	Front Coupling	* * *	1				



#### 24 hours a day - 365 days a year

Please provide following information: -Model number -Serial number (if any) -Part description and number as shown in parts list

#### **21AA84**

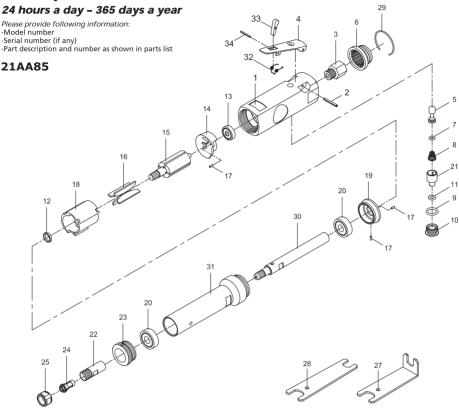


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Ref.		Part		Ref.		Part	
No.	Description	No.	Qty.	No.	Description	No.	Qty.
1	Motor Housing	* * *	1	20	Ball Bearing	PN21AA371G	1
2	Spring Pin	* * *	1	21	Air Regulator	* * *	1
3	Air Inlet	* * *	1	22	Spindle	* * *	1
4	Throttle Lever	* * *	1	23	Retaining Ring	PN21AA431G	1
5	Valve Stem	* * *	1	24	Collet	* * *	1
6	Deflector	* * *	1	25	Collet Nut	* * *	1
7	O-Ring	PN21AA424G	1	26	Clamp Nut	* * *	1
8	Spring	PN21AA366G	1	27	Angle Double Ended Spanner	* * *	1
9	Motor Gasket	PN21AA657G	1	28	Double Ended Spanner	* * *	1
10	Reverse Valve	* * *	1	29	Retainer Ring	PN21AA427G	1
11	Reverse Lever	PN21AA425G	1	31	O-Ring	* * *	2
12	Rotor Spacer	* * *	1	34	O-Ring	* * *	1
13	Ball Bearing	* * *	1	36	O-Ring	* * *	1
14	Rear End Plate	PN21AA428G	1	37	Spring Pin	* * *	1
15	Rotor	* * *	1	41	Fixed Shaft	* * *	1
16	Rotor Blade	PN21AA426G	4	45	Screw	* * *	1
17	Spring Pin	* * *	1	51	Decoration Ring	* * *	1
18	Cylinder	PN21AA429G	1	52	Rubber Grip	* * *	1
19	Front End Plate	PN21AA443G	1				
* * *	Parts Not Available						





Ref.		Part		Ref.		Part	
No.	Description	No.	Qty.	No.	Description	No.	Qty.
1	Motor Housing	* * *	1	18	Cylinder	PN21AA432G	1
2	Spring Pin	* * *	1	19	Front End Plate	* * *	1
3	Air Inlet	* * *	1	20	Ball Bearing	* * *	2
4	Throttle Lever	* * *	1	21	Air Regulator	* * *	1
5	Valve Stem	* * *	1	22	Spindle	* * *	1
6	Exhaust Diffuser	* * *	1	23	Lock Nut	* * *	1
7	O-Ring	PN21AA241G	1	24	Collet	PN21AA406G	1
8	Valve Spring	PN21AA366G	1	25	Collet Nut	PN21AA433G	1
9	O-Ring	PN21AA283G	1	27	Angle Double Ended Spanner	* * *	1
10	Throttle Valve Plug	* * *	1	28	Double Ended Spanner	* * *	1
11	O-Ring	PN21AA150G	1	29	Retainer Ring	PN21AA427G	1
12	Rotor Bush	* * *	1	30	Extension Bar	* * *	1
13	Ball Bearing	* * *	1	31	Extension Housing	* * *	1
14	Rear End Plate	* * *	1	32	Spring	* * *	1
15	Rotor	* * *	1	33	Safety Bar	* * *	1
16	Rotor Blade	PN21AA359G	4	34	Spring Pin	* * *	1
17	Spring Pin	PN21AA179G	3				



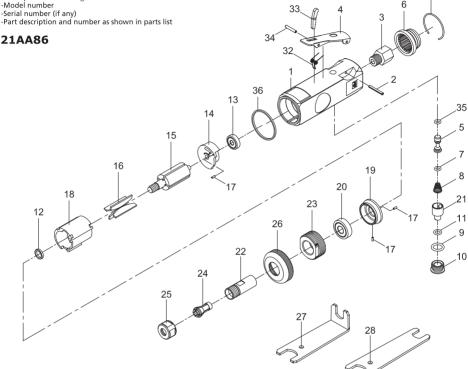
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## For Repair Parts, call 1-800-323-0620

#### 24 hours a day - 365 days a year

Please provide following information: -Model number -Serial number (if any)

#### **21AA86**



#### **Repair Parts List**

Ref.		Part		Ref.		Part	
No.	Description	No.	Qty.	No.	Description	No.	Qty.
1	Motor Housing	* * *	1	18	Cylinder	PN21AA563G	1
2	Spring Pin	* * *	1	19	Front End Plate	PN21AA435G	1
3	Air Inlet	* * *	1	20	Ball Bearing	* * *	1
4	Throttle Lever	* * *	1	21	Air Regulator	* * *	1
5	Valve Stem	* * *	1	22	Spindle	* * *	1
6	Exhaust Diffuser	* * *	1	23	Retainer	* * *	1
7	O-Ring	PN21AA241G	1	24	Collet	PN21AA406G	1
8	Valve Spring	PN21AA366G	1	25	Collet Nut	* * *	1
9	O-Ring	PN21AA283G	1	26	Housing Cap	* * *	1
10	Throttle Valve Plug	* * *	1	27	Angle Double Ended Spanner	* * *	1
11	O-Ring	PN21AA150G	1	28	Double Ended Spanner	* * *	1
12	Rotor Bush	* * *	1	29	Retainer Ring	PN21AA427G	1
13	Ball Bearing	* * *	1	32	Spring	* * *	1
14	Rear End Plate	PN21AA434G	1	33	Safety Bar	* * *	1
15	Rotor	* * *	1	34	Spring Pin	* * *	1
16	Rotor Blade	PN21AA359G	4	35	O-Ring	* * *	1
17	Spring Pin	* * *	3	36	Ring	* * *	1

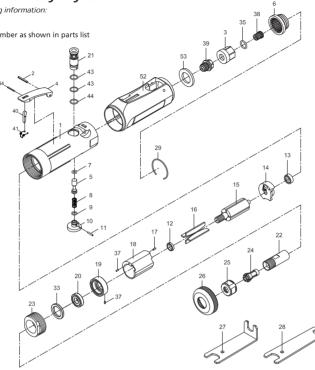
\* \* \* Parts Not Available



#### 24 hours a day - 365 days a year

Please provide following information: -Model number -Serial number (if any) -Part description and number as shown in parts list

21AA87



#### **Repair Parts List**

Ref.		Part		Ref.		Part	
No.	Description	No.	Qty.	No.	Description	No.	Qty.
1	Motor Housing	* * *	1	22	Spindle	* * *	1
2	Spring Pin	* * *	1	23	Clamp Nut	* * *	1
3	Air Inlet	* * *	1	24	Collet	* * *	1
4	Throttle Lever	* * *	1	25	Collet Nut	* * *	1
5	Valve Shaft	* * *	1	26	Housing Cap	* * *	1
6	Exhaust Diffuser	* * *	1	27	Angle Double Ended Spanner	* * *	1
7	O-Ring	PN21AA437G	1	28	Double Ended Spanner	* * *	1
8	Valve Spring	PN21AA253G	1	29	Retainer Ring	PN21AA427G	1
9	O-Ring	PN21AA225G	1	33	Washer	* * *	1
10	Air Regulator Knob	* * *	1	34	Spring Pin	* * *	1
11	Spring Pin	PN21AA438G	1	35	O-Ring	PN21AA221G	1
12	Rotor Bush	* * *	1	37	Spring Pin	* * *	2
13	Ball Bearing	* * *	1	38	Screw	* * *	1
14	Rear End Plate	PN21AA441G	1	39	Fixed Shaft	* * *	1
15	Rotor	* * *	1	40	Safety Bar	* * *	1
16	Rotor Blade	PN21AA439G	4	41	Spring	* * *	1
17	Spring Pin	* * *	1	43	O-Ring	* * *	2
18	Cylinder	PN21AA442G	1	44	O-Ring	* * *	1
19	Front End Plate	PN21AA443G	1	52	Rubber Grip	* * *	1
20	Ball Bearing	PN21AA371G	1	53	Damping Material	* * *	1
21	Bushing	* * *	1				

\* \* \* Parts Not Available



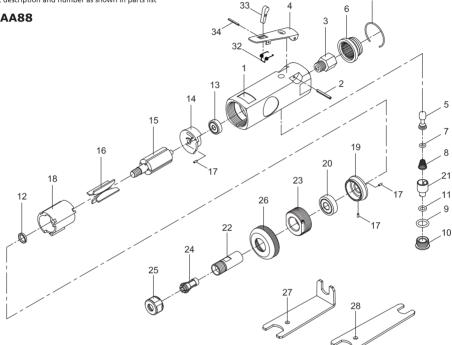
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## For Repair Parts, call 1-800-323-0620

#### 24 hours a day - 365 days a year

Please provide following information: -Model number -Serial number (if any) -Part description and number as shown in parts list

#### **21AA88**



#### **Repair Parts List**

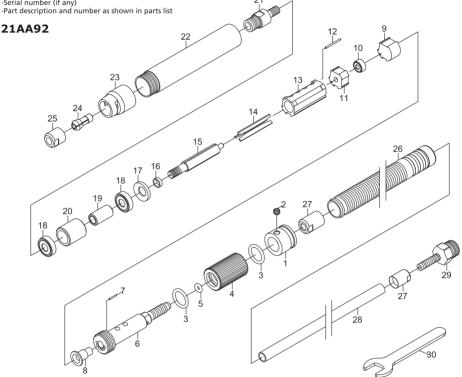
Ref		Part		Ref.		Part	
No.	Description	No.	Qty.	No.	Description	No.	Qty.
1	Motor Housing	* * *	1	17	Spring Pin	PN21AA179G	3
2	Spring Pin	* * *	1	18	Cylinder	PN21AA432G	1
3	Air Inlet	* * *	1	19	Front End Plate	* * *	1
4	Throttle Lever	* * *	1	20	Bal Bearing	* * *	1
5	Valve Stem	* * *	1	21	Air Regulator	* * *	1
6	Exhaust Diffuser	* * *	1	22	Spindle	* * *	1
7	O-Ring	PN21AA241G	1	23	Retainer	* * *	1
8	Valve Spring	PN21AA366G	1	24	Collet	PN21AA406G	1
9	O-Ring	PN21AA283G	1	25	Collet Nut	PN21AA433G	1
10	Throttle Valve Plug	* * *	1	26	Housing Cap	* * *	1
11	O-Ring	PN21AA150G	1	27	Angle Double Ended Spanner	* * *	1
12	Rotor Bush	* * *	1	28	Double Ended Spanner	* * *	1
13	Ball Bearing	* * *	1	29	Retainer Ring	PN21AA427G	1
14	Rear End Plate	* * *	1	32	Spring	* * *	1
15	Rotor	* * *	1	33	Safety Bar	* * *	1
16	Rotor Blade	PN21AA359G	4	34	Spring Pin	* * *	1
* * * F	Parts Not Available						

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#### 24 hours a day - 365 days a year

Please provide following information: -Model number -Serial number (if any)



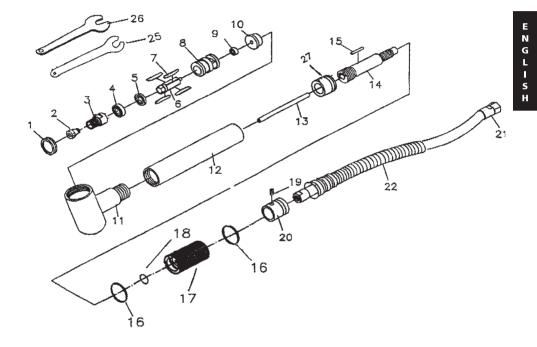
Ref.		Part		Ref.		Part	
No.	Description	No.	Qty.	No.	Description	No.	Qty.
1	Rear End Holder	* * *	1	16	Spacer	* * *	1
2	Screw	* * *	1	17	Lateral Disc	* * *	1
3	O-Ring	PN21AA467G	2	18	Ball Bearing	* * *	2
4	Silding Knob	* * *	1	19	Interior Bearing Retainer Bushing	* * *	1
5	O-Ring	PN21AA468G	1	20	Outer Bearing Retainer Bushing	* * *	1
6	Hose Plug	* * *	1	21	Collet Foundation	* * *	1
7	Pin	PN21AA469G	1	22	Sleeve	* * *	1
8	Plug	* * *	1	23	Front Cover	* * *	1
9	ntake Plate	* * *	1	24	Collet	PN21AA473G	1
10	Ba Bearing	* * *	1	25	Clamping Nut	PN21AA474G	1
11	Bearing Plate	* * *	1	26	Muffer Tube	* * *	1
12	Pin	* * *	1	27	Hose Ring	* * *	2
13	Cynder	PN21AA471G	1	28	Air Hose	* * *	1
14	Roter Blade	PN21AA470G	3	29	n et Connector	* * *	1
15	Roter	PN21AA472G	1	30	Spanner	* * *	2
* * * F	Parts Not Available						



#### 24 hours a day - 365 days a year

Please provide following information: -Model number -Serial number (if any) -Part description and number as shown in parts list

#### 21AA93



Ref.		Part		Ref.		Part	
No.	Description	No.	Qty.	No.	Description	No.	Qty.
1	Lock Nut	* * *	1	13	Air Intake Tube	* * *	1
2	Collet 1/8"	PN21AA646G	1	14	Hose Plug	* * *	1
3	Collet Foundation	* * *	1	15	Short Pin	* * *	1
4	Ball Bearing	* * *	1	16	O-ring	PN21AA479G	2
5	Front End Plate	PN21AA476G	1	17	Sliding Knob	* * *	1
6	Rotor	* * *	1	18	O-ring	PN21AA480G	1
7	Rotor Blade	PN21AA477G	4	19	Screw	* * *	1
8	Cylinder	* * *	1	20	Rear End Holder	* * *	1
9	Ball Bearing	* * *	1	21	Air Inlet W/hose	* * *	1
10	Rear End Plate	PN21AA478G	1	22	Silencer	* * *	1
11	Angle Housing	* * *	1	25	Wrench	* * *	1
12	Boay	* * *	1	26	Wrench	* * *	1



## 21AA82, 21AA84, 21AA85, 21AA86, 21AA87, 21AA88, 21AA92 and 21AA93

# Speedaire<sup>®</sup> Die Grinders

## Troubleshooting

Problem	Possible Cause	Solution
There is moisture blowing out of the tool's exhaust.	There is water in the tank.	Drain the tank. (see the air compressor manual for instructions.) Lubricate the tool again and run for 1-2 seconds.
The tool runs slowly or will not operate.	There is grit or gum in the tool.	Flush the tool with air tool oil or gum solvent.
	The tool is out of oil.	Lubricate the tool according to the lubrication instructions in this manual.
	The air pressure is low.	<ul> <li>Adjust the regulator setting on the tool.</li> <li>Adjust the compressor regulator to the tool's maximum setting of 90psi.</li> </ul>
	The air hose leaks.	<ul> <li>Check the fitting and connection;</li> <li>Check the air hose.</li> </ul>
	The air pressure drops.	<ul> <li>Ensure the hose is the proper size. Long hoses or tools using large volumes of air may require a hose with an I.D. of 1/2" or large depending on the total length of the hose.</li> <li>Do not use a multiple number of hoses connected together with a quick connect fitting. This causes additional pressure drops and reduces the tool power. Directly connect the hoses together.</li> </ul>
	There is a worn rotor blade in the motor.	Replace the rotor blade.
	There is a worn ball bearing in the motor.	Remove and inspect the bearing for rust, dirt, and grit. Replace or clean and grease the bearing with bearing grease.



Speedaire® Operating Instructions and Parts Manual

## 21AA82, 21AA84, 21AA85, 21AA86, 21AA87, 21AA88, 21AA92 and 21AA93

## Speedaire<sup>®</sup> Die Grinders

#### LIMITED WARRANTY

**DAYTON ONE-YEAR LIMITED WARRANTY.** SPEEDAIRE® DIE GRINDERS MODELS COVERED IN THIS MANUAL ARE WARRANTED BY DAYTON ELECTRIC MFG. CO. (DAYTON) TO THE ORIGINAL USER AGAINST DEFECTS IN WORKMANSHIP OR MATERIALS UNDER NORMAL USE FOR ONE YEAR AFTER DATE OF PURCHASE. ANY PART WHICH IS DETERMINED TO BE DEFECTIVE IN MATERIAL OR WORKMANSHIP AND RETURNED TO AN AUTHORIZED SERVICE LOCATION, AS DAYTON DESIGNATES, SHIPPING COSTS PREPAID, WILL BE, AS THE EXCLUSIVE REMEDY, REPAIRED OR REPLACED AT DAYTON'S OPTION. FOR LIMITED WARRANTY CLAIM PROCEDURES, SEE "PROMPT DISPOSITION" BELOW. THIS LIMITED WARRANTY GIVES PURCHASERS SPECIFIC LEGAL RIGHTS WHICH VARY FROM JURISDICTION TO JURISDICTION.

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Manufactured for Dayton Electric Mfg. Co., 100 Grainger Parkway, Lake Forest, Illinois 60045 USA.



### **Notes**

