Alpha® Pneumatic Air Polisher Instruction Manual

Part No: AIR-684
Version 1

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► INTRODUCTION

Thank you for purchasing an Alpha® Air Polisher. This polisher is the workhorse of a complete polishing system. A wide range of accessories help you perform many different tasks. This tool lets you grind, shape, bevel, contour and polish all kinds of natural stone and man-made materials. You can easily change from one type of disc to another in just a matter of seconds. The tool is used with water to help you get the best possible finish, to reduce the health risks of dust, and to give the most savings in time and money. For your safety, please read this manual thoroughly before you start operating this polisher.

► ABOUT THE SYMBOLS

According to the hazard level, all safety notes in this manual are classified into "DANGER", "WARNING", and "CAUTION".

⚠ DANGER!   Death or serious personal injury is imminent when handling this polisher incorrectly.

⚠ WARNING!   There is a possibility of death or serious personal injury when handling this polisher incorrectly.

⚠ CAUTION!   There is a possibility of personal injury or property damage when handling this polisher incorrectly.

Note: In some situations, failing to observe WARNING notes could result in death or serious personal injury. Be sure to read and observe the safety notes to ensure safety and correct use of the polisher.

► SAFETY INSTRUCTIONS FOR POWER TOOLS

1.   KNOW YOUR POWER TOOL. Read owner's manual carefully. Learn its applications and limitations as well as specific potential hazards particular to this tool.

2.   KEEP WORK AREA CLEAN. Cluttered areas and benches invite accidents.

3.   AVOID DANGEROUS ENVIRONMENTS. Keep work areas as dry as possible. Do not use tool in presence of flammable liquids or gases. Keep the area well lit.

For repair information call:

Headquarters, Oakland, NJ — (800) 648-7229 ext.505

Due to specially designed components this machine must be serviced only with genuine ALPHA® parts.

4. KEEP CHILDREN AND VISITORS AWAY. All visitors should be kept a safe distance from the work area. Keep out of reach of children.

5. DON'T FORCE TOOL. It will do the job better and safer at the rate for which it was designed.

6. WEAR PROPER APPAREL. Do not wear loose clothing or jewelry as it can get caught in moving parts. Rubber gloves and insulated non-skid footwear are recommended. Wear protective covering to contain long hair.

7. WEAR PROPER EYE PROTECTION. All users and bystanders must always wear proper personal eye protection which conform with ANSI/ISEA Z87.1 (CAN/CSA Z94.3). Also use a face or dust mask if operation is dusty. Always wear certified safety equipment.

8. WEAR PROPER EAR PROTECTION. All users and bystanders must wear proper personal ear protection which conforms with ANSI S12.6 (S3.19) hearing protection.

9. WEAR PROPER RESPIRATORY PROTECTION. All users and bystanders must wear proper personal respiratory protection. Always use NIOSH/OSHA approved respiratory protection appropriate for the dust exposure.
Warning: Some dust created by power sanding, sawing, grinding, drilling, polishing and other construction activities contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.
Some examples of these chemicals are:
- Lead from lead-based paints
- Crystalline silica from bricks, 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, 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.

To familiarize with the risks associated with a material, consult with your employer, manufacturer/supplier and government agencies regarding the hazards of the materials and their recommendations to protect yourself.

DON'T ABUSE WATER SUPPLY HOSE. Don't carry tool by supply hose or expose to traffic areas where it can be crushed.

10. ALWAYS SECURE WORK PIECE. Use clamps or a vise to hold work. It's safer than using your hand and it frees both hands to operate tool.

11. DON'T OVERREACH. Keep proper footing and balance at all times.

12. DISCONNECT TOOLS WHEN NOT IN USE. Always disconnect tool before servicing; when changing accessories such as grinding wheels, backer pads, etc.

13. REMOVE ADJUSTING KEYS AND WRENCHES. Form a habit of checking to see that keys and adjusting wrenches are removed from tool before turning it on.

14. MAINTAIN TOOLS WITH CARE. Keep tools clean at all times for best and safest performance. Follow instructions for lubricating and changing accessories. Keep handles dry, clean and free of oil or grease. Inspect moving parts for alignment and binding as well as for breakage and improper mounting.

15. AVOID ACCIDENTAL STARTING. Do not carry a "connected" tool, or make adjustments, or change discs without making sure the tool is disconnected from the air supply.

16. USE ONLY RECOMMENDED ACCESSORIES. The use of any accessories other than what is listed or recommended for this particular tool may be hazardous.

17. KEEP HANDS AWAY FROM ALL MOVING PARTS.

18. USE SIDE HANDLES. Supplied with tool for control and safety.

19. USE RECOMMENDED GRINDING WHEELS ONLY. Do not use conventional abrasive grinding wheels with this tool. Only use diamond grinding wheels which are rated for wet usage.

20. STAY ALERT. Watch what you are doing and use common sense. Do not operate tool when you are tired, or under the influence of medication or alcohol.

DECLARATION

DECLARED DUAL-NUMBER NOISE EMISSION VALUES IN ACCOREDANCE WITH ISO 4871

Measured A-weighted sound power level, $L_{WA,}$ in decibels	96.9
Uncertainty, $K_{WA,}$ in decibels	0.73
Measured A-weighted emission sound pressure level L_{pA} at the operator's position, indecibels	85.9
Uncertainty, $K_{pA,}$ in decibels	0.73
Values determined to noise test code given in ISO 15744.	
Note - The sum of a measured noise emission value and its associated uncertainty represents an upper boundary of the range of values which is likely to occur in measurements	

DECLARED VIBRATION EMISSION VALUE IN ACCORDANCE WITH EN 12096

Measured vibration emission total value a	$1.48 m/s^2$
Uncertainty K	$0.32 m/s^2$
Values determined according to ISO 8662-8.	

AIR-684 OVERVIEW

Adjustable Water Valve

Exhaust Hose With Clamp

Rubber Body Cover

Internal Water Line

Oil Port Screw

Adjustable Air Valve

Reversible Handle

15 ft Water Hose
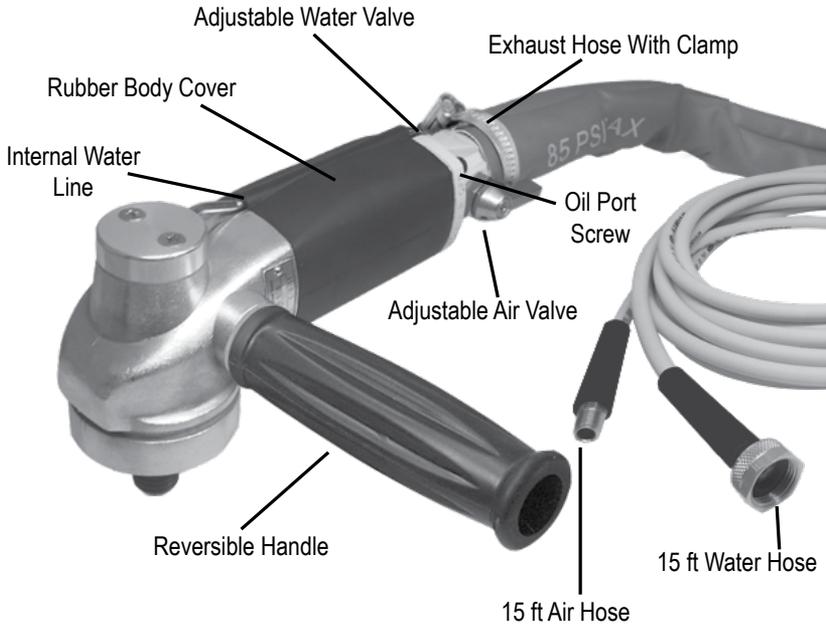
15 ft Air Hose

▶**SPECIFICATIONS**

Air Pressure..85 PSI/6 Bars

Air Consumption..15 CFM/420 l/min

No Load RPM 4,000

Weight 2.64lbs/1.2kg

Air Inlet .... 1/4" BSPP

Water Inlet .... 1/8" BSPP

Spindle..M-14

► **EQUIPMENT INCLUDED**

Air hose (15 ft / 4.5m)..1pc
Water hose (15 ft / 4.5m) 1pc
Side Handle (reversible)......................................1pc
Double End Wrench (19mm/22mm)....................1pc
Rust Inhibitor Oil (8oz / 237ml) (AIR-008)..........1pc
Screw (w/ O-Ring Seal for Oil Port) 1pc
Exhaust Hose With Clamp 1pc

► **OPTIONAL ACCESSORIES**

Splash Guard (AWP-01) 1pc
C-Shaped Handle (1030-0004)..........................1pc

► **RECOMMENDED ALPHA® ACCESSORIES**

Ceramica EX flexible diamond polishing discs, waterproof Sandpaper discs, Hook and Loop Backed Felt Wheels, Core Drill Bits, Turboshine and Profilers.


SPECIAL FEATURES

The Alpha® AIR-684 polisher was designed with user comfort in mind, for a full day of use. The silencer system will reduce the noise volume below 80 dBA and the rubber body cover will insulate the user from the cold and fatigue. The blue exhaust hose is designed to guide the cold exhaust air and rust inhibitor oil away from the user and the work area.

TOOL SET-UP INFORMATION

Unpack the tool carefully and study the helpful hints and warnings contained in this manual. Please take time to familiarize yourself with the features of the tool. Be sure to fill out the registration card enclosed, and mail it back to the distribution center today.

▶ CONNECTION FITTINGS

The air and water hose fittings on the back of this tool are BSPP (British standard parallel pipe or "G" thread). These fittings have parallel threads and seal off on the flat surface on the bottom of the thread. This type of fitting is usually supplied with an "O"ring or sealing ring which we replaced with the silencer.

Air Valve

Air Hose Fitting

Air Hose Assembly

Water Valve

Water Hose Fitting

Water Hose Assembly

Exhaust Hose

Hose Clamp

Sealing Surface

60°

P

inch
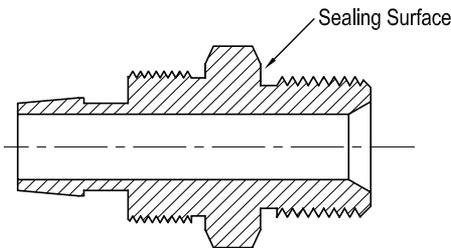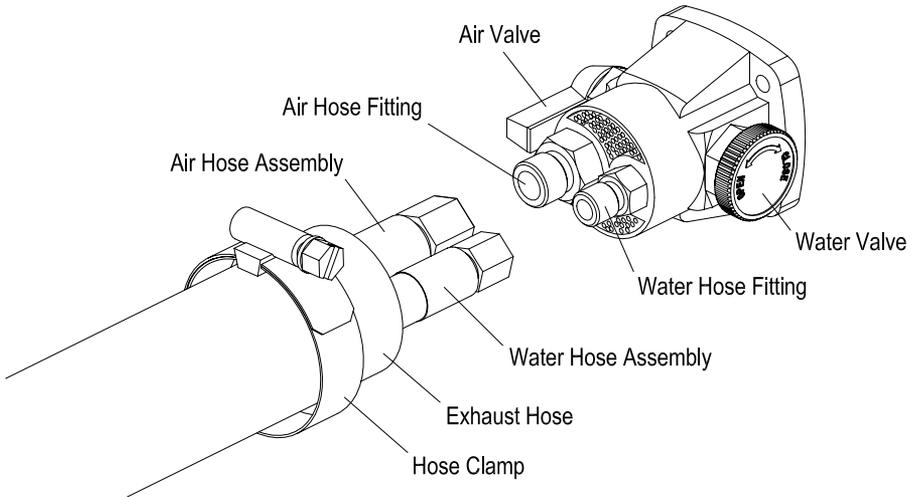
Parallel Thread
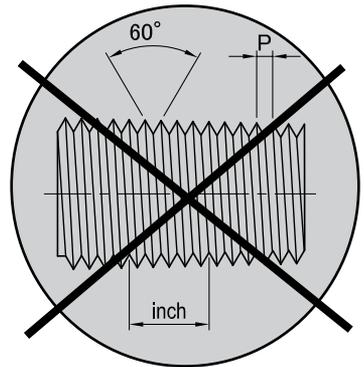
Tapered Thread NPT

⚠ CAUTION!

Trying to convert either fitting to an American standard pipe thread (NPT), which is tapered, will crack the Endcase and is not covered under warranty.

► AIR PRESSURE AND VOLUME

The recommended air pressure for this tool is 85 PSI. The most important factor in running this tool is the volume of air being supplied to the tool. The volume is the air consumption needed to run this tool at a constant speed under light downward hand pressure. The volume is measured in CFM (cubic foot per minute (ft^3/min). You need a minimum of 15 CFM per tool.

When choosing a compressor to run an AIR-684 polisher, we recommend a rotary screw type with a minimum of a 5hp motor/15-20 CFM and a 60 gallon tank, per tool. (*I.E. if you want to run four tools, you will need a compressor with a 20hp motor capability of 80+ CFM and an 80 to 100 gallon storage tank.*)

It is also very important to keep your air cool, dry, and clean, so look for a compressor with a refrigerated dryer and high-efficiency filter built in or purchase a separate air dryer and filter unit rated for your compressors CFM.

► RUST PROTECTION (A rust inhibitor oil is used to protect the tool from rusting when not in use)

PROPER CARE AND MAINTENANCE ARE IMPORTANT FACTORS IN PREVENTING THIS TOOL FROM RUSTING ON THE INSIDE WHEN NOT IN USE.

At the end of each workday, place 2-3 drops of rust inhibitor oil (included with each polisher) directly into the OIL PORT of the pneumatic tool. After applying the rust inhibitor oil, turn the air valve slightly so that the oil atomizes into a mist and coats the internal components of the polisher. If the process is executed correctly, you should see a mist coming out of the end of the polisher. The Exhaust Hose (Part No. 658-95) and Hose Clamp (Part No. 1030-1104) need to be removed to see the mist effect. See the detailed steps on the next page for adding the oil to the pneumatic polisher.

⚠ WARNING!

When you remove the screw (658-91) without disconnecting the air supply, compressed air will start leaking out and push the screw while removing. When installing the oil port screw, install until the O-ring and screw head make contact with the Endcase.
Warning: Over tightening of the oil port screw can strip the screw and/or internal thread of the Endcase.

▶ **HOW TO ADD THE RUST INHIBITOR OIL**

1. Disconnect the tool from your air supply.

2. Remove the screw (Part No. 658-91) using a #1 phillips head miniature screw driver. (See Fig. 1)

Figure-1

3. Add 2 -3 drops of the rust inhibitor oil into the oil port. (See Fig. 2)

4. Reinstall the screw (Part No. 658-91).

5. Reconnect the tool to your air supply.

Figure-2

6. Turn the valve lever (Part No. 658-50) slightly so the air is leaking through the tool. (Spindle of tool should not spin during this process). (See Fig. 3)

7. Replacement Rust Inhibitor Oil can be purchased from Alpha® Professional Tools (Part No. AIR-008).

Figure-3

Lubricating the tool before and during work is not needed. Excessive oil will turn to a tar-like substance inside the tool, causing the vanes to stick in the rotor and slow the tool down. This is the reason we do not recommend automatic oilers be used with this tool. Old or worn compressors, which emit oil through the air lines, can significantly shorten the life of the tool.

POLISHING AND USING THE TOOL

This tool and the Alpha® accessories approved for use with this tool are designed to be used under light downward hand pressure. You need to allow the polishing pads, core bits, and profilers to do their job. Applying excessive downward pressure to the tool will cause the vanes to wear out in the middle and fail prematurely.

► SPINDLE SIZE

The Alpha® AIR-684 air polisher features a M14 spindle. This tool has been designed for portable/shop production and uses all modern accessories. It is very important that you do not run anything heavier than the recommended accessories on this machine. A drop of oil should be applied to the outside threads whenever attachments are changed to facilitate removal and prevent rust. A Double End Wrench (19mm/22mm) is provided to assist in changing accessories.


⚠ CAUTION!

Maintenance and Usage Tip:

- Do not leave the tool submersed in water. This could expose the inner moving parts to moisture, which will shorten the life of the tool.
- Do not leave threaded accessories (backer pads, core drill bits, profilers) on the spindle of tool for extended periods of time; this may result in making it difficult to remove these accessories.
- Excessive force or impact to the spindle may result in premature failure of gears, keyways and bearings, which may not be immediately evident.

► AIR VALVE LEVER

The valve lever controls the flow of air through the tool. It has two positions- ON or OFF. Run the tool at the recommended pressure of 85 PSI, with the lever pointing to the ON position. This will produce 4,000 RPM. Do not try to vary the speed. The tool works best at full
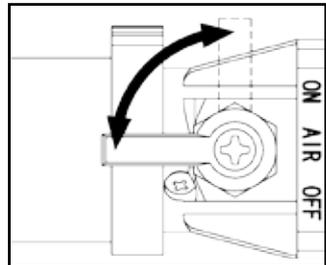
throttle only. Do not attempt to exceed the recommended speed by excess pressure. This will significantly shorten the life of the tool. When storing the tool overnight, disconnect from the air supply and open the valve.

HELPFUL HINT:
• Air valve lever should be opened and closed slowly to allow the tool to accelerate and decelerate during all applications. Rapid acceleration and deceleration can wear out the ball bearings prematurely.

HELPFUL HINT:
• Using a Filter Regulator System is Recommended


▶ **FILTER/REGULATOR SYSTEM**
Having a Filter/Regulator helps prevent pressure drops when using a large volume of air, so you can set the pressure to the tools at 85 PSI, while the main system can run at 125 PSI. The F/R unit will also remove any water from the air supply while also filtering the air of contamination down to five microns. By only using aluminum and brass after the F/R unit, you are eliminating any rust and contamination from getting into the air tools.

The Alpha® F/R Manifold System comes in two sizes, 53 CFM & 106 CFM and three adapter blocks: 3/8", 1/2" and 3/4", and is designed for installation at the point of use. All F/R manifolds are custom-configured to a clients specific needs and are available through our distributor network, and via our website.

▶ **WATER CONTROL VALVE**
This valve lets you adjust the flow of water through the spindle. It may be used to shut off the water entirely when changing discs. When storing the tool overnight, open the valve and drain all water from the supply hose and tool.
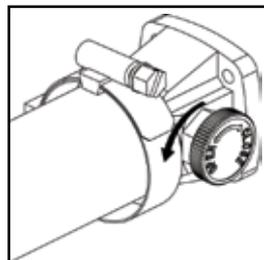
► SILENCER / MUFFLER

To comply with OSHA Occupational Noise Exposure Standard Number 1926.52, this polisher is equipped with an internal Silencer System. When the polisher is operated correctly at 85 PSI, the sound level emitted should be less than 80 dBA. The internal Silencer System is also used to maintain a constant back pressure inside the tool, to prevent the rotor assembly from exceeding the max speed of the bearings; this helps prevent the polisher from exceeding the recommended 4,000 RPM. The exhaust hose for this tool also helps to reduce the noise level by venting the exhaust air and residual air-line, thus eliminating the risk of excess rust inhibitor oil dripping on the work piece.

Tools sent in for repair, where the body gasket or silencer is removed or modified, are not covered under our Limited Warranty.

► REVERSIBLE SIDE HANDLE

Attach the handle into the threaded socket on either the left or right side of the tool. A locknut is slipped onto the threads to keep the handle safely in position.

Maintenance and Usage Tip:
Do not apply more force or pressure than the force created by the weight of the polisher itself. The polishing discs are designed to work properly under light downward hand pressure. Applying excessive force or pressure may damage the vanes and could shorten the life of the tool.

► AIR SUPPLY HOSE ASSEMBLY

This new hose has 1/4" NPT threads and is composed of a special material to avoid kinks and remain flexible down to -40°F.Replacements are available should the hose become damaged (Part No. 1030-0002).

► WATER SUPPLY HOSE ASSEMBLY

This new hose may be connected to any garden hose. It is composed of a special material to avoid kinks and remain flexible down to -40°F. Replacements are available should the hose become damaged (Part No. 1030-0003).

▶ PROCEDURE FOR CONNECTING EXHAUST HOSE AND HOSE CLAMP

1. Slide the Exhaust Hose (Part No. 658-95) over the water & air hoses which should be already connected to the polisher. (See Fig.4)
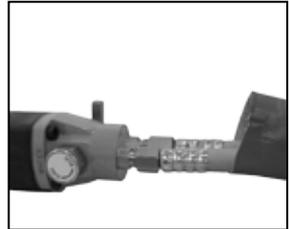
Figure-4

2. Exhaust Hose should be pulled up and wrapped around the bottom portion of the Endcase Assembly (Part No. 658-94 / 96). (See Fig.5)
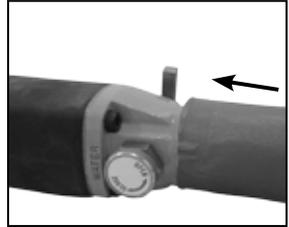

Figure-5

3. Slide the Hose Clamp (Part No. 1030-1104) over the Exhaust Hose and Endcase Assembly. (See Fig.6)
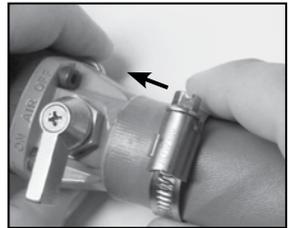
Figure-6

4. Using a screw driver, tighten to a snug fit. (See Fig.7)

Figure-7

ALPHA® AIR-684 SCHEMATIC (VER.3.1)
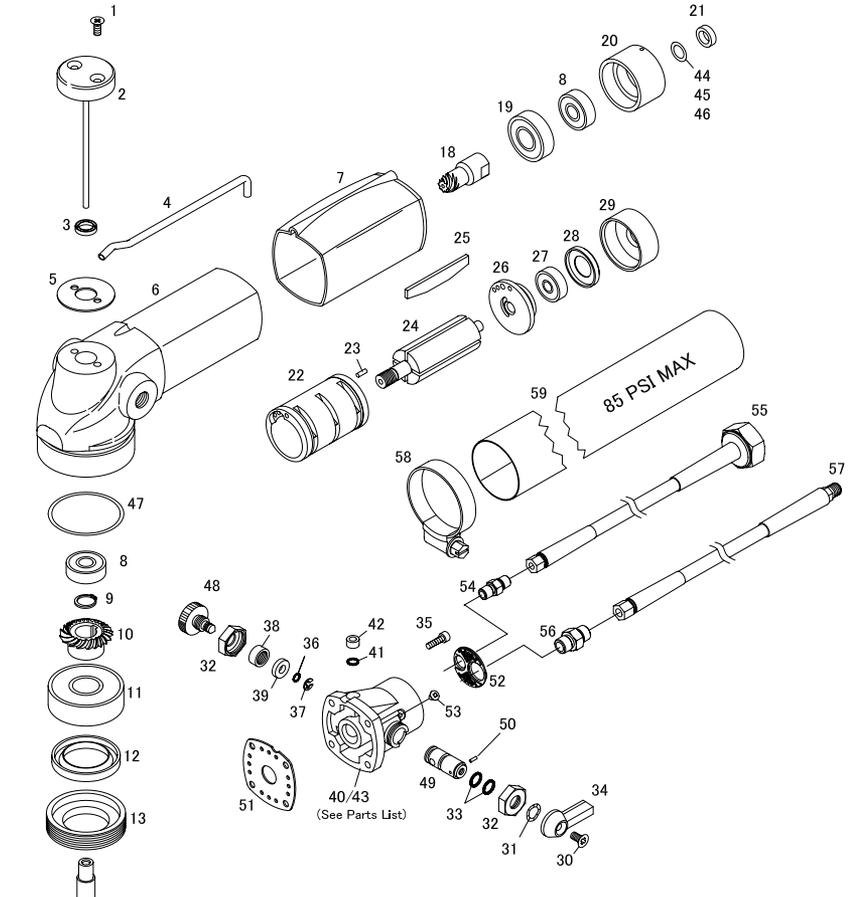
85 PSI MAX

ACCESSORIES

OPTIONAL PARTS

40/43
(See Parts List)

► ALPHA® AIR-684 PARTS LIST (VER. 3.2)

DRAWING NO	PART NO.	DESCRIPTION	QUANTITY
1	658-01	Screw	2
2	658-92	Pipe-Joint Assembly	1
3	516-44	Oil Seal	1
4	658-09	W-Pipe	1
5	658-10	Head Packing	1
6	658-11	Body	1
7	658-12	Body Cover	1
8	516-20	Bearing (608ZZ)	2
9	658-16	Snap Ring	1
10	658-17	Spiral Bevel Gear	1
11	516-48	Bearing (6302ZZ)	1
12	516-49	Oil Seal	1
13	516-50	44 Nut	1
14	658-614	Spindle M14 Thread	1
15	658-22	Woodruff Key	1
16	658-23	O-Ring (1.7mm x 2.75mm)	1
17	658-24	Spray Nozzle	1
18	658-25	Spiral Bevel Pinion	1
19	516-18	Ball Bearing (6001ZZ)	1
20	658-28	F-Bearing Case	1
21	658-29	Rotor Spacer	1
22	658-30	Cylinder (inc. Part No. 658-31)	1
23	658-31	Spring Pin	1
24	658-32	Rotor	1
25	516-25	Vanes (4pc set)	1
26	516-26	R-Bearing Case	1
27	516-27	Bearing	1
28	516-28	Bearing Cap	1
29	658-37	Air Inlet Case	1
30	658-43	Screw	1
31	658-45	Wave Washer	1
32	658-46	Nut M-14	2
33	658-47	O-Ring (1.7mm x 6.75mm)	1
34	658-50	Valve Lever	1
35	658-51	Hex. Socket Head Screw	4

► ALPHA® AIR-684 PARTS LIST (VER. 3.2)

DRAWING NO	PART NO.	DESCRIPTION	QUANTITY
36	658-64	O-Ring (1.0mm x 3.0mm)	1
37	658-65	Retaining Ring E-Style	1
38	658-66	Nut M8	1
39	658-67	Washer 05	1
40	658-94	Endcase Assembly (inc. Part No. 658-72 & 658-73)	1
41	658-72	O-Ring (1.9mm x 3.8mm)	1
42	658-73	Bushing 07	1
43	658-96	Complete Endcase Assembly	1
44	658-80	Shim (0.10mm)	1
45	658-81	Shim (0.03mm)	1
46	658-82	Shim (0.05mm)	1
47	658-84	Shim (0.20mm)	1
48	658-86	Water Valve	1
49	658-87	A-Valve (inc. Part No. 658-88)	1
50	658-88	Needle Pin	1
51	658-89	Body Gasket (req. Part No. 658-90)	1
52	658-90	Silencer (req. Part No. 658-89)	1
53	658-91	Screw (w/O-Ring Seal (1pc in tool + 1 spare))	2
54	1030-1020	Male Union for Water Hose Fitting	1
55	1030-0003	Water Hose Assembly	1
56	1030-1021	Male Union for Air Hose Fitting	1
57	1030-0002	Air Hose Assembly	1
58	1030-1104	Hose Clamp	1
59	658-95	Exhaust Hose	1
60	1030-1103	Double Open End Wrench (19mm/22mm)	1
61	658-13	Spring Lock Washer	1
62	658-14	Side Handle	1
63	AIR-008	Rust Inhibitor Oil 8 oz.(237ml)	1
64	AWP-01	Splash Guard	Optional
65	AWP-21A	C-Shaped Handle	Optional

► ACCESSORIES AND FACTORY SERVICE

All the accessories can be purchased at a local distributor in your area. For more information concerning Alpha® Air Polisher and factory service, please contact the Alpha® distribution centers listed below.

COMPANY HEADQUARTERS   Alpha Professional Tools®
& REPAIR CENTER:
                                 103 Bauer Drive
                                 Oakland, NJ 07436
Hours of Operation: 8:30 a.m. – 5:00 p.m. EST
Telephone Number: 201-337-3343
Toll-Free Number: 800-648-7229

EC DECLARATION OF CONFORMITY

We declare, under solo responsibility, that the product:

Product: Pneumatic Polisher
Model: AIR-680C

To which this declaration relates complies with the provisions of following European Directives:

2006/42/EC relating machinery.
It confirms that the listed equipment complies with the principal protection requirements of the directive.

Applied Harmonized Standards
EN ISO 12100-2: 2003
EN 792-8:2001

Alpha Professional Tools®
103 Bauer Drive
Oakland, NJ 07436

Signature:

Nao Takahashi
(President)

Date of Issue: December 26, 2018

PRODUCT REGISTRATION CARD

Model No. **AIR-684**   Serial No.

Company Name: _____

Name: _____

Address: _____

City: _____State: _____Zip: _____

Telephone: _____

Purchase Date: _____

Dealer's Name: _____

Note: Serial & Model Number must be included for proper registration.

Alpha Professional Tools®   **(800) 648-7229**

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Register online at:
www.alpha-tools.com/productregistration.aspx

Mail or Fax to:
Alpha Professional Tools®
103 Bauer Drive, Oakland, NJ 07436
Fax: 800-286-0114

Photocopy of product registration form will be accepted.

Alpha Professional Tools®

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