



High Torque Pneumatic Nutrunners Operation Manual



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Introduction

Thank you for your purchase of an AcraDyne® HT Series Pneumatic Nutrunner. These Nutrunners offer a reliable and dependable solution for the installation and removal of heavy-duty fasteners in a variety of industries that require high torque capability, accuracy, power and safety.

Safety Information

CAUTION – Do not use the AcraDyne® HT nutrunning system without fully reading this manual and having a complete understanding of the correct usage of a high torque-delivering tool and any associated reaction bars/accessories.

SAVE THESE INSTRUCTIONS

1) WORK AREA

- a. Keep work area clean and well lit. Cluttered and dark areas invite accidents.
- b. Do not operate power tools in explosive atmospheres, such as the presence of flammable liquids, gases or dust. Power tools create sparks which may ignite the dust or fumes. Ensure there are no cables or gas pipes that may cause a hazard if damaged by the tool.
- c. Keep children and bystanders away while operating a power tool. Distractions can cause you to lose control.
- d. Be aware of trip hazards such as air lines and electrical cords in the work area.

3) PERSONAL SAFETY

- a. Only qualified and trained operators should install and adjust tool.
- b. Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use a power tool while you are tired or under the influence of drugs, alcohol or medication. A moment of inattention while operating power tools may result in serious personal injury.
- c. Use safety equipment. Always wear eye protection. Safety equipment such as dust mask, non-skid safety shoes, hard hat, or hearing protection used for appropriate conditions will reduce personal injuries. If the maximum duty cycle of the attached tool is exceeded or the tool temperature exceeds 50° C., then the operator should wear protective hand wear (gloves).
- d. Avoid accidental starting. Ensure the switch is in the off-position before plugging in. Carrying power tools with your finger on the switch or plugging in power tools that have the switch on invites accidents.
- e. Remove any adjusting key or wrench before turning the power tool on. A wrench or a key left attached to a rotating part of the power tool may result in personal injury.
- f. Do not overreach. Keep proper footing and balance at all times. This enables better control of the power tool in unexpected situations.

- g. Dress properly. Do not wear loose clothing or jewelry. Keep your hair, clothing and gloves away from moving parts. Loose clothes, jewelry or long hair can be caught in moving parts.
- h. If devices are provided for the connection of dust extraction and collection facilities, ensure these are connected and properly used. Use of these devices can reduce dust-related hazards.
- i. Ensure hose and fittings are securely fastened to prevent injury from disconnected whipping hose. Whenever universal twist couplings are used, lock pins should be installed and whip check safety cable shall be used.
- j. Always shut-off air supply, drain air hose pressure and disconnect tool from air supply when not in use, before making changes to accessories or when in repair. Air under pressure can cause severe injury.
- k. Do not modify tool. Any modification of tool could result in personal injury.
- l. Failure of the workpiece, tool or accessories can generate high velocity projectiles.

4) POWER TOOL USE AND CARE

- a. Do not force the power tool. Use the correct power tool for your application. The correct power tool will do the job better and safer at the rate for which it was designed. Hold tool with a light, safe grip.
- b. Do not use the power tool if the switch does not turn it on and off. Any power tool that cannot be controlled with the switch is dangerous and must be repaired.
- c. Tool is intended for the use on threaded fasteners with impact grade sockets. All sockets and extensions should be secured with pins and o-ring to the tool. Any other use of this tool is strictly forbidden.
- d. Inspect tool to ensure all markings are visible and legible.
- e. Operator and maintenance personnel should physically be able to handle the bulk, weight, and power of the tool. If not, the use of a balancer is recommended.
- f. Should the operator experience discomfort or pain in the hands, arm or shoulders, do not ignore it and seek the advice of a qualified medical professional.

Specifications

Environmental

- Operating Temperature: 0°C to 32°C
- Storage Temperature: 0°C to 65°C
- Humidity:
 - 5% to 90% RH, Non-Condensing, for temperatures 0°C to 40°C
 - 5% to 60% RH, Non-Condensing, for temperatures 0°C to 65°C
- Maximum Altitude of Operation: 3000m

Sound and Vibration Emissions

- Sound Pressure Level: 82 dB(A)
- Sound Pressure Level: 93 dB(A)
- Sound Level uncertainty: 3 dB(A)
- Vibration Value: <2.5m/s²
- Vibration Level Uncertainty: 0.7 m/s²

Sound and vibration emissions for the AAP1B Series tested per ISO 15744 and ISO 28927-2

Air Supply

- Air Hose Size: 1/2" ID X 3 Meters in Length.
- Air Pressure: 20 - 90 PSI air pressure is recommended for the most efficient performance. CAUTION: Never use higher air pressure to increase the output of the tool. Overloading will drastically shorten the life of all internal parts.
- Dry and Clean Air: Drain daily and install filter at or near the take-off point to prevent trouble from foreign matter.
- Air Hose and Joints: Use air hose (the shorter, the better), joints, and other fittings of good condition and of proper size to avoid pressure drop.

Lubrication

- Maintenance: Clean, inspect and lubricate all ring gears, planet gears and bearings every 100,000 cycles. NOTE: All work must be performed by a trained and certified AIMCO/AcraDyne repair technician. Replace all worn parts with original AIMCO/AcraDyne parts.
- For Air motor: Place three drops of light spindle oil properly through the air inlet daily and at shift change. Always use AIMCO Motor Oil when lubricating the air motor.
- For Gears and Bearings: Supply recommended high-quality grease (e.g. Dow Corning, Moly Kote, BR2 Plus (or equivalents) properly once every 25,000 cycles and when the tool is overhauled. Over-greasing will cause dull motion or heating.

Physical



AAP1B High Torque Series Tools

Model	Torque		Speed	Weight	Square Dr.	Air Consumption
	(NM)	(FT-LB)	(RPM)	(LB)	(IN)	(CFM)
AAP1B66400A	400	300	57	9.75	3/4	22.9
AAP1B66600A	600	450	39	9.75	3/4	22.9
AAP1B66850A	850	625	27	9.75	3/4	22.9
AAP1B76950A	950	700	31	10.4	3/4	26.3
AAP1B771350A	1,350	1,000	22	10.4	1	26.3
AAP1B772000A	2,000	1,475	14	12.7	1	26.3
AAP1B772950A	2,950	2,175	9	14.9	1	26.3
AAP1B885100A	5,100	3,775	8	23	1-1/2	31.5

AAP2B High Torque, High Speed Series Tools

Model*	Torque		Speed	Weight		Length		Square Dr.
	(NM)	(FT-LB)	(RPM)	(LB)	(KG)	(IN)	(MM)	(IN)
AAP2B76250A(R)	250	185	660	A = 10.5 AR = 12.3	A = 4.8 AR = 5.6	A = 10 AR = 12.5	A = 255 AR = 317	3/4
AAP2B76450A(R)	450	330	335	A = 10.5 AR = 12.3	A = 4.8 AR = 5.6	A = 10 AR = 12.5	A = 255 AR = 317	3/4
AAP2B76650A(R)	650	480	223	A = 10.5 AR = 12.3	A = 4.8 AR = 5.6	A = 10 AR = 12.5	A = 255 AR = 317	3/4
AAP2B76950A(R)	950	700	153	A = 10.5 AR = 12.3	A = 4.8 AR = 5.6	A = 10 AR = 12.5	A = 255 AR = 317	3/4
AAP2B771400A(R)	1,400	1,000	110	A = 14.6 AR = 16.4	A = 6.6 AR = 7.4	A = 10 AR = 12.6	A = 255 AR = 319	1
AAP2B772000A(R)	2,000	1,475	63	A = 14.8 AR = 16.6	A = 6.7 AR = 7.5	A = 11.2 AR = 13.6	A = 284 AR = 346	1
AAP2B773000A(R)	3,000	2,210	52	A = 15.0 AR = 16.8	A = 6.8 AR = 7.6	A = 11.6 AR = 14.0	A = 293 AR = 356	1
AAP2B785100A(R)	4,800	3,540	26.5	A = 19.7 AR = 21.5	A = 8.9 AR = 9.7	A = 13.3 AR = 15.8	A = 338 AR = 400	1.5

*R = Reversible

Operation

High Torque Pneumatic Series



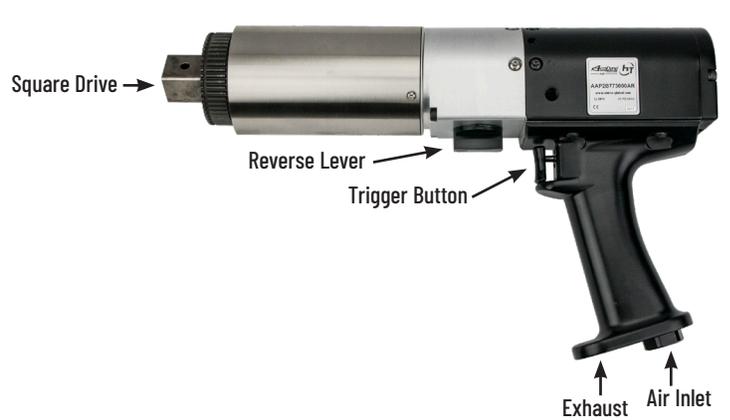
1. Connect the Air Hose to the tool's Air Inlet:

Use proper size Air Hose and connector to supply proper air pressure and CFM to tool.

2. Reverse Lever:

"R" is right-hand rotation and "L" is left-hand rotation.

High Torque, High Speed Pneumatic Series



3. Trigger Button Operation:

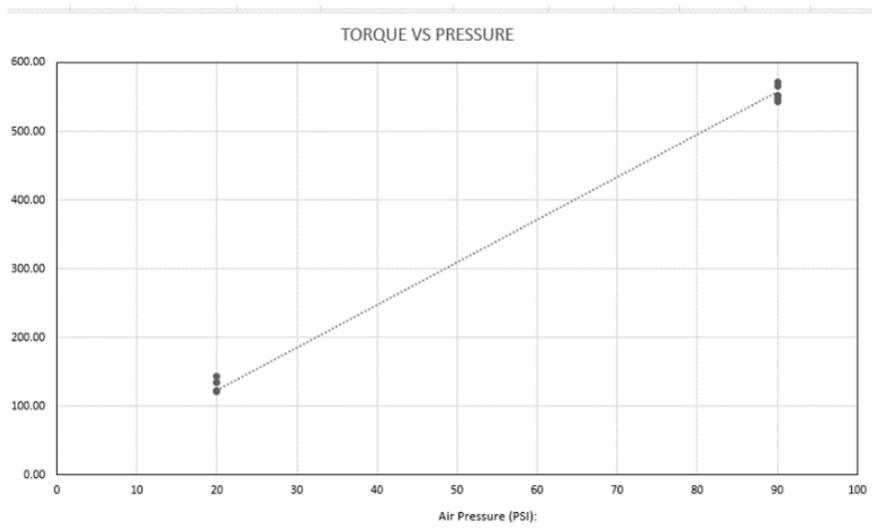
Engage fully to supply full air pressure to air motor.

4. Directional Exhaust:

Direct exhaust away from the operator, co-worker and workpiece.

Torque Adjustment

Each AcraDyne HT Air tool is delivered with a Pressure versus Torque Output Calibration Graph (See example).



Calibration Graph (See example). Using a reliable regulator with gauge in the air supply line, adjust the supply air pressure to correlate with the desired torque output as shown on the specific graph supplied with the tool. Pressure value should be observed and confirmed with the tool trigger depressed and the tool free running.

Operation

A complete tool system consists of the following items:



AFRL-4HTA
(Maximum allowable Input
Pressure not to exceed 120 PSI)



Air Hose



Tool



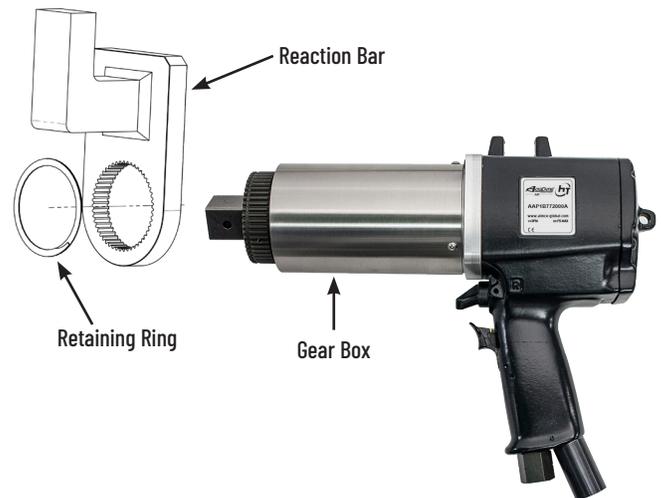
Reaction Bar

Installing Reaction Bar



ENSURE THAT THE ACRADYNE HT PNEUMATIC NUTRUNNER IS DISCONNECTED FROM THE AIR SUPPLY.

- Orient the Reaction Bar so that the recess above the spline on the Reaction Bar is oriented towards the rear of the tool and any reaction foot is oriented away from the tool anvil.
- Install the Reaction Bar onto the splines of the gearbox ensuring that the Reaction Bar is staying true to the splines.
- Install the Reaction Bar retaining ring/plate onto the end of the Gearbox securing the Reaction Bar in place on the Gearbox. **FAILURE TO SECURE THE REACTION BAR PROPERLY CAN RESULT IN SEVERE INJURY TO THE OPERATOR AND/OR DAMAGE TO THE TOOL/APPLICATION.**
- Reconnect the AcraDyne HT Series Pneumatic Nutrunner to air supply.
- Ensure that the workpiece is securely fixed.



THE TOOL HANDLE MUST NOT BE LOCATED AGAINST AN OBJECT OR RESTRICTION DURING OPERATION OF THE TOOL TO AVOID CREATION OF A PINCH POINT. AN OEM SOURCED OR APPROVED REACTION BAR OR PROPER REACTION ABSORPTION DEVICE MUST BE IN USE AND IN GOOD CONDITION ANY TIME THE TOOL IS OPERATED. PROPER TORQUE REACTION MANAGEMENT PRACTICES MUST BE OBSERVED AT ALL TIMES. FAILURE TO UNDERSTAND AND EMPLOY SAFE OPERATING TECHNIQUES CAN RESULT IN TOOL DAMAGE, APPLICATION DAMAGE, SEVERE PERSONAL INJURY, OR DEATH

When ready to begin tightening:

- Swivel the reaction bar (Slip Ring Equipped Models only) into position minimizing or ideally eliminating any gap between the Reaction Bar and the Reaction Surface of the application. On Fixed Gearcase models, ensure that reaction absorption device is configured properly.
- Complete the tightening event.

Reaction Bar Safety



AcraDyne® HT Nutrunning Systems deliver high amounts of torque to an application in a continuous drive manner. As is the nature with all tool systems that function in this manner, high amounts of torque reaction will occur. AcraDyne® HT systems work with Reaction Bars that engage the tool with a secure spline and when used correctly counteract the natural torque reaction in use by pressing against a part detail or adjacent nut/bolt.

It is essential that these forces are understood completely by the operator and that the Reaction Bars have been chosen with the application's specific geometry in mind.

AcraDyne® offers a range of Reaction Bars from stock and will design specific Reaction Bars to suit specific applications upon request.

It is the user's responsibility to ensure that the correct Reaction Bar or Tool Holding Fixture is in place PRIOR to use of the AcraDyne® HT Series Nutrunner.

Reaction Bar Guidelines



CAUTION IS REQUIRED. FAILURE TO EXERCISE CAUTION AND CORRECT OPERATING TECHNIQUE CAN RESULT IN SERIOUS PERSONAL INJURY, LOSS OF LIMB OR DEATH.

The guidelines offered below are only guidelines. Should there be any doubt as to the integrity of a proposed reaction strategy, it is strongly advised to consult with an AcraDyne® authorized representative prior to executing strategy.

Reaction force is equal to the point being applied. The magnitude of the reaction force is dependent upon the perpendicular distance between the point of reaction and the centerline of the gearbox. In other words, the greater the distance the lower force experienced. For this reason, the point of reaction should be kept as far away from the centerline of the tool gearbox as possible.

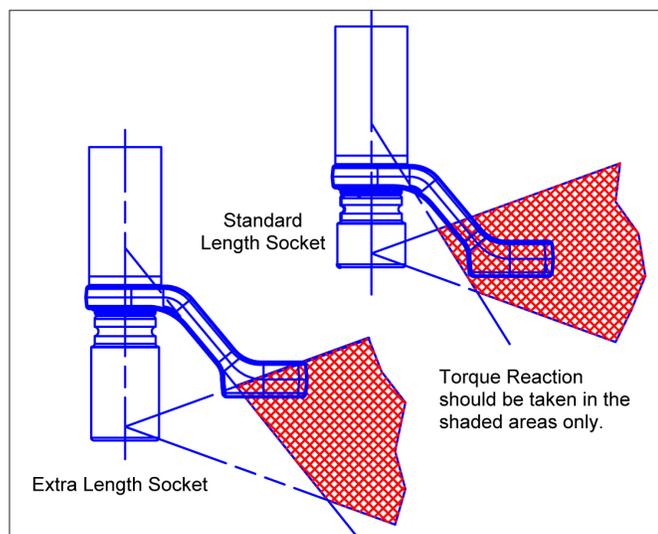


Figure 1 - Safe reaction window

Sockets



CAUTION IS REQUIRED. FAILURE TO EXERCISE CAUTION AND CORRECT OPERATING TECHNIQUE CAN RESULT IN SERIOUS PERSONAL INJURY, LOSS OF LIMB OR DEATH.

Only Impact Grade, Industrial Sockets should be used with AcraDyne® HT Series Nutrunners. Mechanic-grade chrome sockets are not to be used as they do not have sufficient structural strength required to deliver the higher torque loads that an AcraDyne® HT Series Nutrunner is capable of delivering. In addition, the use of Socket Extensions of any length are strongly discouraged as they also will experience failure to an extent where tool damage or operator injury may occur.

Pinch Point



CAUTION IS REQUIRED. FAILURE TO EXERCISE CAUTION AND CORRECT OPERATING TECHNIQUE CAN RESULT IN SERIOUS PERSONAL INJURY, LOSS OF LIMB OR DEATH.

The nature of a Reaction Bar in any continuous drive tool is to press against an object to counteract Torque Reaction as the tool is delivering Torque.

The operator must take great care to keep body parts or foreign matter clear of the area between the Reaction Bar and the surface it is reacting against.



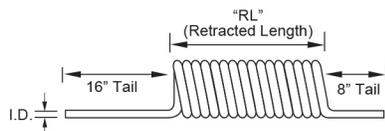
ANY BODY PART OR FOREIGN MATTER RESIDING IN A SPACE BETWEEN THE REACTION BAR AND THE SURFACE IT WILL REACT AGAINST WILL ENCOUNTER SIGNIFICANT FORCES THAT CAN CAUSE INJURY, LOSS OF LIMB OR DEATH.

HT Pneumatic Tool Accessories

Polyurethane Hose for HT Tools



- Durable Polyurethane is chemical resistant and lightweight, and provides excellent recoil memory and maximum flexibility
- Available in transparent hose color (opaque also available)
- Assemblies for coiled hose include reusable swivel fitting. Straight hose available with or without fittings
- Working temperature: -104° F to 175° F
- Working pressure: 100 PSI



Single Air Hose Assemblies (Coiled)

Model	Description (O.D. x I.D. x Length)	Retracted Length	Npt Fittings
ASH-500C-15MSZ	3/4" x 1/2" x 15'	13"	1/2"
ASH-500C-25MSZ	3/4" x 1/2" x 25'	23"	1/2"

Custom length coil assemblies and special colors available in minimum order quantities. Contact an AIMCO Customer Service Associate, 1-503-254-6600, or toll free 1-800-852-1368.



Straight Air Hose (Sold Per Foot)

MODEL	DESCRIPTION
ASH-500Z	1/2" I.D.

Contact an AIMCO Customer Service Associate about full reel pricing, 1-503-254-6600, or toll free 1-800-852-1368.

Rubber Hose for HT Tools



- Designed for use in a wide range of industrial, construction, and agricultural applications
- Constructed of high grade, reinforced EPDM synthetic rubber
- Working temperature: -40° F to 190° F

Single Air Hose (Rubber)

I.D.	O.D.	Length	Working Pressure	Weight
1/2"	0.81"	10 ft	200 psi	2.0 lb
5/8"	0.97"	10 ft	200 psi	2.7 lb
3/4"	1.12"	10 ft	200 psi	3.4 lb

Custom lengths available. Contact an AIMCO Customer Service Associate for more details, 1-503-254-6600, or toll free 1-800-852-1368.

REACTION BARS

Tool includes standard, spline attachment reaction device. Custom reaction devices are available; contact an AIMCO Customer Service Associate for more details, 1-503-254-6600, or toll free 1-800-852-1368.



Air Line Fittings



Plugs

Model	Description
28161	1/2" x 1/4" MPT
28162	1/2" x 3/8" MPT
28163	1/2" x 1/2" MPT
28164	1/2" x 1/2" FPT



Quick-Change Couplers

Model	Description
27768	1/2" FPT
27769	1/2" MPT



Protective Coupler

Model	Description
27771	Vinyl



Swivel Fitting

Model	Capacity
500-SZ	1/2" NPT Swivel Fitting

HT Pneumatic Tool Accessories

AFRL STACKING FILTER/REGULATORS

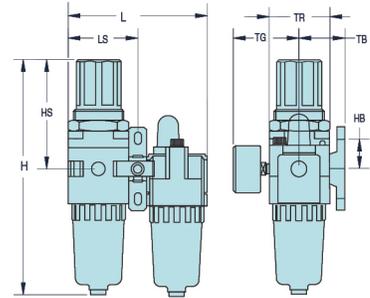
Stacking filter/regulator combinations provide air filtration and precise regulation in a single unit for easy mounting and installation.

FEATURES AND BENEFITS

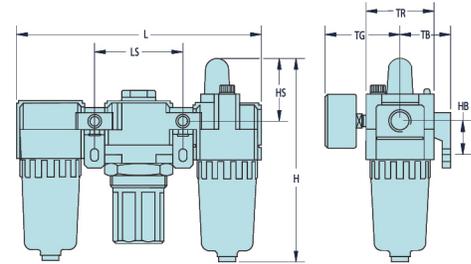
- All models include L-mount bracket, gauge, and metal bowl shields
- Polycarbonate filter and lubricator bowls (metal bowls standard on AFRL-8)
- 25-micron filter included on all models
- Regulating range: 7 - 125 PSI
- Custom order upgrade items include metal bowl, 5 micron filter, semi-automatic filter drain, and reduced PSI range regulator. Contact an AIMCO Customer Service Associate for more information, 1-503-254-6600, or toll free 1-800-852-1368
- Maximum allowable Input Pressure not to exceed 120 PSI



AFRL-2-C
AFRL-3-C



AFRL-3
AFRL-4
AFRL-8



28178
HT Air Tool/AFRL
Carrying Kit

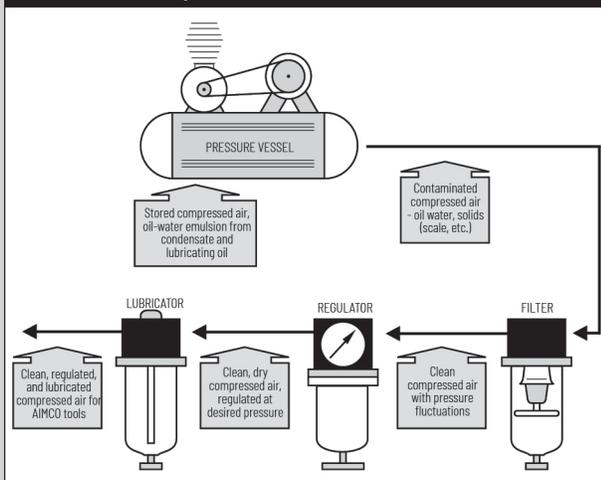


AFRL-4HTA
Standalone Unit

AFRL Stacking Filter/Regulators

Model	Port	Gauge Port	Flow Rate CFM	Flow Rate L/MIN	Bowl Shield	H IN/MM	HB IN/MM	HS IN/MM	L IN/MM	LS IN/MM	TB IN/MM	TG IN/MM	TR IN/MM
AFRL-2	1/4"	1/8"	70	2,000	yes	6.16 (156.5)	1.39 (35.3)	1.50 (38.1)	7.13 (181.1)	2.52 (64.0)	1.61 (41.0)	2.39 (60.7)	2.09 (53.1)
AFRL-2-C	1/4"	1/8"	60	1,700	yes	8.31 (211.1)	1.38 (35.1)	3.64 (92.5)	4.61 (117.1)	2.30 (58.4)	1.61 (40.9)	2.39 (60.7)	2.09 (53.1)
AFRL-3	3/8"	1/4"	140	4,000	yes	7.54 (191.5)	1.57 (40.0)	1.61 (40.9)	9.37 (238.0)	3.31 (84.1)	1.97 (50.0)	2.58 (65.5)	2.76 (70.1)
AFRL-3-C	3/8"	1/4"	105	3,000	yes	10.31 (261.9)	1.57 (39.9)	4.41 (112.0)	6.06 (153.9)	3.03 (77.0)	1.97 (50.0)	2.58 (65.5)	2.76 (70.1)
AFRL-4	1/2"	1/4"	140	4,000	yes	7.54 (191.5)	1.57 (40.0)	1.61 (40.9)	9.37 (238.0)	3.31 (84.1)	1.97 (50.0)	2.58 (65.5)	2.76 (70.1)
AFRL-8	1"	1/4"	180	5,000	yes	10.69 (271.5)	1.97 (50.0)	1.89 (48.0)	11.81 (300.0)	4.13 (104.9)	2.75 (69.9)	2.97 (75.4)	3.54 (89.9)

Air Preparation Units: Basic Functions



The supply of clean, dry air is essential to the operation of pneumatic powered tools. Use only clean filtered air for longer tool life. Provide proper airflow (CFM) and regulate air pressure (PSI) for optimum performance.

To determine unit size for application, you need to know:

- Total air flow (CFM) required for application
- Size of incoming air line and size of air line required by tool
- Air supply pressure (PSI)
- Allowable pressure drop
- Does the application require lubrication?
- Does the overall system have the required capacity?

AIMCO Warranty

NEW TOOL AND ACCESSORY WARRANTY

Any new tool or accessory branded with the AIMCO, Uryu, AcraDyne or Eagle Industries name, and purchased from AIMCO, or through one of its authorized distributors or agents, is warranted to the original buyer against defects in materials and workmanship for a period of one (1) year* from date of delivery. Under the terms of this warranty, AIMCO will repair or replace any product or accessory warranted hereunder and returned freight prepaid proving to AIMCO's satisfaction to be defective as a result of workmanship or materials. In order to qualify for this warranty, written notice to AIMCO must be given immediately upon discovery of such defect, at which time AIMCO will issue an authorization to return the tool. The defective item must be promptly returned to an authorized AIMCO service center with all freight charges prepaid.

REPAIRED TOOL WARRANTY

Once a tool is beyond the new product warranty period as detailed above, AIMCO repairs are subject to the following warranty periods: pneumatic tools: 90 days*; electric tools and Acra-Feed: 90 days; battery tools: 30 days*; DC Electric tools: 90 days*

EXCLUSION FROM WARRANTY

This warranty is valid only on products purchased from AIMCO, or thru its authorized distributors or agents. AIMCO shall have no obligation pursuant to the AIMCO Warranty with respect to any tools or accessories which in AIMCO's sole judgment have been altered, damaged, misused, abused, badly worn, lost or improperly maintained. This Warranty is null and void if the customer, or any other person other than an authorized representative of AIMCO, has made any attempt to service or modify the tool or accessory prior to its return to AIMCO under this Warranty.

The warranty provision with respect to each such product may be amended by AIMCO from time to time in its sole discretion. The liability of AIMCO hereunder shall be limited to replacing or repairing, at its option, any products which are returned freight prepaid to AIMCO and which AIMCO determines to be defective as described above or, at AIMCO's option, refunding the purchase price of such products.

AIMCO reserves the right to make periodic changes in construction or tool design at any time. AIMCO specifically reserves the right to make these changes without incurring any obligation or incorporating such changes or updates in tools or parts previously distributed.

THE AIMCO WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, AND AIMCO EXPRESSLY DISCLAIMS ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THIS WARRANTY SETS FORTH THE SOLE AND EXCLUSIVE REMEDY IN CONTRACT, TORT, STRICT LIABILITY, OR OTHERWISE.

THIS WARRANTY IS THE ONLY WARRANTY MADE BY AIMCO WITH RESPECT TO THE GOODS DELIVERED HEREUNDER, AND MAY BE MODIFIED OR AMENDED ONLY BY A WRITTEN INSTRUMENT SIGNED BY A DULY AUTHORIZED OFFICER OF AIMCO.

LIMITATION OF LIABILITY

AIMCO'S LIABILITY PURSUANT TO WARRANTY OF THE PRODUCTS COVERED HEREUNDER IS LIMITED TO REFUND OF THE PURCHASE PRICE. IN NO EVENT SHALL AIMCO BE LIABLE FOR COSTS OF PROCUREMENT OF SUBSTITUTE GOODS BY THE BUYER. IN NO EVENT SHALL AIMCO BE LIABLE FOR ANY SPECIAL, CONSEQUENTIAL, INCIDENTAL OR OTHER DAMAGES (INCLUDING WITHOUT LIMITATION, LOSS OF PROFIT) WHETHER OR NOT AIMCO HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH LOSS, HOWEVER CAUSED, WHETHER FOR BREACH OR REPUDIATION OF CONTRACT, BREACH OF WARRANTY, NEGLIGENCE OR OTHERWISE. THIS EXCLUSION ALSO INCLUDES ANY LIABILITY WHICH MAY ARISE OUT OF THIRD PARTY CLAIMS AGAINST BUYER. THE ESSENTIAL PURPOSE OF THIS PROVISION IS TO LIMIT THE POTENTIAL LIABILITY OF AIMCO ARISING OUT OF THIS AGREEMENT AND/OR SALE.

Note: The AIMCO Warranty confers specific legal rights, however some states or jurisdictions may not allow certain exclusions or limitations within this warranty.

* All warranty periods addressed herein are determined using a standard shift, eight-hour work day.



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