

COLUMBIA

WINCHES & HOISTS

Manufactured by Allied Power Products, Inc.

Pneumatic D/F/G Series Owner's Manual

Installation and Operating Instructions

Model:

CFM

Serial Number:

PSI

ALLIED POWER PRODUCTS, INC.

THE WINCH & HOIST SPECIALISTS

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CAUTION

The final determination as to the suitability of this product for any purpose is solely that of the user.
Columbia products are not to be used to lift people or to lift anything over people.

READ THIS FIRST.

The information in this manual is intended to help ensure your Columbia product is properly installed, operated and maintained.

Although every effort has been made to make this manual complete and understandable, it is not a definitive guide to every possible situation or circumstance.

The proper installation, operation and maintenance of this product is solely the responsibility of the owner.

Safe operation of this product is directly dependent on the operator's skill, knowledge and judgment before, during and after the use of the product.

To avoid hazardous situations, every operator must be knowledgeable about appropriate safety guidelines, codes and regulations related to rigging, wire rope, and winch / hoist usage. Remember that an uninformed or careless operator can make the operation of any equipment dangerous.

Ultimately, the owner / operator must make the final decision as to how this product will be used and whether that intended use is safe.

If, after reading this manual, you have any questions regarding the installation or use of this Columbia product, contact your dealer or the Customer Service Manager of Allied Power Products, Inc. for an answer to your question.

Replacement manuals are available free of charge by writing:

Allied Power Products, Inc.
6590 SW Fallbrook Place
Beaverton, OR 97008

THIS MANUAL CONTAINS EXTREMELY IMPORTANT INFORMATION ABOUT THE INSTALLATION AND OPERATION OF YOUR COLUMBIA PRODUCT. FOR YOUR OWN SAFETY, READ THIS MANUAL COMPLETELY PRIOR TO PRODUCT INSTALLATION AND / OR OPERATION.



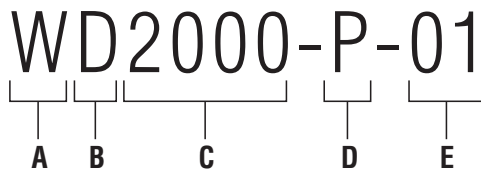
⚠ WARNING

COLUMBIA PRODUCTS ARE NOT TO BE USED FOR LIFTING PEOPLE OR THINGS OVER PEOPLE.

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Sample Model Number



Model Number Information

When instructions in this manual refer to specific specifications on different models, identify your unit by referring to the model number as shown on the unit nameplate and the front of this manual.

A	H = Hoist, rated for hoisting	W = Winch, rated for pulling
B	Model Series	
C	Model Specification	
D	P = Pneumatic Power Source	
E	C & D Series -01 = 5.0" drum -02 = 9.0" drum -11 = 2.7" ALUM drum -13 = 5.0" ALUM drum -15 = 2.7" strap drum	F & G Series -01 = 8" drum -02 = 10" drum -03 = 12.5" drum -05 = 25" drum
	00 = Custom Drum Configuration	

General Information

Columbia pneumatic winch and hoist assemblies consist of a frame with drum and vane air motor.

Drum

The drum is attached to the motor through planetary gear reductions to deliver the required pulling capacity and performance.

Ratings and Suitability

Columbia winches and hoists are not to be used to lift, pull, support or otherwise transport people or loads over people. Line pull ratings represent the maximum load that can be placed on a new unit. This load rating varies with the amount of wire rope wound on the drum and is affected by the age and condition of the unit.

WARNING

DO NOT ATTEMPT TO MOVE LOADS GREATER THAN THE RATED CAPACITY.

Even if the unit appears to be able to handle the load, it can cause the unit to fail or create undetectable damage that could cause the unit to fail while using the unit within its rated capacity.

Factors of Operation

Harsh environments decrease the load rating of the unit and make it more susceptible to damage. Avoid installation in extreme temperatures, dirty surroundings and wet environments.

Improper installation can create excessive wear or failure of any of the component parts or fasteners in the unit. Be sure that the unit is properly installed, the fasteners checked for tightness and the mounting inspected for damage on a periodic basis.

Use of the unit will create wear in the components. The more frequently it is used and the heavier the load, the greater the strain and wear on the components. This may result in damage that causes a failure over a period of time. Periodic inspection of the unit is the only way to ensure its continued operating capability.

CAUTION

The amount of wire rope on the drum affects the performance of the unit.

Line-pull decreases with each additional layer of wire rope wound on the drum. Line-speed increases with each additional layer of wire rope wound on the drum.

Installation Guidelines

The safe installation of this product is solely dependent upon the owner and/or operator's skill, knowledge and judgment. Installation must be done only by those qualified and familiar with all operating guidelines, safety codes and regulations related to rigging, wire rope and winch and/or hoist usage. The determination of suitability for this product for any specific use is the responsibility of the owner and/or operator.

The following guidelines are to be used only as a reference.

Location

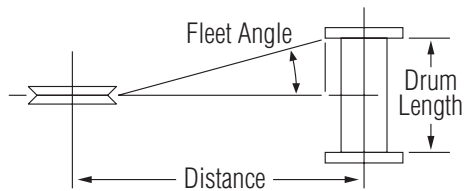
When selecting a location for the unit, the following guidelines must be met:

1. An unobstructed area that keeps the operator and others out of the path of the unit and the path of broken wire rope. Broken wire rope can snap back and cause serious injury to personnel and machinery.
2. A location where it will not interfere with or be damaged by other objects or machinery.
3. A location with adequate lighting and heat for both the operator and unit. Although the unit is rated for operation in temperatures ranging from -50° to $+125^{\circ}$ Fahrenheit, extremes in temperature will affect the performance of the unit.
4. A location that permits proper fleet angle. Maintaining proper fleet angle allows the wire rope to spool uniformly onto the drum and prevents damage to the wire rope.

Fleet Angle

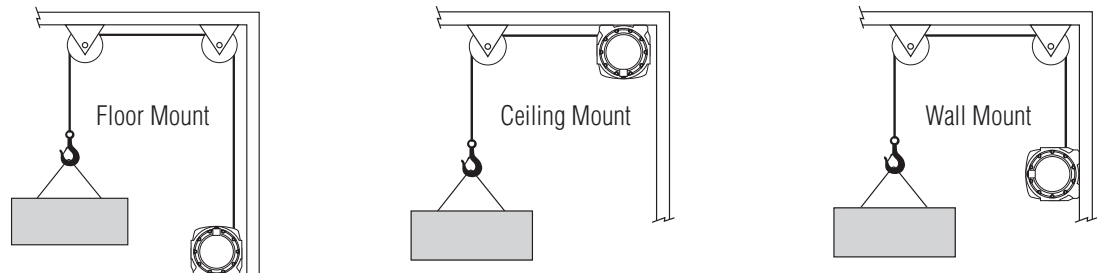
Proper fleet angle is less than $1\text{-}1/2^{\circ}$ measured as illustrated below (Diagram 1). As a "rule of thumb", the absolute minimum distance from the drum to a fixed sheave should be equal in feet to the drum length in inches. For example, with a drum width of 10 inches, the minimum distance to a fixed sheave should be 10 feet.

Diagram 1



Possible Mounting Locations

Diagram 2



Mounting

The unit must be attached to a rigid and level foundation or support structure that is adequate to support the unit and its load under all load conditions, including shock-loads, without flexing. Three different mounting positions are shown.

⚠ WARNING

Do not attach the unit to wood, sheet rock, or similar type materials.

Compression-Type Mount

If possible, a compression-type mount (unit on top of the mounting plate) should be used. This is the strongest and safest type of mount. There must be adequate clearance for the wire rope to pass without touching the mounting plate.

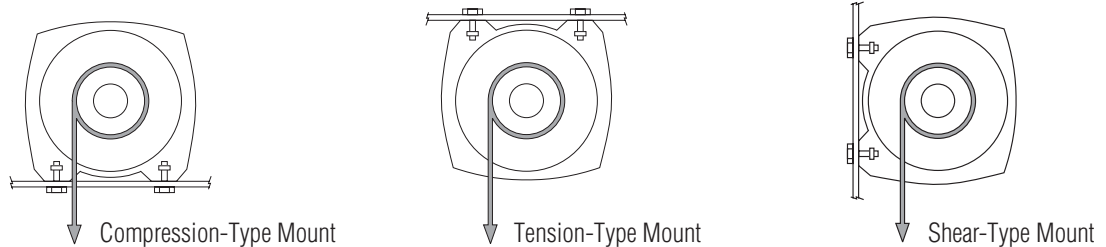
Tension-Type Mount

Use a tension type mount (unit below the mounting plate) when a compression mount is not possible. This is the second best mounting method.

Shear-Type Mount

A shear type mount (unit in front of the plate) is the least desirable. While the strength of this mount exceeds the unit's rated capacity, it has far less tolerance to shock loads that exceed the rated capacity.

Diagram 3



⚠ CAUTION

When using a shear-type mount, an underwound configuration (spooling from the underside of the drum) is the preferred method. An overwound configuration (spooling from the top side of the drum) can still be used when necessary.

Regardless of mounting position, the wire rope must be spooled on the drum according to the "Direction of Rotation". Failure to spool wire rope properly on the drum can result in catastrophic failure of the unit.

Tie Rods

HD/WD Units

Tie rods on these units are not to be removed or altered under **any** circumstances.

HF/HG/WF/WG Units

Tie rods may be moved to alternate locations for wire rope clearance. At least three tie rods must be used at all times.

Mounting Holes

The mounting hole pattern is of critical importance to the strength of the unit. Mounting holes **must** match the template and/or drawings supplied with this owner's manual. Any deviation from the mounting dimensions or instructions creates an unsafe working condition which may cause serious injury or property damage.

The unit base **must** be flat in all directions within + 0.020 inches. An uneven base can cause binding, twisting, excessive wear or catastrophic failure of the gear train and ultimately the unit. If necessary, use shim stock to ensure even mounting.

HD/WD Units

Standard mounting hardware provided is to be used for mounting the unit to fixtures that are 0.25" to 0.375" thick. For mounting to fixtures that fall outside of this thickness increase/decrease the length of the fastener accordingly. Fasteners must meet grade 5 standards or better and are sized 3/8-16. Tighten all mounting hardware to 24 ft-lb [32.5 N-m].

HF/HG/WF/WG Units

Standard mounting hardware provided is to be used for mounting the unit to fixtures that are 0.5" to 0.625" thick. For mounting to fixtures that fall outside of this thickness increase/decrease the length of the fastener accordingly. Fasteners must meet metric Class 8.8 standards or better and are sized M12 x 1.75. Tighten all mounting hardware to 37 ft-lb [50 N-m].

⚠ WARNING

Do not weld any fastener used for attaching the unit or mounting plate. Welding makes the fasteners brittle and subject to failure even in a no-load situation.

Pneumatic Guidelines

This Columbia unit is driven by pneumatic power. Max pressure and flow guidelines are printed on the cover of this manual.

Air Supply and Circuit

The air supply must be clean and relatively dry. An airline filter and lubricator should be fitted in the air supply line and located before the first control valve of the system.

If the rated performance of the motor and unit is to be obtained, all valves and pipe work of the air supply must be of adequate size. Valves should be located as close as possible to the motor.

For short length pipe runs up to 6 feet, the supply lines should be the same size as the inlet and exhaust ports, and larger for longer runs.

Before final connection to the motor, blow out the airlines to remove any loose scale, swarf or abrasive dust that may be present, and squirt a few drops of oil in to the inlet ports.

⚠ CAUTION

Make sure hose pressure is at 0 PSI when making connection to existing power sources.

Supplied compressed air is to be filtered to a minimum of 64 micron and lubricated with a suitable pneumatic or hydraulic oil. Oil viscosity of ISO VG32 is recommended for ambient temperatures between 0° – 32° Celsius (32° – 90° Fahrenheit). If the unit is plumbed to a system without an air drying system, it is strongly recommended that an additional water separator be added to the pneumatic circuit.

Typical oil supply rate is 8-12 drops/min, this amount may be adjusted outside of these limits as required.

The filter bowl should be drained regularly and the element examined for signs of clogging.

Safety Precautions

1. Regularly check the water separator, regulator and air supply lubricator prior to running and during operation.
2. All hose assemblies should be checked regularly for leaks, abrasion, kinks, cover blisters or any other damage. Any assembly showing signs of wear or damage must be replaced before further use.

Wire Rope

The wire rope must be spooled on the drum according to the direction or rotation label on the unit or the drum brake will not function.

The wire rope anchor, which attaches the first wrap of the wire rope to the drum, is not designed to hold rated loads. Keep a minimum of five wraps of wire rope on the drum at all times to achieve rated load.

⚠ WARNING

Wire rope must be spooled on under tension before initial use of this unit. Factory installed wire rope is not spooled on under load.

To correctly spool the wire rope, it is necessary to unwind the wire rope and then rewind the wire rope under load. It is recommended that during the initial tensioning of the wire rope a load of approximately 15% of the rated first layer line pull be used. In the event that tension is taken off the line, the wire rope must be re-tensioned according to the above guidelines.

Operating Instructions

The safe operation of this product is solely dependent upon the owner and/or operator's skill, knowledge and judgment. Only those qualified and familiar with all operating guidelines, safety codes and regulations related to rigging, wire rope and winch and/or hoist usage should operate this unit.

The determination of suitability for this product for any specific use is the responsibility of the owner and/or operator. The following guidelines are to be used only as a reference.

Preparing for Operation

Inspect the condition of all components, including mounting bolts, pneumatic connections, sheaves, wire rope, hook, rigging, etc.

Verify the line pull required to move your desired load and make sure you do not exceed the load rating of the unit.

Test for proper forward and reverse operation without a load.

Operating the Unit

Ensure that the load is free of objects around it.

Connect the load to hook with a sling or other approved device. Never hook the wire rope around a load and onto itself.

Use the control valve intermittently to take up wire rope slack to avoid shock loads, which can momentarily exceed the unit and wire rope rating. Move the load slowly at first to make sure the load is securely attached to the hook.

Do not allow the hook to be any closer than two feet from the drum to prevent damage to the unit and wire rope.

Always inspect and carefully rewind the wire rope after each use. Improperly spooled, kinked or tangled wire rope will damage and shorten the life of the wire rope.

Duty Cycle

HD/WD Units

Do not use these units continuously under any circumstances. Recommended use is 15 minutes out of each hour on an intermittent basis. Continuous duty usage can cause undetectable damage and lead to failure of the brake and motor.

HF/HG/WF/WG Units

These units are rated for continuous duty and may be operated up to 40 minutes out of each hour on an intermittent basis.

Factors such as altitude, ambient temperature, air quality, fluctuations in voltage, motor cleanliness and the frequency of start/stop cycles all affect the duty cycle.

Braking System for Winches (WD/WF/WG)

Any time the winch is stopped, the drum brake will automatically engage against the load. Never leave any load unattended without properly securing it.

Free-spool Control

The free-spooling control allows wire rope to be pulled off the drum manually.

DO NOT attempt to disengage the freespool control when there is a load on the wire rope.

DO NOT use the load to assist in pulling cable off the drum.

DO NOT attempt to re-engage the freespool control while the drum is turning.

DO NOT attempt to use the freespool control to stop the drum from turning.

Any of these actions can cause severe damage to or failure of the winch.

Braking System for Hoists (HD/HF/HG)

Any time the unit is stopped, the brake will automatically engage against the load. Never leave any load unattended without properly securing it.

Operating Safety Precautions

1. Never touch the wire rope or rigging while another person is at the control switch or at anytime while operating the unit.
2. Never attempt to pull a load with less than five wraps of wire rope around the drum. Fewer wraps could cause the wire rope anchor to break and release the wire rope and load.
3. Keep the operator, assistants and spectators at a safe distance from the wire rope and rigging and out of the path of the load during the lifting operation. If the wire rope breaks or pulls loose under load, it can lash back with enough force to cause property damage, injury or even death.
4. Keep hands away from wire rope and hook while operating the unit. Never let the wire rope slide through your hands. Always wear heavy leather gloves when handling wire rope.
5. Never touch the wire rope or hook while they are under load.

General Maintenance

Maintenance of this product is the sole responsibility of the owner and/or operator.

The determination of suitability for this product for any specific use is the responsibility of the owner and/or operator. The following guidelines are to be used only as a reference.

Periodically inspect the unit for general wear and tear. Immediately determine the cause of any change in performance or sound during operation and take corrective action as required.

Keep unit, wire rope and controls free from contaminants. Use a clean rag or towel to remove any dirt and debris. If necessary, unwind unit completely, wipe clean, and rewind properly before storage.

This unit is of sealed construction. No internal lubrication by the owner is needed for the life of the unit.

Wire Rope

Inspect the wire rope before and after each operation. The life of the wire rope is directly related to the care and use it receives. Wire rope must be replaced when it has one or more of the following defects as defined in the American National Standards Industry Handbook A10.5 or as defined by OSHA:

- Corrosion
- Frayed or broken wire rope
- Abrasions
- Kinking
- Heat damage
- Any apparent reduction of wire rope diameter

STOP USING THE UNIT AND REPLACE THE WIRE ROPE if any of the defects listed above are discovered.

Using light oil on the wire rope and hook can keep rust and corrosion from forming.

Troubleshooting Guide

General Symptom	Potential Cause
Unit will not produce wire rope pull/line speed as listed.	1. Inadequate air pressure/flow.
	2. Air motor is not properly lubricated.
	3. Air is restricted (line, mufflers, etc.).
	4. Unit is mounted to an uneven surface.
	5. Wire rope sheaves or block purchase not turning freely.
	6. Load is constrained.
Brake does not hold.	Wire rope installed with incorrect rotation.
Line stacks against flanges.	1. Unit is not level.
	2. Wire rope leads to a point not in line with the drum.
	3. Distance to cable sheaves, block purchase or load inadequate for proper fleet angle.
Wire rope spools poorly.	1. Wire rope tension was lost.
	2. Wire rope not installed properly.
	3. Tension not adequate to spool wire rope on tightly.
	4. Distance to wire rope sheaves, block purchase or load inadequate for proper fleet angle.

Hoist Specific	Potential Cause
Unit will lower load, but will not raise load.	1. Load is beyond rated capacity.
	2. Load is constrained.

LIMITED WARRANTY

Allied Power Products, Inc. (APPI) warrants the products it manufactures to be free from defects in material and workmanship to the original buyer for a period of 24 MONTHS from the date of shipment from APPI. All warranties for products sold but not manufactured by APPI are solely that of the manufacturer.

This warranty and liability of APPI is limited to the replacement or repair of any product manufactured by APPI if the product is found – upon examination at our facility – defective due to materials or workmanship. All freight, removal and/or installation charges shall be borne by the Buyer.

This warranty does not cover failures or malfunctions found by APPI to result from:

- Improper installation, operation and/or maintenance of the product.
- Replacements, repairs and/or alterations made by or on behalf of the buyer without written approval from APPI.
- Use of accessories and/or other components in conjunction with the product without written approval from APPI.

APPI SHALL NOT IN ANY EVENT BE HELD LIABLE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGE OR FOR EXPENSES OR DELAY CAUSED BY DEFECTIVE MATERIAL OR WORKMANSHIP.

Except for the above warranty, APPI makes no other express or implied warranties and NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

This warranty shall be governed by and construed in accordance with the laws of the State of Oregon and enforced in Oregon courts. If any portion of this limited warranty and limitation on damages is determined to be invalid or unenforceable, the remainder of the warranty shall remain in full force and effect.

All warranty claims must be submitted to APPI in writing to:

Allied Power Products, Inc.
6590 SW Fallbrook Place
Beaverton, OR 97008



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