



HYDRO-FORCE™

AIR WAVE DUCT CLEANER OPERATOR'S MANUAL



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#LMANAC040 Air Wave Manual

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AC040 Duct Cleaner Operating Manual

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Introduction

Congratulations on your purchase of the Hydro-Force Air Wave Duct Cleaner. Years of experience, engineering, and planning have gone into the design and manufacturing of the Air Wave Duct Cleaner. We take a great deal of pride in the Air Wave Duct Cleaner; our goal is no less than your complete satisfaction.

The Hydro-Force Air Wave Duct Cleaner is intended for commercial use only.

This manual will provide users with the knowledge required to properly operate and maintain the Air Wave Duct Cleaner equipment.



All users must read and understand this manual completely before operating the machine.

Always maintain this manual in legible condition adjacent to the Air Wave Duct Cleaner, or place in a secure location for future reference.

Any questions pertaining to the operating or servicing of this equipment should be directed to your nearest Hydro-Force distributor.

This manual is written specifically for the Air Wave Duct Cleaner AC040 manufactured by:

AramSCO
4282 South 590 West
Salt Lake City, UT 84123
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Information in this manual is subject to change without notice and does not represent a commitment on the part of Hydro-Force or its parent or affiliated companies.

Standard Equipment

AC040 Air Wave Duct Cleaner

Standard Equipment

- Vacuum Box Assembly (AC040B):
Includes: Vacuum Box (NM6100)
Dust Plug Gasket (NM6106)
Receiver Plate - Pole Mount with mounting hardware (NM6104)
2" Male Flash Cuff with 2" Male NPT with 2" Lock Nut (AH224 & NM6102)
LED Light with Adhesive Mounting Strip (AC043)
- Toe Kick Adapter Plate (AC042)
- Flash Cuff 2" Female for 2" Vacuum Hose (AH204)
- Flash Cuff 2" Female for 1-1/2" Vacuum Hose (AH201)
- Cleaning Air Hose – 25FT. Black - Rigid 1/4" MPT ends (AH040)
- Compressor Air Hose – 50FT. Red - Rubber 1/4" MPT ends (AC031A)
- Pusher Ball – Black 1/4" FPT – Qty. 1 (NM6109)
- Blaster Ball – White 1/4" FPT – Qty. 2 (NM6108)
- Extension Pole - (AC049)
- Extension Pole Ball End (just the ball)- (NM6110)
- Air Gun – (AC047)
- Air Shutoff Valve 1/4" FPT x 1/4" MPT (AH54)
- Male Air Quick Connect – 1/4" FPT (PAF17)
- Female Air Quick Connect – 1/4" FPT (PAF19)
- Male Air Quick Connect – 1/4" MPT (PAF18)
- Carry Bag – (AC046)
- Operator's Manual (LMANAC040)

AIR COMPRESSOR (Not included)

The air compressor to be used with the Duct Cleaner must meet these requirements:

- **Minimum 4 Gallon Air Tank Capacity**
- **Maximum Pressure Output greater than 120 PSI**
- **Must be able to maintain pressure for at least 10-15 seconds while cleaning each duct**

Compressors with larger tanks and higher pressure will perform better but are not required. The compressor CFM is not important as long as it meets the output pressure and tank capacity requirements. Compressor Air Outlet should be fitted with 1/4" quick connects to attach to the hoses supplied with the Air Wave Duct Cleaner.

We recommend the Dewalt 200 PSI air compressor, our part #MH90.

VACUUM SYSTEM (Not included)

Dry Vacuums, Portable or Truck Mounted Extractors with a minimum air flow of approximately 100 CFM air flow. Best results will be achieved using the vacuum system with the highest powered system which maintains the highest **Cubic Feet per Minute** of air flow while cleaning.

Must be setup to exhaust outdoors or have a HEPA filter if used indoors.

Additional / Optional Equipment

Description	Part #	
2" Vacuum Hose – 50FT. Blue with Vinyl Cuffs:	AH24	
1-1/2" Vacuum Hose- 25FT. Blue with Vinyl Cuffs:	AH38BH	
Hydro Filter II:	AC10	
Replacement Screen for Hydro-Filter II:	AC10C	
2" Hose Barb x 2" MPT PVC:	AH68	
2" Hose Cuff – Vinyl for 2" Vacuum Hose	AH44	
2" Hose Cuff – Vinyl for 1-1/2" Vac Hose:	AH46	
2" Hose Connector PVC:	AH76	
1-1/2" Hose Cuff – Vinyl for 1-1/2" Vac Hose:	AH42	
1-1/2" Hose Connector PVC:	AH74	
Dewalt 4.5 Gal 200 PSI Electric Air Compressor	MH90	
Dry Vacuum DustDowner for 2" Hose	AH128	
Dry Vacuum DustDowner for 1.5" Hose	AH127	

Safety



READ AND UNDERSTAND ALL INSTRUCTIONS BEFORE OPERATING THE AIR WAVE DUCT CLEANER.

- * If your vacuum system is not designed for dry soil removal you must use a Dust Downer or other device to wet down the dust before it gets to your vacuum system to protect your vacuums.
- * When using the Air Wave Duct Cleaner, it is highly recommended that your vacuum system be exhausted outdoors. Any system which exhausts indoors must utilize a HEPA filter, or use the Dust Downer to prevent blowing particulates back into the environment.
- * Clean filters, grilles & vent covers outdoors whenever possible to avoid contaminating the indoor air with dust & other particulates.
- * Wear eye protection while using the Air Wave Duct Cleaner.
- * Wear a dust mask or other type of respiratory protection from particulate contaminates while using the Air Wave Duct Cleaner
- * Wear work gloves to protect your hands from sharp metal edges while using the Air Wave Duct Cleaner.
- * Use caution while cleaning the HVAC unit. Live electrical connections, moving parts and sharp edges may cause injury.
- * Turn off any pilot lights in the HVAC system and other appliances near the air handling system before beginning the duct cleaning process.

AIR WAVE DUCT CLEANER SET UP

AIR HOSE & COMPRESSOR

1. Connect the red rubber air hose (AC031A) to the compressor.
2. Connect the red rubber air hose to the 25' black air hose using the provided quick connects. Close the Ball Valve on the air hose.
3. Plug the compressor power cord into a 15amp or 20amp 120 volt outlet and turn the compressor on. The compressor will run approximately 2 minutes to fill the tank and then shut off. (Other compressors may have different power requirement. Refer to your compressor operator's manual for power requirements.)
4. Set the compressor outlet pressure to your desired setting. The pressure setting should be at least 120psi.
(The Dewalt compressor has a maximum outlet pressure of approximately 175psi.)
 - A higher pressure setting (150-175psi) will provide a stronger blast when the valve is first opened but the line pressure will drop below 60-90psi more rapidly.
 - A lower pressure setting (120-130psi) will maintain pressure above 60-90psi for a longer time while cleaning.
5. Connect either the Air Pusher Ball or Air Blaster Ball to the black Air Hose.
 - If cleaning the return air system attach the Black Air Pusher Ball (NM6109).
 - If cleaning the supply ducts attach the White Air Blaster Ball (NM6108).



VACUUM HOSE

1. Attach a vacuum hose to your vacuum source. This may be either a portable extractor, or truckmounted vacuum system. Attach a male vinyl cuff to the end of your vacuum hose and attach to either a 1.5" DustDowner (AH127) or 2" DustDowner (AH128).
2. Connect the DustDowner to another section of vacuum hose with male cuff attached. This second hose will connect via female Flash Cuff (AH204) to the male Starter Flash Cuff (AH224) on the vacuum box.
 - a. Note: some users like to run a long hose to the vacuum box, and then attach the DustDowner with a short 3' section so they are close to the ball valve that controls water flow while working. This adds the weight of the solution hose and brass to the end of your hose run and may make it more difficult to clean ceiling ducts (since you have to pull both the vacuum hose and solution hose off the floor). If most of the vents you clean are on the ground, then having the valve closer to the vent might be preferable since you can reduce water consumption because you don't have to walk as far to reach the shut off valve.
3. Connect the DustDowner to your solution hose. Place a ball valve (AH54) on your solution hose so you can control the flow of water.



Operation Procedures

STANDARD DUCT CLEANING PROCEDURE

I. Cleaning the Return Air System:

1. **IMPORTANT:** Before cleaning, ensure that both the heating and cooling systems function. If there is a problem, make sure you alert the homeowner BEFORE doing any work. This will help protect you and prevent the homeowner from blaming you for damaging their HVAC system if there was a pre-existing condition.
2. Turn the HVAC fan ON. This will create a flow of air through the air supply and return ducts. Ensure that the air filter is in place as this will capture the dust removed in the next steps.
3. Remove the grilles from the air return openings and take them outside to clean. Some grilles are hinged and not designed to be removed. If you cannot remove the grille, it can be cleaned in place. Use your air gun (AC047) to blow the dust off the grille back into the return duct.
4. Use a brush & your air gun to clean the return air duct behind the grille.
5. Attach the black Air Pusher ball (NM6109) to your air cleaning hose (AH040). The airflow from the black Air Pusher ball pushes the dust and debris forward towards the air handler air filter which can then be replaced or cleaned later. Connect the black cleaning air hose to the red air compressor hose. Make sure the ball valve controlling airflow is turned to the off position.
6. Insert the Air Pusher ball and cleaning air hose into the air return duct and open the air valve. As you push the cleaning air hose into the return air duct the airflow will push the dust & debris forward towards the HVAC filter. Turn the hose in a twisting motion as you push it forward. As you move the hose, pull it back a little and then push it forward into the duct. Once you have cleaned the entire length of the duct, close the air valve and remove the cleaning air hose.
7. Replace the air return grille and use your vacuum system to clean up any dust and debris remaining in the air return opening area. If you are using a truckmount or portable extractor as your vacuum source, use a DustDowner to wet down the dust and debris in the airflow back to the extractor.

II. Cleaning the HVAC Air Filter & Fan:

1. Turn the power off to the HVAC system before beginning to clean.
2. Remove the filter from the HVAC system.
3. Remove the HVAC inspection cover to access the controls & fan. You'll want to have a vacuum on hand, preferably with a narrow attachment to reach into tight spaces, so you can remove the dust that is blasted off the air handler. If you are using a truckmount or portable extractor as your vacuum source, use a DustDowner to wet down the dust and debris in the airflow back to the extractor.
4. Use your air gun & cleaning hose with the white Air Blaster ball attachment (NM6108) to clean the plenum and the fan area inside the HVAC system.
5. Since your customer will have a hard time seeing many of the surfaces you will be cleaning, it is very important that you clean the outside (visible) portions of the air handler, grilles and registers. This will convey a strong message of thoroughness to your customer and ensure them that you are a professional and that their ducts will actually be cleaner when you are done.
6. Clean or replace the air filter as needed.

III. Cleaning the Air Supply Ducts:

1. Turn on the HVAC system to use the air handler's high airflow to assist you in removing dust from the vents.
2. Remove all the grilles in the house and use your vacuum to remove any dust on the grilles. Use a good general purpose cleaner and towel to wipe off any dirt, oil or film on the grille. If the grilles are especially dirty, and there is a risk of getting spots on your customer's carpet, take the grilles outside to clean them.
3. Start the duct cleaning procedure at the highest point, farthest from the HVAC system.
4. Connect the white Air Blaster ball to your cleaning air hose.
5. Turn the LED lights on in the vacuum box so you can more easily observe dust removal. The LED lights make it easier to see the dust and debris you remove from the homeowner's ducts. Show the homeowner the amount of dirt being removed from their ducts and they'll really appreciate the work you are doing.



6. Connect your vacuum hose to your vacuum. Attach a Female Flash Cuff (AH204) to the end of your vacuum hose and attach to the vacuum box.
7. Place the vacuum box over the vent opening.
8. With the air valve closed, push the white Air Blaster ball and the cleaning air hose through the vacuum box and into the duct. Twist the hose as you push it into the duct and continue pushing as far as the hose will go.
9. Turn on your vacuum source & open the air valve.
10. With the air pressure from the white Air Blaster Ball knocking loose the dust and debris, the airflow from the HVAC fan, and the airflow from your vacuum hose, you should now see the dust and debris flow into the Vacuum Box and be removed through your vacuum hose.
11. Slowly pull the cleaning air hose back out of the duct. Pull it out some, push it back in a little, and twist the hose as you pull it out some more and repeat the process to clean the duct.
12. When the white Air Blaster ball reaches the vacuum box, close the air valve.
13. Disconnect the vacuum hose from the vacuum box and remove the vacuum box from the duct opening.
14. Use your vacuum to remove any dust collected around the duct opening and any remaining in the duct. Insert the vacuum hose down into the duct. Twist the hose as needed to move it around inside the duct and push it in as far as you can. Pull it out some, push it back in a little and twist the hose as you pull it out some more and repeat the process to clean the duct.
15. Once the end of the vacuum hose is out of the duct, use the vacuum hose to clean up the area around the duct opening.
16. Replace the vent cover and move to the closest vent and repeat the process. Work in a pattern toward the HVAC unit until you have cleaned all of the vents and supply ducts.

IV. Final Clean Up:

1. Use your vacuum system to clean up any dust and debris remaining in the HVAC system and vent areas.
2. Replace the HVAC system inspection cover.
3. Turn the HVAC fan setting back to its original setting for regular operation.

SPECIAL DUCT CLEANING PROCEDURES

I. Mobile Home Duct Cleaning:

The different type of duct configuration in most mobile homes requires a different cleaning procedure.

The duct system in a mobile home is constructed in an “H” shaped pattern, with the legs of the “H” running along each side of the mobile home.

1. Start the cleaning process at the end of one leg of the duct system. Remove the vent cover from the end vent and close all of the other vents on this leg.
2. Turn the HVAC system fan OFF.
3. Turn on the LED light located inside the vacuum box.
4. Place the vacuum box over the vent opening.
5. Connect your vacuum hose to the vacuum box. Turn on your vacuum.
6. With the air valve closed, connect the cleaning air hose to your compressor and push the white Air Blaster Ball and hose through the vacuum box. Twist the hose as you push it into the duct and continue pushing all the way to the end of the leg. Once you reach the end turn the air valve on.
(An additional hose section may be required.)
7. With the combined air pressure from the white Air Blaster Ball knocking loose the dust and debris, and the airflow from your vacuum hose, you should now see the dust and debris flowing into the vacuum box and removed through your vacuum hose.
8. Slowly pull the cleaning air hose back out of the duct. Pull it out some, push it back in a little and twist the hose as you pull it out some more, and repeat the process to clean the duct.
9. When the white Air Blaster Ball reaches the vacuum box, close the air valve.
10. Disconnect the vacuum hose from the vacuum box. Remove the vacuum box from the duct opening.
11. Insert the vacuum hose down into the duct. Twist the hose as needed to move it around inside the duct and push it to the far end of the leg. Pull it out some, push it back in a little and twist the hose as you pull it out some more and repeat the process to clean the duct.
12. Once the end of the vacuum hose is out of the duct, use the vacuum hose to clean up the area around the duct opening.
13. Replace the vent cover and move to the other side of the mobile home. Remove the vent cover from the vent farthest from the HVAC system and repeat the process for the second leg.
14. Remove the filter from the HVAC system.
15. Remove the HVAC inspection cover to access the controls & fan.

16. Use your air gun & cleaning air hose with the black Air Pusher Ball attachment to clean the plenum and the fan area inside the HVAC system.
17. Use your vacuum system to clean up any dust and debris remaining in the HVAC system and vent areas.
18. Clean or replace the filter as needed.
19. Replace the HVAC system inspection cover.
20. Turn the HVAC fan setting back to its original setting for regular operation.

II. Dryer Duct Cleaning:

1. Locate the dryer vent opening on the inside and outside of the building.
2. Depending on the configuration of the dryer vent it may be easier to push the lint to the outside from the inside using the black Air Pusher ball. Conversely, it might be easiest to use the white Air Blaster ball from the outside and blast the lint towards you. E.g. if the vent is located on the second story, and access is difficult, you can work inside and push the lint to the outside and vacuum the lint that has fallen to the ground.
3. Remove the outside vent cover if possible, or needed. Be careful not to damage the cover.
4. If you're working inside and want to push lint to the outside, connect the black Air Pusher ball to your cleaning air hose.
 - a. Insert the cleaning air hose into the dryer vent opening.
 - b. Turn on the air valve and begin pushing the cleaning air hose into the dryer vent duct using a twisting motion as you work.
 - c. When the cleaning air hose reaches the end of the duct, turn off the air valve and go outside to vacuum up any lint that fell to the ground or that remains in the vent.
5. If you're working outside and want to pull lint from the inside to the outside, connect the white Air Blaster ball to your cleaning air hose.
 - a. Push the cleaning air hose into the dryer vent as far as it will go.
 - b. Open the air valve and slowly pull the cleaning air hose out of the dryer duct. Pull it out some, push it back in a little and twist the hose as you pull it out some more and repeat the process to clean the duct. Repeat the process until no more lint is being removed from the duct. Turn off the air valve & remove the cleaning hose.
6. Clean up the lint and dust from the area around the dryer vent opening.

EXTENSION POLE USE

Your Air Wave Duct Cleaner comes with an extension pole to help you hold the Vacuum Box over vent openings when these openings are located on the ceiling.



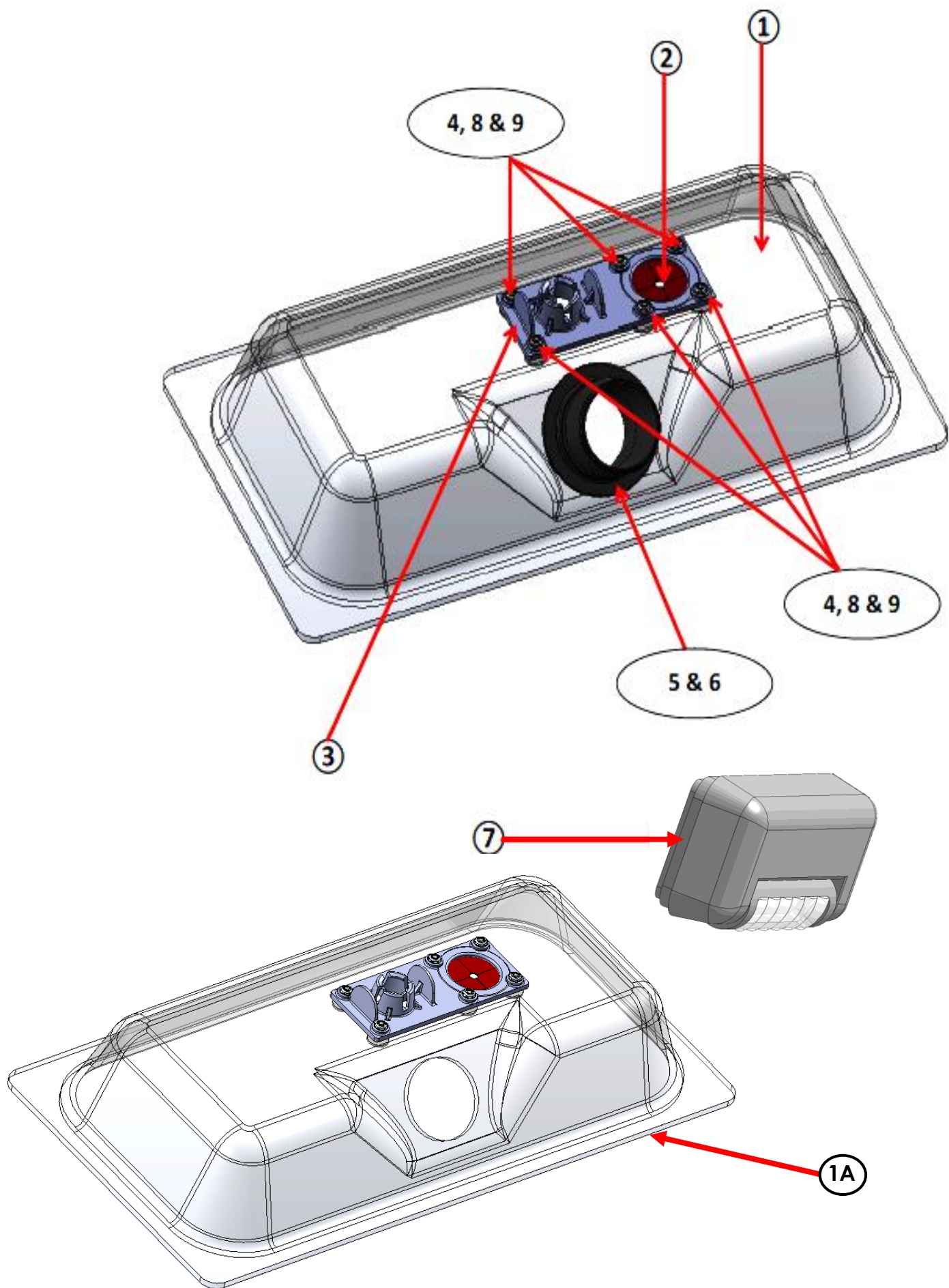
TOE KICK ADAPTER PLATE USE

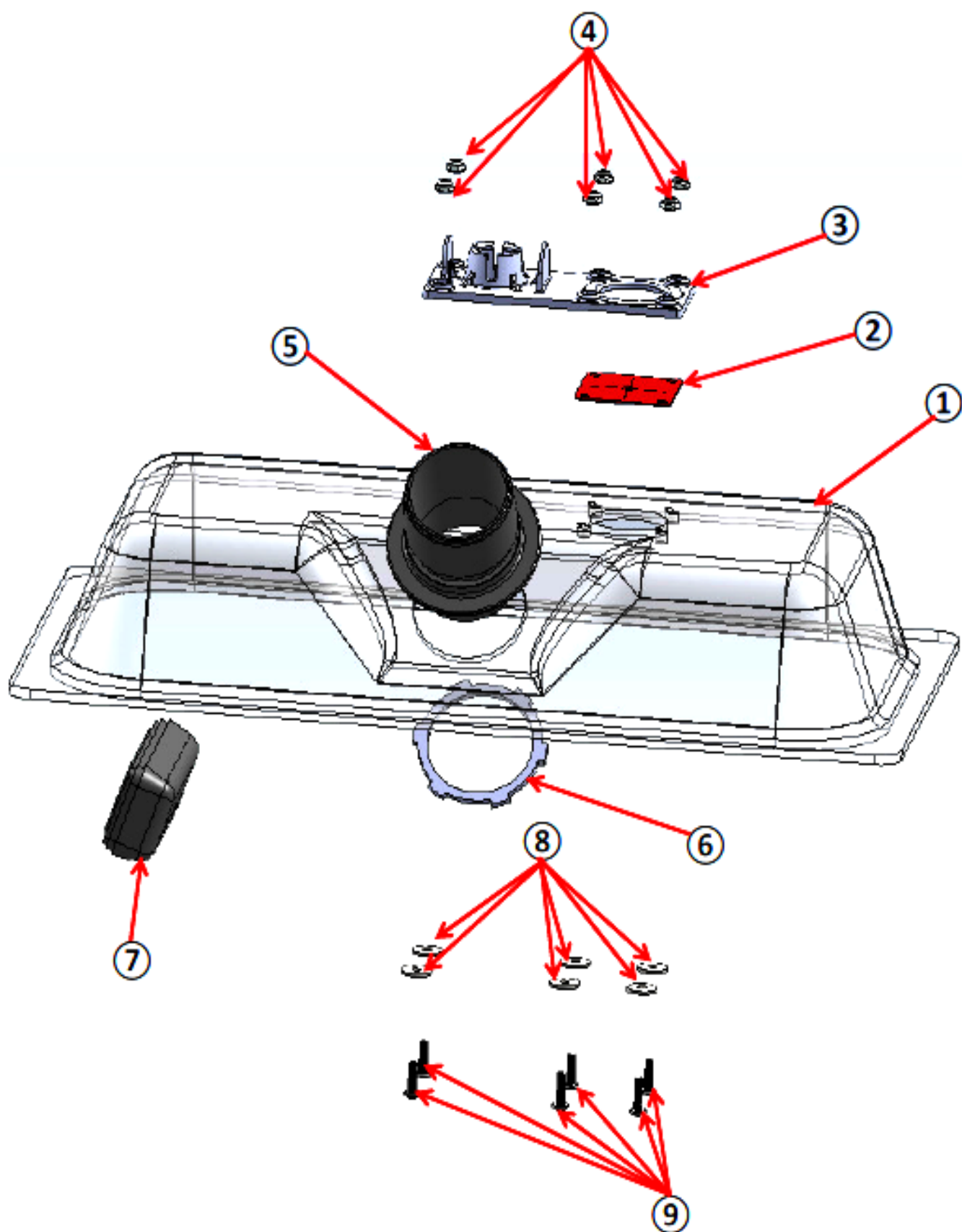
Your Duct Cleaner comes with a Toe Kick Adapter Plate to help you make a seal over vent openings when these opening are located under cabinets where there is not enough room to fit the Vacuum Box.

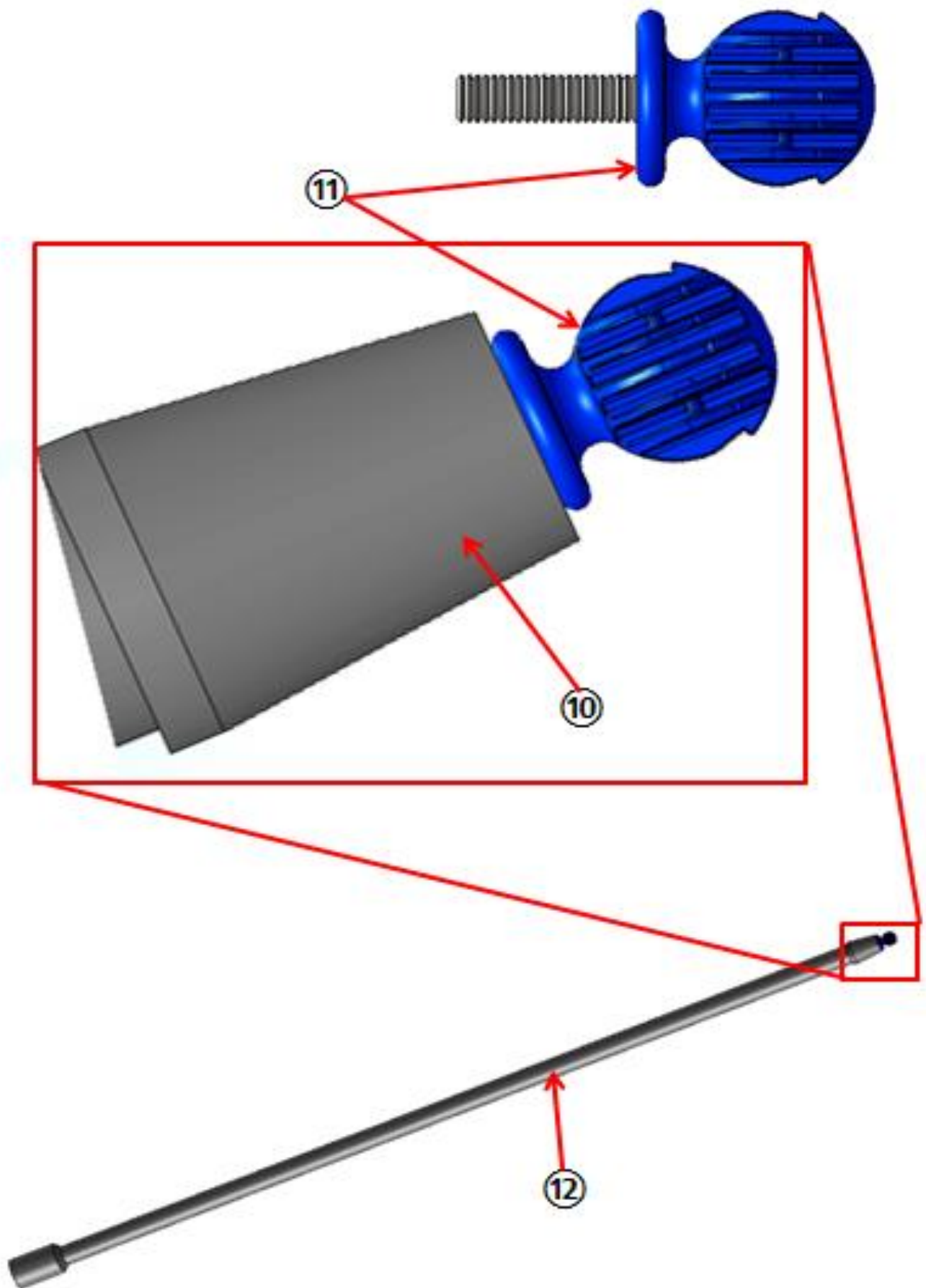


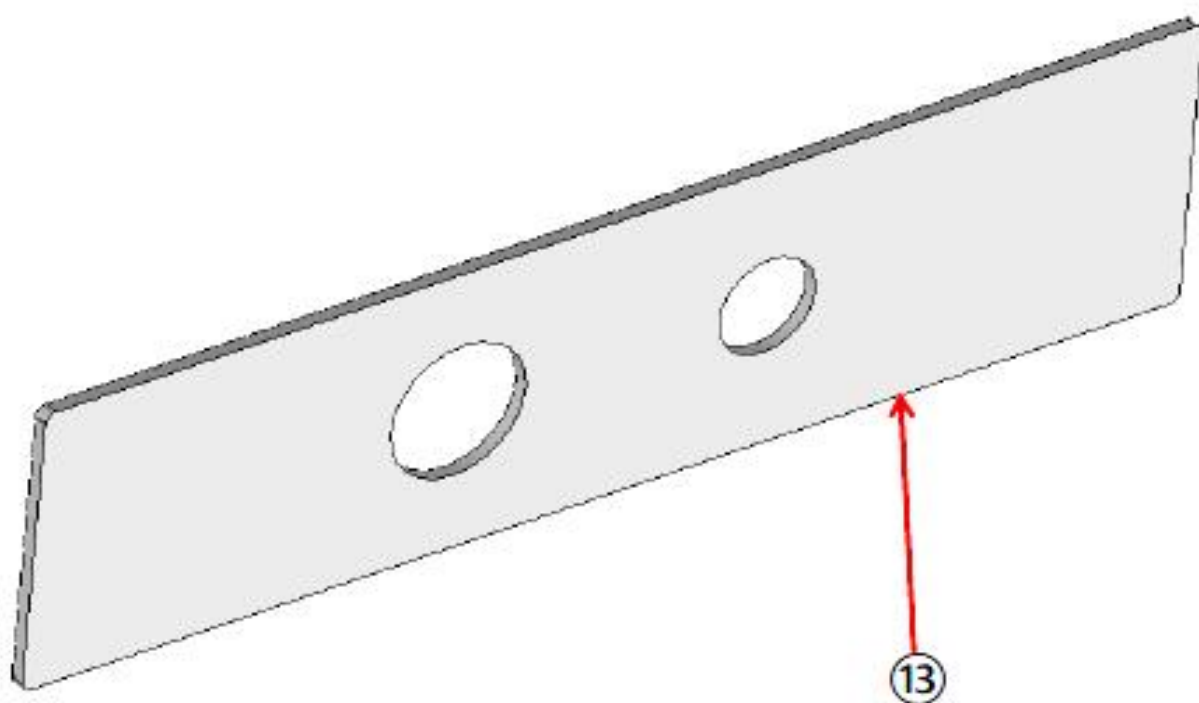
Parts

Key#	Part #	Description	QTY
1	NM6100	VACUUM BOX CLEAR PC – DUCT CLEANER	1
1A	AC041	VACUUM BOX ASSEMBLY (Includes Items #1, 2, 3, 4, 8 & 9)	1
2	1661-4834	DUST PLUG – DUCT CLEANER	1
3	NM6104	RECEIVER POLE MOUNT - PLASTIC	1
4	NM5793	NUT #8 NYLOCK	6
5	AH224	FLASHCUFF 2" MALE X 2" MPT	1
6	NM6102	NUT 2" FPT	1
7	AC043	LED LIGHT – DUCT CLEANER	1
8	NM6107	WASHER #8 FENDER SS	6
9	NM5723	SCREW 8-32 X .625" PPH SS	6
10	AC049	EXTENSION POLE	X
11	NM6110	BALL END – M6 THREADED	X
12	AC048	EXTENSION POLE W/ BALL END (Includes #10 & #11)	1
13	AC042	VACUUM PLATE TOE KICK – DUCT CLEANER	1
14	AH204	FLASHCUFF 2" FEMALE – FOR 2" VAC HOSE	1
15	AH201	FLASHCUFF 2" FEMALE – FOR 1.5" VAC HOSE	1
16	NM6108	AIR BLASTING BALL – WHITE 1/4" FPT	2
17	NM6109	AIR PUSHING BALL – BLACK 1/4" FPT	1
18	AC046	CARRYING BAG – DUCT CLEANER	1
19	PAF17	1/4" MALE AIR QUICK CONNECT – 1/4" FPT	2
20	PAF19	1/4" FEMALE AIR QUICK CONNECT – 1/4" FPT	1
21	AH54	BALL VALVE 1/4" MPT X 1/4" FPT	1
22	AC047	AIR BLOW GUN – PISTOL GRIP	1
23	PAF18	1/4" MALE AIR QUICK CONNECT – 1/4" MPT	1
24	AC031A	AIR HOSE RED RUBBER – 50 FT. 1/4" MPT ENDS	1
25	AH040	AIR HOSE RIGID BLACK – 25 FT. (1/4" MPT ENDS)	1

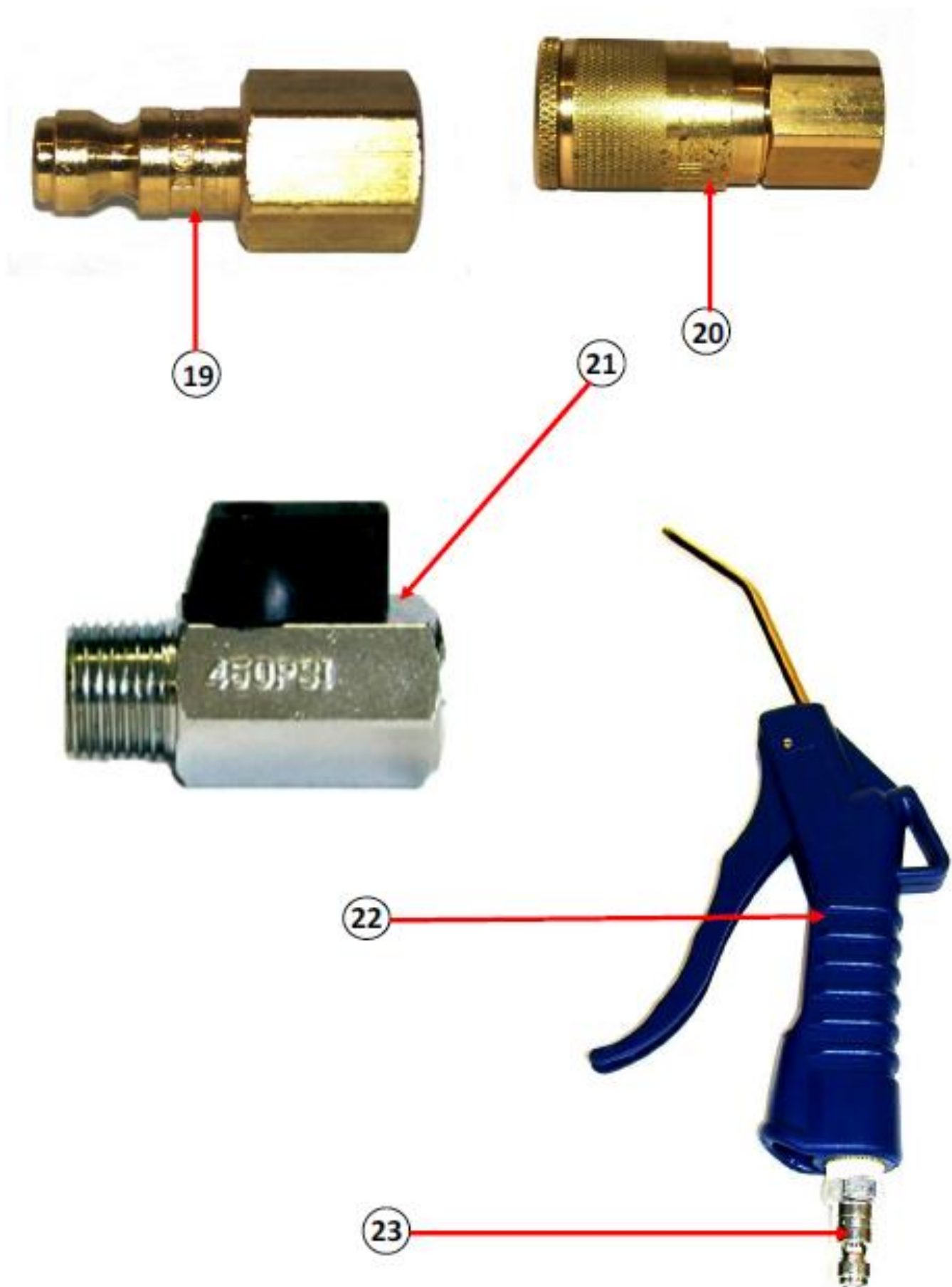














Limited Warranty

Your Hydro Force Duct Cleaner is designed to give you years of reliable service. If a problem should arise use the troubleshooting section in the operation manual to diagnose and correct the problem if possible.

If you are unable to determine the cause or solution to the problem contact your distributor or Hydro-Force for assistance.

Hydro-Force warrants the AC040 Duct Cleaner to be free of defects in material and workmanship for one year from the date of purchase.

During the warranty period, Hydro-Force will, at its option, repair or replace components which prove to be defective. This warranty does not provide for replacement of complete units due to defective components. Any costs for transportation or related service labor are not covered in this warranty. Replacement parts are warranted only for the remainder of the original warranty period.

This warranty shall not apply to defects resulting from improper operation, lack of maintenance, unauthorized modification, chemical incompatibility, misuse, abuse or neglect. It does not cover normal wear items such as o-rings, gaskets, valves, quick connects, hoses, or other items which require replacement as a result of ordinary usage.

To obtain warranty service for the AC040 Duct Cleaner, contact your distributor or Hydro-Force. If the extractor must be returned to Hydro-Force or an authorized service center, the purchaser shall prepay shipping charges for products returned for warranty service. No returned items will be accepted by Hydro-Force without prior authorization. All returns must have a return authorization number, issued by Hydro-Force, clearly marked on the exterior of the package.

Hydro-Force makes no other warranty either expressed or implied with respect to this product.

The remedies provided herein are the purchaser's sole and exclusive remedies. In no event shall Hydro-Force be liable for any direct, indirect, special, incidental or consequential damages.

This warranty gives you specific legal rights. You may also have other rights which vary from jurisdiction to jurisdiction.