

# STS™\*

## SUPER TURBINE SUCTION

54130 STS-15™ WITH 20 GALLON CAS™ (Cyclonic Action Separator)\*

54132 STS-30™ WITH SINGLE 20 GALLON CAS™



## USER'S MANUAL



\* PATENTS PENDING



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## **CONGRATULATIONS**

*Congratulations on the purchase of your new **STS™** Dual Stage Dry Vacuum System (Super Turbine Suction). The **STS™** is a dry vacuum pump that produces high-volume air flow with multiple users online. The **STS™** is a medical dry vacuum pump which is designed for use in a dental facility. The **CAS™** (Cyclonic Action Separator) tank will ensure that no liquids or foams enter the vacuum pump. The relief valve is easily accessible on the **CAS™**. The patented vacuum relief valve maintains a constant uniform vacuum. The powerful 3 phase motor, with a highly reliable contactor and powerful transformer can be depended upon to start every time. Your **STS™** vacuum system and **CAS™** separator tank are easily installed and maintained.*

# AIR TECHNIQUES WARRANTY

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The **STS™** and **CAS™** are warranted to be free from defects in material and workmanship from the date of installation for a period of thirty-six (36) months.

Any item returned to our factory in Hicksville, New York through an Air Techniques' Authorized Dealer, will be repaired or replaced at our option at no charge provided that our inspection shall indicate it to have been defective. Dealer labor, shipping and handling charges are not covered by this warranty.

This warranty does not apply to damage due to shipping, misuse, careless handling or repairs by other than authorized service personnel. Warranty void if installed or serviced by other than Authorized Air Techniques' Dealer service personnel. Air Techniques, Inc. is not liable for indirect or consequential damages or loss of any nature in connection with this equipment.

This warranty is in lieu of all other warranties expressed or implied. No representative or person is authorized to assume for us any liability in connection with the sale of our equipment.

## SAFETY INSTRUCTIONS

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Use of the **STS™** not in conformance with the instructions specified in this manual may result in premature failure of the unit.

**WARNING:** To prevent fire or electrical shock, do not expose this appliance to rain or moisture.

All user servicable items are described in the maintenance sections.

Manufacturing date code on serial number label is in format YYMM.

### ATTENTION USERS:



This symbol alerts the user that important Operating and Maintenance instructions have been included with the unit. Read carefully to avoid any problems.



This symbol warns the user that uninsulated voltage within the unit may be of sufficient magnitude to cause electric shock.



This symbol indicates type B equipment in accordance with IEC 601-1



This symbol indicates the presence of a hot surface or component. Touching this surface could result in bodily injury.

I ON

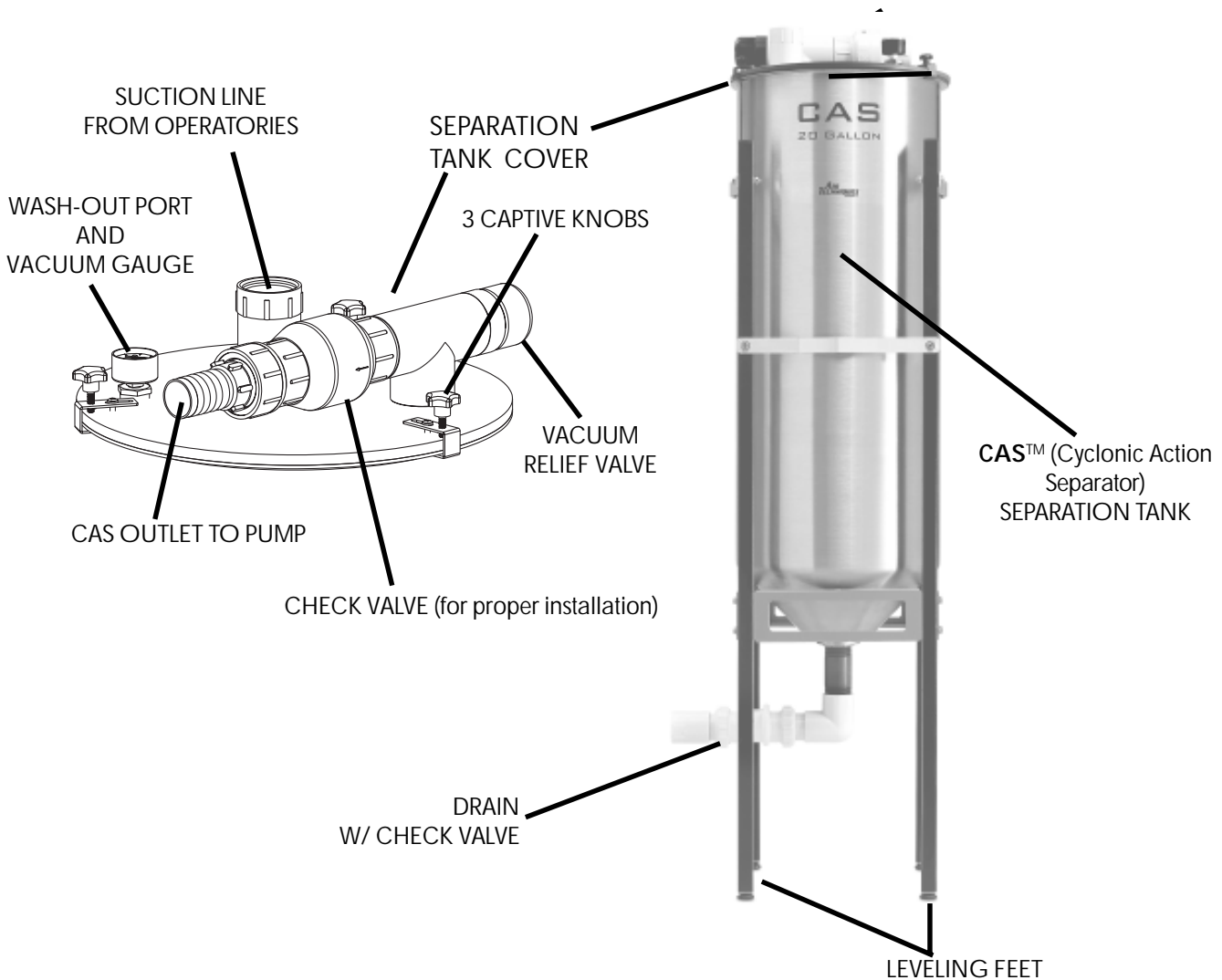
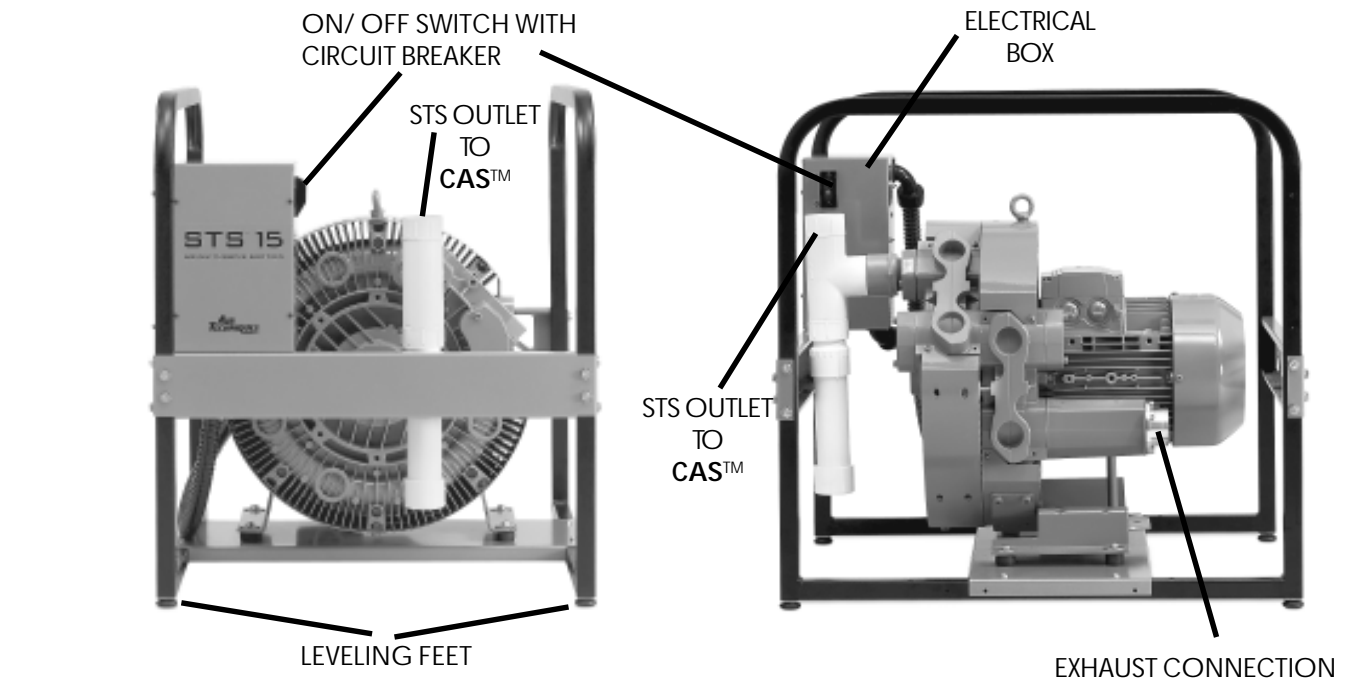
O OFF

These symbols indicate the "ON" and "OFF" position for the power switch.



Protective Earth Ground.

# KEY PARTS IDENTIFICATION



# **INSTALLATION INFORMATION**

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**For new installations it is recommended that these guidelines be used:**

- Suction line from the operatories to be a minimum of 2" dia. and must be sloped (1/4" minimum for every 10') toward the separation tank. The suction line should not have any sharp right angle bends.
- The suction line should be connected to the **CAS™** separation tank with a short run of 1-1/2" dia. flexible tubing.
- The **STS™** system can replace turbine type pumps with larger diameter piping in existing installations.
- The drain on the base of the separation tank must be connected to an open floor drain capable of handling 20 gallons per minute. Drain pipe size 1-1/2" schedule 40.
- The drain line should be a short run with a minimum slope of 1/4" for every 10' toward the drain (avoid any sharp right angle bends).
- The vent line should be 3" dia. pipe for a single **STS™** and two 3" dia. pipe for a dual system. The vent should be sloped 1/4" per 10' towards the pump. Vent line must be capable of handling vapors and liquids and needs to terminate in a 2" end fitting.
- The outside vent must be protected from rain and animals.
- A 2" flexible air exhaust hose is provided to connect to the 3" dia. exhaust (vent) which must terminate with a 2" end fitting at pump. Hose clamps are provided to secure hose to exhaust (vent).
- Wash-out port uses a 3/4" garden hose connection, affixed to the CAS.
- Refer to page 11 for mounting and securing instructions.

# **OPERATING INFORMATION**

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- The **STS™** may be turned "ON/OFF" from a single, convenient location within the dental office using a Remote Control Panel. Remote wiring must be done by a licensed electrician in accordance with local codes.
- The vacuum level is factory preset at 10 in Hg (inches of mercury). This is the reading on the gauge when all HVE's and SE's are CLOSED. If this setting needs to be adjusted contact your dealer to readjust the setting.
- The unit is capable of running continuously. To conserve electricity, the system may be turned off when not in use.
- The **CAS™** separation tank has been designed to collect the fluids evacuated during a normal operating day. If an excessive amount of fluids are collected in the **CAS™**, the protective mechanism in the **CAS™** will interrupt the vacuum flow in order for the tank to automatically drain. This process takes approximately 60 seconds. To restore the vacuum to full operation turn OFF the power to the **STS™** for a minimum of 10 seconds and then back ON.
- Turn the power OFF at the end of the day. This will drain collected liquids in the **CAS™** separation tank.

**NOTE: Any time the power to the **STS™** is turned OFF the **CAS™** tank will automatically drain.**

# ***MAINTENANCE***

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## **INITIAL MAINTENANCE**

The **CAS™** uses patented technology to provide cyclonic action cleaning within the tank.

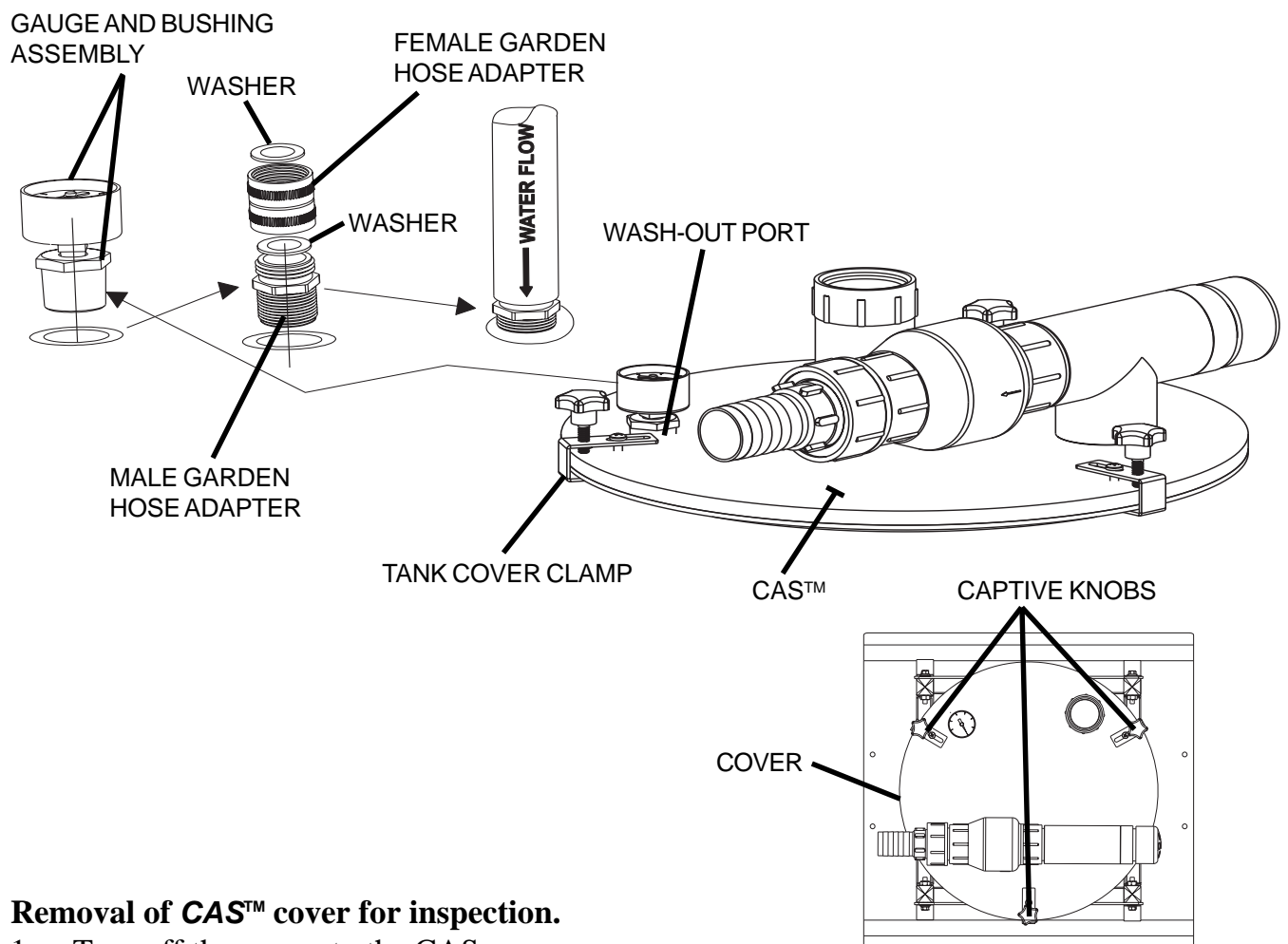
After installation, clean the vacuum lines with CleanStream™ Cleaner. The **STS™** system has the capability of removing built up deposits in the piping system.

## **DAILY MAINTENANCE - CLEAN VACUUM LINES**

To maintain the cleanliness of your **CAS™**, including all the vacuum lines and tubing in your dental system, we recommend the daily use of CleanStream™ Cleaner.

## YEARLY MAINTENANCE

1. Turn OFF the power to the **STS™**.
2. Remove the gauge and bushing assembly.
3. Attach the male garden hose adapter to the wash-out port in the **CAS™** (Be sure to include washers).
4. Attach the the water supply to the garden hose adapter (use female garden hose adapter if required).
5. Run water through the **CAS™** for approximately 10 minutes.
6. Remove the male garden hose adapter from the **CAS™** and re-install the gauge and bushing assembly. (use teflon tape)



### Removal of **CAS™** cover for inspection.

1. Turn off the power to the CAS.
2. Loosen the 3 captive knobs holding the cover to the tank.
3. Carefully remove the cover ensuring that the gasket remains firmly attached to the tank flange.
4. Prior to replacing the cover, inspect the gasket to ensure a clean smooth surface.
5. Finger tighten the 3 captive knobs.

**Do not over tighten knobs.**

# ***SITE REQUIREMENTS***

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## **ELECTRICAL**

Minimum circuit breaker rating  
Wire size AWG  
Receptacle Type

## **SINGLE**

30 A  
#10  
Hardwired

## **DUAL**

Two 30A  
2 each #10  
Hardwired

## **SINGLE**

## **DUAL**

## **EXHAUST VENT PIPE**

3" metal pipe  
with 2" end fitting

3" (x 2) metal pipe  
with 2" end fitting

## **SINGLE**

## **DUAL**

## **SUCTION LINE**

Riser Diameter ID  
Branch Line Dia. ID  
Main Line Diameter  
End Fitting

1/2"  
1-1/2 to 2"  
2 to 3"  
1-1/2" FNPT

1/2"  
2 to 3"  
3 to 4"  
1-1/2" FNPT

## **DRAIN LINE**

1-1/2" Schedule 40 Pipe

1-1/2" Schedule 40 Pipe

## **WASH-OUT LINE**

3/4" Garden Hose

3/4" Garden Hose

### **Note:**

The STS unit must be used in a controlled temperature environment. Maintain equipment room temperature between 40 and 105 degrees Fahrenheit. Adequate forced ventilation must be provided across the unit by placing an appropriate exhaust fan opposite an equivalent air intake vent. The fan should be higher than the associated intake vent.

Recommended minimum exhaust fan requirements are as follows:

STS-3	500 CFM
STS-5	600 CFM
STS-15	800 CFM
STS-6	1000 CFM
STS-10	1200 CFM
STS-30	1600 CFM

## **ENVIRONMENTAL CONDITIONS**

Transport and storage Temperature

0° F to 150° F  
Relative Humidity 90% no condensate

Operating Condition Temperature

40° F to 105° F with PVC vent pipe  
Relative Humidity 90% no condensate

## **IEC601-1 CLASSIFICATION**

Class 1  
Type B  
Transportable  
Operation - Continuous  
Equipment not suitable for use in the presence of flammable anaesthetic mixture(s)  
Protection against ingress of liquids. - Ordinary



# TROUBLE SHOOTING

PROBLEM	POSSIBLE CAUSE	POSSIBLE SOLUTION
No suction	<p>Pump not turned on.</p> <p>Pump not running.</p> <p>CAS separator tank full.</p> <p>CAS hooked up backwards</p> <p>Drain check valve clogged. Techniques dealer for repair service</p> <p>Clogged drain.</p> <p>Kinked or collapsed suction hose.</p> <p>Separator tank is full and will not drain.</p>	<p>Turn pump on.</p> <p>Call your authorized Air Techniques dealer for repair service.</p> <p>Shut unit "OFF" for 10 seconds then turn back "ON". Check drain for clog.</p> <p>Connect hose from STS to swivel tee fitting on CAS.</p> <p>Call your authorized Air</p> <p>Call your local plumber.</p> <p>Check the suction line from the unit to the separation tank and the separation tank to the opertory line. If clogged, collapsed or kinked call your authorized Air Techniques dealer for repair service.</p> <p>Tank must be hooked up to an open drain. If hooked to an open drain and tank won't drain call your authorized Air Techniques dealer for repair service.</p>
Poor or low suction	<p>Restricted air exhaust.</p> <p>Restricted air suction.</p>	<p>Check air exhaust pipe to make sure it conforms to specs. Check and clear possible restrictions in exhaust line.</p> <p>Check the suction line from the unit to the separation tank and the separation tank to the opertory line. If clogged , collapsed or kinked call your authorized Air Techniques dealer for repair service.</p>
Excessive suction	<p>Relief valve set high or stuck closed.</p> <p>Relief valve screen clogged.</p>	<p>Call your authorized Air Techniques dealer for repair service.</p> <p>Call your authorized Air Techniques dealer for repair service.</p>
Pump does not run.	<p>Site circuit breaker is "OFF".</p> <p>Pump circuit breaker is "OFF".</p> <p>Low voltage circuit breaker is open.</p> <p>Low voltage remote switch turned "OFF", or not connected properly.</p> <p>Electrical problem.</p>	<p>Turn "ON" the site circuit breaker.</p> <p>Turn "ON" the pump circuit breaker.</p> <p>If you can see the white section of the circuit breaker, it is tripped. Flip this section back in to reset breaker.</p> <p>Make sure remote switch is turned "ON" or if not using remote, switch yellow and orange wires twisted together.</p> <p>Call your authorized Air Techniques dealer for repair service.</p>

# STS-15 & STS-30 SPECIFICATIONS

## SITE REQUIREMENTS

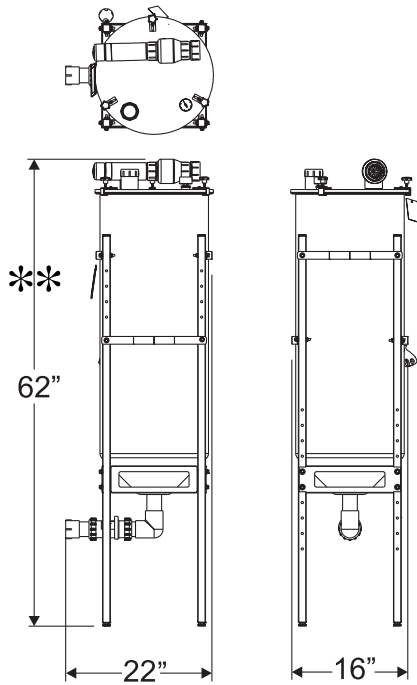
ELECTRICAL	STS-15	STS-30
Minimum circuit breaker rating	30 A	2 each 30A
Wire size AWG minimum gauge	#10	2 each #10
Receptacle	Hardwired	Hardwired
PLUMBING	STS-15	STS-30
Exhaust	3" Metal Pipe	Two x 3" Metal Pipes
Ambient Temperature	40° - 104° F (5° - 40° C)	40° - 104° F (5° - 40° C)
Main Line Diameter I.D. in Inches	2" - 3"	3" - 4"
End Fitting at STS	1-1/2" FNPT	1-1/2" FNPT
Riser Diameter ID	1/2"	1/2"
Branch Line Dia. I.D.	1-1/2" - 2"	2" - 3"
Drain Line	1-1/2" Schedule 40	1-1/2" Schedule 40
Wash-Out Line	3/4" Garden Hose	3/4" Garden Hose

**NOTE:** Suction piping must slope at least 1/4" for each 10 feet of run towards the pump.  
Use PVC Schedule 40 or Copper Type M.

## PRODUCT SPECIFICATION/DIMENSIONS

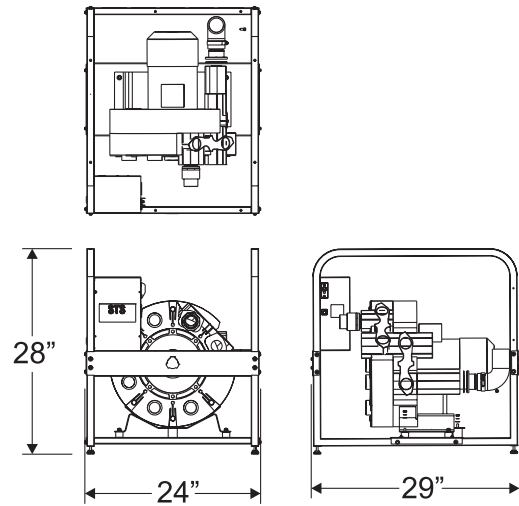
ELECTRICAL	STS-15	STS-30
VOLTAGE (MIN/MAX) 3 PHASE	200/250	200/250
FULL LOAD AMPS	18 A	36 A
STARTING AMPS	100 A	200 A
FREQUENCY	60Hz	60Hz
MAXIMUM VACUUM In Hg	17	17
VACUUM LEVEL (PRESET) In Hg	10	10
WEIGHT Lbs.	170	340
STS™ DIMENSIONS in.(WxDxH)	24" x 29" x 28"	24" x 29" x 56" Stacked
CAS™ DIMENSIONS in.(WxDxH)	22" x 16" x 62"	22" x 16" x 62"

# 54130 & 54132 OVERALL DIMENSIONS

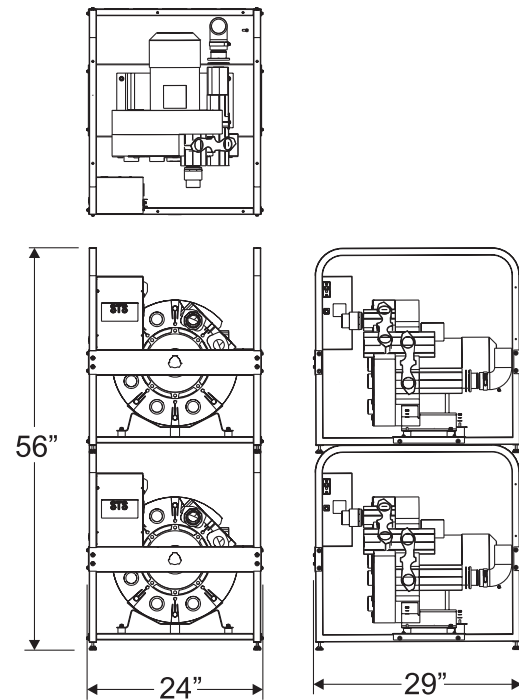


20 GALLON CAS  
P/N 54170

NOTE:  
20 gallon CAS must be bolted to the wall with brackets provided in the accessory kit.  
20 gallon CAS cannot be stacked on top of a STS-15 pump.



SINGLE STS-15  
P/N 54110

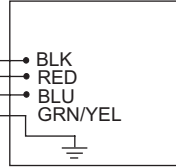


SINGLE STS-30  
P/N 54630

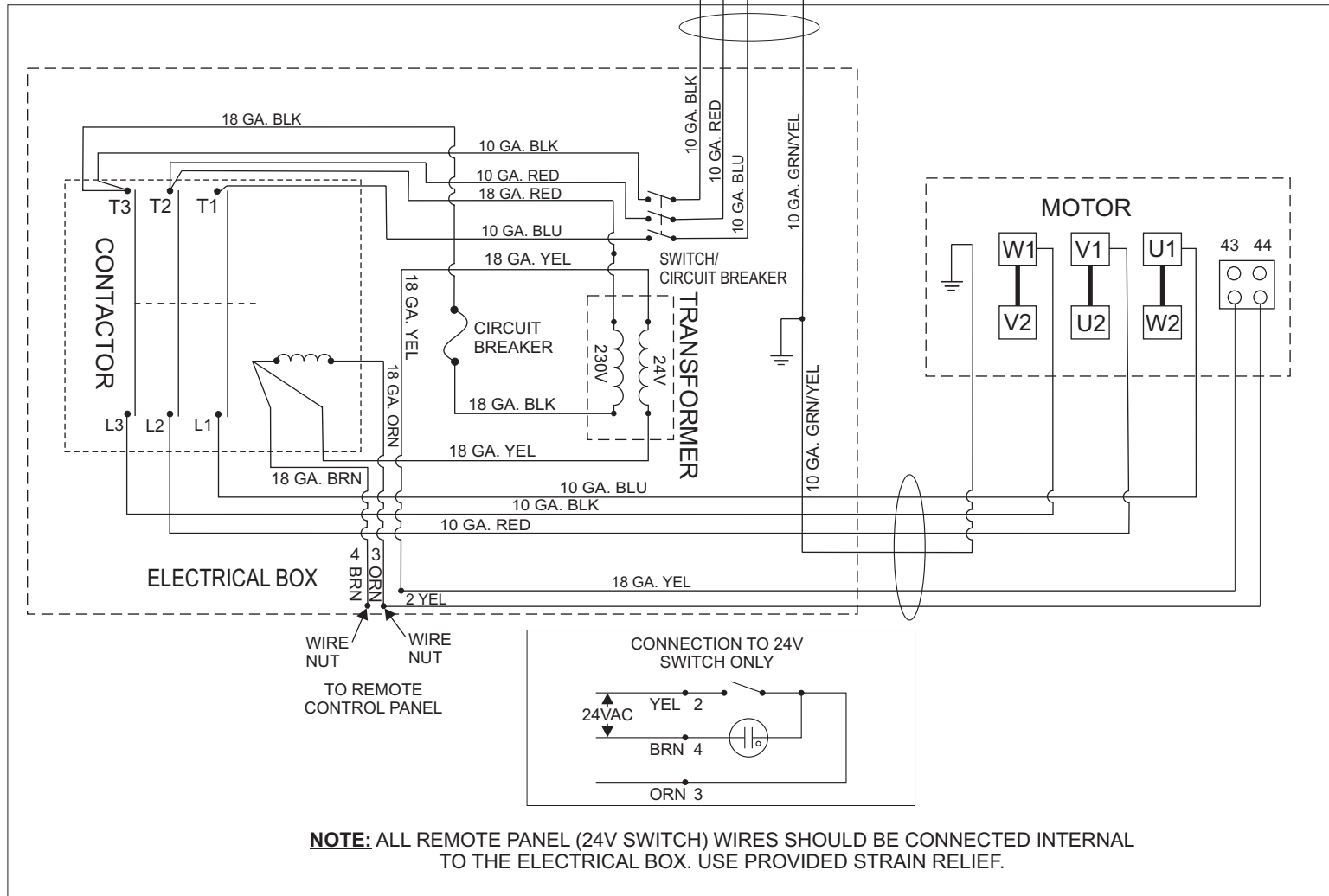
\*\*CAS heights can be increased by 8 inches and decreased by 8 inches with chassis adjustment holes.

NOTE: If STS is spinning counter clockwise and producing pressure at the outlet turn unit "OFF" disconnect from power source and switch any two of the three incoming power lines in the 4 x 4 Handy Box.

4x4 HANDY BOX

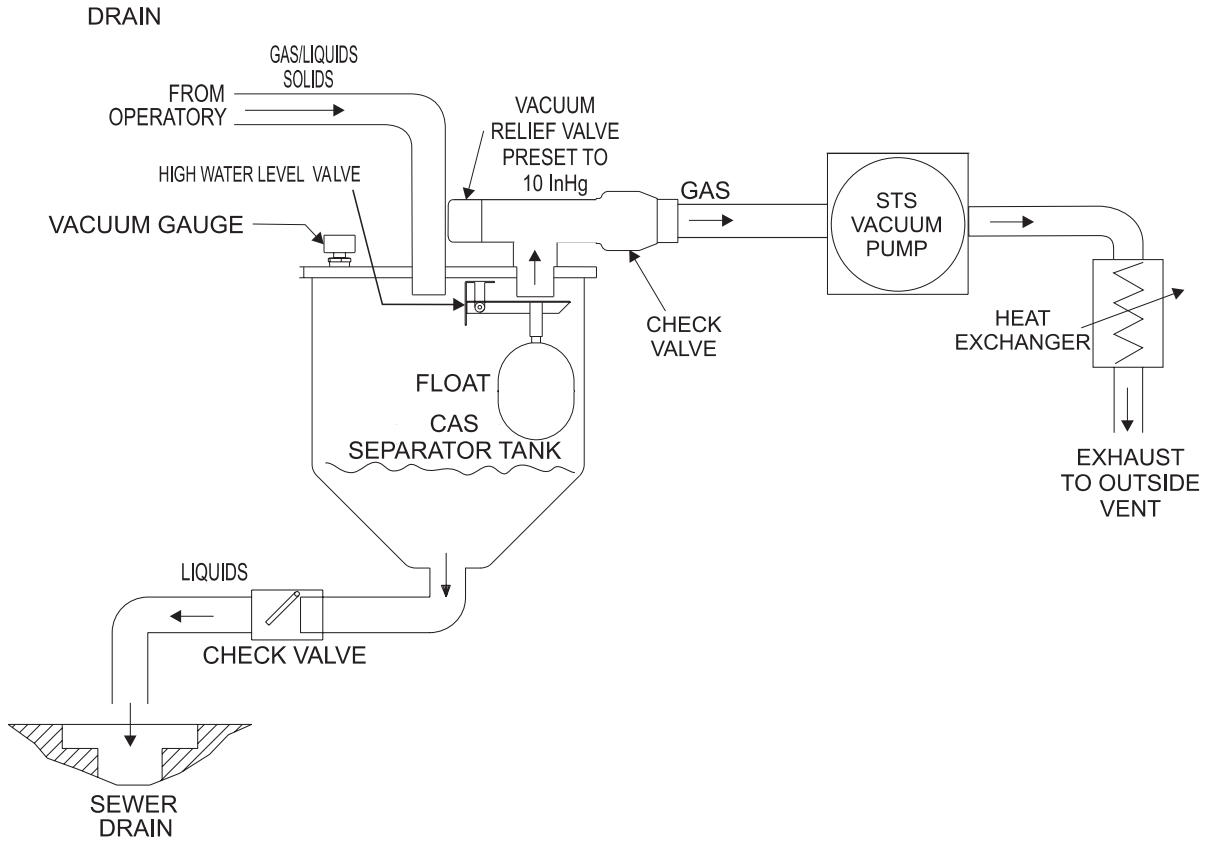


Bring incoming power into 4 x 4 Handy Box

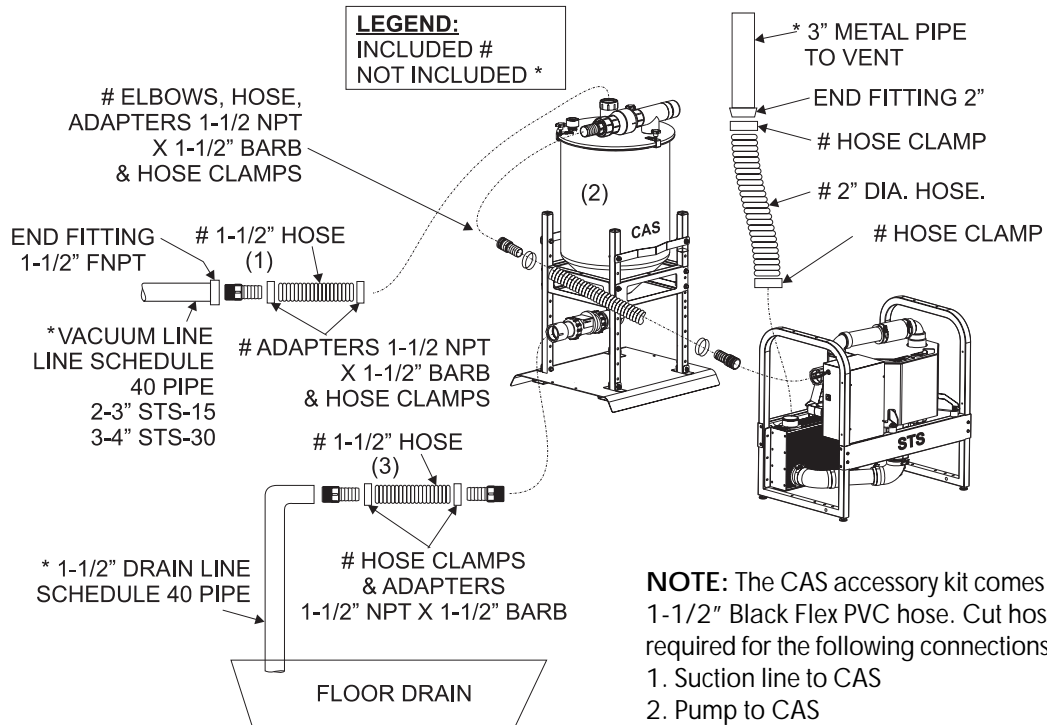


**NOTE:** ALL REMOTE PANEL (24V SWITCH) WIRES SHOULD BE CONNECTED INTERNAL TO THE ELECTRICAL BOX. USE PROVIDED STRAIN RELIEF.

# FLOW SCHEMATIC



# CONNECTIONS DIAGRAM



**NOTE:** The CAS accessory kit comes with 15 feet of 1-1/2\" Black Flex PVC hose. Cut hose to the length required for the following connections.

1. Suction line to CAS
2. Pump to CAS
3. CAS to Drain. If more than 15 feet of hose is needed, please order P/N 57227 (order per foot).

# **ACCESSORIES/INCLUDED**

## **54150 PUMP ACCESSORY PACK; STS™**

### *CONTENTS*

PART NO.	DESCRIPTION OF COMPONENT	QTY
57253	ADAPTOR,1-1/2"MNPTX1-1/2"BARB	1
56057	HOSE,2 1/4"DIAX17"L,1"WIDE CUFF	1
89324	CLAMP;HOSE,1-9/16" - 2-1/2"MAX X 1/2"	2
57234	1-1/2",ELBOW,STREET 1-1/2" NPT	1
57169	CLAMP;HOSE, 1.31 - 2.25 DIA.	1
54105	MANUAL, STS 15 & 30	1



## **54135 TANK ACCESSORY PACK; CAS™**

### *CONTENTS*

PART NO.	DESCRIPTION OF COMPONENT	QTY
57227	HOSE;1-1/2 DIA,PVC,BLACK	15 FT
57169	CLAMP;HOSE, 1.31 - 2.25 DIA.	5
57253	ADAPTOR,1-1/2"MNPTX1-1/2"BARB	4
57234	1-1/2",ELBOW,STREET 1-1/2" NPT	1
31453	BOLT;1/4-20 X 1-3/4",HEX HEAD,GRADE 5	4
30610	WASHER;FLAT:1/4",PLATED	12
30222	WASHER;LOCK:1/4",SPLIT,PLATED	4
30049	NUT;1/4-20,HEX,PLATED	4
A1028	WALL BRACKET, RUGHT SIDE, CAS TANK	1
A1029	WALL BRACKET, LEFT SIDE, CAS TANK	1
30124	BOLT; LAG, 1/4 X 2"	4

## ***ACCESSORIES/OPTIONS***

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<b>PART NO.</b>	<b>DESCRIPTION</b>
54400	Installation Kit, Dual System
54061	Washout Connector Washer
54360	Installation Guide, STS and CAS
56200	Vacuum Equalizer
57660	CleanStream Starter Kit
57640	CleanStream Vacuum Cleaner (32 Packets)

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- A/T 2000® XR
- VISTACAM OMNI®
- VISTACAM OMNI® ic4
- STSJ
- CASJ



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