

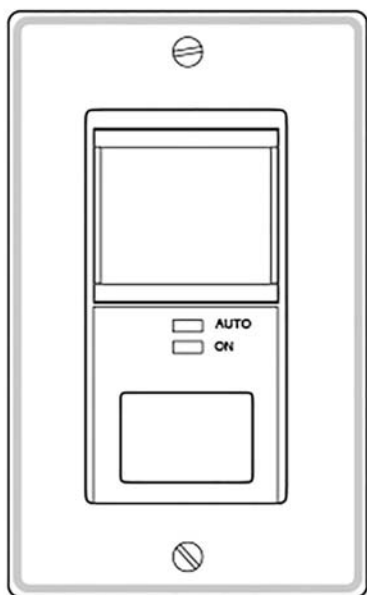
APPENDICES

Preamble

These appendices provide more technical information about a number of the electrical, mechanical, and plumbing fixtures of the hall. Portions of a number of the manufacturer's manuals are included to aid in understanding maintenance and operation of a number of items, but it is expected that professional service contractors will be contacted to carry out these tasks. The appendices and manuals herein simply help in the understanding of function and in the communication with professional service contractors who may ask for details prior to making a site visit.

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Appendix A. Operation of motion-Sensing light timers of washrooms



COOPER Wiring Devices 6109 **Motion Sensing Wall Switch**

The 6109 Motion Sensing Wall Switch detects motion to turn on lights for an adjustable amount of time. A built-in photo cell can be set to keep lights off when the lights aren't needed. The unit has excellent sensitivity and a wide 180° detection range. It can be used with incandescent lighting as well as rapid start fluorescent lighting. Two LEDs allow for easy mode identification. (Not for use with electronic ballasts)

Installation is as easy as replacing a wall switch. However, some codes require installation by a qualified electrician.

Features include:

- 180° motion detection angle
- Adjustable on-time from 12 sec. to 30 min.
- Adjustable photocell
- Works with incandescent and rapid start fluorescent lighting (Not for use with electronic ballasts)
- Works with motors up to 1/6 hp.
- Push button selectable ON AND AUTO modes.

Included are: • The sensor switch • Cover plate • 3 wire connectors • 2 large screws • 2 small screws.

INSTALLATION

WARNING: For indoor use only.

SELECT A LOCATION

NEW APPLICATION

Choose a location where the motion sensor has a clear view of the entire area where occupant motion may occur.

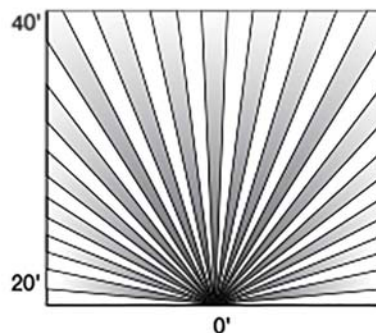
RETROFIT APPLICATION

Motion sensing switch will replace existing wall switch. Use only where the existing switch location provides a clear view of the occupied area.

GENERAL APPLICATION INFORMATION

The detector is more sensitive to motion across the front of the sensor than to motion towards the sensor.

The detector senses heat in motion and possible heat sources that change temperature quickly. Therefore, to avoid false triggering, avoid placing the sensor where it will be aimed at air conditioners, heaters, and other sources of heat or cold.



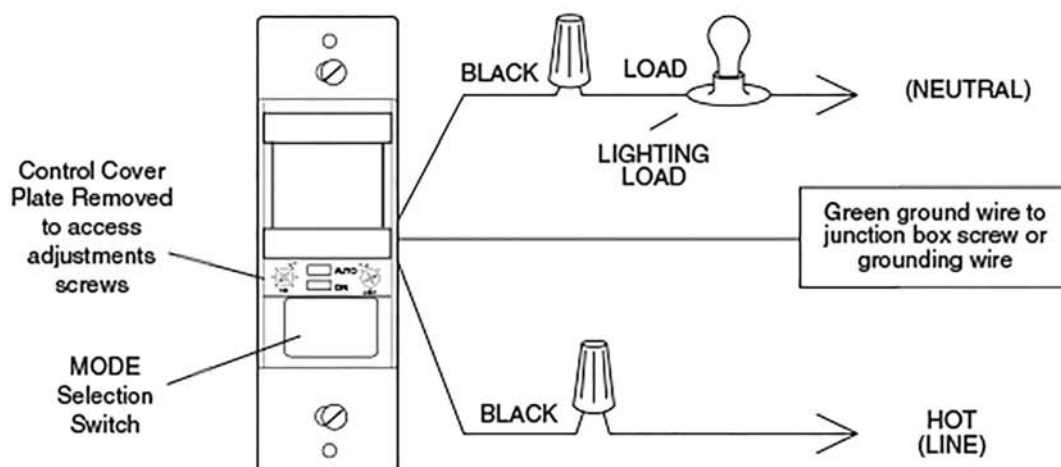
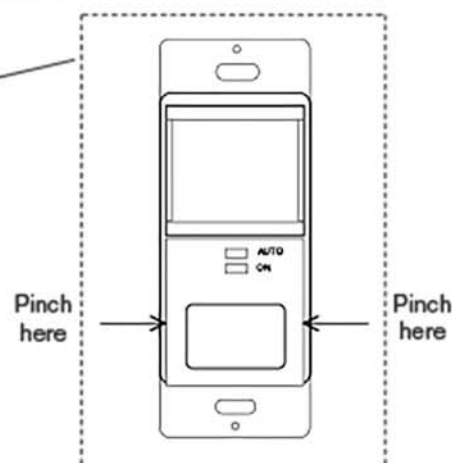
Typical Plan View of Coverage

469MX-PT

INSTALLING THE SWITCH

WARNING: Turn power off at the circuit breaker before wiring.

- Remove the decorative coverplate (secured by two decorative screws).
- Remove Control Cover (pinch the Control Cover at the indicated points and pull).
- Remove the existing switch (if this is a retrofit application).
- Connect the detector as shown in the diagram. Before installing the detector into the box, make sure there is no wire exposed at the connection.
- Do not connect to neutral wire or damage to unit will occur.



TYPICAL INSTALLATION

- Mount the detector into the wall box with the mounting screws.
- For test purposes, use a small screwdriver to turn the time control fully counter-clockwise and the light control fully clockwise. Turn the power back on at the circuit breaker.
- Press MODE selection push button until the AUTO LED is on. Lamp will be on for 12 seconds. Allow two minutes for the unit to warm up. If motion is detected, the lights will turn on. The lights will turn off 12 seconds after motion is no longer detected.

Questions? Call 1-866-853-4293 8:00 AM to 7:00 PM Eastern Time, weekdays

TIME

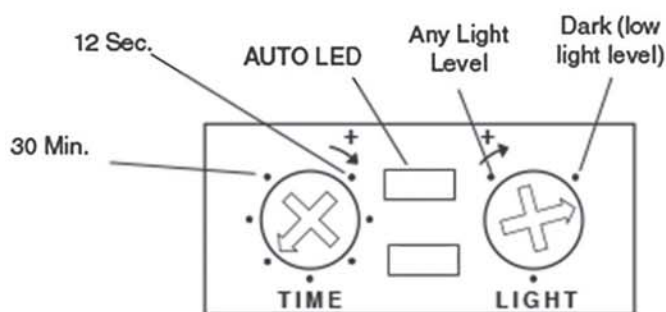
The length of time that the lights stay on is adjustable from 12 seconds to 30 minutes.

- Use a small screw driver to set the time by using the diagram below as a guide.

ADJUSTMENTS

LIGHT LEVEL

The sensor can be prevented from turning on lights when there is already enough light in the room. Use a small screw driver to set the light level using this diagram as a guide. In the fully clockwise position, the sensor turns on lights even in full daylight. In the fully counter-clockwise position, the sensor only turns on lights when the surrounding light level is very low.



Note:
Adjustment screws
found under (off-auto-
on) face plate.

To adjust the photocell:

- When the light in the room is at the level you want the lights to turn on, set the switch to the AUTO position.
- Put the TIME control to the 12 sec. (fully counter-clockwise) position.
- Put the LIGHT control to the minimum dark (fully counter-clockwise) position.
- Wait for the lights to turn off.
- Turn the LIGHT adjustment clockwise in very small steps and wait 2 seconds before moving your hand in front of the sensor. Repeat until the lights controlled by the sensor come on. The light will now come on when the light level is at or below the present level and motion is detected.

Complete Installation

- Replace control panel cover and install the decorative wall plate. In installations where the Cooper motion sensor switch is combined with other switches or outlets on an expanded box, a combination wall plate will need to be purchased. Various combination wall plates are available at Home Centers and Electrical Supply Stores.
- Press the push button a couple of times to make sure it operates freely.

USE

MODE Selection Switch

Pressing the pushbutton selects one of three modes of operation: ON, OFF, AUTO

ON: Lights stay on continuously. *The ON led is lit.*

OFF: Lights stay off. *The AUTO led and the ON led are not lit.*

AUTO: Lights come on for time set when motion is detected and the light level is below the set level.
The AUTO led is on and the ON led is off.

*When in the OFF mode, the circuit is still alive. Turn off circuit breaker before re-lamping.

TROUBLESHOOTING

If you have a problem with your Wall Switch, first follow this guide. If the problem persists, call the customer service hotline at 1-866-853-4293 between 8:00 AM and 7:00 PM ET weekdays.

SYMPTOM	POSSIBLE CAUSE
Light does not come on.	<ol style="list-style-type: none"> 1. Circuit breaker or fuse is turned off. 2. If the lamp being controlled has another switch, it may be turned off. 3. Bulb is defective. 4. LIGHT control is set too far toward the DARK position. 5. MODE switch is set to OFF instead of AUTO. 6. Incorrect wiring.
Lights do not stay on in the Auto mode.	<ol style="list-style-type: none"> 1. Motion has stopped in the room. 2. TIME control is set for too short a delay.

SYMPTOM	POSSIBLE CAUSE
Light does not turn off.	<ol style="list-style-type: none"> 1. Incorrect wiring. 2. MODE switch is set to ON instead of AUTO. 3. Motion is still present. 4. Delay set by TIME control has not expired.
Light comes on for no reason in the Auto mode.	<ol style="list-style-type: none"> 1. Heating or cooling objects (such as air vents, appliances, or drafts through the wall box) are causing false triggering. Switch on the sensor has been turned off and back on. There was a momentary power interruption. The light will turn off automatically when the "on" time expires.

SPECIFICATIONS

Electrical input.....120V, 60 Hz
 Fluorescent Load (not for electronic ballasts).....(2) 30 Watt minimum 400 Watt maximum Rapid Start
 Motor Load.....1/6 HP maximum
 Incandescent.....500W at 120V AC
 On-Time.....Adjustable approximately 12 sec. to 30 min.
 Photocell Sensor.....From dull daylight to less than 1 FC.
 Coverage.....up to 20 ft. at 180°, up to 40 ft. in front of the sensor
 Dimensions4.10 in. high, 1.7 in. wide and 2.00 in. deep

YOUR COOPER WIRING DEVICES ASSEMBLED PRODUCT TWO YEAR LIMITED WARRANTY

For a period of 2 years from the date of purchase, Cooper Wiring Devices will replace or repair the motion sensing switch provided that it has not been subject to abuse, improper installation or improper use, and is returned prepaid to Cooper Wiring Devices Quality Control Department at 203 Cooper Circle, Peachtree City, GA 30269. If the product has been discontinued, replacement will be made with the nearest available equivalent model. This warranty does not cover consumables (such as fuses). Proof of purchase in the form of a bill of sale or receipted invoice that shows that the item is within the applicable warranty period must be presented to obtain the repair or replacement provided by the warranty. *Repair or replacement as provided under this warranty is the exclusive remedy of the customer. Cooper Wiring Devices shall not be liable for any incidental or consequential damages for breach of any express or implied warranty on any of its products. Except to the extent limited or prohibited by applicable law, any implied warranty of merchantability or fitness for a particular purpose on this product is limited in duration to the duration of this warranty.* Some states do not allow the exclusion or limitation of incidental or consequential damages, or allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

Resetting the combination

1. Open the lock box.
2. Remove the plastic card from the back of the lid by lifting from the center of the edges.
3. You will see ten numbered gray buttons with arrows. Turn the lid in your hand so the back is facing you and the number “1” is in the upper left corner of the lid. (These numbers correspond to the numbered buttons on the front of the lid.)
4. All the arrows on the screws point to the left because there is no preset combination. Arrows pointing to the left are not part of combination.
5. Use the screwdriver tip on the plastic card or a small screwdriver to push and rotate the arrows. For each number in your combination, apply light pressure and rotate a half turn so that the arrow points to the right and snaps up. Arrows rotated a half turn to the right are part of your combination.
6. Check to make sure that the arrow of any number that is not in the combination is pointing LEFT. CAUTION: Arrows must point either to the left or to the right. An arrow pointing to the left is not a number in the combination. An arrow pointing to the right is a number in the combination. If any arrow is pointing up, down or has not snapped up, the combination will not work. Test the combination before putting the lid on the box. Test before putting the lid on the key box.
7. Replace the plastic card on the back of the lid.



FA-1025T

Fire Alarm Control Panel



Installation and Operation Manual

LT-493 Rev. 7.1
September 2012

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Introduction

The FA-1025T is a supervised five-zone 24VDC Fire Alarm Control Panel. The panel is ULC listed and meets all performance and operational requirements of ULC. The FA-1025T provides the following features:

- Five Class B detection zones
- Two Class B signal zone, 1.25A
- DIP switch selectable signal circuit outputs such as Temporal or Steady
- Alarm and trouble relay contacts
- Remote trouble and AC On indication
- Remote supervised alarm annunciation
- Individual zone silence/disconnect switch
- Buzzer silence switch
- Subsequent alarm operation
- LED indicators for zone alarm and trouble, A.C. On, Battery Fault, Ground Fault, Common Trouble, Signal Trouble and Signal Silenced

Mechanical Installation

The panel can be surface or flush mounted. Refer to Figure 1 on page 5 for dimensions.

Surface Mounting

1. Mark the location of the four mounting holes.
2. Install the top two screws into the wall and place the panel over the screws.
3. Install the bottom screws and tighten down all four screws.

Flush Mounting

1. Make the wall cut-out according to the panel dimensions.
2. Remove the control panel door.
3. Mount the flush mounting trim (model FA-102TR) to the back box using the screws and nuts provided with the flush mounting kit.
4. Re-install the door on top of the flush trim. The cam lock may require a minor adjustment in order to compensate for the flush trim.

Function Selection

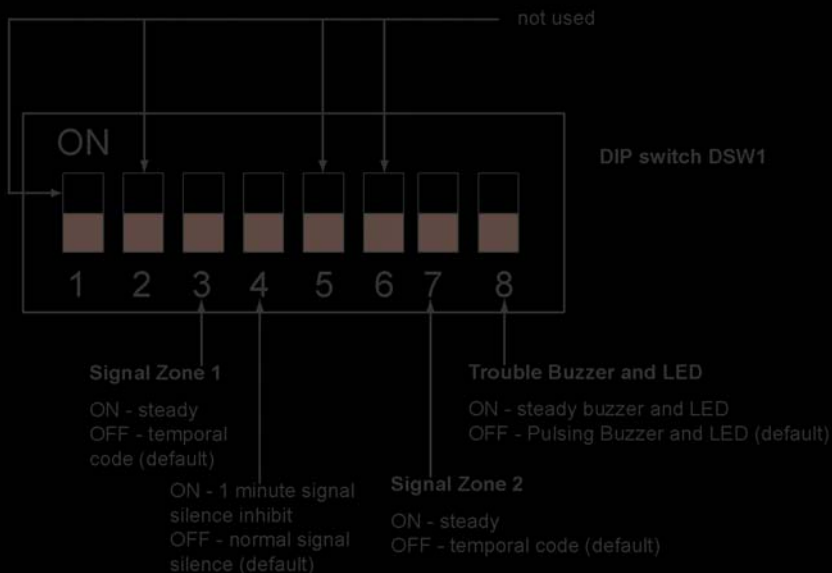
The following jumpers are available for function selection. Refer to Figure 2 on page 6 for location.

- **JW1:** Cut for resettable +24V DC supply.
- **JW2:** Cut to make auxiliary relay disconnectable.
- **JW3:** Cut for normally open trouble contacts.
- **JW4:** Cut for normally closed trouble contacts.
- **JW5:** Cut for non-latching alarm zone 4.
- **JW6:** Cut for non-latching alarm zone 5.

Wiring

- **JW7:** Cut to enable supervision of remote annunciation alarm zone indicators.

DIP switch DSW1 is used to set the preferred signal zone outputs, the signal silence inhibit, and the common trouble flash rate.



- **Temporal Code:** 3 rounds of 0.5 second ON, 0.5 second OFF, then 1.5 second pause.
- **Steady:** Signal on continuously.



Note: Any time the DIP switches in DSW1 are positioned (ON or OFF), the panel must be reset by holding the Reset button for 5 seconds.

Wiring

Detection Zones

The system has five detection zones. Refer to Figure 3 on page 7 for wiring instruction and to Figure 4 on page 8 for wire size.

Signal Zone

There are two signal zones available for bells and horns providing 1.25A of signal power. Refer to Figure 3 on page 7 for wiring instruction and to Figure 5 page 8 on for wire size.

Alarm and Trouble Relays

Alarm and trouble relay contacts are provided. Refer to Figure 6 on page 9 for contact location and designation.

Remote Annunciation

Annunciation outputs are provided for alarm, remote trouble indicator and buzzer. Cut JW7 to enable lamp supervision for the remote annunciator alarm zones. Refer to Figure 6 on page 9 for wiring instruction.

A.C. Power and Batteries

The A.C. power is connected to the terminal block above the transformer.

Use Gel Cell or Sealed Lead-Acid type of batteries only. Connect the batteries after power up. Use 24V 4AH batteries for 24 hours standby and 5 or 30 minutes of alarm. For greater accuracy, use the battery calculations chart located in *Appendix B* on page 14.

ELECTRICAL RATING: 120V, 60Hz, 1A / 240V, 50Hz, 0.5A

Trouble Indicators and Controls

Refer to Figure 2 on page 6 for the location of indicators and controls.

Common Trouble LED

The yellow Common Trouble LED will flash and the buzzer will sound for any trouble in the panel (unless DSW1-8 is ON, then the common trouble LED will illuminate steadily and the buzzer will sound).

Buzzer/Buzzer Silence Switch

The buzzer will sound intermittently for any trouble. The buzzer will sound steadily for any alarm in the system. Operating the Buzzer Silence switch will silence the buzzer. Any subsequent alarm will resound the buzzer. Turning the Buzzer Silence switch OFF normal will sound the buzzer steadily.

Zone Trouble LED

The yellow Zone Trouble LED will illuminate steadily for an open loop in the zone wiring. Refer to Figure 2 on page 6 for the location of indicators and control.

Battery Fault LED

Battery removal, low voltage and open battery leads will turn on the yellow Battery Fault LED and the Common Trouble LED.

Ground Fault LED

Any ground fault of 10K ohms or less will turn on the yellow Ground Fault LED steadily, flashing the Common Trouble LED and sounding the common trouble buzzer intermittently.

Remote Lamp Fail LED

Any open on the supervised remote annunciator wiring will illuminate the yellow Remote Lamp Fail LED steadily, flash the Common Trouble LED and the Common Trouble buzzer will sound intermittently.

Signal Trouble LED

The yellow Signal Trouble LED will illuminate steadily for any open or short. (The LED is located behind the display plate.)

Sequence of Operation

Refer to Figure 2 on page 6 for the location of indicators and controls.

Normal

All indicators are normally OFF except for the green A.C. On LED.

Alarm

A red zone alarm LED will illuminate steadily for incoming alarm.

Signal silence

If the 60 second signal silence inhibit is selected, the signal cannot be silenced for 60 seconds after an alarm initiation. Once the 60 seconds have expired, pushing the signal silence switch to the right will silence all the bells and horns. Once the signal has been silenced, the signal silenced LED will illuminate. If the switch is in the OFF normal position to the right while there is no alarm condition, the panel will indicate trouble.

Reset/Lamp Test

Operating the reset switch will restore all latched functions in the panel. The smoke detectors will reset if all products of combustion are cleared from their chambers. Holding the reset switch for five seconds will cause the panel to preform a lamp test as well as reset the panel.

System Checkout

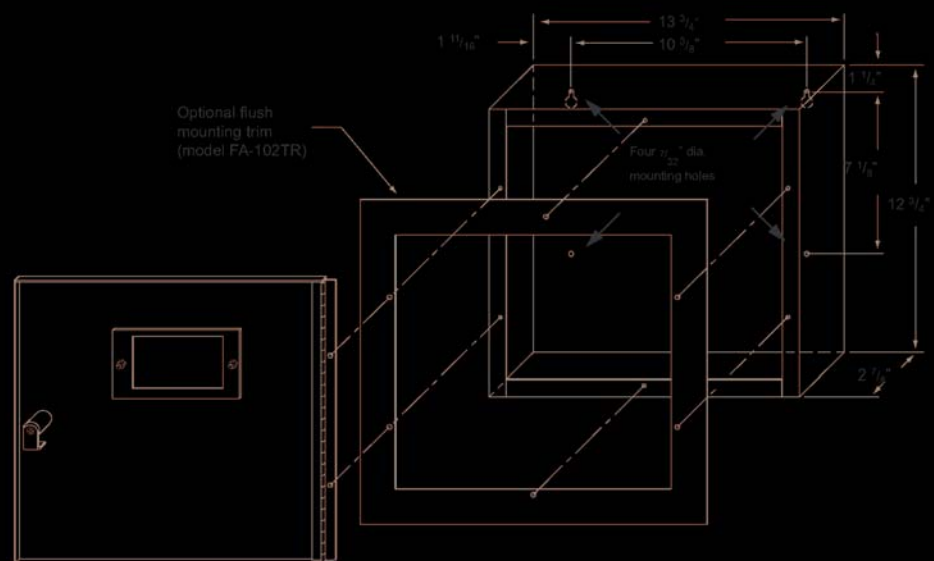
Before turning the power on,

1. Check all external wiring for opens, shorts or grounds.
2. Check that transformer cables are securely connected.
3. Check the A.C. power wiring for proper connection. To prevent sparking, *do not* connect batteries.
4. Check that all switches are in the normal position to the left.

Power up and Troubleshooting

1. After completing all of the system checkout procedures, power up the panel. The A.C. On LED should illuminate. The trouble buzzer should sound intermittently, and the Common Trouble LED should flash, indicating battery fault.
2. Connect the batteries carefully, observing the correct polarity. The Common Trouble LED should extinguish. If the Common Trouble LED stays on, check the front panel for the illumination of the following LEDs:
 - **Battery LED** indicates that the battery voltage may be too low (below 20.4V).
 - **Ground Fault LED** indicates a ground on one or more of the extended wires.
 - **Zone Trouble LED** indicates an open loop or a signal silence switch is in the OFF normal position to the right.
 - **Signal Trouble LED** indicates an open loop or short in the signal zone.

Figure 1: Backbox and flush trim mounting details



9 **Figure 2: Circuit Board Layout**

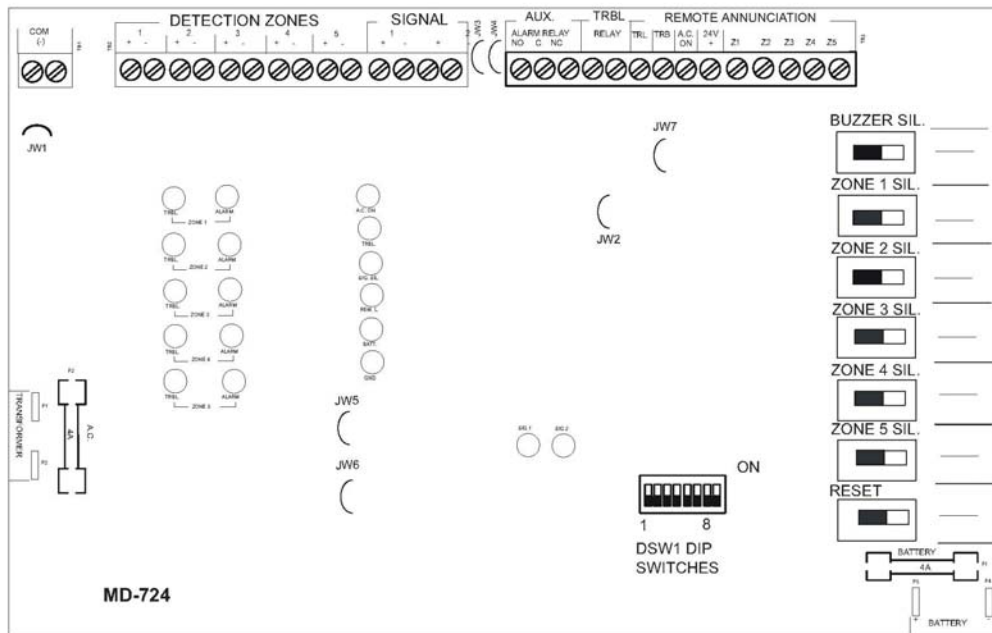
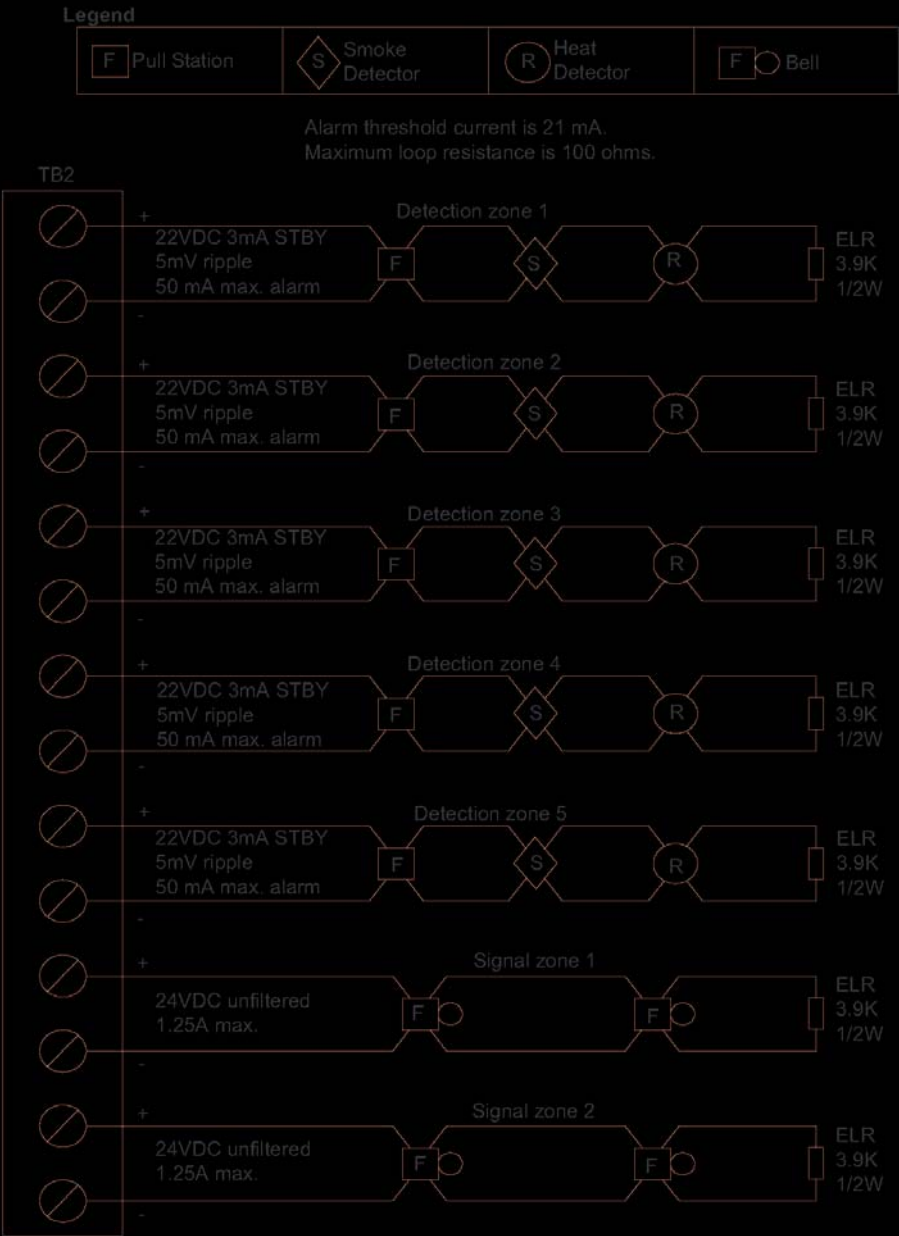


Figure 3: Detection and signal wiring



Wiring Tables and Information

Figure 4: Wiring table for detection zone

Wire Gauge (AWG)	Maximum Wiring Run to Last Device (ELR)	
	ft.	m
22	2990	910
20	4760	1450
18	7560	2300
16	12000	3600
14	19000	5800
12	30400	9200



Note: Maximum loop resistance should not exceed 100 ohms.

Figure 5: Wiring table for bells and horns

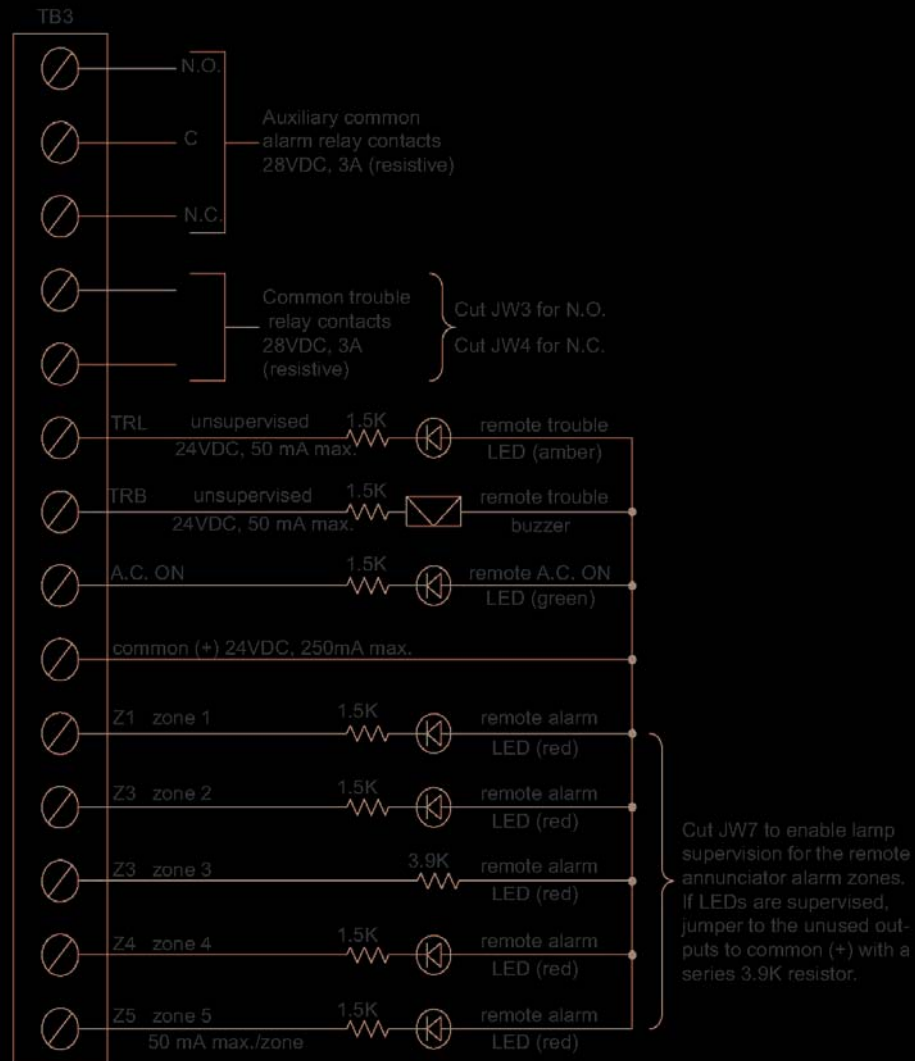
Signal circuits are rated for 1.25 amperes each.

Total Signal Load	Maximum Wiring Run to Last Device (ELR)								Max Loop Resistance
	18AWG		16AWG		14AWG		12AWG		
Amperes	ft.	m	ft.	m	ft.	m	ft.	m	Ohms
0.06	2350	716	3750	1143	6000	1829	8500	2591	30
0.12	1180	360	1850	567	3000	915	4250	1296	15
0.30	470	143	750	229	1200	366	1900	579	6
0.60	235	71	375	114	600	183	850	259	3
0.90	156	47	250	76	400	122	570	174	2
1.20	118	36	185	56	300	91	425	129	1.5
1.50	94	29	150	46	240	73	343	105	1.2
1.7	78	24	125	38	200	61	285	87	1.0



Note: Maximum voltage drop should not exceed 1.8 volts.

Figure 6: Alarm and trouble relay contacts and remote annunciation wiring instructions



Appendix A: Compatible Devices

Underwriter's Laboratories Canada (ULC) Canadian 2-Wire Smoke Detector Control Panel


Notes:

- Reset time, hold for five seconds minimum.
- Whether mixing different models of compatible smoke detectors, or using the same model on the same Circuit, total standby current of all detectors must not exceed 3 mA.

Make Model / Base	Make Model / Base	Make Model / Base
Mircom	Cerebrus Pyrotronics	Fenwal
MIR-525	D1-2	PSD-7131/70-201000-001
MIR-525T	D1-3/DB-3S	PSD-7131/70-201000-002
System Sensor		PSD-7131/70-201000-003
1400-A		PSD-7131/70-201000-005
2400-A	Mirtone	PSD-7130/70-201000-001
1451-A/B401B	73471	PSD-7130/70-201000-002
1451-A/B406B	73494	PSD-7130/70-201000-003
2451-A/B401B	73575	PSD-7130/70-201000-005
2451-A/B406B	73495/73486	PSD-7128/70-201000-001
1451DH/DH400A	73495/73487	PSD-7126/70-201000-002
2451-A/DH400A	73595/73486	PSD-7126/70-201000-003
C2W-BA	73595/73497	PSD-7126/70-201000-005
C2WT-BA	73594/73400	PSD-7129/70-201000-000
Edwards	73405/73400	PSD-7125/70-201000-001
6249C	73594/73401	PSD-7126/70-201000-002
6250C	73405/73401	PSD-7125/70-201000-003
6264C		PSD-7125/70-201000-005
6266C	Simplex	CPD-7021/70-201000-001
6269C	2098-9110	CPD-7021/70-201000-002
6270C		CPD-7021/70-201000-003
6269C-003		CPD-7021/70-201000-005
6270C-003		

Underwriter's Labs Inc. (ULI) United States 2-Wire Smoke Detector Control Panel Compatibility



Notes:

- Reset time, hold for five seconds minimum.
- Whether mixing different models of compatible smoke detectors, or using the same model on the same circuit, total standby current of all detectors must not exceed 3 mA.
- The below-listed smoke detectors are compatible with initiating circuits having Compatibility Identifier "A".

Smoke Detector Make Model / Base	Compatibility Identifier Head / Base	Rated Standby Current	Smoke Detector Make Model / Base	Compatibility Identifier Head / Base	Rated Standby Current
System Sensor			Sentrol - ESL		
1100	A - N/A	0.12 mA	429C	S10A - N/A	0.10 mA
1151/ B110LP	A - A	0.12 mA	429CT	S10A - N/A	0.10 mA
1151/ B116LP	A - A	0.12 mA	429CST	S11A - N/A	0.10 mA
1400	A - N/A	0.10 mA	429CRT	S11A - N/A	0.10 mA
1451/B401	A - A	0.12 mA	711U/701E, 701U, 702E, 702U	S10A - S00	0.10 mA
1451/ B401B	A - A	0.12 mA	712U / 701E, 701U, 702E, 702U	S10A - S00	0.10 mA
1451/ B406B	A - A	0.12 mA	713-5U / 701E, 701U, 702E, 702U	S10A - S00	0.10 mA
1451DH/ DH400	A - A	0.12 mA	713-6U / 701E, 701U, 702E, 702U	S10A - S00	0.10 mA
2100	A - N/A	0.12 mA	721U / 702E, 702U	S10A - S00	0.10 mA
2100T	A - N/A	0.12 mA	721UT / 702E, 702U	S10A - S00	0.10 mA
2151/ B110LP	A - A	0.12 mA	722U / 702E, 702U	S10A - S00	0.10 mA
2151/ B116LP	A - A	0.12 mA	731U / 702E, 702U, 702RE, 702RU	S11A - S00	0.10 mA

Appendix A: Compatible Devices

Smoke Detector Make Model / Base	Compatibility Identifier Head / Base	Rated Standby Current	Smoke Detector Make Model / Base	Compatibility Identifier Head / Base	Rated Standby Current
System Sensor			Sentrol - ESL		
2400	A - N/A	0.12 mA	732U / 702E, 702U, 702RE, 702RU	S11A - S00	0.10 mA
2400TH	A - N/A	0.12 mA			
2400AT	A - N/A	0.12 mA	Detection Systems Inc.		
2400AIT	A - N/A	0.12 mA	DS250	B - N/A	0.10 mA
2451 / B401B	A - A	0.12 mA	DS250TH	B - N/A	0.10 mA
2451 / B406B	A - A	0.12 mA	DS282	B - N/A	0.10 mA
2451 / DH400	A - N/A	0.12 mA	DS282TH	B - N/A	0.10 mA
2451TH / B401B	A - A	0.12 mA			
2451TH / B406B	A - A	0.12 mA			
2451 / B401	A - A	0.12 mA			
2451TH / B401	A - A	0.12 mA			
4451HT / B401B	A - A	0.12 mA			
4451HT / B406B	A - A	0.12 mA	Mircom		
4451HT / B401	A - A	0.12 mA	MIR-525U	FDT-1	0.10 mA
5451 / B401B	A - A	0.12 mA	MIR-525TU	FDT-1	0.10 mA
5451 / B401	A - A	0.12 mA			
5451 / B406B	A - A	0.12 mA			

(Continued from previous page)

Underwriter's Labs Inc. (ULI) United States Signaling Device Control Panel Compatibility

System Sensor - SpectrAlert				
P2415	P2415W	P241575	P241575W	P2475
P2475W	P24110	P24110W	S2415	S2415W
S241575	S241575W	S2475	S2475W	S24110
S24110W	H12/24	H12/24W	MDL	MDLW
Wheelock				
AS-2415W-24-FR	AS-241575W-FR	AS-2430W-FR	AS-2475W-FR	AS-24110W-FR
AS-2415C-FW	AS-2430C-FW	AS-2475C-FW	AS-24100C-FW	AH-24-R
AH-24-WP-R	NS-2415W-FR	NS-241575W-FR	NS-2430W-FR	NS-2475W-FR
NS-24110W-FR	NS4-2415W-FR	NS4-241575W-FR	NS4-2430W-FR	NS4-2475W-FR
NS4-24110W-FR	RS-2415W-FR	RSS-241575W-FR	RSS-2415W-FR	RSS-241575W-FR
RSS-2430W-FR	RSS-2475W-FR	RSS-24110W-FR	RSS-2415C-FW	RSS-2430C-FW
RSS-2475C-FW	RSS-24100C-FW	MT-12/24-ULC	MT-24-LS-VFR-ULC	MT-24-WS-VFR-ULC
AMT-12/24-R-ULC	AMT-24-LS-VFR-ULC	MB-G6-24-R	MB-G10-24-R	SM-12/24-R
DSM-12/24-R				
Gentex				
AVP-4-15-1	AVP-4-15/75	AVP-4-30/75	AVP-4-110-1	GXS-4-15-1
GXS-4-15/75-W	GXS-4-30/75-W	GXS-4-15/75-C	GXS-4-110-1	GX90S-4-15-1
GX90S-4-15/75-W	GX90S-4-30/75W	GX90S-4-15/75-C	GX90S-4-110-1	SHG24-15-1
SHG15/75-W	SHG24-30/75-W	SHG24-15/75-C	SHG24-110-1	GOT24
GOS24-15-1	GOS24-15/75	GOS24-15/75	GOS24-30/75	GOS24-110-1
GMH-24	GMS-24-15-1	GMS-24-15/75-W	GMS-24-30/75-W	GMS-24-15/75-C
GMS-24-110-1	WGMS-4/75			
Mircom				
FH-240R	FH-240W	FHS-240R	FHS-240R/110	FHS-240W
FHS-240W/110	FS-240R	FS-240R/110	FS-240W	FS-240W/110
SDM-240				

Appendix B: Battery Calculations (Selection Guide)

Use the form below to determine the required batteries.

IMPORTANT NOTICE							
The main AC branch circuit connection for the Fire Alarm Control Unit must provide a dedicated continuous power without provision of any disconnect devices. Use #12 AWG wire with 600-volt insulation and proper over-current circuit protection that complies with the local codes.							
Power Requirements (All currents are in amperes)							
Model Number	Description	Qty		Standby	Total Standby	Alarm	Total Alarm
FA-1025T	Fire Alarm, 5 Det, 2 Sig		X	0.114	=	0.200	=
RA-105	Annunciator, 5 Circuits		X	0.016	=	0.032	=
RTI-1	Remote Trouble Indicator		X	0.035	=	0.035	=
2-Wire Smoke Detectors			X	* 0.0001	=	* 0.090	= 0.090
4-Wire Smoke Detectors			X		=		=
Signal Load (bells, horns, strobes, and etc.)							=
Total currents (Add above currents)				Standby	(A)		(B)

Total Current Requirement

ALARM (B) _____ Amps.

Battery Capacity Requirement

$\{[\text{STANDBY (A)}] \times [(24 \text{ or } 60 \text{ Hours})]\} + \{[\text{ALARM (B)}] \times [^* \text{Alarm in Hr.}]\} = (\text{C}) \text{ _____ AH}$

Battery Selection

Multiply (C) by 1.20 to derate battery.



Note: Batteries BA-104 (4.0AH) and BA-1065(6.5AH) fit into the backboxes; all larger batteries such as BA-110(10AH) and the BA-117(17AH) require an external battery box.

* Assuming three initiating circuits in alarm.

* Use 0.084 for five minutes of alarm or 0.5 for thirty minutes of alarm as a multiplier figure.

* Using the MIR-525U 2-wire smoke detector. See Appendix A, for other available smoke detectors.



T8602D Chronotherm® IV Programmable Thermostats

INSTALLATION INSTRUCTIONS

APPLICATION

The T8602 Chronotherm® IV Programmable Thermostat provides electronic control of 24 Vac single-stage heating and cooling systems or 750 mV heating and 750 mV

cooling. Refer to Table 1 for a general description of the thermostat. All T8602 Thermostats are powered by batteries.

Table 1. Description of T8602 Thermostats.

T8602	System	Changeover	System Selection	Fan Selection	Comments
D	Heat-Cool	Manual or Automatic Selectable	Heat-Off-Cool or Heat-Off-Cool-Auto	On-Auto	System and fan selections are done by keyboard.



MERCURY NOTICE

If this control is replacing a control that contains mercury in a sealed tube, do not place your old control in the trash. Dispose of properly.

Contact your local waste management authority for instructions regarding recycling and the proper disposal of the old control.

Do not install the thermostat where it can be affected by:

- drafts, or dead spots behind doors and in corners.
- hot or cold air from ducts.
- radiant heat from sun or appliances.
- concealed pipes and chimneys.
- unheated (uncooled) areas such as an outside wall behind the thermostat.

Wallplate Installation

The thermostat can be mounted horizontally on the wall or on a 50.8 mm x 101.6 mm (2 in. x 4 in.) wiring box. Position wallplate horizontally on the wall or on a 50.8 mm x 101.6 mm (2 in. x 4 in.) wiring box.

INSTALLATION

When Installing this Product...

1. Read these instructions carefully. Failure to follow the instructions can damage the product or cause a hazardous condition.
2. Check the ratings given in the instructions and on the product to make sure the product is suitable for your application.
3. Installer must be a trained, experienced service technician.
4. After completing installation, use these instructions to check out the product operation.

Location

Install the thermostat about 1.5m (5 ft) above the floor in an area with good air circulation at average temperature. See Fig. 1.

1. Position and level the wallplate (for appearance only). The thermostat will function properly even when not level.
2. Use a pencil to mark the mounting holes. See Fig. 2.
3. Remove the wallplate from the wall and drill two 4.76 mm (3/16 in.) holes in the wall (if drywall) as marked. For firmer material such as plaster, drill two 5.56 mm (7/32 in.) holes. Gently tap anchors (provided) into the drilled holes until flush with the wall.
4. Position the wallplate over the holes, pulling wires through the wiring opening.
5. Loosely insert the mounting screws into the holes.
6. Tighten mounting screws.

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69-1510-4

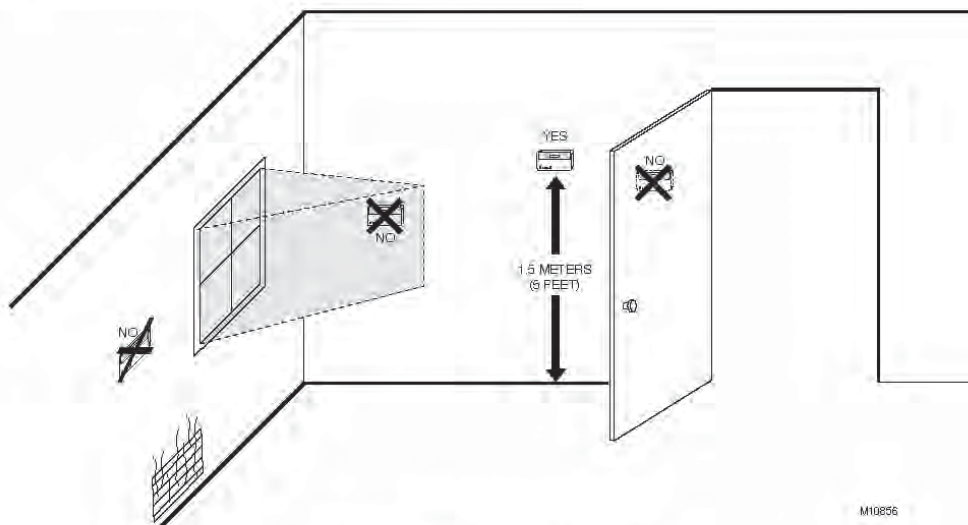


Fig. 1. Typical location of thermostat.

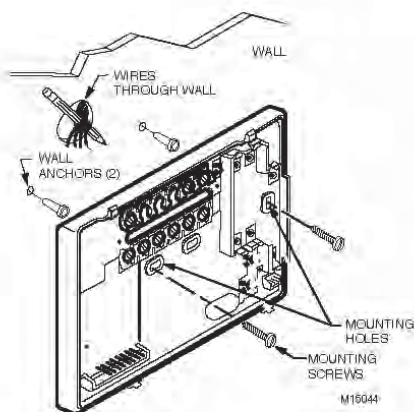


Fig. 2. Mounting the wallplate.

WIRING

All wiring must comply with local electrical codes and ordinances. Refer to Fig. 3 through 6 for typical hookups. A letter code is located near each terminal for identification.



CAUTION

Electrical Hazard.
Can cause electrical shock or equipment damage.
Disconnect power before wiring.

1. Loosen the terminal screws on the wallplate and connect the system wires. See Fig. 7.

IMPORTANT

Use 18 gauge, color-coded thermostat cable for proper wiring.

2. Securely tighten each terminal screw.
3. Push excess wire back into the hole.
4. Plug the hole with nonflammable insulation to prevent drafts from affecting the thermostat.

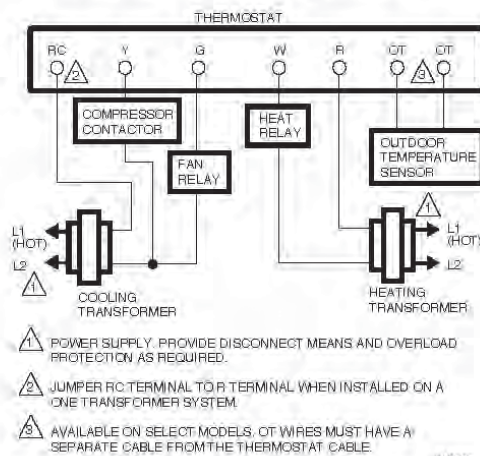


Fig. 3. Typical hookup in heat and cool system with two transformers.

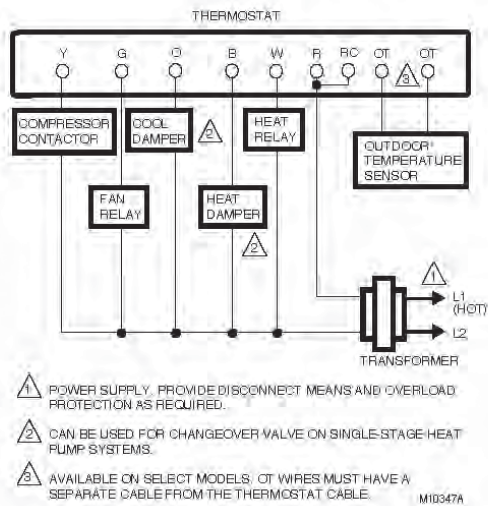


Fig. 4. Typical hookup in heat and cool system with one transformer.

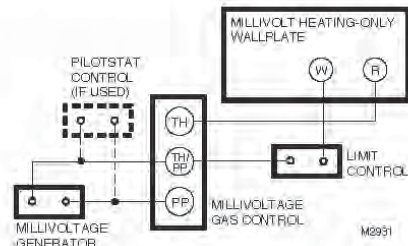


Fig. 5. Typical hookup in millivoltage heating circuit.

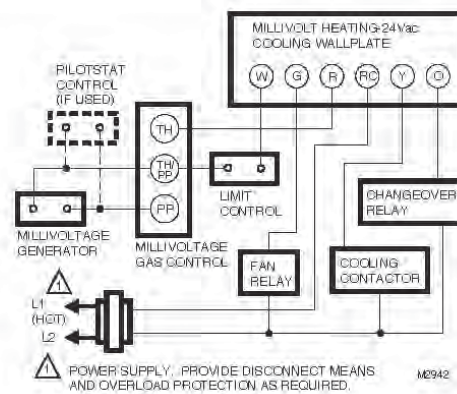


Fig. 6. Typical hookup in millivoltage heating and 24 Vac cooling circuit.

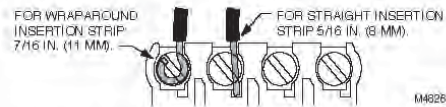


Fig. 7. Correct wiring technique.

Mounting Thermostat

- Engage tabs at the top of the thermostat and wallplate. See Fig. 7.
- Press lower edge of case to close and latch.

NOTE: To remove the thermostat from the wall, first pull out at the bottom of the thermostat; remove top last.

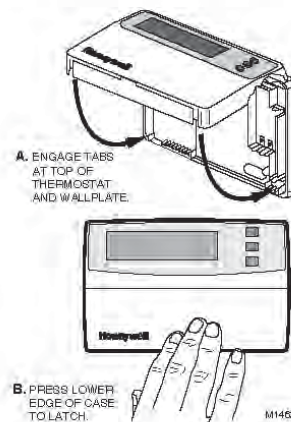


Fig. 8. Mounting thermostat on wallplate.

Using Thermostat Keys

The thermostat keys are used to:

- set current day and time,
- program times and setpoints for heating and cooling,
- temporarily override program temperatures,
- display present setting,
- configure Installer Setup,

- check Self-Test,
- display outdoor temperature (select models),
- set the system operation,
- set the fan operation.

See Fig. 9 for the location of the keys.

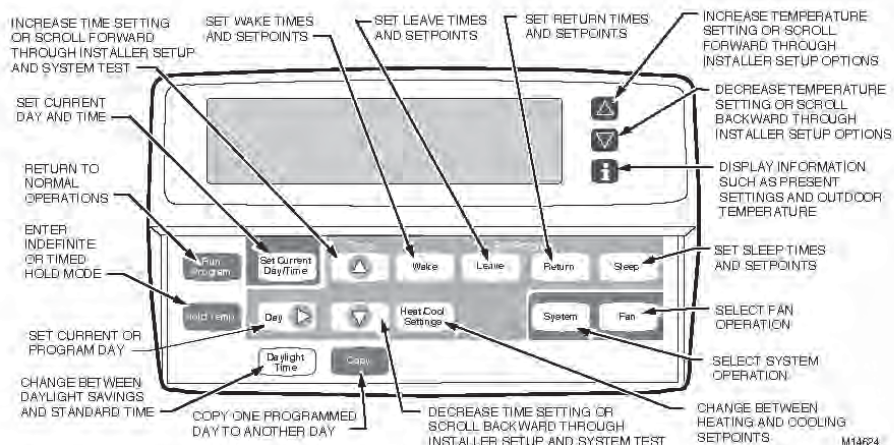


Fig. 9. T8602D key locations and descriptions.

SETTINGS

System and Fan Settings

The System default setting is Heat and the Fan default setting is Auto. Use the System and Fan keys to change the settings. See Fig. 10. The fan settings can be set for each program period individually. The system selection is for all the program periods.

System settings control the thermostat operation as follows:

- Heat: The thermostat controls the heating.
- Off: Both the heating and cooling are off.
- Cool: The thermostat controls the cooling.
- Auto: The thermostat automatically changes between heating and cooling operation, depending on the indoor temperature.

Fan settings control the system fan as follows:

- On: Fan operates continuously.
- Auto: Fan operates with equipment.

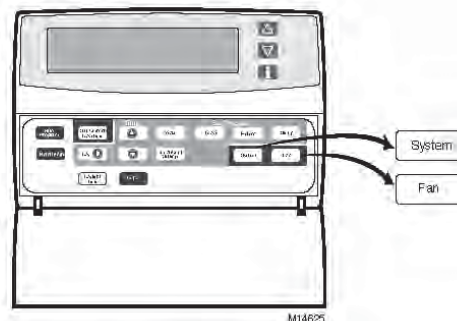


Fig. 10. Thermostat System and Fan key locations.

NOTE: Always press the keys with your fingertip or similar blunt tool. Sharp instruments like a pen or pencil point can damage the keyboard.

Temperature Settings

Refer to Table 2 for the default program settings. If the daytime energy savings period is not used, press the period key (Leave or Return) until the time is blank. The fan setting feature is available on select thermostat models. See Owner's Guide, form 69-0940, for complete instructions on changing the program.

Table 2. Default Program Settings.

Period	Time	Heat Setpoint	Cool Setpoint	Fan Setting
Wake	6:45 AM	20°C	25°C	Auto
Leave	8:45 AM	4.5°C	37°C	Auto
Return	5:00 PM	20°C	25°C	Auto
Sleep	10:00 PM	4.5°C	37°C	Auto

INSTALLER SETUP

NOTE: For most applications, the thermostat factory-settings do not require changing. Review the factory settings in Table 2 and, if no changes are necessary, go to Installer Self-Test section.

The Installer Setup is used to customize the thermostat to specific systems. Some of the options include temperature display, system changeover and outdoor temperature display. Installer Setup numbers are listed in Table 3. The table includes all the configuration options and the factory-settings for the T8602.

A combination of key presses is required to use the Installer Setup feature.

- To enter the installer setup, press and hold the information **i** key with the increase **▲** and decrease **▼** keys until the first number is displayed. All display segments appear for approximately three seconds before the number is displayed. See Fig. 11 and 12.
- To advance to the next Installer Setup, press the Time **Δ** key.
- To change a setting, use the increase **▲** or decrease **▼** key.
- To scroll the Installer Setup numbers backward, press the Time **▽** key.
- To exit the Installer Setup, press Run Program.



Fig. 11. Display of all LCD segments.

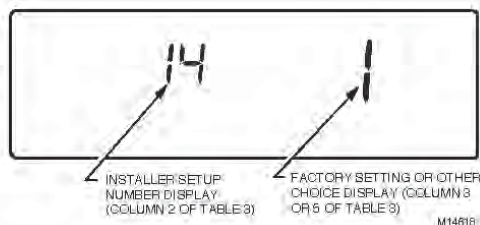


Fig. 12. Display of Installer Setup number and setting.



CAUTION

Electric Heat Configuration Hazard.
Can cause equipment damage.

Configure electric heat system to 1 in Installer Setup number 2 to prevent system running without fan.

IMPORTANT

Only configured numbers are shown on the device. Example: If thermostat does not have a System key, Installer Setup Number 12 will not be displayed. Review Table 3 factory settings and mark any desired changes in the Actual Setting column. When Installer Setup is complete, review the settings to confirm that they match the system.

Table 3. Thermostat Installer Setup Options.

Select	Installer Setup Number (Press Time Δ key to change)	Factory Setting		Other Choices (Press ▲ or ▼ key to change)		Actual Setting
		Display	Description	Display	Description	
Not Used.	1	—	—	—	—	—
Fan operation.	2 (Number 2 must be set to 1 to extend fan operation.)	0	Conventional applications where equipment controls fan operation in heat mode.	1	Heat pump or electric heat applications where thermostat controls fan operation in heat mode.	
Not Used.	3	—	—	—	—	—
Heating cycle rate.	4	6	6—6 cph used for conventional heat.	1, 3, or 9	1—1 cph used for radiant floor heat, gravity system. 3—3 cph used for hot water systems or high efficiency furnaces. 9—9 cph used for electric heat systems.	
Not Used.	5 thru 11	—	—	—	—	—
System setting adjustment	12	1	Manual changeover	0 or 2	0—Auto changeover 2—Auto only	
Adaptive Intelligent Recovery™ control.	13	1	Conventional recovery (system starts recovery at programmed time).		Adaptive Intelligent Recovery™ control is activated (system starts early so setpoint is reached by start of program period).	—
Not Used.	14 thru 15	—	—	—	—	—
Clock format.	16	0	12-hour clock format.	1	24-hour clock format.	
Not Used.	17 thru 23	—	—	—	—	—
Outdoor temperature display (select models).	24	0	No outdoor temperature is displayed.	1	Outdoor temperature is displayed. Needs a C7089B1000 Outdoor Temperature Sensor to operate.	
Not Used.	25 thru 32	—	—	—	—	—
Minimum off time for the compressor.	33	5	5 minute minimum offtime for the compressor.	0 thru 4	Minimum number of minutes (0 thru 5) the compressor will be off between calls for the compressor.	
Temperature range stops in heating.	34	32.0	Highest setting for heating setpoint.	4.5 to 31.5	Temperature range (0.5°C increments) of heating setpoint settings.	
Temperature range stops in cooling.	35	7.0	Lowest setting for cooling setpoint.	7.5 to 37.0	Temperature range (0.5°C increments) of cooling setpoint settings.	
Not Used.	36	—	—	—	—	—

Table 3. Thermostat Installer Setup Options. (Continued)

Select	Installer Setup Number (Press Time Δ key to change)	Factory Setting		Other Choices (Press \blacktriangle or \blacktriangledown key to change)		Actual Setting
		Display	Description	Display	Description	
Temperature display adjustment.	37	0	No difference in displayed temperature and actual room temperature.	1.5 thru -1.5	.5—Display adjusts to 0.5° C higher than actual room temperature. 1.0—Display adjusts to 1.0° C higher than actual room temperature. 1.5—Display adjusts to 1.5° C higher than actual room temperature. -.5—Display adjusts to -.5° C lower than actual room temperature. -1.0—Display adjusts to -1.0° C lower than actual room temperature. -1.5—Display adjusts to -1.5° C lower than actual room temperature.	
Furnace Air Filter Timer.	43	0	Off	1, 2, 3, 4	1 – 10 days 2 – 30 days 3 – 60 days 4 – 120 days (Time counted when heat, cool or fan is running.)	
Humidifier Pad Monitor.	44	0	Off	1, 2, 3	1 – 90 days 2 – 180 days 3 – 365 days (Time counted by calendar days in heat mode.)	
Ultraviolet (UV) Air Treatment System Lamp Monitor.	45	0	Off	1	1 – 365 days (Times counted by calendar days in any mode.)	

IMPORTANT

Review the settings to confirm that they match the system. Press Run Program to exit the Installer Setup. The thermostat has saved the Installer Setup changes and initiated a reset in order to operate using the new settings. Be sure to set the current day and time immediately.

Setting Current Day and Time

1. Press Set Current Day/Time.

NOTE: On initial powerup or after an extended power loss, 1:00 pm flashes on the display until a key is pressed.



M14619

2. Press Day until the current day is displayed.

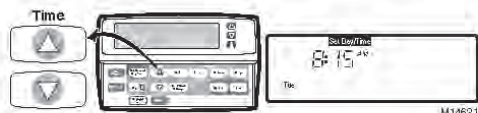
NOTE: Sun=Sunday, Mon=Monday, Tue=Tuesday, Wed=Wednesday, Thu=Thursday, Fri=Friday, Sat=Saturday.



M14620

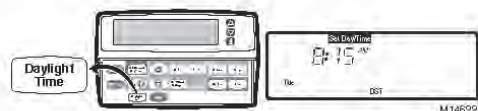
3. Press Time Δ or Time ∇ until the current time is displayed.

NOTE: Tapping the Set Current Day/Time changes the time in one hour increments.



M14621

NOTE: If the current time is Daylight Savings Time, press Daylight Time until DST is displayed.



M14622

4. Press Run Program.



M14623

INSTALLER SYSTEM TEST

Use the Installer System Test to check the thermostat operation. Refer to Table 4 for a list of the available system tests.



CAUTION

Equipment Damage Hazard.
Minimum compressor off-time is bypassed during Installer System Test.
Avoid cycling compressor quickly.

To start the system test:

Press and hold the increase ▲ and decrease ▼ keys at the same time until 10 appears. All segments of the display will be displayed before the 10 appears. See Fig. 13 and 14.

Table 4. Tests Available in Installer System Test.

Test Number	System Test Description
10-19	Heating equipment can be turned on and off.
30-39	Cooling equipment can be turned on and off.
40-49	Fan equipment can be turned on and off.
60 0 to 60 19	Keyboard keys test.
70-79	Thermostat information, including date code and software versions, is displayed.



M14625

Fig. 13. Display of all LCD segments.



V14312

Fig. 14. Display of test number.

Refer to Table 5 for the directions and results of the specific tests.

NOTE: Press Time Δ to advance to the next test and Time ∇ to go back to the previous test. Press Run Program to exit the System Test

Table 5. Installer System Test Options.

Keys to Press	Test Number	Description
Heating Equipment System Test		
Time Δ	10	Enter heating equipment system test.
▲	11	Heat comes on. When Installer Setup number 2 is 1, the system fan is also energized.
▼	10	Heat and system fan turn off.
Cooling Equipment System Test		
Time Δ	30	Change from heating to cooling equipment system test.
▲	31	Cool and system fan come on.
▼	30	Cool and system fan turn off.
Fan Equipment System Test		
Time Δ	40	Change from cooling to fan equipment system test.
▲	41	Fan comes on.
▼	40	Fan turns off.
Key Operation System Test		
Time Δ	60 2	Change from fan to key operation system test.

NOTE: Press any key and the displayed numbers will change. Press Time ▼ to go to the previous test and Time Δ to go to the next test. The Run Program key does not exit this test. Press Time Δ or Time ▼ and then the Run Program key to exit.

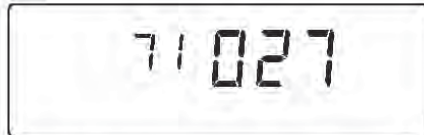
THERMOSTAT INFORMATION

1. Press the Time Δ key to access the thermostat information.



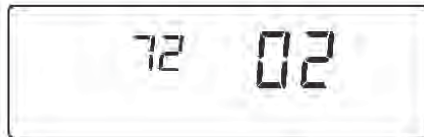
M14013

2. Press the increase \blacktriangle key to display the production date code. The first two large digits are the month and the third digit is the last digit of the year. (Example: 027 = February 1997).



M14014

3. Press the increase \blacktriangle key again to display the software identification code. (Example: 02 = software ID code 2).



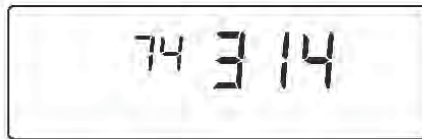
M14015

4. Press the increase \blacktriangle key again to display the software revision number. (Example: 001 = Revision number 1).



M14016

5. Press the increase \blacktriangle key again to display the EEPROM identification code. (Example: 314 = EEPROM ID 314).



M14017

6. Press the Run Program key to exit the system test. The system test times out after four minutes without any key presses.

CHECKOUT

Outdoor Temperature Sensor (Select Models)

Allow the outdoor temperature sensor to absorb the outdoor air for a minimum of five minutes before taking a reading.

TROUBLESHOOTING GUIDE

Table 6. Troubleshooting Guide.

Symptom	Possible Cause	Action
Display will not come on.	Thermostat is not being powered.	<ul style="list-style-type: none"> • Check if batteries are present and installed correctly. <ul style="list-style-type: none"> — If batteries are present and installed correctly, replace thermostat.
Temperature display is incorrect.	Room temperature display has been reconfigured.	Enter Installer Setup number 37 and reconfigure the display.
	Thermostat is configured for °F or °C display.	Enter Installer Setup number 14 and reconfigure the display.
	Bad thermostat location.	Relocate the thermostat.
Temperature settings will not change. (Example: Cannot set the heating higher or the cooling lower.)	The upper or lower temperature limits were reached.	<ul style="list-style-type: none"> • Check the temperature setpoint: <ul style="list-style-type: none"> • Heating limits are 4.5 to 32°C • Cooling limits are 7 to 37°C
	The setpoint temperature range stops were configured.	Check Installer Setup numbers 34 and 35 and reconfigure the setpoint stops.
Heating will not come on.	No power to the thermostat.	<ul style="list-style-type: none"> • Check for 24 Vac between R and W terminals (check for 750 mV on PowerPile® Systems). <ul style="list-style-type: none"> — If missing 24 Vac: <ul style="list-style-type: none"> — check if the circuit breaker is tripped—reset the circuit breaker. — check if the system fuse is blown—replace the fuse. — check if the power switch on the HVAC equipment is in the Off position—set to the On position. — check wiring between thermostat and HVAC equipment—replace any broken wires and tighten any loose connections. — If 24 Vac is present, proceed with troubleshooting.
	Thermostat minimum off time is activated.	Wait up to five minutes for the system to respond.
	System selection is not set to Heat.	Set system selection to Heat.
	Heating setpoint is below room temperature.	Check heating setpoint. Set heating setpoint to desired temperature.
Cooling will not come on.	No power to the thermostat.	<ul style="list-style-type: none"> • Check for 24 Vac between R or RC and Y terminals <ul style="list-style-type: none"> — If missing 24 Vac: <ul style="list-style-type: none"> — check if the circuit breaker is tripped—reset the circuit breaker. — check if the system fuse is blown—replace the fuse. — check if the power switch on the HVAC equipment is in the Off position—set to the On position. — check wiring between thermostat and HVAC equipment—replace any broken wires and tighten any loose connections. — If 24 Vac is present, proceed with troubleshooting.
	Thermostat minimum off time is activated.	<ul style="list-style-type: none"> • Wait up to five minutes for the system to respond. • Enter Installer Setup number 33. Reconfigure minimum off time (if required).
	System selection is not set to Cool.	Set system selection to Cool.
	Cool setpoint is above room temperature.	Check cooling setpoint. Set cooling setpoint to desired temperature.
Heating or cooling come on momentarily and shut off.	Heat or cool circuit is opening up or becoming high impedance.	Add resistor in parallel with load or install interface relay.

Table 6. Troubleshooting Guide. (Continued)

Symptom	Possible Cause	Action
System on indicator (flame=heat, snowflake=cool) is displayed, but no warm or cool air is coming from the registers.	Fan operation set for 0 (conventional heat) when it should be set for 1 (electric heat).	Enter Installer Setup number 2 and reconfigure the fan operation.
	Conventional heating equipment turns on the fan when the furnace has warmed up to a setpoint.	Wait a minute after seeing the on indicator and then check the registers.
	Heating or cooling equipment is not operating.	Verify operation of heating or cooling equipment in self-test.
Outdoor temperature not displayed ^a	Option not activated.	Enter Installer Setup number 24 and set to 1. Thermostat must have OT terminals and a C7089B1000 Sensor installed.
Outdoor temperature display is incorrect ^a	Outdoor sensor is connected incorrectly.	Refer to C7089B1000 Installation Instructions and check wiring between the thermostat and sensor.
	Wrong sensor.	Replace sensor with C7089B1000 Sensor.

^aSelect models.

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69-1510-4 G.H. Rev. 03-03




Printed in U.S.A. on recycled paper containing at least 10% post-consumer paper fibers.



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Appendix E. Operation of hot water tank

SAFE INSTALLATION, USE AND SERVICE

Your safety and the safety of others is extremely important in the installation, use and servicing of this water heater. Many safety-related messages and instructions have been provided in this manual and on your own water heater to warn you and others of a potential injury hazard. Read and obey all safety messages and instructions throughout this manual. It is very important that the meaning of each safety message is understood by you and others who install, use or service this water heater.

	This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.
---	--

 DANGER	DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or injury.
 WARNING	WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or injury.
 CAUTION	CAUTION indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.
CAUTION	CAUTION used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, could result in property damage

All safety messages will generally tell you about the type of hazard, what can happen if you do not follow the safety message and how to avoid the risk of injury.

The California Safe Drinking Water and Toxic Enforcement Act requires the Governor of California to publish a list of substances known to the State of California to cause cancer, birth defects or other reproductive harm and requires businesses to warn of potential exposure to such substances.

This product contains a chemical known to the State of California to cause cancer, birth defects or other reproductive harm. This appliance can cause low level exposure to some of the substances listed in the Act.


IMPORTANT DEFINITIONS

Qualified Installer: A qualified installer must have ability equivalent to a licensed tradesman in the fields of plumbing, air supply, venting and gas supply, including a thorough understanding of the requirements of the National Fuel Gas Code as it relates to the installation of gas fired water heaters. The qualified installer must also be familiar with the design features and use of flammable vapor ignition resistant water heaters and have a thorough understanding of this Installation and Operating manual.

Service Agency: A service agency also must have ability equivalent to a licensed tradesman in the fields of plumbing, air supply, venting and gas supply, including a thorough understanding of the requirements of the National Fuel Gas Code as it relates to the installation of gas fired water heaters. The service agency must also have a thorough understanding of this Installation and Operating manual, and be able to perform repairs strictly in accordance with the service guidelines provided by the manufacturer.

Gas Supplier: The Natural Gas or Propane Utility or service who supplies gas for utilization by the gas burning appliances within this application. The gas supplier typically has responsibility for the inspection and code approval of gas piping up to and including the Natural Gas meter or Propane storage tank of a building. Many gas suppliers also offer service and inspection of appliances within the building.

GENERAL SAFETY



⚠ WARNING

Read and understand instruction manual and safety messages before installing, operating or servicing this water heater.

Failure to follow instructions and safety messages could result in death or serious injury.

Instruction manual must remain with water heater.




⚠ WARNING

Fire Hazard

For continued protection against risk of fire:

- Do not install water heater on carpeted floor.
- Do not operate water heater if flood damaged.



⚠ DANGER

Water temperature over 125°F can cause severe burns instantly resulting in severe injury or death.

Children, the elderly and the physically or mentally disabled are at highest risk for scald injury.

Feel water before bathing or showering.

Temperature limiting valves are available.


Read instruction manual for safe temperature setting.



⚠ WARNING

Explosion Hazard

- Overheated water can cause water tank explosion.
- Properly sized temperature and pressure relief valve must be installed in opening provided.




⚠ WARNING

Fire or Explosion Hazard

- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
- Avoid all ignition sources if you smell gas.
- Do not expose water heater control to excessive gas pressure.
- Use only gas shown on rating plate.
- Maintain required clearances to combustibles.
- Keep ignition sources away from faucets after extended period of non-use.

Read instruction manual before installing, using or servicing water heater.



Installation and Operating Manual

RESIDENTIAL GAS WATER HEATERS



POWER VENTED GAS MODELS
WITH HOT SURFACE IGNITION
NOT FOR USE IN MANUFACTURED (MOBILE) HOMES



WARNING: If the information in these instructions is not followed exactly, a fire or explosion may result causing property damage, personal injury or death.

- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
- WHAT TO DO IF YOU SMELL GAS:
 - Do not try to light any appliance.
 - Do not touch any electrical switch; do not use any phone in your building.
 - Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
 - If you cannot reach your gas supplier, call the fire department.
- Installation and service must be performed by a qualified installer, service agency or the gas supplier.



⚠ WARNING

Read and understand instruction manual and safety messages before installing, operating or servicing this water heater.

Failure to follow instructions and safety messages could result in death or serious injury.

Instruction manual must remain with water heater.

• For Your Safety •

AN ODORANT IS ADDED TO THE GAS USED BY THIS WATER HEATER.

ALL TECHNICAL AND WARRANTY QUESTIONS: SHOULD BE DIRECTED TO THE LOCAL DEALER FROM WHOM THE WATER HEATER WAS PURCHASED. IF YOU ARE UNSUCCESSFUL, PLEASE CONTACT THE COMPANY LISTED ON THE RATING PLATE ON THE WATER HEATER.

KEEP THIS MANUAL IN THE POCKET ON HEATER FOR FUTURE REFERENCE
WHENEVER MAINTENANCE ADJUSTMENT OR SERVICE IS REQUIRED.

1306

322151-003

WATER PIPING - MIXING VALVE USAGE

Mixing Valves

⚠ DANGER

Water temperature over 125°F can cause severe burns instantly resulting in severe injury or death.

Children, the elderly and the disabled and are at highest risk of scald injury.

Feel water before bathing or showering.

Temperature limiting devices such as mixing must be installed when required by codes and to ensure safe temperatures at fixtures.



Water heated to a temperature which satisfies space heating, clothes washing, dish washing, and other sanitizing needs can scald and cause permanent injury upon contact. Short repeated heating cycles caused by small hot-water uses can cause a temperature increase of the hot water by 20F° higher than the heater's temperature settings.

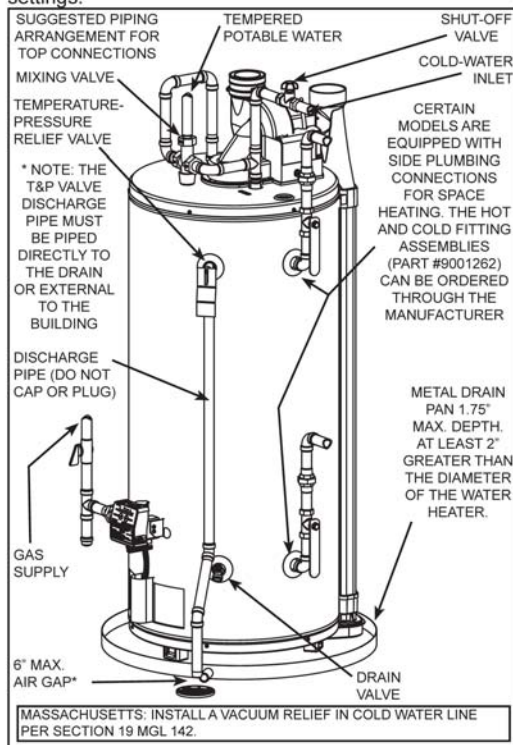


Figure 8.

his appliance has been design certified as complying with American National Standard/CSA Standard for water heaters and certain models with side plumbing connections are considered suitable for Water (Potable) Heating and Space Heating. **Note:** Do not use in space heating only applications.

The water supply pressure should not exceed 80 psi. If this occurs, a pressure reducing valve with a bypass should be installed in the cold water inlet line. This should be placed on the supply to the entire house in order to maintain equal hot and cold water pressures.

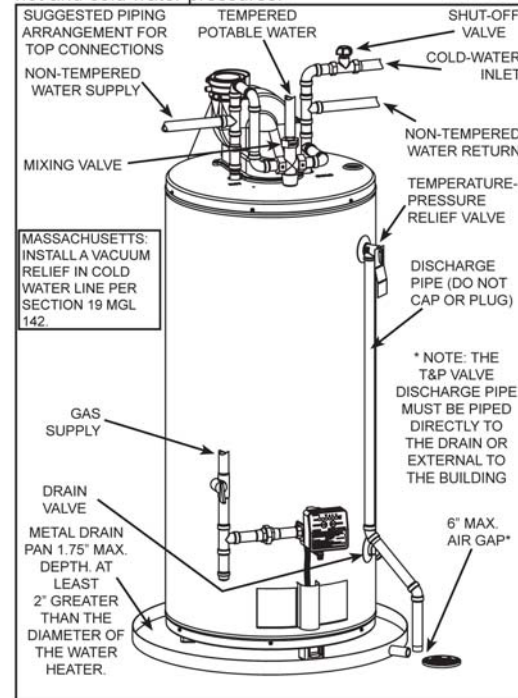


Figure 9.

Some people are more likely to be permanently injured by hot water than others. These include the elderly, children, the infirm and the physically/mentally disabled. Table 1 (published by U.S. Government Memorandum, 1978) shows the approximate time-to-burn relationship for normal adult skin. If anyone using hot water provided by the water heater being installed fits into one of these groups or if there is a local code or state law requiring a certain water temperature at the point of use, then special precautions must be taken.

Water Temperature °F	Time for 1st Degree Burns (Less Severe Burns)	Time for Permanent Burns 2nd & 3rd Degree (Most Severe Burns)
110	(normal shower temp.)	
116	(pain threshold)	
116	35 minutes	45 minutes
122	1 minute	5 minutes
131	5 seconds	25 seconds
140	2 seconds	5 seconds
149	1 second	2 seconds
154	instantaneous	1 seconds
(U.S. Government Memorandum, C.P.S.C., Peter L. Armstrong, Sept. 15, 1978)		

Table 1.

In addition to using lowest possible temperature setting that satisfies demand of application, a mixing valve should be installed at water heater (see Figure 8 & Figure 9) or at hot-water taps to further reduce system water temperature. Mixing valves are available at plumbing supply stores. Consult a Qualified Installer or Service Agency. Follow mixing valve manufacturer's instructions for installation of the valves. Before changing the factory setting on the thermostat, read the "Operating The Temperature Control System" section in this manual.

WATER HEATER OPERATION

Figure 10 shows the water heater's sequence of operation when a call for heat is initiated. The ignition control module will attempt to light the burner three times. If the ignition control does not detect ignition it will enter lockout mode and flash the corresponding error code.

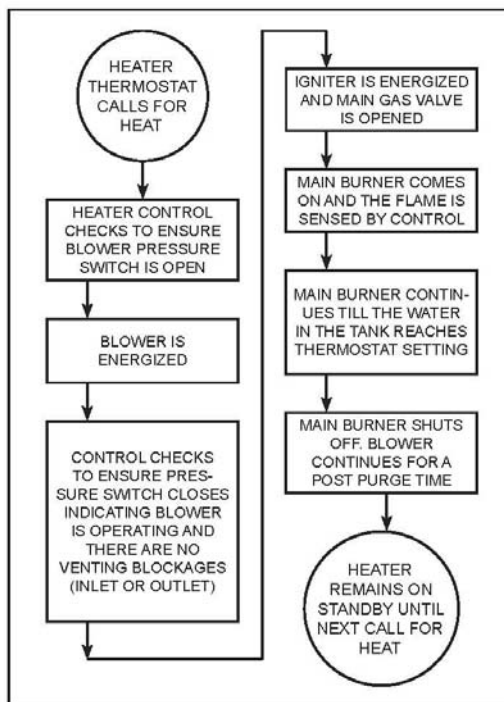


Figure 10.

LIGHTING INSTRUCTIONS

Read and understand these directions thoroughly before attempting to operate the water heater. Make sure the burner viewport is not missing or damaged. Make sure the tank is completely filled with water before operating the water heater. The gas control valve/thermostat has an "On/Off Switch" and must be turned on before the water heater is operational. Check the label on the front of the water heater near the gas control valve/thermostat for the correct gas. Do not start this water heater with any gas other than the one listed on the label. If you have any questions or doubts, consult the gas supplier or gas utility company. The following Lighting Instruction label appears on the front of the water heater.

This heater is equipped with a Honeywell gas control/thermostat and a hot-surface igniter. This control is a combination gas valve, thermostat and ignition controller for use on this power vented water heater. The valve contains a micro-controller that supervises the ignition sequence and monitors the temperature settings and operation of the heater. The controller also monitors the flammable vapor safety features of this heater.

This heater is equipped with a hot-surface ignition system that automatically ignites the burner. Do not attempt to light this heater manually with a match or flame-producing device.

FOR YOUR SAFETY READ BEFORE LIGHTING



WARNING: If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

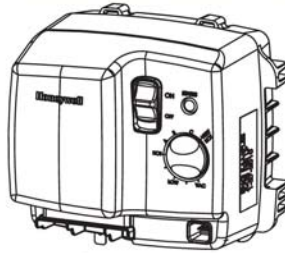


BEFORE OPERATING: ENTIRE SYSTEM MUST BE FILLED WITH WATER AND AIR PURGED FROM ALL LINES.

- A. This appliance does not have a pilot. It is equipped with an ignition device which automatically lights the burner. **Do NOT try to light the burner by hand.**
- B. BEFORE OPERATING smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.
WHAT TO DO IF YOU SMELL GAS:
 - Do not try to light any appliance.
 - Do not touch any electric switch; Do not use any phone in your building.
 - Immediately call your gas supplier from a neighbor's phone. Follow the gas suppliers instructions.
- C. If you cannot reach your gas supplier, call the fire department.
- D. Use only your hand to turn the gas control buttons. Never use tools. If the control buttons will not turn, don't try to repair them, call a qualified service technician. Force or attempted repair may result in a fire or explosion.
- E. Do not use this appliance if any part has been under water. Immediately contact a qualified installer or service agency to replace a flooded water heater. Do not attempt to repair the unit. It must be replaced!

OPERATING INSTRUCTIONS

1. STOP! Read the safety information above on this label.
2. Turn off all electric power to the appliance.
3. Turn the thermostat counter-clockwise to the lowest setting.
4. Set the switch on the control to the "OFF" position.
5. Do not attempt to light manually.
6. Wait five (5) minutes to clear out any gas. If you then smell gas, STOP! Follow "B" in the safety information above on this label. If you don't smell gas, go the next step.



7. Turn on all electric power to the appliance.
 8. Set the switch on the control to the "ON" position.
 9. Turn thermostat to desired setting.
- ⚠ DANGER** Hotter water increases the risk of scald injury. Consult the instruction manual before changing temperature.

10. If the appliance will not operate, follow the instructions "To Turn Off Gas To Appliance" and call your service technician or gas supplier.

TO TURN OFF GAS TO APPLIANCE

1. Turn the thermostat counter-clockwise to the lowest setting.
2. Set the gas control switch to the "OFF" position.
3. Turn off electrical power to the appliance if service is to be performed.

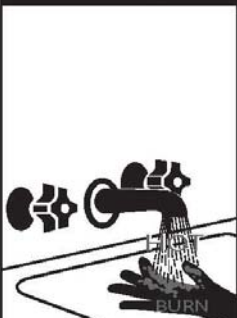
323546-000

OPERATING THE TEMPERATURE CONTROL SYSTEM

It is recommended that lower water temperatures be used to avoid the risk of scalding. It is further recommended, in all cases, that the water temperature be set for the lowest temperature which satisfies your hot-water needs. This will also provide the most energy efficient operation of the water heater.

Short repeated heating cycles caused by small hot-water uses can cause a temperature increase of the hot water by 20F° higher than the heater's temperature settings. If you experience this type of use you should consider using lower temperature settings to reduce scald hazards.

Should overheating occur or the gas supply fails to shut off, turn off the main manual gas shut off valve to the appliance (see Figure 1).



⚠ DANGER

Water temperature over 125°F can cause severe burns instantly resulting in severe injury or death.

Children, the elderly and the disabled and are at highest risk of scald injury.

Feel water before bathing or showering.

Temperature limiting devices such as mixing must be installed when required by codes and to ensure safe temperatures at fixtures.

HOT WATER CAN SCALD:

Water heaters are intended to produce hot water. Water heated to a temperature which will satisfy space heating, clothes washing, dish washing, and other sanitizing needs can scald and permanently injure you upon contact. Some people are more likely to be permanently injured by hot water than others. These include the elderly, children, the infirm or physically/mentally handicapped. If anyone using hot water from this heater fits into one of these groups or if there is a local code or state law requiring certain temperature water at the hot-water tap, then you must take special precautions. In addition to using the lowest possible temperature setting that satisfies your hot-water needs, a means such as a mixing valve, should be used at the hot-water taps used by these people or at the water heater. Mixing valves are available at plumbing supply or hardware stores (see Figure 8 & Figure 9). Follow manufacturer's instructions for installation of the valves. Before changing the factory setting on the thermostat, in this manual, see Table 4.

The water heater should be located in an area where the general public does not have access. If a suitable area is not available, a cover should be installed over the thermostat to prevent tampering.

This water heater is equipped with an adjustable thermostat to control water temperature (see Figure 48). Hot water temperatures required for automatic dishwasher and laundry use can cause scald burns resulting in serious personal injury and/or death. The temperature at which injury occurs varies with the person's age and time of the exposure. The slower response time of children, aged or disabled persons increases the hazards to them. Never allow small children to use a hot-water tap, or to draw their own bath water. Never leave a child or disabled person unattended in a bathtub or shower.

The hot setting shown on the dial is approximately 120°F. This is a good starting point to set the temperature.

Setting the water heater temperature at 120°F will reduce the risk of scalds. Some states require settings at specific lower temperatures.

The thermostat settings on the gas control valve are shown in Figure 48.

The water temperature setting was factory set at the lowest (VAC) temperature setting.

GAS CONTROL VALVE/THERMOSTAT

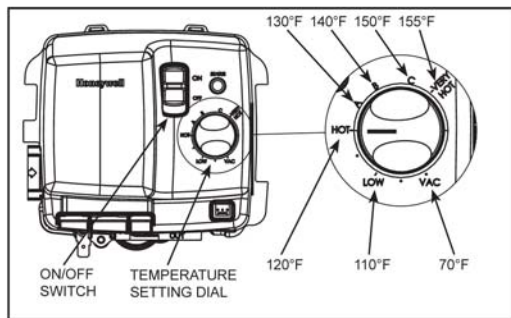


Figure 48.

Temperature Dial Setting	Approximate Temperature °F	Time to induce a 2nd and 3rd Degree burn to adult skin
VERY HOT	155	Less than 1 second
C	150	About 1.5 seconds
B	140	Less than 5 seconds
A	130	More than 30 seconds
HOT	120	More than 5 minutes
LOW	110	Normal shower temp
VAC	70	N/A

Table 4.

Note: The temperatures indicated are approximates. The actual temperature of the heated water may vary. The Vacation Setting (VAC) sets the controller at approximately 70°F. This setting is recommended when the water heater is not in use for a long period of time. This effectively turns the controller temperature setting down to a temperature that prevents the water in the water heater from freezing while still conserving energy.

FOR YOUR INFORMATION

START UP CONDITIONS

Condensate

Whenever the water heater is filled with cold water, some condensate will form while the burner is ON. A water heater may appear to be leaking when in fact the water is condensate. This usually happens when:

- A new water heater is filled with cold water for the first time.
- Burning gas produces water vapor in water heaters, particularly high efficiency models where flue temperatures are lower.
- Large amounts of hot water are used in a short time and the refill water in the tank is very cold.

Moisture from the products of combustion condense on the cooler tank surfaces and form drops of water which may fall onto the burner or other hot surfaces to produce a "sizzling" or "frying" noise.

Because of the suddenness and amount of water, condensate water maybe diagnosed as a "tank leak". After the water in the tank warms up (about 1-2 hours), the condition should disappear.

Do not assume the water heater is leaking until there has been enough time for the water in the tank to warm up.

An undersized water heater will cause more condensation. The water heater must be sized properly to meet the family's demands for hot water including dishwashers, washing machines and shower heads.

Excessive condensate maybe noticed during the winter and early spring months when incoming water temperatures are at their lowest.

Good venting is essential for a gas fired water heater to operate properly as well as to carry away products of combustion and water vapor (see also "Condensate" section).

Thermal expansion

See "Thermal Expansion" section elsewhere in this manual.

CAUTION

Property Damage Hazard

- Avoid water heater damage.
- Install thermal expansion tank if necessary.
- Do not apply heat to cold water inlet.
- Contact qualified installer or service agency.

A properly-sized thermal expansion tank should be installed on all closed systems to control the harmful effects of thermal expansion. Contact a plumbing service agency or your retail supplier regarding the installation of a thermal expansion tank.

Closed water systems

See "Closed Water Systems" section elsewhere in this manual.

Smoke/odor

It is not uncommon to experience a small amount of smoke and odor during the initial start-up. This is due to burning off of oil from metal parts, and will disappear in a short while.

Strange sounds

Possible noises due to expansion and contraction of some metal parts during periods of heat-up and cool-down do not necessarily represent harmful or dangerous conditions. Condensation causes sizzling and popping within the burner area during heating and cooling periods and should be considered normal. See "Condensate" section in this manual.

OPERATIONAL CONDITIONS

Smelly water

Each water heater contains at least one anode rod for corrosion protection of the tank. Certain water conditions will cause a reaction between this rod and the water. The most common complaint associated with the anode rod is one of a "rotten egg smell" in the hot water. The smell is a result of four factors which must all be present for the odor to develop:

- A concentration of sulfate in the supply water.
- Little or no dissolved oxygen in the water.
- A sulfate reducing bacteria which has accumulated within the water heater (this harmless bacteria is nontoxic to humans).
- An excess of active hydrogen in the tank. This is caused by the corrosion protective action of the anode.

Smelly water may be eliminated or reduced in some water heater models by replacing the anode(s) with one of less active material, and then chlorinating the water heater tank and all water lines. Contact the local water heater supplier or service agency for further information concerning an Anode Replacement Kit and this chlorination treatment. If the smelly water persists after the anode replacement and chlorination treatment, we can only suggest that chlorination or aeration of the water supply be considered to eliminate the water problem.

Do not remove the anode leaving the tank unprotected. By doing so, all warranty on the water heater tank is voided.

"AIR" IN HOT-WATER FAUCETS

	! WARNING
	Explosion Hazard <ul style="list-style-type: none">• Flammable hydrogen gases may be present.• Keep all ignition sources away from faucet when turning on hot water.

HYDROGEN GAS: Hydrogen gas can be produced in a hot-water system that has not been used for a long period of time (generally two weeks or more). Hydrogen gas is extremely flammable and explosive. To prevent the possibility of injury under these conditions, it is recommended that the hot-water faucet, located farthest away, be opened for several minutes before any electrical appliances which are connected to the hot-water system are used (such as a dishwasher or washing machine). If hydrogen gas is present, there will probably be an unusual sound similar to air escaping through the pipe as the hot-water faucet is opened. There must be no smoking or open flame near the faucet at the time it is open.

TROUBLESHOOTING GUIDELINES

These guidelines should be utilized by a qualified service agent.

PROBLEM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
BURNER FLAME TOO HIGH	<ol style="list-style-type: none"> 1. Air inlets blocked 2. Insufficient secondary air 3. Orifice too large 	<ol style="list-style-type: none"> 1. Unblock inlet air openings 2. Provide ventilation to water heater 3. Replace with correct orifice
FLAME BURNS AT ORIFICE	<ol style="list-style-type: none"> 1. Low gas pressure 2. Defective gas control valve/thermostat 	<ol style="list-style-type: none"> 1. Check with gas utility company 2. Replace gas control valve/thermostat
INSUFFICIENT HOT WATER	<ol style="list-style-type: none"> 1. Low gas pressure 2. Orifice too small 3. Thermostat set too low 4. Gas control error codes 5. Sediment or lime in tank 6. Water heater too small 7. Wrong piping connections 8. Leaking faucets 9. Wasted hot water 10. Long runs of exposed piping 11. Hot-water piping in outside wall 	<ol style="list-style-type: none"> 1. Check with gas utility company 2. Replace with correct orifice (see rating plate) 3. Turn temperature knob to higher setting 4. Refer to gas control error codes 5. Drain/flush-provide water treatment if needed 6. Install adequate heater 7. Correct piping: dip tube must be in cold inlet 8. Repair faucets 9. Advise customer 10. Insulate piping 11. Insulate piping
WATER IS TOO HOT	<ol style="list-style-type: none"> 1. Thermostat is too high 2. Defective gas control valve/thermostat 	<ol style="list-style-type: none"> 1. Turn temperature knob to lower setting 2. Replace the gas control valve/thermostat
SLOW HOT WATER RECOVERY	<ol style="list-style-type: none"> 1. Insufficient air/ flue blockage 2. Low gas pressure 3. Orifice too small 4. Thermostat set too low 5. Heater too small 6. Wrong piping connection 7. Wasted hot water 8. Flue clogged 9. Air inlets blocked 	<ol style="list-style-type: none"> 1. Provide ventilation to water heater. Check flue way, flue baffle and burner 2. Check with gas utility company 3. Replace with correct orifice (see rating plate) 4. Turn temperature knob to higher setting 5. Install adequate heater 6. Correct piping-dip tube must be in cold inlet 7. Advise customer 8. Clean flue, locate source and correct 9. Unblock inlet air openings
DRIP FROM RELIEF VALVE	<ol style="list-style-type: none"> 1. Pressure build-up 2. Heater stacking 3. Closed water system 4. Improperly seated valve 	<ol style="list-style-type: none"> 1. Use a pressure-reducing valve and relief valve 2. Lower the thermostat setting 3. See thermal expansion section 4. Check Relief valve for proper operation (Do Not plug T&P valve)
GAS CONTROL VALVE/THERMOSTAT FAILS TO SHUT OFF	<ol style="list-style-type: none"> 1. Defective gas control valve/thermostat 	<ol style="list-style-type: none"> 1. Replace gas control valve/thermostat
SMELLY WATER	<ol style="list-style-type: none"> 1. Sulfides in water supply 2. Bacteria in water supply 3. Incompatible anode 	<ol style="list-style-type: none"> 1. Chlorination procedure 2. Chlorination procedure 3. Replace with anode appropriate for water conditions

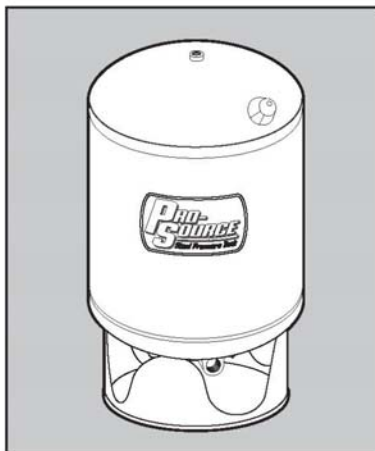
Appendix F. Operation of Pro-Source steel pressure tank.

This is intended for reference for a professional contractor only, in order that a manual be made available to them.



293 Wright Street
Delavan, WI 53115

OWNER'S MANUAL Pro-Source Steel Pressure Tanks



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Installation/Operation/Parts

*For further operating, installation,
or maintenance assistance:*

Call 1-262-728-5551

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S490 (Rev. 9/5/01)

READ AND FOLLOW SAFETY INSTRUCTIONS!

⚠ This is the safety alert symbol. When you see this symbol on your pump or in this manual, look for one of the following signal words and be alert to the potential for personal injury.

⚠ DANGER warns about hazards that **will** cause serious personal injury, death or major property damage if ignored.

⚠ WARNING warns about hazards that **can** cause serious personal injury, death or major property damage if ignored.

⚠ CAUTION warns about hazards that **will** or **can** cause minor personal injury or property damage if ignored.

The label **NOTICE** indicates special instructions which are important but not related to hazards.

Carefully read and follow all safety instructions in this manual and on pump.

Keep safety labels in good condition.

Replace missing or damaged safety labels.

RULES FOR SAFE INSTALLATION AND OPERATION

Read the Owner's Manual and Rules for Safe Operation and Installation Instructions carefully. Failure to follow these Rules and Instructions could cause serious bodily injury and/or property damage.

Install system according to local codes.

Always test water from well for purity before using. Check your local health department for testing procedure.

Before installing or servicing your tank, BE SURE pump electric power source is disconnected.

BE SURE your pump electrical circuit is properly grounded.

Remove bleeder orifices, air volume controls or other air charging devices in existing system.

⚠ WARNING To prevent possible serious or fatal injury and/or damage to equipment, system pressure must be less than 100 pounds per square inch (PSI) under any circumstances. Failure to follow this instruction can result in tank blowup. If system discharge pressure can exceed 100 PSI, install a relief valve capable of passing the full pump volume at 100 PSI.

⚠ WARNING Hazardous pressure. Read owner's manual before attempting to install, operate, or service this tank. To avoid possible equipment failure, severe injury, and property damage, do not allow pump, tank, or piping system to freeze.

LIMITED WARRANTY

Sta-Rite Industries, Inc., warrants to the original consumer of the products listed below, that they will be free from defects in material and workmanship for the Warranty Period from the date of original installation or manufacture as noted.

Product	Warranty Period
Water Systems Products – jet pumps, small centrifugal pumps, submersible pumps and related accessories	whichever occurs first: 1 year from date of original installation, or 2 years from date of manufacture
Hydro-Flow Filters	1 year from date of purchase
Signature 2000 [®] Fiberglass Tanks	5 years from date of original installation
Pro-Source [®] Steel Pressure Tanks	5 years from date of original installation
Pro-Source [®] Epoxy-Lined Tanks	3 years from date of original installation
Sump/Sewage/Effluent Products	1 year from date of original installation, or 2 years from date of manufacture

Our warranty will not apply to any product that has been subject to negligence, misapplication, improper installation or maintenance. In the event a three phase submersible motor is operated with single phase power through a phase converter, or if three-leg ambient compensated, extra-quick trip overload relays of recommended size are not used, our warranty is void.

Buyer's only remedy and Sta-Rite Industries, Inc.'s only duty is to repair or replace defective products (at Sta-Rite Industries, Inc.'s choice). Buyer agrees to pay all labor and shipping charges associated with this warranty and to request warranty service through the installing dealer as soon as a problem is discovered. If warranty service is requested more than 30 days after the Warranty Period has ended, it will not be honored.

STA-RITE INDUSTRIES, INC. SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL, OR CONTINGENT DAMAGES WHATSOEVER.

THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESS WARRANTIES, IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, SHALL NOT EXTEND BEYOND THE WARRANTY PERIOD PROVIDED HEREIN.

Certain states do not permit the exclusion or limitation of incidental or consequential damages or the placing of limitations on the duration of an implied warranty, therefore, the limitations or exclusions herein may not apply. This warranty sets forth specific legal rights and obligations; however, additional rights may exist, which may vary from state to state.

Supersedes all previous publications.

Sta-Rite Industries, Inc. 293 Wright St., Delavan, WI 53115

GENERAL INFORMATION

All tanks are factory pre-charged with air to 40 pounds per square inch (PSI). When installing tank, reduce pre-charge to 2 PSI below pump cut-in pressure setting. To do this, bleed air from valve on top of tank.

NOTICE: Always set pre-charge with NO WATER in tank.

Check pressure frequently with an accurate tire pressure gauge until correct pressure has been reached. For correct pre-charge pressure settings, see Chart 1, below.

CHART I

Pressure Switch Setting	Tank Precharge (PSI)
20-40 PSI	18
30-50 PSI	28
40-60 PSI	38

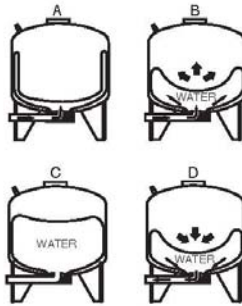
NOTICE: Replace and tighten air valve cap if it is removed for any reason. Failure to replace air cap may allow loss of air pressure and eventually lead to tank waterlogging and bladder failure.

Pre-charged storage tanks can be connected together to increase the supply of usable water (draw-down). Two tanks of the same size will double the

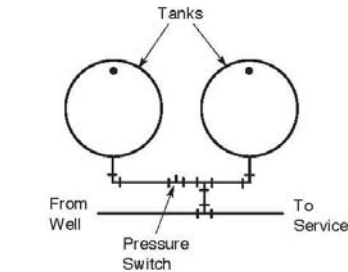
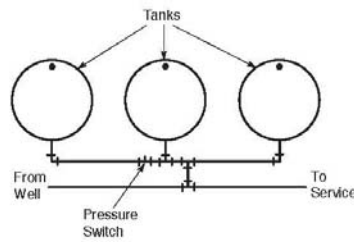
supply and three tanks will triple the supply. See Figures No. 1A and 1B for typical installations of this kind.

OPERATING CYCLE

1. Tank nearly empty – air expands filling area above vinyl bladder (Fig. 2A).
2. Water begins to enter tank – air is compressed above bladder as it fills with water (Fig. 2B).
3. Pump-up cycle completed – air now compressed to cut off setting of pressure switch (Fig. 2C).
4. Water being drawn from tank – compressed tank air forces water out of bladder (Fig. 2D).
5. Bladder completely empty – new cycle ready to begin (Fig. 2A).

**Figure 2****CHART II – Water Yield Per Pump Cycle (drawdown) in Gallons**

Model	Pressure Switch Setting (PSI)		
	20-40	30-50	40-60
PS15-S02	2.2	1.8	1.6
PS15H-S05	2.2	1.8	1.6
PS30-T01	4.8	4.1	3.6
PS42S-T02	6.9	5.8	5.0
PS42T-T02	6.9	5.8	5.0
PS42H-S00	6.9	5.8	5.0
PS75T-T03	11.6	9.8	8.5
PS82T-T05	12.7	10.7	9.3
PS120-T50	18.3	15.5	13.4
PS200-T51	21.4	18.3	16.0
PS220-T52	30.0	26.0	22.0

**Figure 1A****Figure 1B**

Connect system pipe to tank flange. Use plastic or steel pipe as required. To prevent leaks, use Teflon tape or Plasto-Joint Stik¹ on male threads of all threaded connections to tank.

NOTICE To be sure that joint is not cross-threaded and that threads are clean, always make connections by hand (without sealer) first. After making sure that threads are clean, remove pipe, add Teflon tape or Plasto-Joint Stik, and remake connection. Tighten by hand first; finish with pipe wrench for tight seal.

NOTICE When replacing a standard tank in a submersible pump system, raise pump and discharge pipe far enough to remove bleeder orifices in discharge pipe and plug tees. When replacing a standard tank in a jet pump system, remove Air Volume Control (AVC) and plug AVC port in pump.

In areas where the temperature is high for long periods of time, the tank pre-charge pressure may increase. This may reduce the tank drawdown (amount of water available per cycle). If this occurs, reduce the pre-charge pressure to two PSI below the pump cut-in setting of the pressure switch.

It is necessary to flush all air out of the piping system and water reservoir portion of the pre-charged tank. This is required on new installations, pumps requiring repriming and pumps that have been disassembled for service. Do this as follows:

1. Open faucets furthest from tank and allow pump to operate.
2. Air in the system will cause a sputtering flow; allow faucets to run until you have a steady, air free stream.
3. Open and close faucets repeatedly until you are sure all air has been removed.
4. If stream does not become steady, air may be leaking into the system; check for leaks in the piping on the suction side of the pump.

¹Lake Chemical Co., Chicago, Illinois

TO CHECK TANK AIR CHARGE

If drawdown (amount of water that comes out of tank per pump cycle) decreases significantly, check as follows:

1. To check air charge in tank, shut off electric power to pump, open faucet near tank, and drain completely.
2. At the air valve in top of tank, check air pressure with a standard tire gauge. Air pressure should be 2 PSI below pump pressure switch cut-in setting.
3. If the air pressure is more than 2 PSI below the cut-in setting, add air to the tank. Use an air compressor or a portable air storage tank.
4. Use soap or liquid detergent to check for air leaks around air valve. Continuous bubbling indicates a leak. If necessary, install new core in air valve. This is the same as those used for automobile tubeless tires.

TO CHECK PUMP PRESSURE SWITCH SETTING

1. To check pressure switch setting, disconnect power to pump at supply panel (but be sure to leave pressure switch connected to power supply wires).
2. Remove pressure switch cover.
3. Open a faucet near tank.
4. Bleed pressure down until pressure switch contacts close; immediately close faucet.
5. Check pressure at valve with standard tire gauge or with pump pressure gauge (if supplied).
6. Pressure gauge should read 2 PSI below pump cut-in setting (28 PSI for 30-50 switch, 18 PSI for 20-40 switch, etc.) If not:
A. Adjust switch according to switch manufacturer's instructions.

SPECIFICATIONS

Model	Maximum Capacity U.S. Gallons	Tank Diameter	Tank Height	Tank Discharge Tapping
PS15-S02	6	12"	16-1/8"	3/4"
PS15H-S05	6	12"	16-1/8"	3/4"
PS30-T01	14	16"	22-1/4"	1"
PS42S-T02	19	20"	22"	1"
PS42T-T02	19	16"	27-1/2"	1"
PS42H-S00	19	16"	24-5/8"	1"
PS75T-T03	32	16"	42-3/4"	1"
PS82T-T05	35	20"	32-3/4"	1"
PS120T-T50	50	24"	32-1/2"	1-1/4"
PS200-T51	62	24"	39-1/8"	1-1/4"
PS220-T52	85	24"	50-1/2"	1-1/4"

* Tank length if Model No. has "H" suffix.

- B. Reconnect power supply to pump and pump up pressure in system.
- C. Disconnect power supply to pump again and re-check switch setting.
- D. Repeat until pressure switch starts pump within ± 1 PSI of proper setting.
- E. If cut-in setting is too low, system will rattle or develop water hammer when pump starts.
- F. Cut-out setting is not as critical as cut-in setting. Make sure that pump will stop running in a reasonable time. If it does not, cut-out setting may need to be adjusted down slightly. Be sure that after readjustment, system does not rattle or hammer on startup.
7. Re-check tank air pre-charge to be sure it is 2 PSI below pump pressure switch cut-in setting (see Page 3).

TESTING FOR BLADDER LEAKAGE

1. Disconnect power to pump.
2. Drain all water from tank bladder by opening faucet closest to tank.
3. Remove valve cap from valve and release all pressure possible by depressing valve core. When air stops coming from valve, remove valve core to release remaining pressure.
4. Disconnect piping from elbow on tank flange.
5. Carefully turn tank upside down or lay it on its side.

⚠ WARNING Retained water in tank may cause sudden weight shift when lowering. Support tank so that it cannot fall when being lowered or inverted.

6. If bladder leaks, water will run out of valve. If so, replace bladder.

BLADDER REPLACEMENT

⚠ CAUTION To be sure cover flange cannot blow off of tank, release all air from system before removing nuts from cover flange.

1. Disconnect power to pump.
2. Follow steps 2 through 5 under "Testing For Bladder Leakage", above.
3. Remove nuts from tank cover flange. Tap cover flange to break seal and remove.
4. Bladder will not come out in one piece. Hold bladder with pliers and cut wherever convenient with single edge razor blade or sharp knife. Continue holding and cutting until bladder is removed.
5. Clean and dry inside of tank.
6. Before bladder can be inserted into tank, it must be tightly rolled up as follows:
 - A. Place bladder on clean surface with opening to one end and flatten to force air out. Pull ends out flat (see Figure 3).

Pull ends out flat

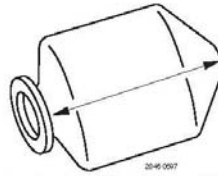


Figure 3 – Force all air out of bladder

- B. To get tightest possible wrap, start on one side at top and TIGHTLY roll bladder diagonally to other side (see Figure 4). To force out as much air as possible, be sure to roll toward bladder neck opening.

Roll Diagonally

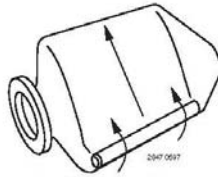


Figure 4 – Roll diagonally toward neck

7. To help insert bladder, sprinkle outside of it with talcum powder. With tank on its side, push tightly rolled bladder into tank, hooking bladder neck ring over edge of tank head.
8. Insert arm in bladder and push sidewalls outward. It is not necessary to remove all wrinkles from bladder.

NOTICE: Don't push bladder into tank further than its own length. In a large tank, bladder can slip out of reach if pushed too far.

9. Clean tank head sealing surface and lip ring groove of cover flange.
10. Pull lip ring of bladder through tank opening and seat it against tank head.
11. Clean sealing surface and groove of cover flange; place on tank (see Figure 5).

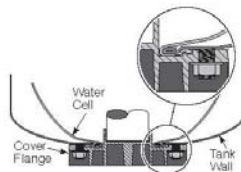


Figure 5 – Proper installation and seating

NOTICE: Be sure discharge port lines up with hole in base.

12. NOTICE: Tighten nuts as follows:

- Hand tighten all nuts.
- Tighten one nut snug.
- Tighten opposite nut snug.
- Proceed, tightening opposite pairs of nuts to a snug fit.
- Recheck all nuts, using same pattern. Be sure all nuts are tight and that you have a good seal.

NOTICE: Do not overtighten; you may twist studs off of tank. If you have a torque wrench, tighten to 85 inch-pounds torque.

- Stand tank on feet and reconnect piping.
- Recharge tank to proper air pressure (see Page 4).
- Prime pump (see pump owner's manual).

AIR VALVE REPLACEMENT

⚠ WARNING Hazardous Pressure. To be sure air valve and core cannot blow out of tank, release all air pressure from tank before removing valve core or valve.

- Disconnect power to pump.
- Drain ALL water in system by opening faucet closest to tank.
- Depress valve core to release ALL air pressure in tank. When air stops coming out of valve, remove core from inside of valve to release remaining pressure.
- Push air valve back into tank. Be sure to remove it before reassembling tank.
- Disconnect piping from tank and turn it on its side.

- Remove flange from tank.
- Push bladder into tank far enough so that you can get into tank with a dowel rod.
- Soap the outside of the new valve and mount it on the end of a piece of 1/4" or 5/16" dowel rod. Push the valve up past the bladder into its mounting hole in the top of the tank. Push it through as far as it will conveniently go; leave the valve cap on to protect the threads on the valve.
- Rap the end of the dowel sharply with a hammer to drive the valve into position. Be sure the shoulder on the valve seats against the tank head (the ridge around the valve body should be all the way through the hole in the tank head – see Figure 6).

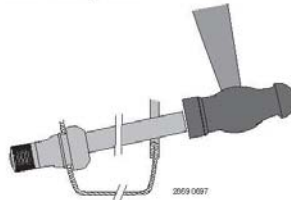


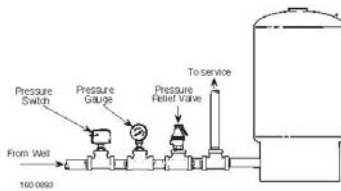
Figure 6 – Tap valve into place

- Remove the dowel. Make sure the old valve has been removed from the tank, pull bladder back over rim of hole in lower tank head, reinstall flange, stand tank upright and reconnect piping.
- Recharge tank (see Page 4), turn on power, fill system, and tank is ready for service.

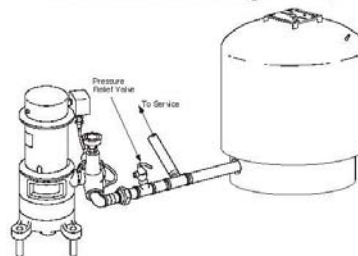
PIPING CONNECTIONS SUBMERSIBLE AND MULTI-STAGE INSTALLATIONS

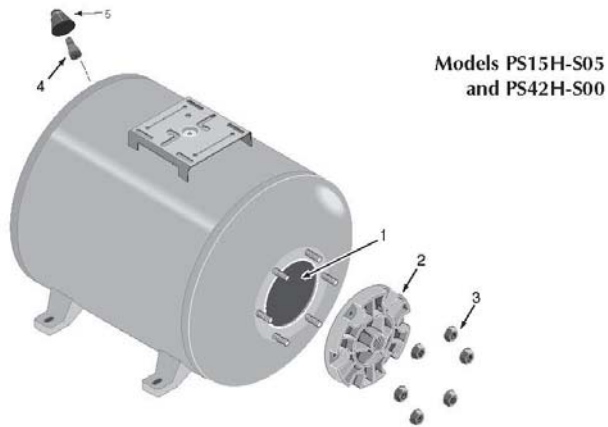
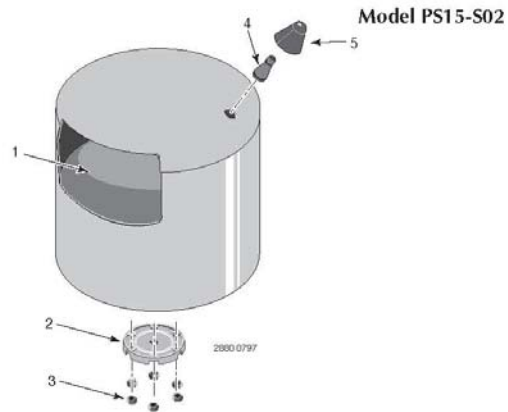
NOTE: When using metal pipe with plastic fittings use only Teflon tape or Plasto-Joint Stik on male threads.

Tank with Submersible Pump



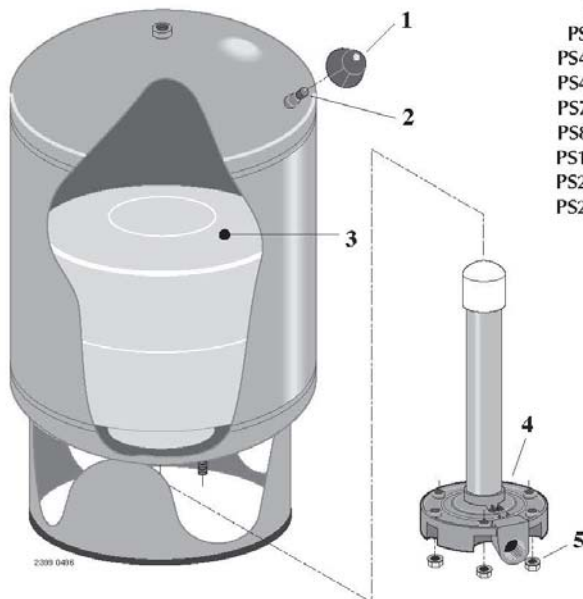
Tank with Multi-Stage Pump





REPAIR PARTS LIST – Pro-Source Tanks

Key No.	Part Description	No. Used	PS15-S02 PS15H-S05 6 Gal.	PS42H-S00 19 Gal.
1	Bladder - Vinyl	1	U20-7	U20-13
2	Cover Flange	1	U31-442P	U31-446P
3	Flanged Nut - 5/16 - 18 Hex.	6	U36-202BT	U36-202BT
4	Air Valve with Cap	1	U212-160B	U212-160B
5	Air Valve Cover	1	U31-380P	U31-380P



Models
 PS30-T01
 PS42S-T02
 PS42T-T02
 PS75T-T03
 PS82T-T05
 PS120-T50
 PS200-T51
 PS220-T52

REPAIR PARTS LIST – Pro-Source Tanks

Key No.	Part Description	No. Used	PS30-T01 14 Gal.	PS42S-T02 19 Gal.	PS42T-T02 19 Gal.	PS75T-T03 32 Gal.
1	Air Valve Cover	1	U31-380P	U31-380P	U31-380P	U31-380P
2	Air Valve with Cap	1	U212-160B	U212-160B	U212-160B	U212-160B
3	Bladder - Vinyl	1	U20-13	U20-8	U20-15S	U20-15
4	Cover Flange	1	U31-446P*	U31-446P*	U231-460P	U231-461P
5	Flanged Nut 5/16 - 18 Hex	6	U36-202BT	U36-202BT	U36-202BT	U36-202BT

* Does not require Stand Pipe.

Key No.	Part Description	No. Used	PS82T-T05 35 Gal.	PS120-T50 50 Gal.	PS200-T51 62 Gal.	PS220-T52 85 Gal.
1	Air Valve Cover	1	U31-380P	U31-380P	U31-380P	U31-380P
2	Air Valve with Cap	1	U212-160B	U212-160B	U212-160B	U212-160B
3	Bladder - Vinyl	1	U20-13L	U20-10	U20-14	U20-17
4	Cover Flange	1	U231-460P	U31-447P*	U231-482P	U231-462P
5	Flanged Nut 5/16 - 18 Hex	6	U36-202BT	U36-202BT	U36-202BT	U36-202BT

* Does not require Stand Pipe.

Appendix G. Operation of portable vacuum (Kenmore)



SEARS
Vacuum Cleaner

OWNER'S MANUAL

READ THIS MANUAL for important safety,
assembly and operating instructions.

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STANDARD AND OPTIONAL FEATURES

Users of upright vacuum cleaners have a variety of cleaning needs.

This vacuum cleaner comes with optional features which offer the customer the opportunity to select features which best meet their needs.

This manual provides instructions which include those features in addition to those found on the standard model. Optional features include:

- Pre-assembly
- Power Switch Location
- Two Power Levels
- Bare Floor Setting
- Belt Protection System
- Performance Indicator
- Quick Release Cord Wrap

Noting these feature options now will enable you to instantly identify your model when the instructions refer to STANDARD or OPTIONAL features.

Some models may come with an extra dust bag and/or belt.

Proper assembly and safe use of your vacuum cleaner are your responsibilities. Your cleaner is intended only for household use. The cleaner should be stored in a dry, indoor area. Read this Owner's Manual carefully for important use and safety information.

WARRANTY

KENMORE VACUUM CLEANER FULL ONE-YEAR WARRANTY

When used for private household purposes, if within one year from the date of purchase, this vacuum cleaner fails due to a defect in material or workmanship, RETURN IT TO THE NEAREST SEARS SERVICE CENTER/DEPARTMENT IN THE UNITED STATES, and Sears will repair it free of charge.

If this vacuum cleaner is used for commercial or rental purposes, the above warranty coverage applies for only 90 days from the date of purchase.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

SEARS, ROEBUCK AND CO., D/817WA
HOFFMAN ESTATES, IL 60195

SERVICE

If you need service or parts, visit your local Sears service or parts department. They will be able to solve your problem and supply any needed replacement parts. Any service needed other than described in this Owner's Manual should be done by a Sears authorized service representative.

When requesting assistance, parts or service, always give the following information:

1. Model number;
2. Serial number;
3. Problem description;
4. Part number;
5. Name of part.

IMPORTANT SAFETY INSTRUCTIONS



WARNING

To reduce the risk of fire, electrical shock, injury to persons or damage when using your vacuum cleaner, follow basic safety precautions including the following:

Read this manual before assembling or using your vacuum cleaner.

Use your cleaner only as described in this manual. Use only with Sears recommended attachments.

To reduce the risk of electrical shock, **do not** use outdoors or on wet surfaces.

Disconnect electrical supply before servicing or cleaning out brush area. Failure to do so could result in electrical shock or brush suddenly starting.

Always turn cleaner off before unplugging.

Do not unplug by pulling on cord. To unplug, grasp the plug, not the cord.

Do not use with damaged cord or plug. If cleaner is not working as it should, has been dropped, damaged, left outdoors, or dropped into water, return it to a Sears Service Center/Department.

Do not pull or carry by cord, use cord as a handle, close door on cord, or pull cord around sharp edges or corners. Do not run cleaner over cord. Keep cord away from heated surfaces.

Do not leave cleaner when plugged in. Unplug from outlet when not in use and before servicing.

Do not allow to be used as a toy. Close attention is necessary when used by or near children.

Do not handle plug or cleaner with wet hands.

Do not put any objects into openings.

Do not use with any opening blocked; keep free of dust, lint, hair and anything that may reduce air flow.

Keep hair, loose clothing, fingers, and all parts of body away from openings and moving parts.

Do not use cleaner without dust bag in place. Always change the dust bag after vacuuming carpet cleaners or fresheners, powders and fine dust. These products clog the bag, reduce airflow and can cause the bag to burst. Failure to change could cause permanent damage to the cleaner.

Do not use the cleaner to pick up sharp hard objects, small toys, pins, paper, etc. They may damage the cleaner or dust bag.

Do not pick up anything that is burning or smoking, such as cigarettes, matches, or hot ashes.

Do not use cleaner to pick up flammable or combustible liquids (gasoline, cleaning fluids, perfumes, etc.), or use in areas where they may be present. The fumes from these substances can create a fire hazard or explosion.

Use extra care when cleaning on stairs. Do not put on chairs, tables, etc. Keep on floor.

You are responsible for making sure that your vacuum cleaner is not used by anyone unable to operate it properly.

SAVE THESE INSTRUCTIONS

Proper assembly and safe use of your vacuum cleaner are your responsibilities.

Your cleaner is intended only for household use.

Read this Owner's Manual carefully for important use and safety instructions.

PARTS AND FEATURES

It is important to know your vacuum cleaner parts and features to assure its proper and safe use. Review these before using your cleaner.

COPY YOUR MODEL AND SERIAL NUMBERS HERE.

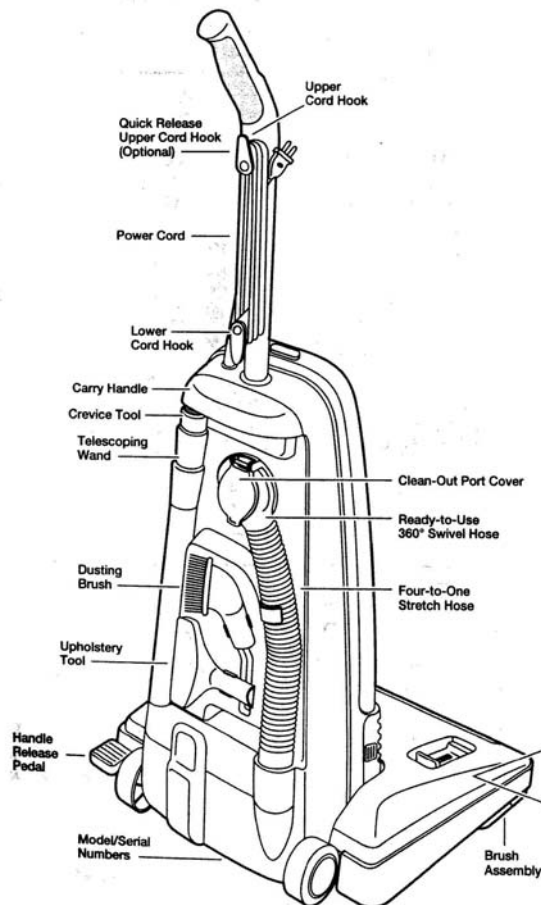
Copy this information from the bottom of the vacuum cleaner into these spaces. Keep these numbers for future reference. If you need service or call with a question, have this information ready:

116.

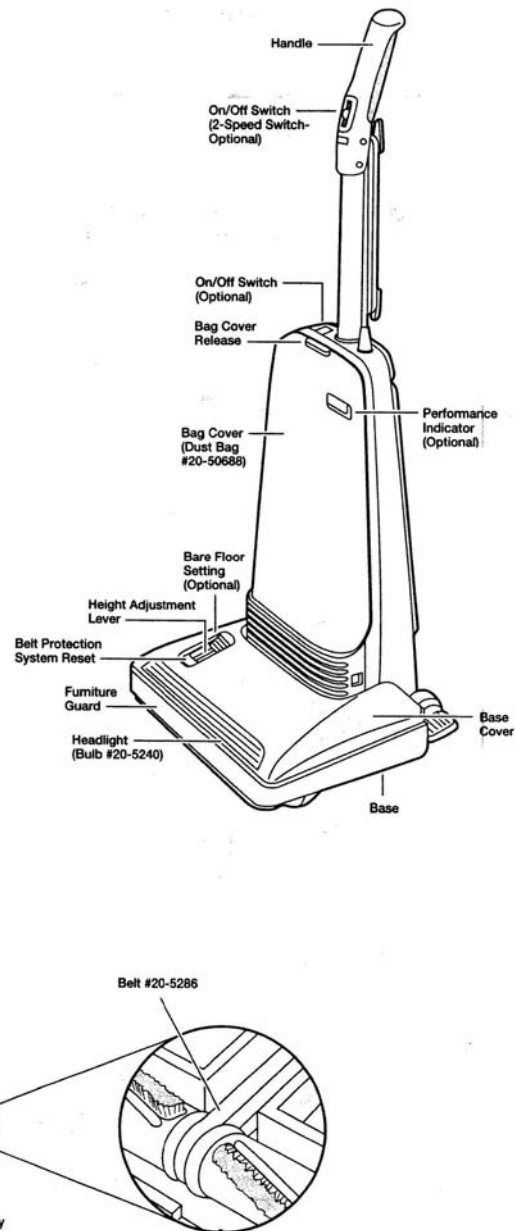
Model Number

D-

Serial Number



UPRIGHT VACUUM CLEANER



ASSEMBLY

HANDLE ASSEMBLY (STANDARD MODEL)

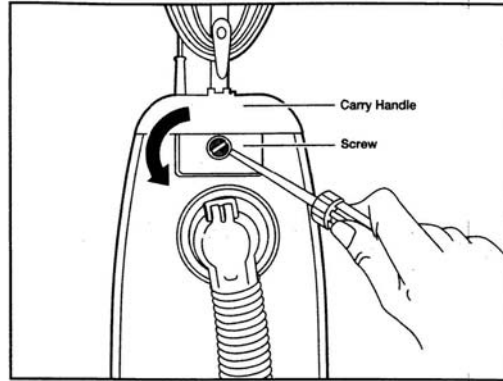
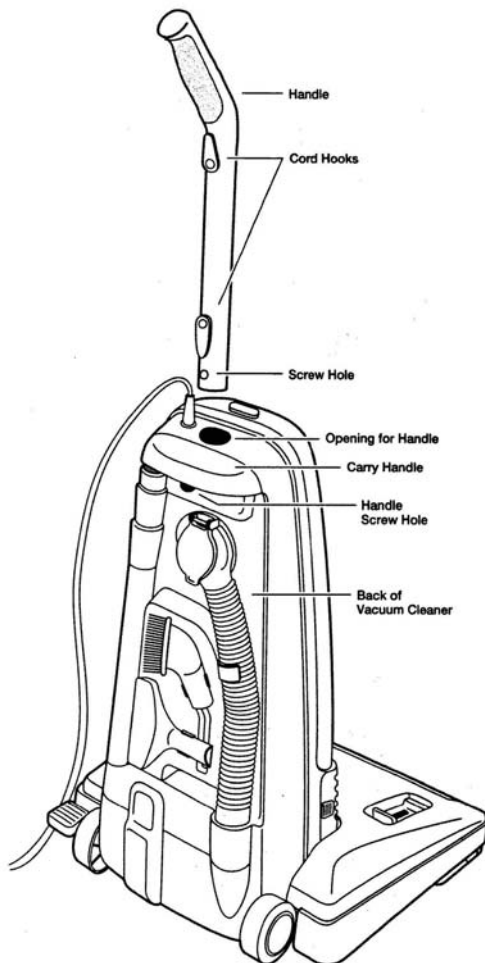
Before assembling your vacuum cleaner be sure you have all the parts shown.



WARNING

Electrical Shock Hazard

Do not plug into the electrical supply until the assembly is complete. Failure to do so could result in electrical shock or injury.



Remove the screw located just below the carry handle on the back side of the vacuum.

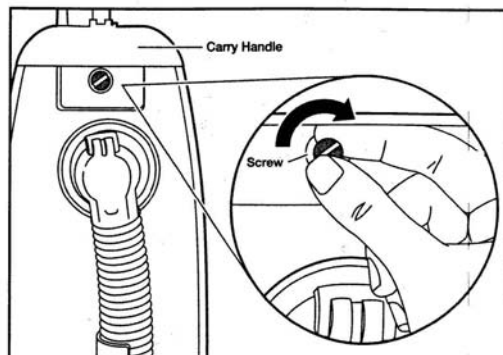
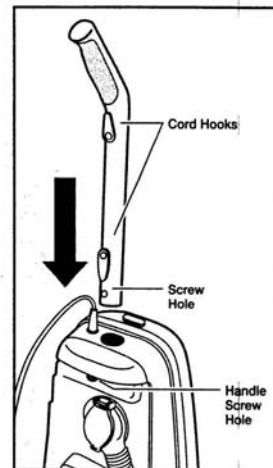
Position the handle so the cord hooks are toward the back of the cleaner.

Insert the handle into the opening at the top of the vacuum.

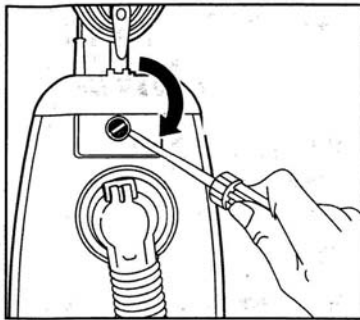
Align the screw hole in the handle with the screw hole in the vacuum.

Insert the screw so it passes through the back of the vacuum into the handle.

Begin to tighten the screw with your fingers. It may be necessary to adjust the handle slightly.



Using a screwdriver, tighten the screw.



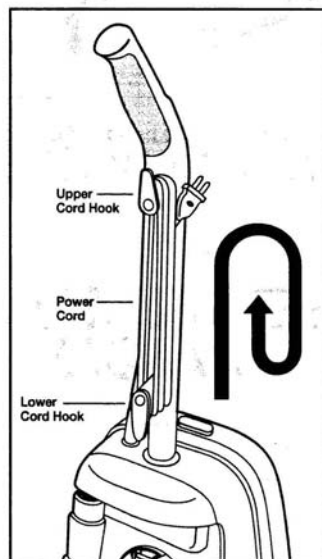
CAUTION

Do not overtighten.
Overtightening could strip the screw holes.
Do not operate the cleaner without the screw in place.

CORD ASSEMBLY (STANDARD AND OPTIONAL MODELS)

Make sure the quick release upper cord hook is in the upright position.

Remove the wire tie from the power cord. Wrap the power cord around the upper and lower cord hooks.



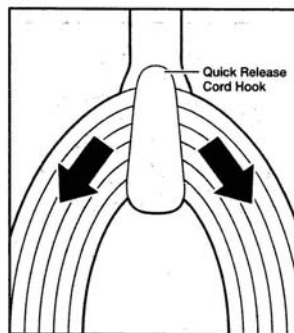
USE

HOW TO START

(STANDARD MODEL)

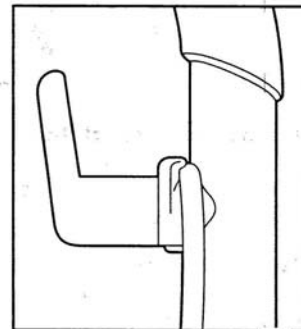
Unwrap the power cord. Plug the power cord into a 120 volt outlet located near the floor.

(OPTIONAL MODEL)



1. Turn the quick release cord hook to either side and down to release the power cord.

2. Once the cord is removed, lock the cord into place by forcing it into the locking notch on the body of the cord hook as shown.



3. Plug power cord into a 120-volt outlet located near the floor.



WARNING

Personal Injury and Product Damage Hazard

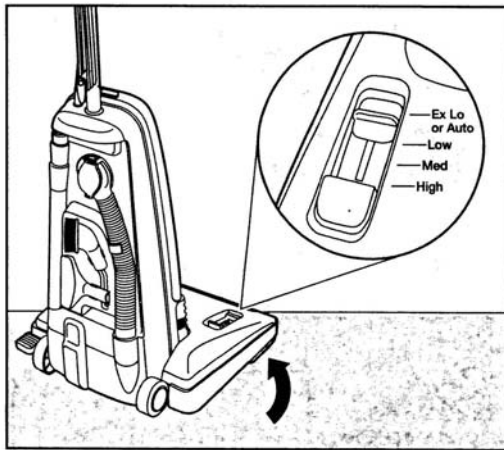
- DO NOT plug in if switch is in ON position. Personal injury or damage could result.
- DO NOT use outlets above counters. Damage to items in surrounding area could occur.

PILE HEIGHT SELECTION AND SETTING

To select a pile height setting:

Turn off the cleaner. Select a pile height setting by tilting the cleaner back until the front wheels are lifted slightly off the floor.

Slide the height adjustment lever to the correct setting.



SUGGESTED PILE HEIGHT SETTINGS

You may need to raise the height to make some jobs easier (such as scatter rugs and longer pile carpets). Suggested settings are:

EX LO or AUTO: very low pile.

LOW: short or medium pile.

MED: medium to long pile.

HIGH: shag carpet, long pile, plush, scatter rugs.



WARNING

Personal Injury Hazard

DO NOT place hands or feet underneath the unit when changing from the bare floor setting to the carpet pile height setting. The brush assembly begins to revolve rapidly when the vacuum is turned on and is switched to a carpet height setting.

BARE FLOOR SETTING

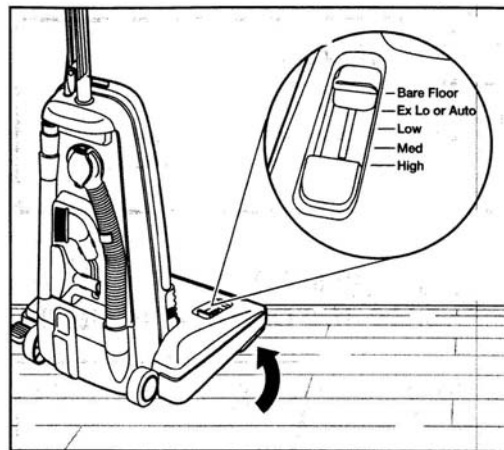
(OPTIONAL MODEL)

To select the bare floor setting:

Turn off the cleaner.

Tilt the cleaner back until the front wheels are lifted slightly off the floor.

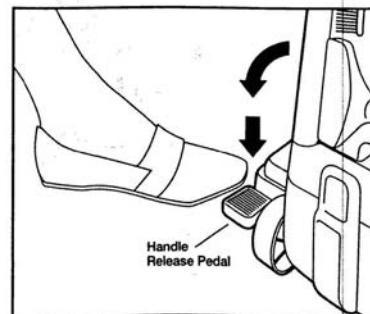
Slide the height adjustment lever to the bare floor setting.



In this position, the headlight is off and the brush assembly does not revolve. This setting is recommended for cleaning hardwood and tile floors.

RELEASING THE HANDLE

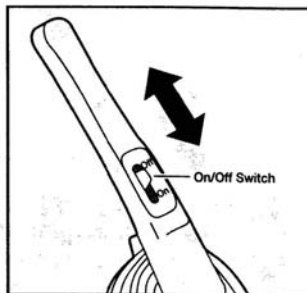
Release the handle by pressing on the handle release pedal.



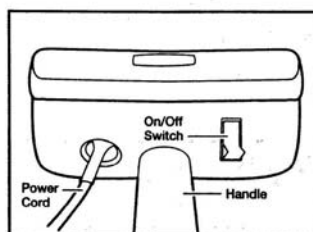
ON/OFF AND POWER LEVEL SELECTION

HANDLE ON/OFF SWITCH (STANDARD MODEL)

To start the vacuum cleaner, slide the On/Off Switch from the OFF position to the ON position. To stop the vacuum cleaner, slide the On/Off Switch to the OFF position.



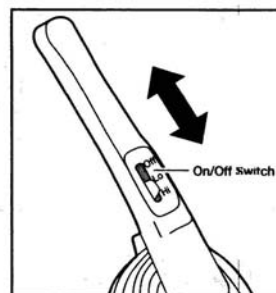
BODY ON/OFF SWITCH (OPTIONAL MODEL)



To start the vacuum cleaner, put the switch on the top of the body in the ON position. To stop the vacuum cleaner, put the switch in the OFF position.

TWO SPEEDS (OPTIONAL MODEL)

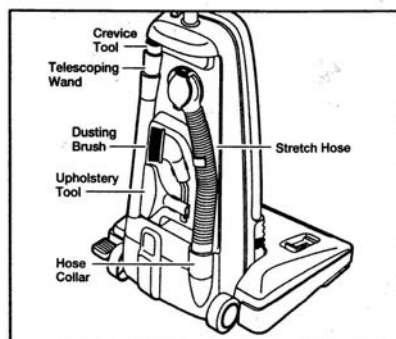
To start the vacuum cleaner, slide the Two-Speed On/Off Switch to the LO or HI position. Use the LO (center position) to clean lightweight rugs. Use the HI (bottom position) to clean most carpeted floors. Use the OFF (top position) when leaving or storing the cleaner.



To stop the vacuum, slide the Two-Speed On/Off Switch to the OFF position.

USING ATTACHMENTS

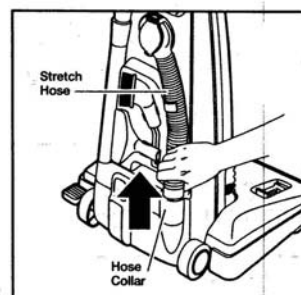
Identify each of the attachments shown below.



To Use Attachments:

Remove the lower end of the stretch hose from the cleaner by grasping the hose collar, twisting and pulling straight up.

NOTE: Brush assembly stops revolving and the headlight goes off when hose is removed.



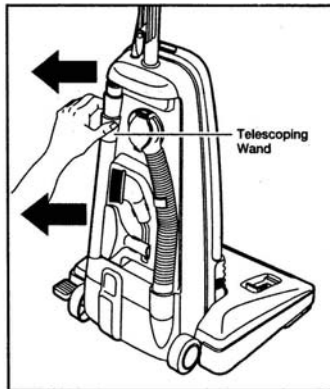
WARNING

Personal Injury Hazard

Always unplug vacuum before placing hands near brush assembly as brush may suddenly re-start. Failure to do so could result in injury.

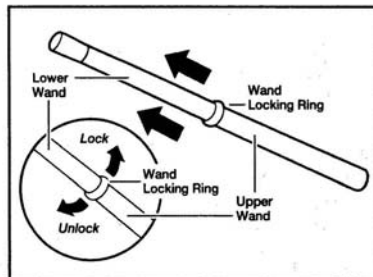
The attached hose end swivels 360 degrees to make cleaning easier in every direction.

Remove the telescoping wand from its storage position.

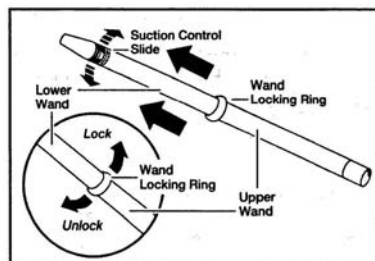


Remove the crevice tool from its storage position in the wand. Turn the locking ring to the **UNLOCK** position.

Extend the wand to its full length. Turn the wand locking ring to the **LOCK** position.

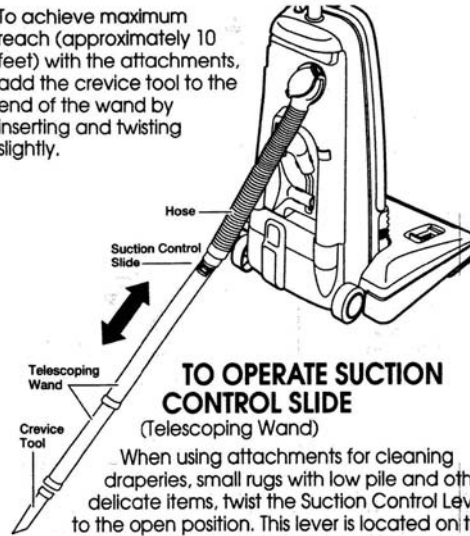


OPTIONAL WAND WITH SUCTION CONTROL



Attach the wand to the hose by inserting and twisting slightly.

To achieve maximum reach (approximately 10 feet) with the attachments, add the crevice tool to the end of the wand by inserting and twisting slightly.



TO OPERATE SUCTION CONTROL SLIDE (Telescoping Wand)

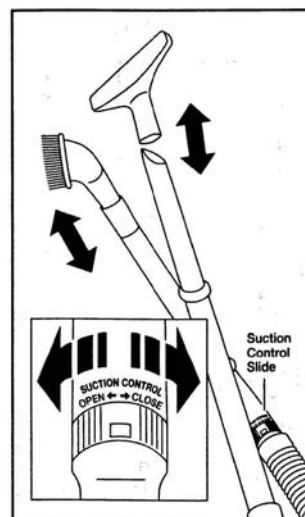
When using attachments for cleaning draperies, small rugs with low pile and other delicate items, twist the Suction Control Lever to the open position. This lever is located on the Telescoping Wand, close to the hose.

This will reduce suction for ease of cleaning.

CAUTION - Return Suction Control Lever to the closed position for normal cleaning.

CAUTION

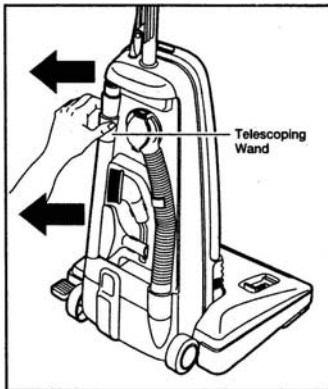
When using attachments, be careful not to over-extend the stretch hose when reaching. Trying to reach beyond the hose stretch capability could cause the cleaner to tip over.



When using the dusting brush or the upholstery tool, they may be attached directly to the wand or placed on the end of the crevice tool.

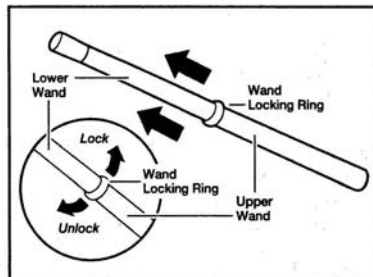
The attached hose end swivels 360 degrees to make cleaning easier in every direction.

Remove the telescoping wand from its storage position.

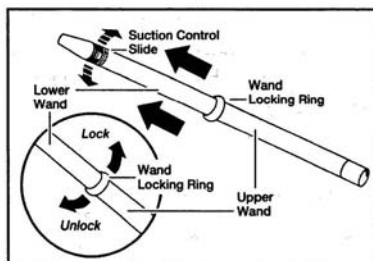


Remove the crevice tool from its storage position in the wand. Turn the locking ring to the **UNLOCK** position.

Extend the wand to its full length. Turn the wand locking ring to the **LOCK** position.

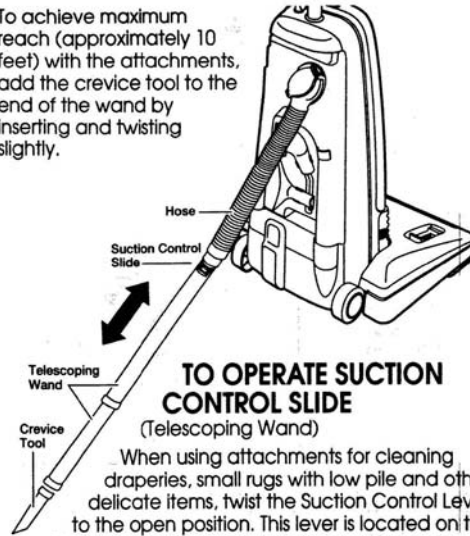


OPTIONAL WAND WITH SUCTION CONTROL



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TO OPERATE SUCTION CONTROL SLIDE (Telescoping Wand)

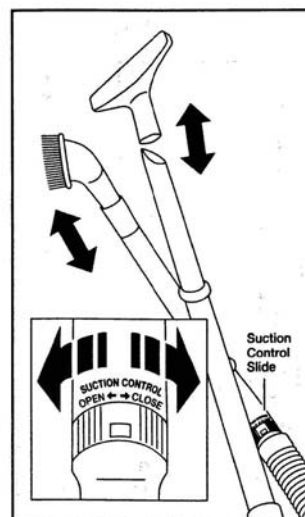
When using attachments for cleaning draperies, small rugs with low pile and other delicate items, twist the Suction Control Lever to the open position. This lever is located on the Telescoping Wand, close to the hose.

This will reduce suction for ease of cleaning.

CAUTION - Return Suction Control Lever to the closed position for normal cleaning.

CAUTION

When using attachments, be careful not to over-extend the stretch hose when reaching. Trying to reach beyond the hose stretch capability could cause the cleaner to tip over.



When using the dusting brush or the upholstery tool, they may be attached directly to the wand or placed on the end of the crevice tool.

VACUUMING TIPS

Carpet edges.

Guide either side or the front of the nozzle along a baseboard. The full length brushes help remove trapped dirt at carpet edges.

Stairs.

Put handle in full upright position. Use the crevice tool or fabric brush. Set the On/Off Switch to HI. (Optional)



WARNING

Personal Injury Hazard

Use care if vacuum cleaner is placed on stairs. If it falls, personal injury or property damage could result.



For best cleaning results, keep the airflow passage clear.

Occasionally, check each of the areas indicated for clogs.

Unplug the cleaner from the outlet before checking.



CAUTION

When using the regular hose or with the extension hose attached, the cleaner should be on a solid surface, such as the floor, on the same level or below the level of the user's feet. Do NOT use the hoses when the cleaner is above the level of the user's feet.

PERFORMANCE FEATURES



WARNING

Personal Injury Hazard

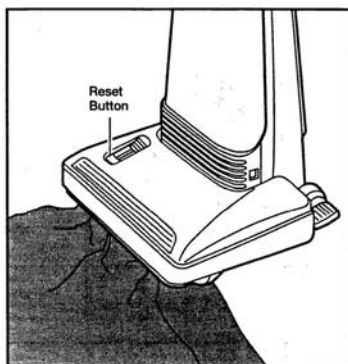
Always unplug the vacuum cleaner before cleaning the brush area as brush may suddenly restart. Failure to do so can result in personal injury.

BELT PROTECTION SYSTEM

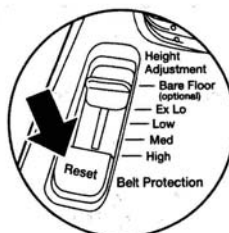
The cleaner has built-in protection against motor and belt damage should the brush jam. When an object slows down or stops the brush roll, the Belt Protection Reset Button pops up, the brush roll stops and the headlight goes off.

The suction motor will continue to run.

To correct problem: See the Trouble-Shooting chart on page 21.



To reset: Push in the Reset Button.

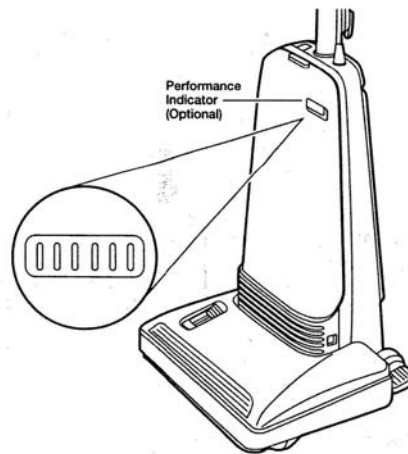


PERFORMANCE INDICATOR (OPTIONAL MODEL)

When the unit is running with normal air flow, the lines on the performance indicator are white. Red lines appear in the performance indicator whenever the airflow becomes blocked. If that occurs, check the disposable dust bag, motor safety filter and other possible clog locations shown on page 18.

NOTE: Red lines may appear when using attachments, due to reduced air flow through the attachment.

To correct problem: See the Troubleshooting chart on page 21.



VACUUM CLEANER CARE

Always follow all safety precautions when cleaning and servicing the vacuum cleaner.



WARNING

Electrical Shock And Personal Injury Hazard
Disconnect electrical supply before servicing or cleaning the unit. Failure to do so could result in electrical shock or personal injury from cleaner suddenly starting.

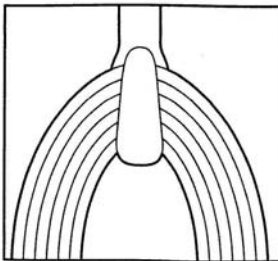


WARNING

Electrical Shock And Personal Injury Hazard
Wrapping the cord too tightly puts stress on the cord and can cause cord damage. A damaged cord is an electrical shock hazard and could cause personal injury or damage.

VACUUM STORAGE

Gather the cord and wrap it loosely around the upper and lower cord hooks.



Store the cleaner in a dry, indoor area, on the floor with the handle locked in the upright position.

CLEANING EXTERIOR AND ATTACHMENTS

Unplug cord from wall outlet. DO NOT drip water on cleaner.

Clean exterior using a clean, soft cloth that has been dipped in a solution of mild liquid detergent and water, then wrung dry. Wipe dry after cleaning.

To reduce static electricity and dust build-up, wipe outer surface of cleaner and attachments.

Wash attachments in warm soapy water, rinse and air dry. **Do not clean in dishwasher.**

DO NOT USE ATTACHMENTS IF THEY ARE WET.



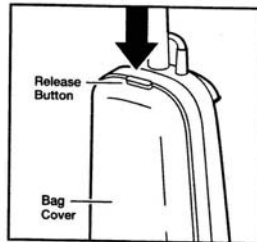
CAUTION

Attachments used in dirty areas (under a refrigerator) should not be used on other surfaces until they are washed. They could leave marks.

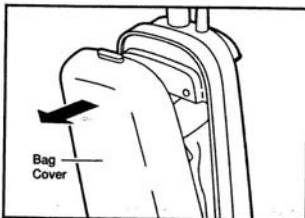
BAG CHANGING

To Remove Bag:

WARNING: Unplug power cord from electrical outlet.



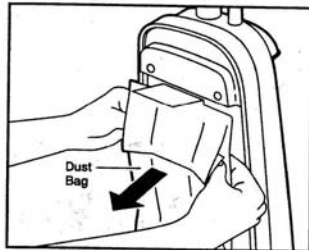
Press the Release Button located on the top of the bag cover.



Pull the bag cover forward. Remove and lay aside.

Grasp the dust bag collar and pull gently, carefully removing the dust bag.

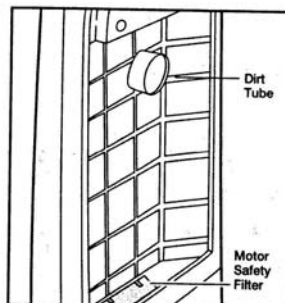
Throw away the used dust bag. Do not reuse.



CAUTION

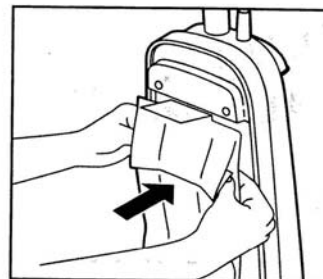
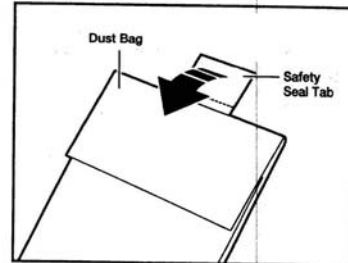
NEVER REUSE A DUST BAG. Very fine materials, such as carpet fresheners, face powder, fine dust, plaster, soot, etc. can clog the bag and cause it to burst before it is full. Change bag more often when vacuuming these materials.

Check the dirt tube and the motor safety filter. If either is blocked, check the Trouble-Shooting chart on page 21.



To Replace Bag:

Fold the safety seal tab on the new dust bag (#20-50688) away from the opening that fits on the dirt tube.

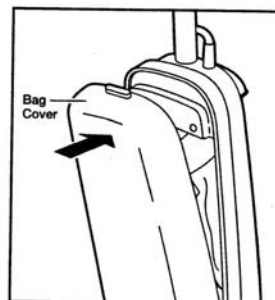
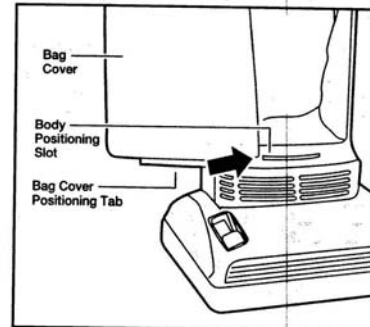


Unfold the new dust bag.

Insert the dust bag onto the bag holder completely by holding the bag collar.

Snap the dust bag collar into position.

Position the bag cover so its positioning tab fits into the body positioning tab slot.



Close the bag cover. You will hear a distinct snap when cover is securely closed.

MOTOR SAFETY FILTER CLEANING

Check motor safety filter occasionally and clean when dirty.



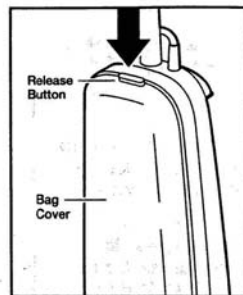
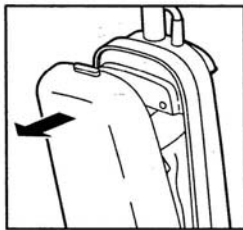
WARNING

Electrical Shock Hazard

Do not operate the cleaner without the motor safety filter. Be sure the filter is dry and properly installed to prevent motor failure and/or electrical shock.

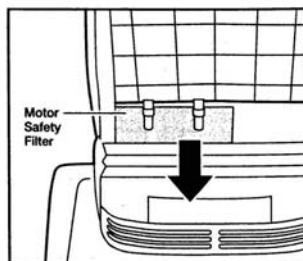
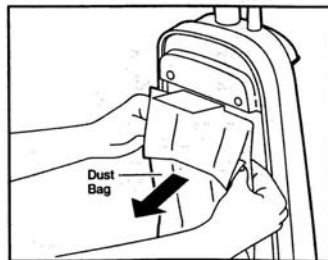
WARNING: Unplug power cord from electrical outlet.

Press the release button located on the top of the bag cover.

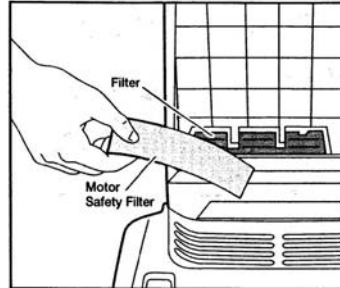


Pull the bag cover forward. Remove and lay aside.

Grasp the dust bag collar and pull gently, carefully removing the dust bag.



If the foam Motor Safety Filter located at the base of the bag cavity is dirty, remove it by pulling forward.



Check the filter located below the foam filter.

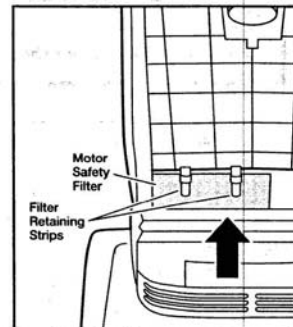
If it is dirty, wipe it with a clean, dry cloth.

Do not attempt to remove the filter located underneath the removable Motor Safety Filter.

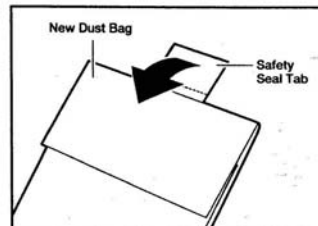
Wash the foam Motor Safety Filter in warm soapy water, rinse and dry.

Do not clean in the dishwasher. Do not install while damp.

Replace the foam Motor Safety Filter by sliding in underneath the filter retaining strips.



To Replace Bag:



Fold the safety seal tab on the new bag away from the opening that fits on the dirt tube.



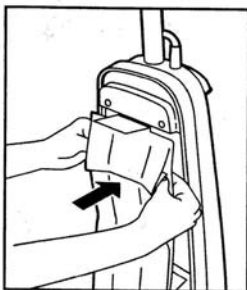
CAUTION

NEVER REUSE A DUST BAG. Very fine materials, such as carpet fresheners, face powder, fine dust, plaster, soot, etc. can clog the bag and cause it to burst before it is full. Change bag more often when vacuuming these materials.

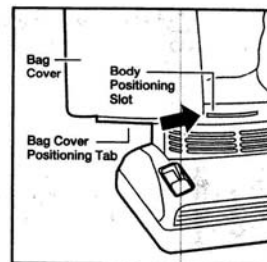
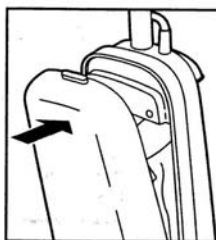
Unfold the new dust bag.

Insert the dust bag onto the bag holder completely by holding the bag collar.

Snap the dust bag collar into position.



Position the bag cover so its positioning tab fits into the body positioning tab slot.



Close the bag cover.

You will hear a snap when the cover is securely closed.

EXHAUST FILTER CLEANING



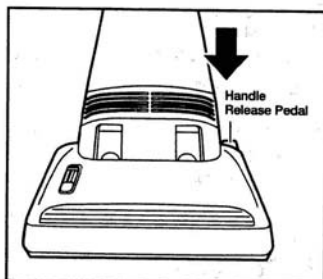
WARNING

Do not operate without exhaust filter.

Check filter frequently.

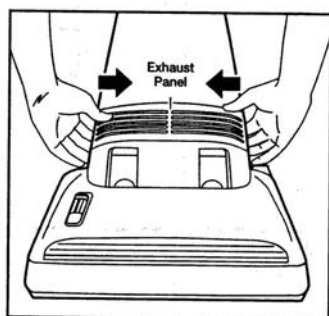
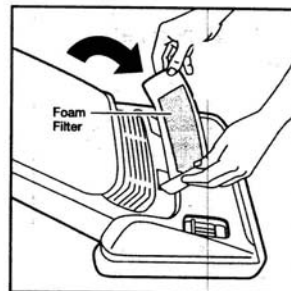
Clean when dirty.

Press the handle release pedal to let the upper portion of the cleaner lay back against the floor.

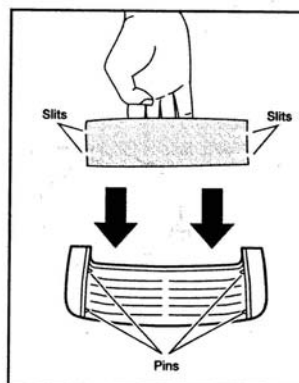


Lift the foam filter to remove. Wash the foam filter, rinse and dry.

Do not clean in the dishwasher. Do not install while damp.



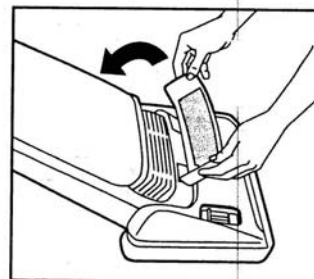
Grasp the air exhaust panel with a hand on each side, press inward and pull the panel forward.



Replace the dry foam filter, carefully positioning it so the slits fit around the four raised pins.

Replace the exhaust panel.

Return the cleaner to the upright position.



BELT CHANGING AND BRUSH CLEANING



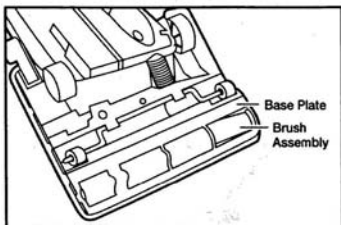
WARNING

Electrical Shock Or Personal Injury Hazard
Disconnect electrical supply before servicing or cleaning the unit. Failure to do so could result in electrical shock or personal injury from cleaner suddenly starting.

Frequently check and remove hair, string and lint build-up in the brush area. If build-up becomes excessive, follow the steps below:

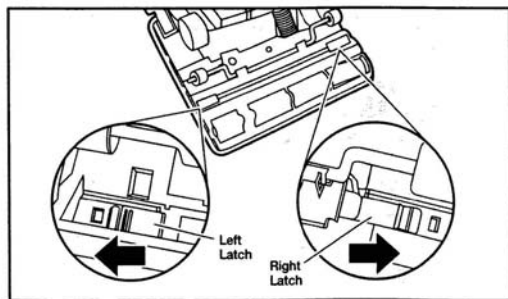
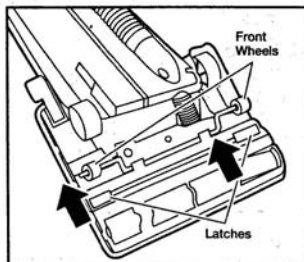
To remove belt:

Disconnect power cord from electrical outlet.
Lower the handle completely.



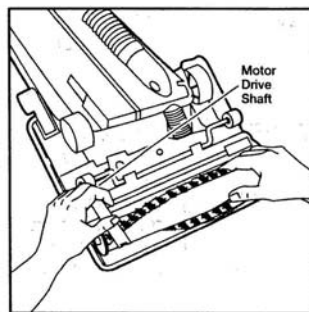
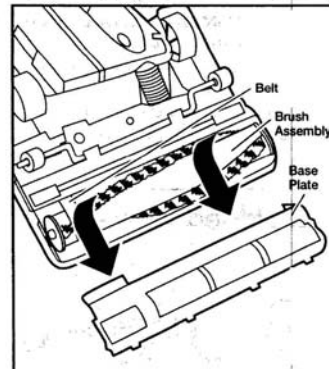
Turn the unit over so the brush assembly and base plate are facing upward.

Lift the front wheels to gain easy access to the two latches. Locate the two latches which secure the base plate.



To unlock the base plate, slide the left latch to the left and the right latch to the right.

Lift the base plate to uncover the brush assembly and belt.



Position hands on the brush assembly. If the belt is still attached to the roller there will be tension on the brush assembly. If belt is not broken remove it from the motor drive shaft before lifting the brush assembly.



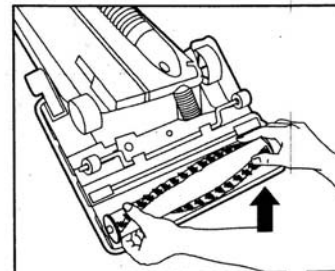
WARNING

Personal Injury Hazard

Be careful when removing brush assembly, the belt tension is high. Failure to do so could result in personal injury from brush assembly releasing quickly and snapping away.

Carefully lift the right end of the brush assembly and then lift the left end.

Carefully remove the end cap and washer from each end and lay them aside. See exploded view.



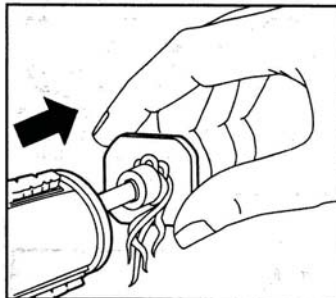
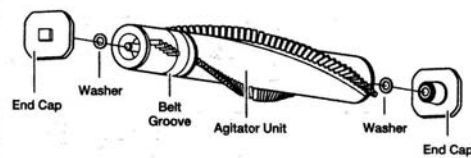


CAUTION

When you remove the end caps, a small metal washer on each end may come off. DO NOT lose these two metal washers.

Remove any dirt or debris in the belt path area or in the brush roller area.

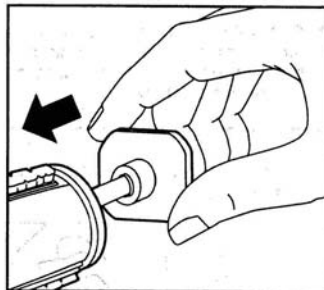
Exploded View – Brush Assembly



Carefully remove the brush end caps and metal washers to check for string and hair build-up. Remove any string or debris.

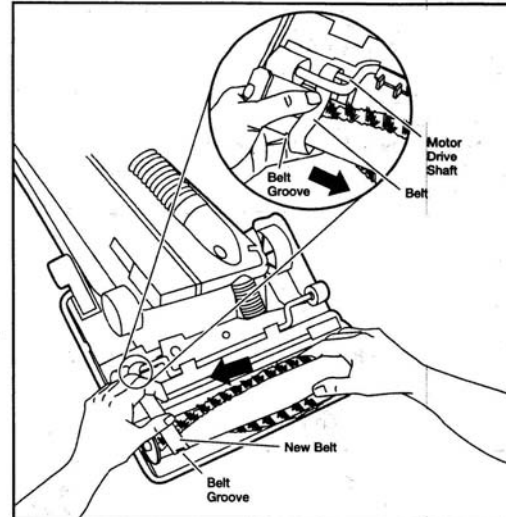
IMPORTANT

Replace the washers and then the end caps. See exploded view for correct assembly.



To replace belt:

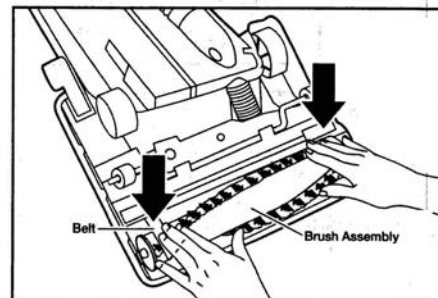
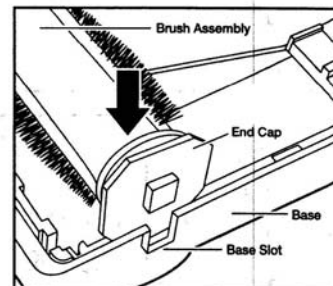
Loop the end of the new belt (#20-5286) on the brush assembly.



Loop the new belt on the motor drive shaft.

Align the square extension on each end cap with the slots in the frame of the base.

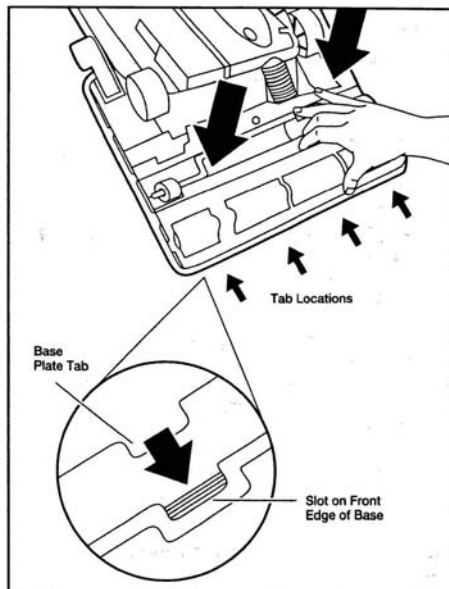
NOTE: Care must be taken due to the belt tension during reassembly.



Press firmly, checking to see that each end is completely inserted.

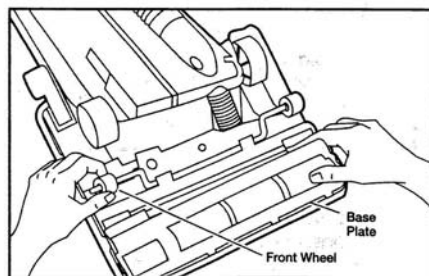
Check to see that the belt is centered in the belt groove. Turn the brush assembly with your fingers to see that it turns freely.

To re-attach the base plate, insert the four tabs into the four slots along the front edge of the base. Lower the base plate to its original position.

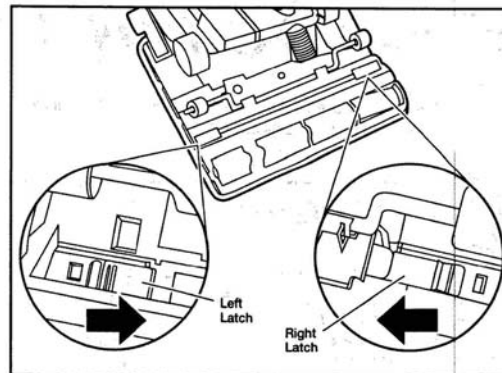
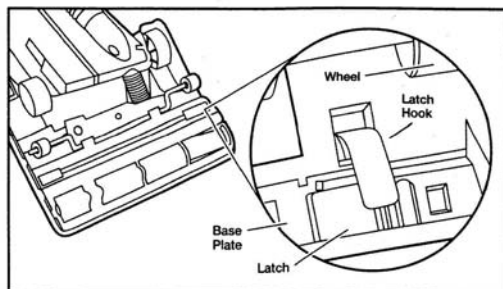


Lift the front wheel assembly.

As the base plate is lowered, the left side will brush against the front wheel.

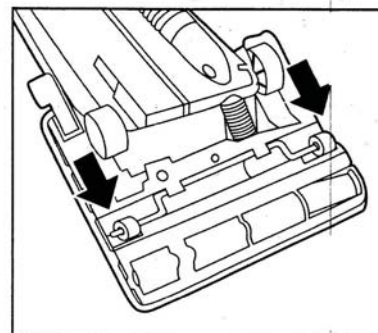


On the right side, lift the latch hook slightly to place the base plate into position. The base plate will not close unless the base plate is under the latch hook.



Slide latches toward the center of the unit to secure.

Reposition the front wheels forward into the operating position.



Return the cleaner to the upright position before plugging into the electrical outlet.

CLOG REMOVAL

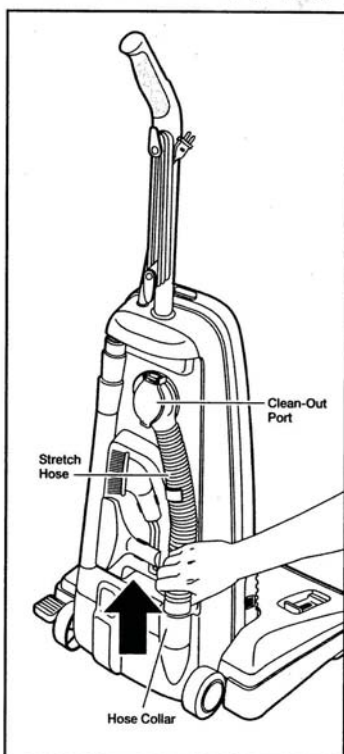
Always follow all safety precautions when cleaning and servicing the vacuum cleaner.

WARNING

Electrical Shock Or Personal Injury Hazard
Disconnect electrical supply before servicing or cleaning the unit. Failure to do so could result in electrical shock or personal injury from cleaner suddenly starting.

If the cleaner does not seem to have adequate suction, first check for a full bag or filter which is clogged. See instructions on Bag Changing on page 12 and Filter Changing on pages 13 and 14.

If the bag and filter areas are free of clogs, check the hose area. Remove the lower end of the stretch hose from the cleaner by grasping the hose collar, twisting and pulling straight up.



Plug in the vacuum and turn it on. Alternately open and shut the clean-out port cover. Stretch the hose to maximum length and then allow the hose to return to its storage length.

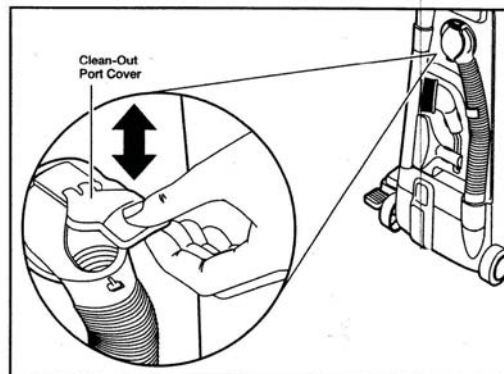
Turn the unit off and unplug the unit.

Visually inspect the clean-out port area and the base area into which the hose is inserted.

Remove visible clog.

Close clean-out port cover firmly to insure seal.

Re-insert the hose into the opening on the lower body from which it was removed. Press firmly to assure connection.



NOTE: Brush assembly will not turn if the hose is not fully inserted.

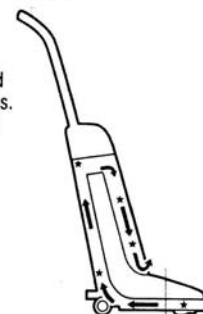
WARNING

Personal Injury Hazard
DO NOT place hands or feet underneath the unit when inserting the hose. The brush assembly begins to revolve rapidly when the vacuum is turned on and is switched to a carpet height setting.

If the bag and filter areas and the hose areas are free of clogs, check the nozzle area. To check this area, see the section on Belt Changing and Brush Cleaning on pages 15-17.

Return the cleaner to the upright position before plugging into the electrical outlet.

For best cleaning results, keep the airflow passage open. Check each starred area occasionally for clogs. Unplug from outlet before checking.



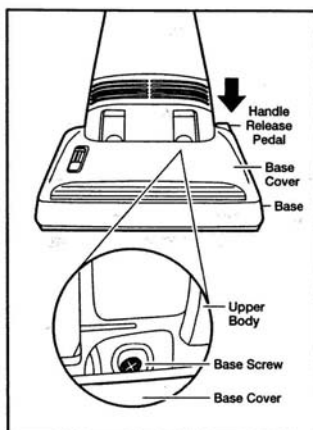
LIGHT BULB CHANGING



WARNING

Electrical Shock Or Personal Injury Hazard
Disconnect electrical supply before servicing or cleaning the unit. Failure to do so could result in electrical shock or personal injury from cleaner suddenly starting.

Disconnect the power cord from the electrical outlet.



Press the handle release pedal to let the upper portion of the cleaner lay back against the floor.

Locate the base screw which attaches the base cover to the base.

Remove the base screw.



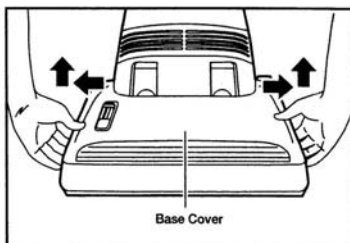
CAUTION

Do not remove the two screws on the upper body which are located to the left and right of the base screw.

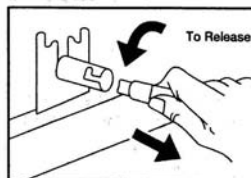
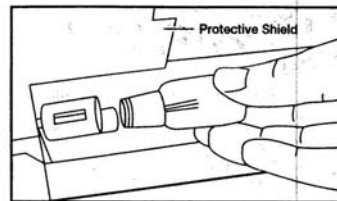
Place hands on the sides of the base cover so that your fingers extend to grasp the lower edge of the base cover.

Gently pull the base cover away from the base and lift up.

Lay the base cover aside.



Lift the protective shield. To release the light bulb, carefully push the bulb in and turn to the left.

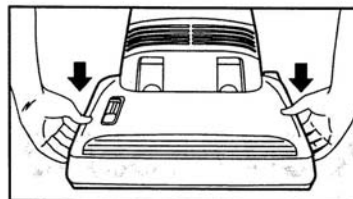
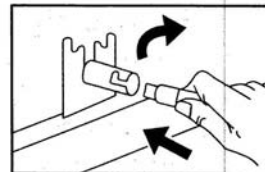


Pull the light bulb to remove.

CAUTION: Replace the light bulb with the same or smaller wattage size to prevent possible damage to surrounding parts.

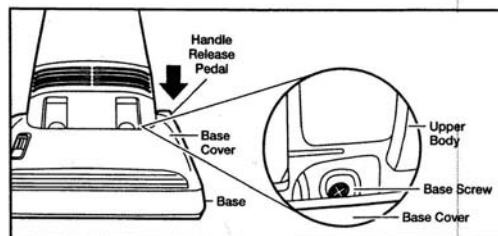
To replace the light bulb (#20-5240), carefully insert and turn it to the right.

CAUTION: Do not plug in or turn on until the vacuum is completely reassembled.



Replace the base cover over the base. Press down firmly so the cover snaps onto the base.

Replace the base screw.



CAUTION

Do not operate the cleaner without the screw in place. Do not overtighten. Overtightening could strip the screw hole.

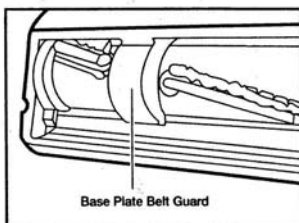
BRUSH SERVICING



WARNING

Electrical Shock Or Personal Injury Hazard
Disconnect electrical supply before servicing or cleaning the unit. Failure to do so could result in electrical shock or personal injury from cleaner suddenly starting.

To check brush:



When brushes are worn to the level of the base plate belt guard or when the back-up beater bar is chipped or gouged, replace the brushes.

To replace brush:

Remove the base plate and brush assembly. See Belt Changing section on page 15.

Remove the brush supports and washers.

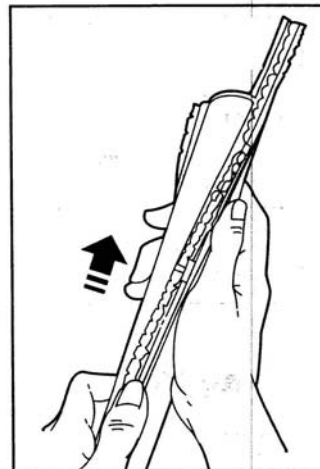
Push out worn brushes and end brushes.

Slide the new brushes and end brushes into the slots. Make sure not to reverse the brush and back-up beater bar position. (See Brush Assembly drawing below.)

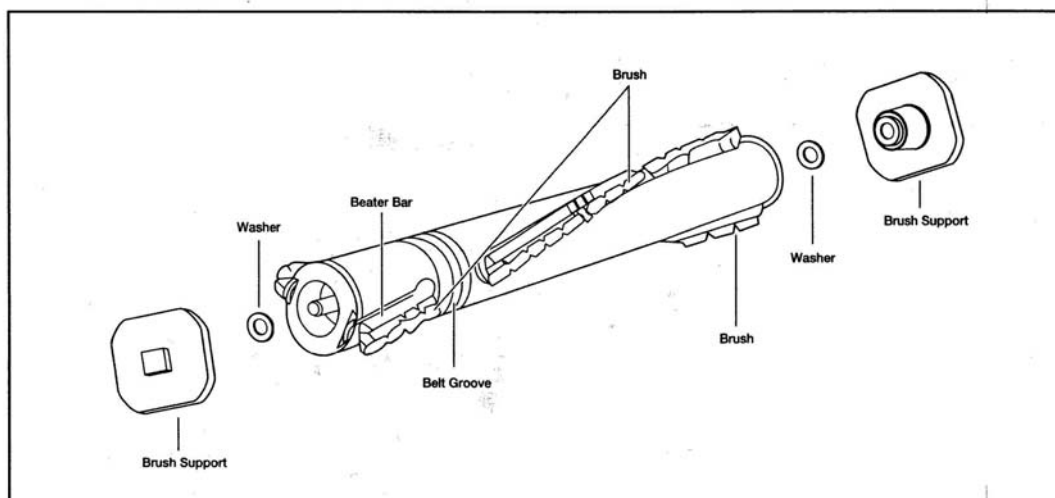
Replace the washers and brush supports.

NOTE: New brushes and end brushes may be easier to install if they are soaked in warm water for a few minutes before sliding them into the slots. Do not use oil. Dry thoroughly before reinstalling.

Reassemble the belt, brush assembly and base plate. See instructions for replacing belt in Belt Changing section which begins on page 15.



BRUSH ASSEMBLY



TROUBLESHOOTING

Review this chart to find do-it-yourself solutions for minor performance problems.



WARNING

Electrical Shock or Personal Injury Hazard

Disconnect electrical supply before servicing or cleaning the unit. Failure to do so could result in electrical shock or personal injury from cleaner suddenly starting.

PROBLEM	POSSIBLE CAUSE	POSSIBLE SOLUTION
Cleaner won't run.	<ol style="list-style-type: none"> 1. Unplugged at wall outlet. 2. Tripped circuit breaker/blown fuse at household service panel. 3. On-Off Switch not turned ON. 4. Tripped thermostat on suction motor. (Brush and light still work.) 	<ol style="list-style-type: none"> 1. Plug in firmly, push On/Off Switch to ON. 2. Reset circuit breaker or replace fuse. 3. Push On-Off Switch to ON. 4. Allow cleaner to cool down for 20-30 minutes. Check for full bag, clogged filter, nozzle.
Poor job of dirt pick-up	<ol style="list-style-type: none"> 1. Full or clogged dirt bag. 2. Wrong Height Adjustment Lever Setting. 3. Worn brush. 4. Clogged nozzle. 5. Clogged dust tube. 6. Hole in hose. 7. Broken belt. 8. Hose not inserted fully. 9. Tripped Belt Protection System. 10. Dirty Motor Safety Filter. 	<ol style="list-style-type: none"> 1. Change bag, (page 12). 2. Adjust setting, (page 6). 3. Change brush, (page 20). 4. Clog removal, (page 18). 5. Clog removal, (page 18). 6. Replace hose. 7. Replace belt, (page 15). 8. Insert hose fully, (page 7). 9. Check for clogs, (page 18). 10. Clean filter, (page 14).
Cleaner picks up movable rugs –OR– pushes too hard.	<ol style="list-style-type: none"> 1. Wrong Height Adjustment Lever Setting. 2. Wrong speed. 	<ol style="list-style-type: none"> 1. Adjust to higher setting, (page 6). 2. Use LO speed, (optional-page 6).
Light won't work.	<ol style="list-style-type: none"> 1. Burned out light bulb. 2. Attachment hose not properly inserted into base at rear. 3. Height Adjustment Lever in Bare Floor Setting. 4. Tripped Belt Protection. 	<ol style="list-style-type: none"> 1. Change light bulb, (page 19). 2. Check for proper insertion. 3. Switch lever to ex lo, medium or high depending on carpet height, (optional – page 6). 4. Reset Belt Protection System, (page 10).
Brush assembly does not turn.	<ol style="list-style-type: none"> 1. Broken belt. 2. Tripped Belt Protection System. 3. Attachment hose not properly inserted into base at rear. 4. Height Adjustment Lever in Bare Floor Setting. 5. Wrong Height Adjustment. 	<ol style="list-style-type: none"> 1. Replace belt, (page 15). 2. Check for clogs, (page 18). Reset Belt Protection System, (page 10). 3. Check for proper insertion. 4. Switch lever to ex lo or auto, low, medium, or high, (optional – page 6). 5. Raise setting to higher setting, (page 6).
Performance indicator (optional) is red.	<ol style="list-style-type: none"> 1. Full or clogged dirt bag. 2. Dirty Motor Safety Filter. 3. Clogged airflow passage. 4. Certain attachment tools. 	<ol style="list-style-type: none"> 1. Change bag, (page 12). 2. Clean filter, (page 14). 3. Clear clog from airflow passage, (page 18). 4. This is normal. Light should go off when tool is removed.

Appendix H. Operation of central vacuum.

IMPORTANTES MESURES DE SÉCURITÉ

LISEZ COMPLÈTEMENT LE MODE D'EMPLOI AVANT D'UTILISER CE SYSTÈME D'ASPIRATEUR.

En employant un appareil électrique, des précautions fondamentales devraient toujours être prises, y compris:

AVERTISSEMENT

Pour réduire les dangers de feu, d'électrocution, ou de blessure:

- Débrancher et couper le courant avant de le réparer.
- Ne pas utiliser sur des surfaces mouillées.
- Ne pas utiliser comme jouet et surtout faire attention quand on l'emploie près des enfants.
- Employer seulement tel que décrit dans ce manuel d'emploi et qu'avec les accessoires du fabricant.
- Ne pas utiliser si la corde ou la prise électrique est endommagée. Si l'appareil ne fonctionne pas, est endommagé, est tombé par terre, a été laissé à l'extérieur, ou a été immergé, dans l'eau, veuillez rapporter l'appareil à un centre de service.
- Ne pas tirer sur le cordon électrique. Ne pas utiliser le cordon électrique comme poignée, ni le coincer dans une porte ou l'appuyer sur des coins et bords tranchants. Ne pas passer l'aspirateur sur le cordon électrique. Bloquent le cordon électrique de la chaleur.
- Ne pas débrancher en tirant sur le cordon électrique. Pour le débrancher, saisissez la prise de courant, et non le cordon électrique.
- Ne pas utiliser avec les mains mouillées.
- Ne rien mettre dans les fentes et les orifices bouchés. Ne pas employer avec des orifices bouchés. Éliminer poussière, cheveux et les autres choses qui peuvent rendre difficile la circulation d'air.
- Gardez cheveux, vêtements amples, doigts, et toutes autres parties du corps loin des orifices et des pièces mobiles.
- Ne pas aspirer quelque chose qui brûle ou fume, comme des cigarettes, des allumettes, ou des cendres chaudes.
- Brancher à une prise de courant munie d'une mise à la terre. Voir les renseignements de mise à la terre.
- Brancher tous les cordons avant de débrancher.
- Faire bien attention en nettoyant les escaliers.
- Ne pas utiliser pour aspirer des liquides inflammables comme l'essence et ne pas employer dans des endroits où ces choses peuvent se trouver.
- Ne rien placer ou entreposer sur le dessus de l'appareil - une surchauffe du moteur pourrait se produire.

CONSERVEZ CES INSTRUCTIONS

USAGE RÉSERVÉ POUR LA MAISON OU EMPLOI COMMERCIAL LÉGER

Ne pas sentir dans un mita un plafond, ou un espace délimité d'un bâtiment ou un toit défilé.

NE BRANCHER L'APPAREIL QU'À UNE PRISE AVEC MISE À LA TERRE.

INSTRUCTIONS DE MISE À LA TERRE

Cet appareil doit avoir une mise à la terre. Si une déficience ou autre survenant, la mise à la terre offre une voie de moindre résistance au courant électrique, d'où un risque moins élevé d'électrocution. Cet appareil est équipé d'un cordon électrique ayant un conducteur et une fiche de mise à la terre. Cette fiche doit être branchée dans une prise appropriée qui a été installée en accord avec le code électrique de votre région.

AVERTISSEMENT

Un branchement incorrect de l'équipement de mise à la terre peut causer un risque d'électrocution. Si vous avez un doute concernant la mise à la terre de votre prise, veuillez faire vérifier votre installation par un électricien qualifié ou une personne du service après-vente. Ne pas modifier la fiche fournie avec l'appareil - si la fiche ne se branche pas à la prise, faites installer une prise adéquate par un électricien qualifié.

Les appareils, modèle 260, 460 & 560 doivent être employés avec un circuit de 120 volts et avoir une prise qui ressemble à la prise illustrée sur l'image A.

Les appareils, modèle 280, 480 & 580 doivent être employés avec un circuit de 240 volts.

Vérifiez que votre appareil est branché sur une prise ayant la même configuration que la fiche électrique. Aucun adaptateur ne devrait être utilisé avec cet appareil.

MODÈLE A



MÉTHODE DE MISE À LA TERRE



ATTENTION: NE PAS UTILISER SURTAPS OU PLANCHER MOBILE.



Le logo ci-dessus s'applique au modèle 280, 480 & 580



OPERATING INSTRUCTIONS

FOR MODELS
260/280, 460/480
& 560/580

READ MANUAL BEFORE OPERATING SYSTEM

TO THE OWNER:

Read the owner's manual thoroughly to ensure the most efficient use of your VACUFLO system. To register your VACUFLO system warranty in the United States and Canada, call 1-800-822-9277, register online (www.vacuflo.com) or fill in and mail the warranty card located with this manual.

Please be sure this manual and warranty information are left with the power unit or customer when installation is complete.

P/N 7804
1/02



MODELS 260/280, 460/480 & 560/580

COMMERCIAL AND OVERSEAS LIMITED WARRANTY

The manufacturer warrants to the initial purchaser that the VACUFLO Models 260/280, 460/480 & 560/580 power units will be free from defects in material and workmanship for one (1) year from the date of first consumer purchase and that hoses, tools, turbine attachments and other attachments will be free from defects in material and workmanship for ninety (90) days from the date of first purchase.

Defects, malfunctions, failure, or damage caused by improper, unreasonable, or negligent use or repair while the warranted parts are in possession of the purchaser are excluded from the warranty. This warranty does not cover unauthorized removal or repair of the motor assembly.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THIS WARRANTY DOES NOT COVER THE INSTALLATION OF EQUIPMENT. IN NO EVENT SHALL THE MANUFACTURER BE LIABLE FOR ANY OTHER OBLIGATIONS OR LIABILITIES ESPECIALLY FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES TO ANYONE. THE WARRANTY DOES NOT COVER UNAUTHORIZED REMOVAL OR REPAIR OF THE MOTOR ASSEMBLY.

Some states/provinces do not allow the exclusion or limitation of incidental or consequential damages so the above limitation or exclusion may not apply to you. We neither assume nor authorize any person to assume for us any liability in connection with the sale or service of the VACUFLO equipment other than as provided in this warranty. This warranty is only valid under normal, intermittent use of the product when properly installed and operated in light commercial application.

IMPORTANT WARRANTY INFORMATION

Proof of Purchase or Registration of the VACUFLO System is required before any warranty work will be performed by an Authorized VACUFLO Dealer. Registration ensures a fast and easy resolution to your warranty requirements.

To register, simply call the 24-hour VACUFLO registration line at 1-800-822-9277, register online (www.vacuflo.com) or complete and return the blue warranty postcard located with this Manual.



512 West Gorgan Street • P.O. Box 3912
Louisville, OH 44641-3912
1-800-822-8366
www.vacuflo.com

VACUFLO® Built - In Central Vacuum Systems OPERATING INSTRUCTIONS

VACUFLO® True Cyclonic MODELS: 260/280, 460/480 & 560/580

General Information

Do Not Store Objects on top of the power unit. This will block the motor cooling ventilation. Restricting the cooling airflow may shorten the motor life.

The central vacuum is designed to vacuum ordinary household dirt and dust. The system is designed for dry pickup. A Wetvac accessory is needed if the system will be used for liquid pickup.

The central vacuum system is a network of inlet valves, 2" PVC tubing, and low voltage wiring installed in the walls of your home. To operate the system, simply plug the hose into an inlet valve, attach the cleaning tool to the curved hose end and begin vacuuming. The dirt is transported through the in-wall tube system back to the dirt canister (located on the power unit).

Caution: Do not allow the motor to remain turned on, unless a hose is connected or an inlet valve is open. If air is not permitted to pass through the fan blades, damage may occur to the motor.

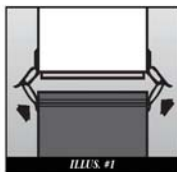
Operating Instructions

Using the Central Vacuum System is easy. Simply raise the inlet valve lid, insert the hose end and attach the desired cleaning tool to the hose wand. The Power Unit is activated when the hose is inserted into the valve.

General Power Unit Maintenance

The simple care and maintenance instructions included here will help ensure trouble-free use of the central vacuum system.

- Do not place objects on top of the power unit. The motor could overheat.
- Do not allow the motor to remain "on" unless a hose is connected or an inlet valve is open. If airflow is not permitted to flow through fan blades, motor damage may occur.
- Empty the dirt canister when it is 3/4 full.
- Remember to clean the motor guard screen each time the dirt receptacle is emptied (refer to Cleaning Guard Screen instructions).
- The power unit does not require any lubrication.
- The exterior of the power unit can be wiped with a clean, dry cloth. Do not use liquid cleaners or water as an electrical shock may occur.
- For additional service contact a qualified service person.



Emptying the Dirt Canister & Cleaning the Guard Screen

The dirt canister - where the vacuumed dirt is deposited - is the removable lower portion of the power unit. The canister needs to be removed and emptied when it is 3/4 full. The Motor Guard Screen should be cleaned each time you empty the dirt canister.

The motor guard screen is located directly above the dirt canister inside the power unit. The guard screen is not removable, it is designed to prevent lightweight fibers from entering the motor impeller blades. A buildup of material on the guard screen may result in a loss of vacuum.

Follow these steps to empty the dirt canister

- (refer to illustration #1)
- 1) Make sure the Power Unit is OFF.
 - 2) Disengage the canister latches located on opposite sides of the power unit.
 - 3) Remove the dirt canister.
 - 4) Dispose of canister contents in trash receptacle.
 - 5) Clean the guard screen.



Follow these steps to clean the motor guard screen

- (refer to illustration #2)
- 1) A long handled stiff brush is recommended for cleaning the screen.
 - 2) Make sure the Power Unit is OFF.
 - 3) Unlatch and remove the Dirt Canister. (Hold or place the canister under the power unit to catch the debris removed from the guard screen.)
 - 4) Using a long handled brush, insert the brush through the bottom of the dirt cone reaching to the guard screen. Gently "sweep" the screen to remove the debris.

Follow these steps to clean the motor guard screen

- (refer to illustration #2)
- 1) A long handled stiff brush is recommended for cleaning the screen.
 - 2) Make sure the Power Unit is OFF.
 - 3) Unlatch and remove the Dirt Canister. (Hold or place the canister under the power unit to catch the debris removed from the guard screen.)
 - 4) Using a long handled brush, insert the brush through the bottom of the dirt cone reaching to the guard screen. Gently "sweep" the screen to remove the debris.

- 3) Dispose of the dirt and debris captured in the dirt canister.
- 4) Raise the dirt canister to the proper location under the power unit and engage the latches.
- 5) Be certain the dirt canister is "seated" properly to the gasket on the body of the power unit.

Troubleshooting the system

Motor Fails to Turn On:

- Check the main fuse or circuit breaker at the main power supply panel of your home. Reset breaker or replace fuses if necessary.
- Check the Power unit reset button located above the power cord. Pressing the button should restore operation.
- If the circuit protector continues to trip off after a short period of time, the motor brushes may be worn out. Call a qualified service person for service.

Loss of Vacuum

If the system shows a loss of vacuum power, check the following:

- The dirt receptacle and motor guard screen may need cleaned - follow instructions in this guide.
- The hose may be clogged - To check if there is an obstruction, unplug the hose and insert an object that is smaller than the diameter of the hose (A butter knife works well). Pass the object completely through the hose. If it stops that will indicate where the obstruction is located. A dry garden hose can be inserted into the hose to help push obstruction through.
- The Dirt Canister may not be properly seated to the gasket - Follow instructions for replacing the dirt canister.
- Tube lines may be obstructed - First check the 90 degree elbow located directly behind the inlet valves, if an obstruction occurs it will usually not make it past this elbow. If the obstruction is not visible at the elbow, attempt to purge the tubing at each inlet valve. To do this, connect the hose and use your hand to stop airflow at the end of the hose for a couple seconds, let airflow resume. Repeat if necessary.
- If necessary call a qualified service person to perform required maintenance.

Obtaining Service Under Warranty: To obtain repair on warranted parts contact the seller of the system with the power unit serial number.

IMPORTANT SAFETY INSTRUCTIONS

READ ALL INSTRUCTIONS BEFORE USING THIS VACUUM SYSTEM

When using an electrical appliance, basic precautions should always be followed, including the following:

WARNING

To reduce the risk of fire, electric shock or injury:

- Unplug and disconnect power before servicing.
- Do not use on wet surfaces.
- Do not allow to be used as a toy. Close attention is necessary when used by or near children.
- Use only as described in this manual. Use only manufacturer's recommended attachments.
- Do not use with damaged cord or plug. If appliance is not working as it should, has been dropped, damaged, left outdoors, or dropped into water, return it to a service center.
- Do not pull or carry by cord, use cord as a handle, close a door on cord, or pull cord around sharp edges or corners. Do not run appliance over cord. Keep cord away from heated surfaces.
- Do not unplug by pulling on cord. To unplug, grasp the plug, not the cord.
- Do not handle system or appliance with wet hands.
- Do not put any object into openings. Do not use with any opening blocked. Keep openings free of dust, lint, hair, and anything that may reduce air flow.
- Keep hair, loose clothing, fingers, and all parts of body away from openings and moving parts.
- Do not pick up anything that is burning or smoking, such as cigarettes, matches, or hot ashes.
- Connect to a properly grounded outlet. See grounding instructions.
- Turn off all controls before unplugging.
- Use extra care when cleaning on stairs.
- Do not use to pick up flammable or combustible liquids such as gasoline or use in areas where they may be present.
- Do not place or store anything on top of power unit - overheating of motor could occur.

SAVE THESE INSTRUCTIONS

INTENDED FOR HOUSEHOLD AND LIGHT COMMERCIAL USE.

Do not vent into a wall, ceiling, or concealed space of a building or structure.

CONNECT TO A PROPERLY GROUNDED OUTLET ONLY.

GROUNDING INSTRUCTIONS

This appliance must be grounded. If it should malfunction or break down, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This appliance is equipped with a cord having an equipment grounding conductor and grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.

WARNING

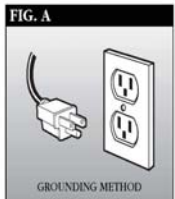
Improper connection of the equipment-grounding conductor can result in a risk of electric shock. Check with a qualified electrician or service person if you are in doubt as to whether the outlet is properly grounded. Do not modify the plug provided with the appliance - if it will not fit the outlet, have a proper outlet installed by a qualified electrician.

The Models 260, 460 & 560 appliances are for use on a nominal 120 volt circuit and has a grounding plug that looks like the plug illustrated in Fig. A.

The Models 280, 480 & 580 appliances are for use on a nominal 240 volt circuit.

The Models 260j, 460j & 560j are for use on a nominal 100 volt circuit.

Make sure that the appliance is connected to an outlet having the same configuration as the plug. No adapter should be used with this appliance.



WARNING: ELECTRIC SHOCK COULD OCCUR IF USED ON WET SURFACES.

CAUTION: DO NOT USE ON WET RUG OR FLOOR.

Above legs do not apply to models 280, 480, 580, 200j, 460j or 560j



Applies to models 280, 480 & 580



MODELS 260/280, 460/480 & 560/580

LIFETIME PLUS 3 RESIDENTIAL LIMITED WARRANTY

All permanently installed components of the VACUFLO Built-In Central Vacuum System are warranted to be free from defects in material and workmanship under normal use and care as long as the original consumer purchaser owns the home of original installation or until the system is removed from its' original installation, whichever occurs first.

In the event of a defect in permanently installed components of the VACUFLO System, an authorized VACUFLO dealer should be contacted. The dealer will repair or replace (at our option) any defective part or parts at your location at no labor cost for a period of three (3) years. Thereafter, repaired or replacement (at our option) part or parts will be provided to you for any items under warranty.

All VACUFLO accessories are warranted to be free from defects in material and workmanship under normal use and care for three (3) years from date of original consumer purchase. In the event of a defect in a VACUFLO accessory, the accessory will be repaired or replaced (at our option) at an authorized VACUFLO dealer location at no labor costs for three (3) years. There is no warranty for consumable items such as light bulbs, belts, and beater brushes.

THIS WARRANTY IS A SOLE AND EXCLUSIVE WARRANTY. ALL OTHER WARRANTIES INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXCLUDED. THIS WARRANTY COVERS ONLY LIABILITY AND RESPONSIBILITY DESCRIBED HEREIN AND THERE IS NO LIABILITY FOR ANY CONSEQUENTIAL, INCIDENTAL OR SPECIAL DAMAGES ARISING FROM THE USE OF THIS SYSTEM.

Some states do not allow exclusion or limitation of warranties or limitation of incidental or consequential damages so the above exclusion may not apply to you. This warranty gives you specific legal rights and you may have other rights which vary from state to state.

To register as the original consumer purchaser and verify your coverage please return the warranty registration located with this manual or in the United States and Canada, call 1-800-822-9277. Register online: www.vacuflo.com

Appendix I. Operation of snow blower

(Note, only pages relevant to operation and safety have been included here.)

SEARS

owner's manual

Model
C950-52919-0
9-H.P. 27 inch

CAUTION:

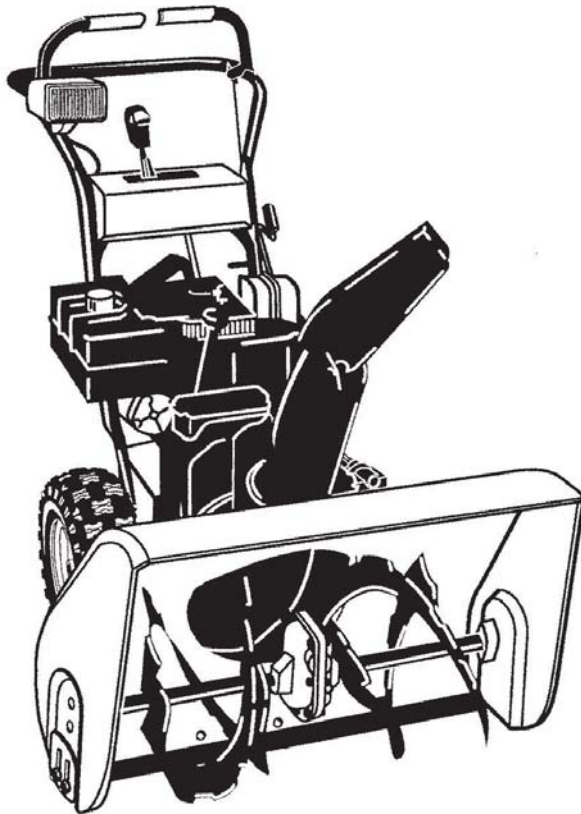
You must read and
understand this owner's
manual before operating
unit.

Serial No. _____

SEARS

CRAFTSMAN

DUAL STAGE SNOW BLOWER



F-001005J 05/10/99

SEARS CANADA INC., TORONTO, ONTARIO M5B 2B8

Printed in U.S.A.

RULES FOR SAFE OPERATION

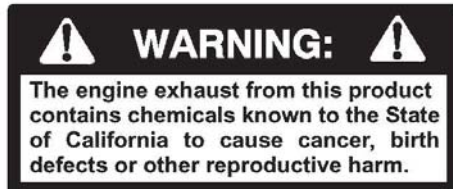
IMPORTANT



WARNING: Always disconnect the spark plug wire and place it where it cannot make contact with spark plug to prevent accidental starting during: Preparation, Maintenance, or Storage of your snow blower.



SAFE OPERATION PRACTICES FOR WALK-BEHIND SNOW BLOWER DO NOT OPERATE THIS EQUIPMENT BEFORE READING THIS MANUAL



TRAINING

1. Read the operating and service instruction manual carefully. Be thoroughly familiar with the controls and the proper use of the equipment. Know how to stop the unit and disengage the controls quickly.
2. Never allow children to operate the equipment. Never allow adults to operate the equipment without proper instruction.
3. Keep the area of operation clear of all persons, particularly small children and pets.
4. Exercise caution to avoid slipping or falling especially when operating in reverse.

PREPARATION

1. Thoroughly inspect the area where the equipment is to be used and remove all doormats, sleds, boards, wires, and other foreign objects.
2. Disengage all clutches before starting the engine.
3. Do not operate the equipment without wearing adequate winter outer garments. Wear footwear that will improve footing on slippery surfaces.
4. Handle fuel with care; it is highly flammable.
 - (a) Use an approved fuel container.
 - (b) Never add fuel to a running engine or hot engine.
 - (c) Fill fuel tank outdoors with extreme care. Never fill fuel tank indoors.
 - (d) Replace gasoline cap securely and wipe up spilled fuel.

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5. For all units with electric starting motors use electric starting extension cords certified CSA/UL. Use only with a receptacle that has been installed in accordance with local inspection authorities.
6. Adjust the auger housing height to clear gravel or crushed rock surface.
7. Under no circumstances should any adjustments be made while the engine is running (except when specifically recommended by manufacturer).
8. Let engine and machine adjust to outdoor temperatures before starting to clear snow.
9. Always wear safety glasses or eye shields during operation or while performing an adjustment or repair to protect eyes from foreign objects that may be thrown from the machine.

OPERATION

1. Do not put hands or feet near or under rotating parts. Keep clear of the discharge opening at all times.
2. Exercise extreme caution when operating on or crossing gravel drives, walks or roads. Stay alert for hidden hazards or traffic.
3. Never discharge snow onto public roads or near moving traffic.
4. After striking a foreign object, stop the engine, remove the wire from the spark plug, thoroughly inspect snow blower for any damage, and repair the damage before re-starting and operating the snow blower.
5. If the unit should start to vibrate abnormally, stop the engine and check immediately for the cause. Vibration is generally a warning of trouble.
6. Stop the engine and remove spark plug wire whenever you leave the operating position, before unclogging the auger/impeller housing or discharge chute and when making any repairs, adjustments, or inspections.
7. When cleaning, repairing, or inspecting, make certain the auger/impeller and all moving parts have stopped and all controls are disengaged. Disconnect the spark plug wire and keep the wire away from the spark plug to prevent accidental starting.
8. Take all possible precautions when leaving the snow blower unattended. Disengage the auger/impeller, shift to neutral, stop engine, and remove key.

2

RULES FOR SAFE OPERATION

9. Do not run the engine indoors, except when starting the engine and for transporting the snow blower in or out of the building. Ensure the outside doors are open; exhaust fumes are dangerous.
10. Do not clear snow across the face of slopes. Exercise extreme caution when changing direction on slopes. Do not attempt to clear steep slopes.
11. Never operate the snow blower without proper guards, plates or other safety protective devices in place.
12. Never operate the snow blower near enclosures, automobiles, window wells, drop-offs, and the like without proper adjustment of the snow discharge angle. Keep children and pets away.
13. Do not overload the machine capacity by attempting to clear snow at too fast a rate.
14. Never operate the machine at high transport speeds on slippery surfaces. Look behind and use care when backing up.
15. Never direct discharge at bystanders or allow anyone in front of the unit.
16. Disengage power to the collector/impeller when snow blower is transported or not in use.
17. Use only attachments and accessories approved by the manufacturer of the snow blower (such as wheel weights, counterweights, cabs, and the like).
18. Never operate the snow blower without good visibility or light. Always be sure of your footing and keep a firm hold on the handles.
19. Do not over-reach. Keep proper footing and balance at all times.
20. Do not attempt to use snow blower on a roof.

MAINTENANCE AND STORAGE

1. Check shear bolts and other bolts at frequent intervals for proper tightness to be sure the equipment is in safe working condition.
2. Never store the machine with fuel in the tank inside a building where ignition sources are present such as hot water and space heaters, clothes dryers, and the like. Allow the engine to cool before storing in any enclosure.
3. Always refer to operator's guide instructions for important details if the snow blower is to be stored for an extended period.
4. Maintain or replace safety and instruction labels, as necessary.
5. Run the machine 2 minutes with auger clutch lever engaged after blowing snow to prevent freeze-up of the auger/impeller.



WARNING: Do not use hands to unclog discharge chute.



- Stop engine/motor before removing debris.
- Do not walk in front of running machine.
- Do not discharge at bystanders.
- Keep people and pets a safe distance from the machine.
- Before leaving machine, shut off engine/ motor and remove key.



WARNING: Avoid injury from rotating auger— keep hands, feet, and clothing away.



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3

OPERATION

Get to know your snow blower and its controls. Be sure you (or any other operator) have read and understood the Operation Precautions listed on page 2 of this manual.

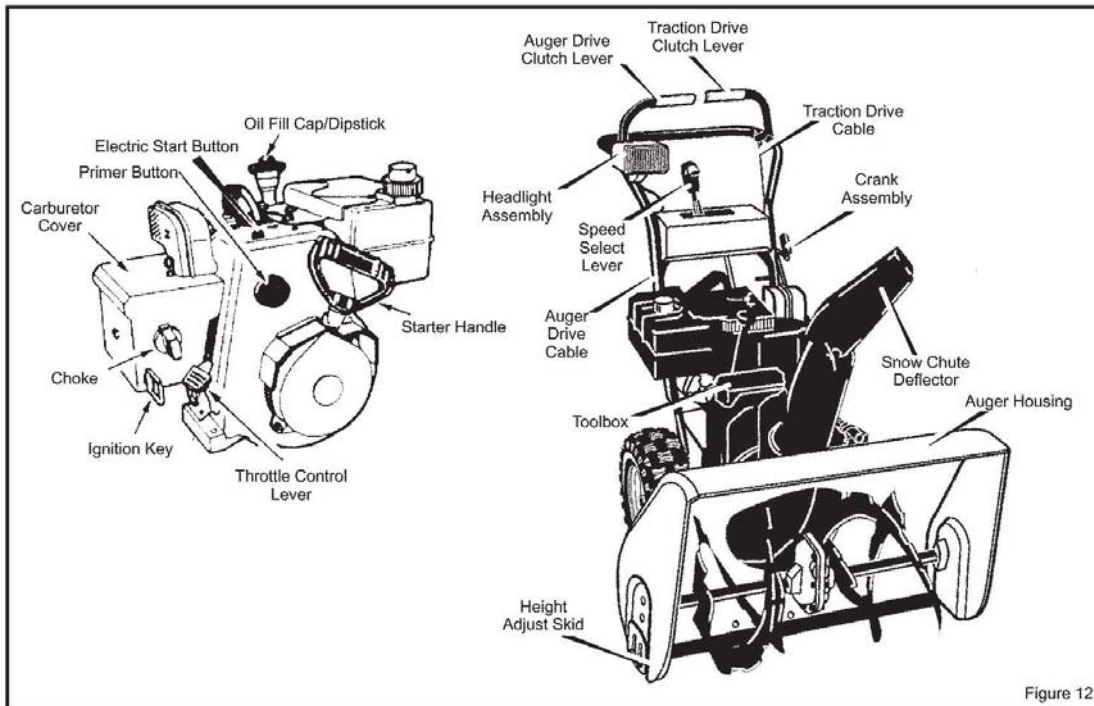


Figure 12

ENGINE AND SNOW BLOWER OPERATING CONTROLS

The engine operating controls and their functions are as follows:

Throttle Control Lever – This snow blower is equipped with an engine mounted throttle control lever used to start a cold engine.

Choke Lever– Set choke lever to ON CHOKE position to start a cold engine.

Electric Start Button– Used to start the engine using the 120 volt electric starter.

Prime Button– Used to inject fuel directly into carburetor manifold to insure fast starts in cool weather.

Ignition Key– Must be inserted into ignition key slot to start engine. Pull out to stop. Do not turn ignition key.

Starter Handle– Starts the engine manually.

The snow blower operating controls and their functions are as follows:

Speed Select Lever– Allows the operator to use one of six (6) forward and two (2) reverse speeds. To shift, move speed select lever to desired position.

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NOTE: Do not move speed select lever while Traction Drive Clutch is engaged. This may result in severe damage to drive system.

Auger Drive Clutch Lever– Used to engage and disengage the auger and impeller. To engage push down, to disengage release.

Traction Drive Clutch Lever– Used to propel snow blower forward or reverse. Push down to engage, release to disengage.

Snow Chute Deflector– Changes the direction the snow is blown.

Crank– Used to change direction of the snow discharge. Turn handle clockwise to turn chute to right. Turn handle counter clockwise to turn chute to left.

Height Adjust Skid– Used to adjust ground clearance of auger housing (see To Adjust Skid Height in the Adjustment/Repair section of this manual).

Toolbox – Spare shear pins and spacers are located in toolbox.

OPERATION



The operation of any snow blower can result in foreign objects being thrown into the eyes, which can result in severe eye damage. Always wear safety glasses or eye shields before beginning snow blower operation. We recommend standard safety glasses or Wide Vision Safety Mask for over spectacles.

SNOW BLOWER OPERATION

The most effective use of the snow blower will be established by experience, taking into consideration the terrain, wind conditions and building location which will determine the direction of the discharge chute.

NOTE: Do not blow snow towards a building as hidden objects could be blown with sufficient force to cause damage.

1. Start the engine as described in section "To Start Engine" (see Figure 15).
2. Adjust snow chute deflector. Loosen wing nut on the side of the snow chute and raise chute deflector for more distance. Tighten wing nut. (see Figure 14).
3. Using crank, position the discharge chute to discharge snow with the wind.
4. Select proper speed for snow conditions as outlined below and set speed select lever to desired position.

NOTE: Always release traction drive clutch lever before moving speed select lever.

Ground speed is determined by snow conditions. Select the speed you desire by moving the speed selector into the appropriate colored area on the control panel.

Red	Wet, Heavy, Slushy, Extra Deep
Amber	Moderate
White	Very Light
Green	Transport Only

NOTE: When clearing wet, heavy snow, it is recommended that the ground speed of the unit be reduced, maintain full throttle and do not attempt to clear the full width of the unit.

For additional operating instructions see "Operating Tips" in this section of the manual.

5. Engage auger drive clutch lever (right hand—Figure 15).
6. Engage traction drive clutch lever (left hand—Figure 15). As the snow blower starts to move, maintain a firm hold on the handles and guide the snow blower along the cutting path. Do not attempt to push the snow blower.



WARNING: Read Owner's Manual before operating machine. This machine can be dangerous if used carelessly.

Never operate the snow blower without all guards, covers, and shields in place.

Never direct discharge towards windows or allow bystanders near machine while engine is running.

Stop the engine whenever leaving the operating position.

Disconnect spark plug before unclogging the impeller housing or the discharge chute and before making repairs or adjustments.

When leaving the machine, remove the ignition key. To reduce the risk of fire, keep the machine clean and free from spilled gas, oil and debris.

ENGINE WILL NOT START UNLESS IGNITION KEY IS INSERTED INTO IGNITION SLOT IN CARBURETOR COVER. DO NOT TURN IGNITION KEY.



Figure 13

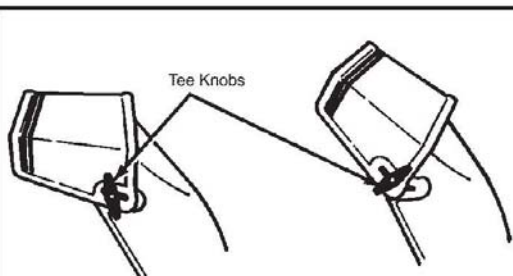


Figure 14

OPERATION

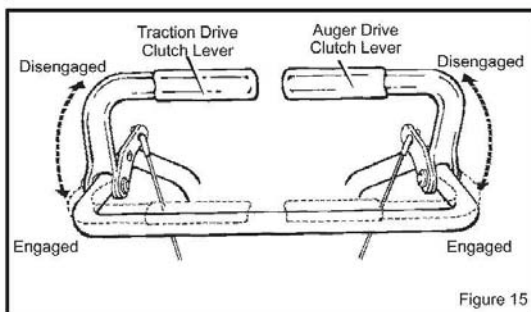


Figure 15

7. To stop forward motion, release traction drive clutch lever (left hand – Figure 15).
8. To stop auger, release auger drive clutch lever (right hand – Figure 15).
9. To move the snow blower backwards, move speed select lever into first or second reverse and engage traction drive clutch lever (left hand). To stop, release traction drive clutch lever.



WARNING: Never run engine indoors or in an enclosed, poor ventilated area. Engine exhaust contains CARBON MONOXIDE, an ORDERLESS and DEADLY GAS. Keep hands, feet, hair and loose clothing away from any moving parts on engine and snow blower. Temperature of muffler and nearby areas can exceed 150° F (66° C). Avoid these areas. DO NOT allow children or young teenagers to operate or be near snow blower while it is operating.

WHEEL LOCK OUT PIN

1. The left hand wheel is secured to the axle with a klik pin. This unit was shipped with this klik pin in the locked position. (Figure 16).
2. For ease of maneuverability when lighter conditions prevail, remove klik pin from wheel locked position and insert into single wheel drive (unlocked) position (Figure 17). Make sure that the klik pin is in the single wheel drive position of the axle only and not through the locked position.

NOTE: Check tire pressure (20 pounds). See side of tire for maximum inflation. Do not exceed listed maximum pressure.



WARNING: Do not attempt to remove any item that may become lodged in auger without taking the following precautions:

- Release auger and drive clutch levers.
- Move throttle lever to STOP position.
- Remove the ignition key.
- Disconnect the spark plug wire.
- Do not put your hands in the auger or discharge chute. Use a pry bar.

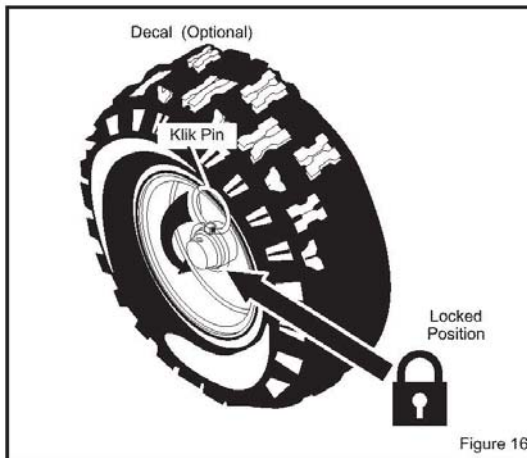


Figure 16

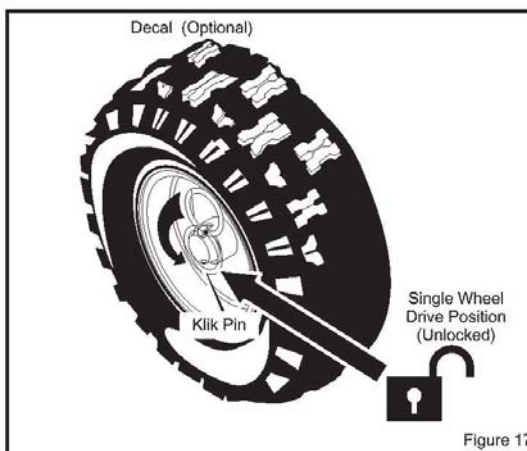


Figure 17

OPERATION

BEFORE STARTING ENGINE

Check the oil

NOTE: The engine was shipped from the factory filled with oil. Check the level of the oil. Add oil as needed.

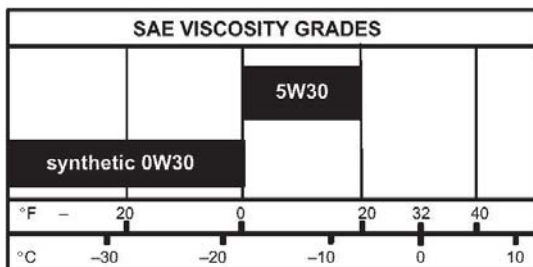
1. Make sure the unit is level.
2. Remove the oil fill cap/dipstick. Check the oil.
3. If necessary, add oil until the oil reaches the FULL mark on the oil fill cap/dipstick (see Figure 18). Do not add too much oil.

NOTE: For extreme cold operating conditions of 0°F (-18°C) and below, use a synthetic 0W30 motor oil for easier starting.

NOTE: S.A.E. 5W30 motor oil may be used to make starting easier in areas where the temperature is 20°F (-7°C) to 0°F (-18°C).

NOTE: SEE CHART FOR OIL RECOMMENDATION

TEMPERATURE	TYPE OF OIL
20° F. to 0° F. (-7° C) to (-18° C)	S.A.E. 5W30
0° F. (-18° C) and below	synthetic 0 W30



FILL GAS

1. Fill the fuel tank with a fresh, clean, unleaded regular, unleaded premium, or reformulated automotive gasoline only. **DO NOT** use leaded gasoline.

NOTE: Winter grade gasoline has higher volatility to improve starting. Be certain container is clean and free from rust or other foreign particles. Never use gasoline that may be stale from long periods of storage in the container.

CAUTION: DO NOT use gasoline containing any amount of alcohol as it can cause serious damage to the engine or significantly reduce the performance.

2. Check to make sure that spark plug is tightened securely into engine and spark plug wire is attached to spark plug. If torque wrench is available, torque plug to 18-23 ft-lbs.

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WARNING: Gasoline is flammable. Always use caution when handling or storing gasoline. Do not add gasoline to the fuel tank while snow blower is running, hot, or when snow blower is in an enclosed area. Keep away from open flame, electrical sparks and **DO NOT SMOKE** while filling the fuel tank. Never fill the fuel tank completely; but fill the fuel tank to within 1/4-1/2 inch (6.5-12.5 mm) from the top to provide space for the expansion of the fuel. Always fill fuel tank outdoors and use a funnel or spout to prevent spilling. Make sure to wipe up any spilled fuel before starting the engine.

Store gasoline in a clean, approved container, and keep the cap in place on the container. Keep gasoline in a cool well ventilated place; never in the house. Never buy more than a 30 day supply of gasoline to assure volatility. Gasoline is intended to be used as a fuel for internal combustion engines; therefore, do not use gasoline for any other purpose. Since many children like the smell of gasoline, keep it out of their reach because the fumes are dangerous to inhale, as well as being explosive.

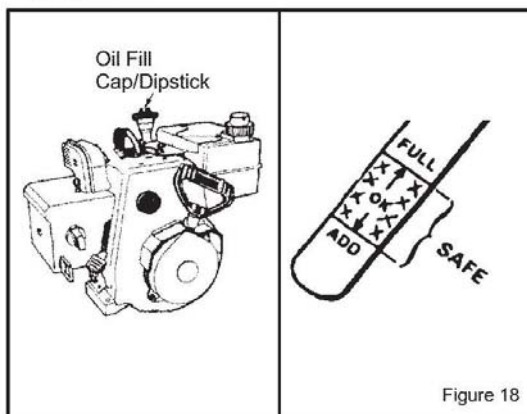


Figure 18

BEFORE STOPPING THE ENGINE

Run the engine for a few minutes to help dry off any moisture on the engine.

To help avoid possible freeze-up of the starter, proceed as follows:

Recoil Starter

With the engine running, pull the starter rope with a rapid continuous full arm stroke three or four times.

NOTE: The normal sound made by pulling the starter rope will not harm the engine or the starter.

Electric Starter

1. Connect the power cord to the switchbox and then to a wall outlet.
2. With the engine running, push the starter button and spin the starter for several seconds.

OPERATION

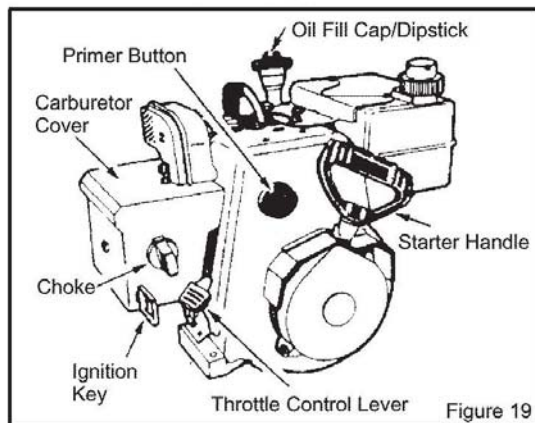
NOTE: The normal sound made by spinning the starter will not harm the engine or the starter.

3. Disconnect the power cord from the receptacle first and then from the switchbox.

TO START ENGINE

Be sure that engine has sufficient oil.

The snow blower engine is equipped with a recoil starter.



COLD ENGINE START (RECOIL STARTER) (SEE FIGURE 19)

(Engine has not been run recently.)

1. Be sure auger drive clutch lever and traction drive clutch lever are in the disengaged (RELEASED) position.
2. IN TEMPERATURES ABOVE 0°F (-18°C)
Move throttle control to "FAST" position.
IN TEMPERATURES BELOW 0°F (-18°C)
Move throttle control to "1/2 THROTTLE" position. Before engaging auger drive clutch lever allow engine to idle for five minutes to allow engine oil to warm. Failure to allow engine oil to warm can cause damage to engine.
3. Insert key into ignition slot. Make sure it snaps into place (Figure 19). Do not turn key.
4. Rotate choke knob to the on position.
5. Push the primer button as follows:
Above 50° F (10° C), DO NOT PRIME.
From 50° F (10° C) to 15°F (-10° C), PUSH TWO TIMES.
Below 15° F (-10° C), PUSH FOUR TIMES.

NOTE: Cover the vent hole when as you push the primer. Remove your finger from the primer vent hole between pushes.

6. Pull starter handle (Figure 19) rapidly, and allow to re-wind slowly while maintaining firm grip on handle.
7. As engine warms up move choke lever to "1/2 choke" position. When engine does not run smoothly, move choke lever to the off position.

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NOTE: Allow the engine to warm up for several minutes before blowing snow in temperatures below 0°F.

8. Run engine at or near top speed.
9. To stop engine, move throttle control lever to stop position. Remove key. Do not turn key.

WARM ENGINE START (RECOIL STARTER)

(Engine still warm from recent running.)

1. Be sure auger drive clutch lever and traction drive clutch lever are in the disengaged (RELEASED) position.
2. IN TEMPERATURES ABOVE 0°F (-18°C)
Move throttle control to "FAST" position.
IN TEMPERATURES BELOW 0°F (-18°C)
Move throttle control to "1/2 THROTTLE" position. Allow engine to idle at "1/2 Throttle" for five minutes to allow engine oil to warm before engaging auger drive clutch lever. Failure to allow engine oil to warm can cause damage to engine.
3. Insert key into ignition slot. Make sure it snaps into place (Figure 19). Do not turn key.
4. CHOKE KNOB must be in the off position. Do not use primer button.
5. Pull starter handle (Figure 19) rapidly, and allow to re-wind slowly while maintaining firm grip on handle.
6. If engine fails to start after a reasonable number of starting attempts, rotate choke knob to the on position and repeat instruction number 5.
7. As engine warms up, move the choke lever to the "1/2 choke" position. When engine does not run smoothly, move choke lever to the off position.

NOTE: Allow the engine to warm up for several minutes before blowing snow in temperatures below 0°F.

8. Run engine at or near top speed.
9. To stop engine, move throttle control lever to stop position. Remove ignition key. Do not turn the ignition key.

To help prevent possible freeze-up of recoil starter and engine controls, proceed as follows after each snow removal job.

1. With engine running, pull starter rope hard with a continuous full arm stroke three or four times. Pulling of starter rope will produce a loud clattering sound. This is not harmful to the engine or starter.
2. With engine not running, wipe all snow and moisture from carburetor cover in area of control levers. Also move control levers backward and forward several times.

IMPORTANT: After each use of the snow blower, stop the engine, remove the ignition key, remove all accumulated snow from the snow blower and wipe clean. Store the snow blower in a protected area.

NOTE: Never cover snow blower while engine and exhaust area are still warm.

16

OPERATION

USE OF ELECTRIC STARTER

On models so equipped



WARNING: The electric starter is equipped with a three-wire power cord and plug designed to operate on 120 volt AC house hold current. The power cord must be properly grounded at all times to avoid the possibility of electric shock which can cause injury to the operator. Follow all instructions carefully as set forth below:

Make sure your house has a three-wire grounded system. If you are not sure, ask a licensed electrician. If your house does not have a three-wire grounded system, do not use this electric starter under any condition.

If your house has a three-wire grounded system but a three hole receptacle is not available to connect the electric starter, have a three-hole receptacle installed by a licensed electrician.



WARNING: To connect a 120 volt power cord, always connect the power cord first to the switch box located on the engine and then plug the other end into a three-hole grounded receptacle.



WARNING: To disconnect the power cord, always unplug the end connected to the three-hole grounded receptacle first.

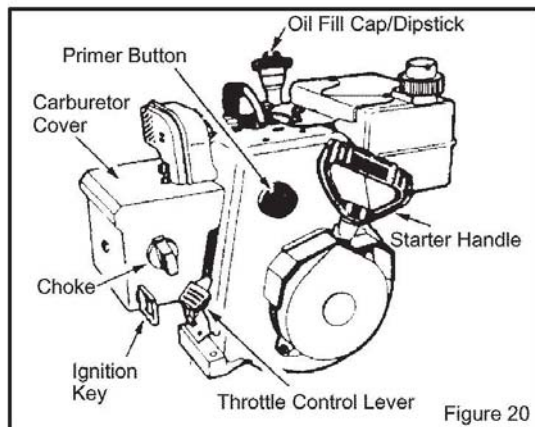


Figure 20

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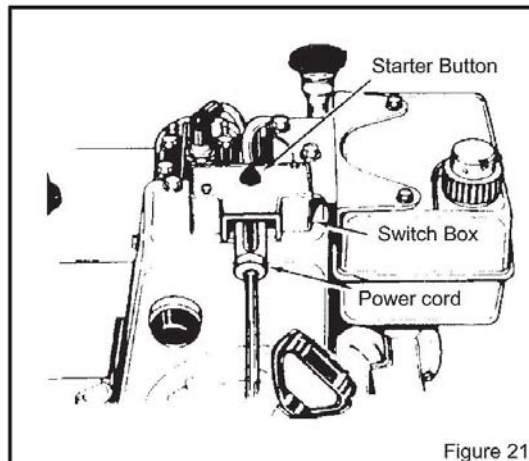


Figure 21

COLD ENGINE START (ELECTRIC STARTER) (SEE FIGURE 20 AND FIGURE 21)

(Engine has not been run recently.)

NOTE: When using the 120 volt electric starter, do not push the primer button.

1. Be sure auger drive clutch lever and traction drive clutch lever are in the disengaged (RELEASED) position.
2. IN TEMPERATURES ABOVE 0°F (-18°C)
Move throttle control to "FAST" position.
IN TEMPERATURES BELOW 0°F (-18°C)
Move throttle control to "1/2 THROTTLE" position. Allow engine to idle at "1/2 Throttle" for five minutes to allow engine oil to warm before engaging auger drive clutch lever. Failure to allow engine oil to warm can cause damage to engine.
3. Insert key into ignition slot. Make sure it snaps into place (Figure 20). Do not turn key.
4. CHOKE KNOB must be in the off position.
5. Connect POWER CORD to SWITCH BOX (Figure 21).
6. Plug other end of POWER CORD into a three-hole, GROUNDED 120 VOLT, AC receptacle. (See WARNING at beginning of these instructions).

NOTE: Cover vent hole when pushing primer. Remove finger from primer vent hole between pushes.

7. Push the primer button as follows:
Above 50° F (10° C), DO NOT PRIME.
From 50° F (10° C) to 15° F (-10° C), PUSH TWO TIMES.
Below 15° F (-10° C), PUSH FOUR TIMES.
8. START ENGINE:

OPERATION

- a. Push STARTER BUTTON (Figure 21) to engage starter motor and crank engine.
- b. Rotate CHOKE KNOB to the on position while cranking engine.

NOTE: The electric starter is thermally protected. If overheated, the electric starter will stop automatically and can only be restarted when it has cooled to a safe temperature. A wait of approximately five to ten minutes is required.

- c. When engine starts, release the STARTER BUTTON and rotate the CHOKE KNOB gradually to the off position.
 - d. If engine falters, rotate the CHOKE KNOB immediately to the on position and then gradually to the off position.
 - e. Disconnect the POWER CORD from receptacle first, and then from the SWITCH BOX.
9. When the engine starts, release the starter button and move choke lever to "1/2 choke" position. When engine does not run smoothly, move choke lever to the off position.

NOTE: Allow the engine to warm up for several minutes before blowing snow in temperatures below 0°F.

10. Run engine at or near top speed.
11. To stop engine, move throttle control lever to stop position. Remove key. Do not turn key.

If, after following the preceding instructions, your engine fails to start, have it checked by an Authorized Sears Service Outlet.

WARM ENGINE START (ELECTRIC STARTER)

(Engine still warm from recent running.) Proceed with the following instructions.

NOTE: Warm engine may start without choking.

1. Be sure auger drive clutch lever and traction drive clutch lever are in the disengaged position, "RELEASED".

2. IN TEMPERATURES ABOVE 0°F (–18°C)
Move throttle control to "FAST" position.
IN TEMPERATURES BELOW 0°F (–18°C)
Move throttle control to "1/2 THROTTLE" position. Allow engine to idle at "1/2 Throttle" for five minutes to allow engine oil to warm before engaging auger drive clutch lever. Failure to allow engine oil to warm can cause damage to engine.
3. Insert key into ignition slot. Make sure it snaps into place (Figure 17). Do not turn key.
4. CHOKE KNOB must be in the off position.
5. Connect the POWER CORD to the SWITCH BOX (Figure 21).
6. Plug other end of POWER CORD into a three hole, GROUNDED 120VOLT, AC receptacle (See "WARNING" at beginning of these instructions).
7. START ENGINE:
 - a. Push STARTER BUTTON (Figure 21) to engage starter motor and crank engine.
 - b. While cranking, rotate the CHOKE KNOB on the engine to the on position.

NOTE: The electric starter is thermally protected. If overheated, the electric starter will stop automatically and can only be restarted when it has cooled to a safe temperature. A wait of approximately five to ten minutes is required.

- c. When the engine starts, release the STARTER BUTTON and rotate the CHOKE KNOB gradually to the off position.
 - d. If the engine falters, rotate CHOKE KNOB immediately to the on position and then gradually to the off position.
 - e. Disconnect the POWER CORD from the receptacle first and then from the SWITCH BOX.
8. Run the engine at or near top speed.
 9. To stop the engine, move the throttle control lever to the "Stop" position. Remove the ignition key. Do not turn key.

If after following the preceding instructions, your engine fails to start, have the engine checked by an Authorized Sears Service Outlet.

NOTE: Do not lose the ignition key. Key the ignition key is a safe place. The engine will not start without the ignition key.

OPERATION

OPERATING TIPS

1. For optimum snow blower efficiency, adjust ground speed, not the throttle. **REMEMBER** – if the wheels slip, forward speed will be reduced. The engine is designed to deliver optimum performance at full throttle and must be run at this power setting at all times.
2. Most efficient snowblowing is accomplished when snow is removed immediately after it falls.
3. For complete snow removal, slightly overlap each swath previously taken.
4. Snow should be discharged downwind whenever possible.
5. For normal usage, set the skids one-eighth inch (3 mm) below the scraper bar. For extremely hard-packed snow surfaces, the skids may be adjusted upward to insure cleaning efficiency.
6. On gravel or crushed rock surfaces, the skids should be set at 1-1/4 inch (32 mm) below the scraper bar (see To Adjust Skid Height, in the Adjustment/Repair section in this manual). Rocks and gravel must not be picked up and thrown by the machine.
7. After the snowblowing job has been completed, allow the engine to idle for a few minutes, to melt snow and ice accumulated on the engine.
8. Remove ice and snow accumulation from the entire snow blower to prevent obstructions and possible damage when snow blower is subsequently operated.

9. Before starting snow blower, always inspect augers and impeller for ice accumulation and/or debris, which could result in snow blower damage.
10. Check oil level before every start. Fill to "SAFE" indication prior to operating snow blower.

To help avoid possible freeze-up of starter, proceed as follows:

Recoil Starter:

With engine running, pull starter rope with a rapid continuous full arm stroke three (3) or four (4) times.

NOTE: The unusual sound made by pulling starter rope will not harm the engine or the starter.

Electric Starter:

1. Connect the "POWER CORD" to the "SWITCH BOX" and then to a 120 volt AC receptacle.
2. With engine running, push the "STARTER BUTTON" and spin the starter for several seconds.

NOTE: The unusual sound made by spinning the starter rope will not harm the engine or the starter.

3. Disconnect the "POWER CORD" from the receptacle first and then from the "SWITCH BOX".

SERVICE RECOMMENDATIONS

SERVICE RECOMMENDATIONS									
	PROCEDURE	FIRST 2 HOUR	BEFORE EACH USE	OFTEN	EVERY 5 HOURS	EVERY 10 HOURS	EVERY 25 HOURS	BEGINNING EACH SEASON	BEFORE STORAGE
S N O W B L O W E R	Tighten all screws and nuts	√		√				√	
	Check Traction Clutch Cable Adjustment (See Cable Adjustment)	√						√	
	Check Auger clutch Cable Adjustment (See Cable Adjustment)	√						√	
	Adjust Drive Belts	√					√	√	
	Lubricate Chains and Hex Shaft							√	√
	Lubricate Auger Shaft (See Shear Bolt Replacement)					√			√
E N G I N E	Oil, Check		√		√			√	
	Oil, Change	√					√	√	

The warranty on this snow blower does not cover items that have been subjected to operator abuse or negligence. To receive full value from the warranty, operator must maintain snow blower as instructed in this manual. The following **Service Recommendations** is supplied to assist operator to properly maintain snow blower. This is a check list only. Adjustment referred to will be found in Adjustments/Repairs section of this manual.

AFTER EACH USE

1. Check for any loose or damaged parts.
2. Tighten any loose fasteners.
3. Check and maintain the auger.
4. After each use, remove all snow and slush off the snow blower to prevent freezing of auger or controls.
5. Check controls to make sure they are functioning properly.
6. If any parts are worn or damaged, replace immediately.

CUSTOMER RESPONSIBILITIES

Some adjustments will need to be made periodically to properly maintain your snow blower.

All adjustments in ADJUSTMENTS/REPAIRS section of this manual should be checked at least once each season.

SNOW BLOWER

The following adjustment should be performed more than once each season.

Auger and Traction Drive Belts should be adjusted after the first 2 to 4 hours of use, again about mid-season and twice each season thereafter (See To Adjust Belts paragraph in the Adjustment/Repair section).

AS REQUIRED

Auger Gear Box

The auger gear box is lubricated at the factory and should not require additional lubrication.

If for some reason the lubricant should leak out, or if the auger gear box has been serviced, add Lubriplate GR132 Grease or equivalent. Maximum 3-1/4 ounces, (92 grams) should be used.

Remove filler plug D (Figure 22 and Figure 23), once a year. If grease is visible, do not add. If grease is not visible, use a piece of fine wire, like a dipstick to check if there is grease in the gear box. Mobilux EP1 and Shell Aldania EP1 are suitable equivalents.

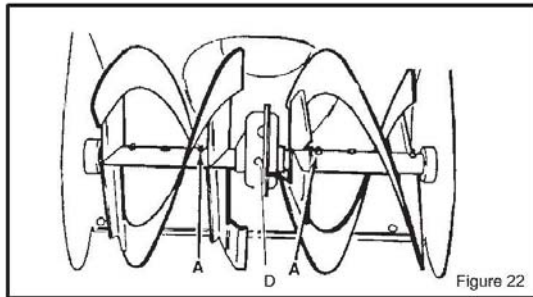


Figure 22

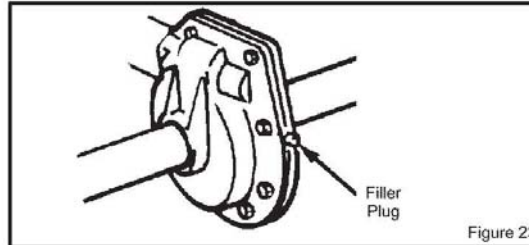


Figure 23

LUBRICATION AT STORAGE

Bearings and bushings

All bearings and bushings are lifetime lubricated and require no maintenance.

Hex shaft and chains

For storage hex shaft should be wiped with a cloth lightly moistened with motor oil to prevent rusting (see Figure 25).

For storage chains should be lubricated with a chain type lube. (see Figure 25).

NOTE: Any greasing or oiling of the above mentioned components can cause contamination of the rubber friction wheel. If the disc drive plate or friction wheel come in contact with grease or oil damage to rubber friction wheel will result .

Should grease or oil come in contact with the disc drive plate or friction wheel be sure to clean plate and wheel thoroughly with a alcohol base solvent.

LUBRICATION – EVERY 10 HOURS

1. **Auger Shaft** – Using a hand grease gun, lubricate the auger shaft zerk fittings (A) every ten (10) operating hours. Each time a shear bolt is replaced, the auger shaft **MUST** be greased (Figure 22). (See To Replace Auger Shear Bolt in the Repair/Adjustment section).
2. For storage or when replacing shear bolts, remove shear bolts and lubricate auger shaft zerk. Rotate augers several times on the shaft and reinstall the shear bolts.

CUSTOMER RESPONSIBILITIES

LUBRICATION – EVERY 25 HOURS

Disc Drive Plate

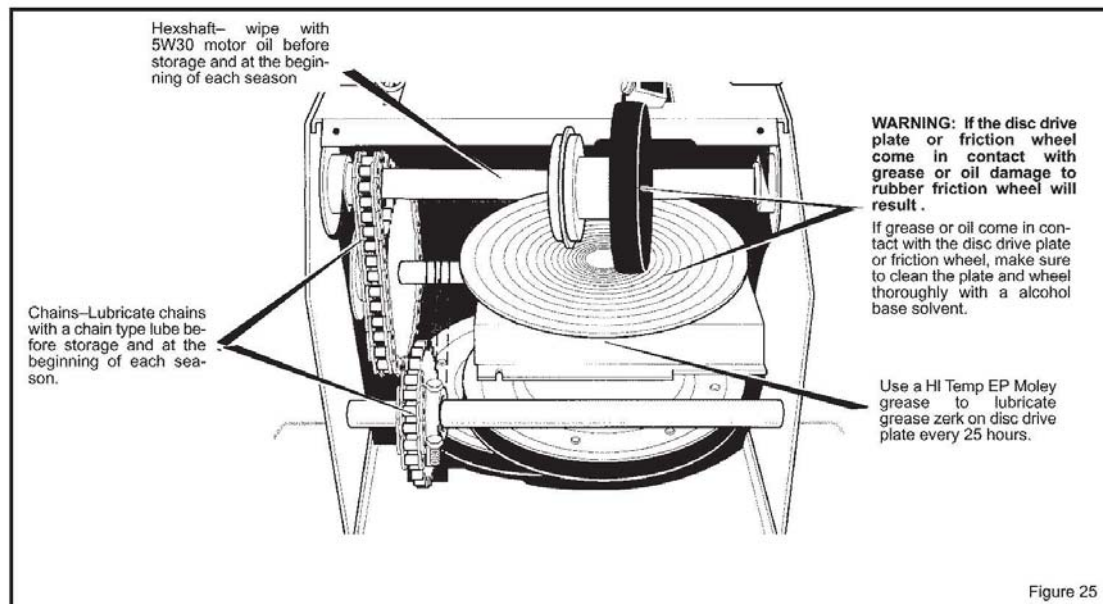
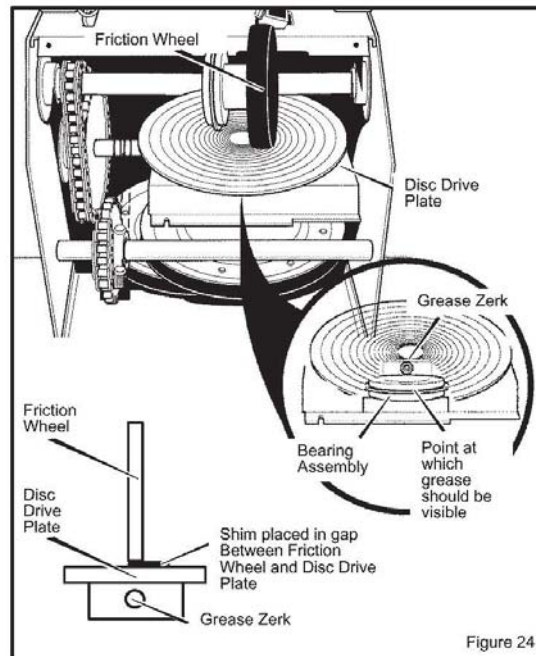
Lubricate Disc Drive Plate every twenty-five (25) hours and at the end of the season and/or before storage.

To Lubricate:

3. Position speed selector lever in first (1) forward gear.
4. Stand the snow blower up on the auger housing end.
5. Remove the bottom panel.
6. Turn disc drive plate clockwise by hand until grease zerk is clearly visible at front center (see Figure 24).
7. Place a coin or (a **shim of equal thickness**) between the rubber friction wheel and disc drive plate to prevent rubber friction wheel contacting the drive disc (see Figure 24).
8. To grease zerk, use a hand grease gun, lubricate with a Hi Temp EP Moly grease. See inset of Figure 24. **DO NOT** over fill or allow grease to come in contact with the disc drive plate or friction wheel or damage will result. Fill zerk only until grease becomes visible below bearing assembly located under grease zerk.
9. Remove coin used in step 7. Make sure that a gap exists between the friction wheel and the disc drive plate.

NOTE: Clean all excess grease or oil found on the friction disc hub.

CAUTION: Do not allow grease or oil to contact the rubber friction wheel or the disc drive plate.



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CUSTOMER RESPONSIBILITIES

ENGINE

Check Crankcase Oil Level before starting engine and after each 5 hours of continuous use (see Figure 26). Add proper motor oil as required.

NOTE: Overfilling the engine can affect performance. Tighten the oil fill cap securely to prevent leakage.

Change Oil every 25 hours of operation or at least once a year, even if the snow blower is not used for twenty-five hours. Use a clean, high quality detergent oil. Fill the crank case to FULL line on dipstick (see Figure 26). Be sure original container is marked: A.P.I. service "SF", "SE", "SD" or "SC". Do not use SAE10W40 oil (as it may not provide proper lubrication). See Chart for oil recommendations.

To Drain Oil – Position snow blower so that the oil drain plug is lowest point on engine. Remove oil drain plug and oil fill cap and drain oil into a suitable container (Figure 27).

NOTE: Oil will drain more freely when warm.

Replace oil drain plug and tighten securely. Refill crank case with proper motor oil or as indicated in the preceding paragraphs of this section.

SAE VISCOSITY GRADES				
		5W30		
synthetic 0W30				
°F	-20	0	20	32
°C	-30	-20	-10	0

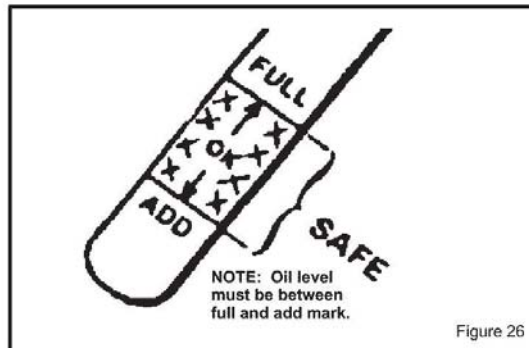


Figure 26

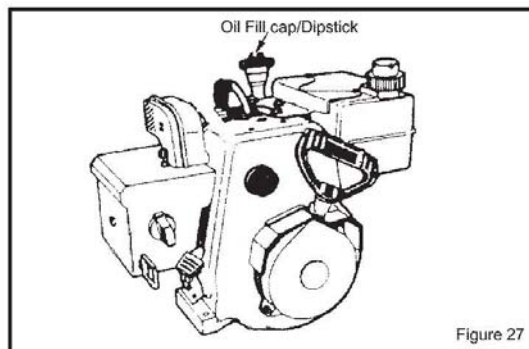


Figure 27

ADJUSTMENT/REPAIR



WARNING: Always turn unit off, remove ignition key and disconnect the spark plug wire before making any repairs or adjustments.

AUGER HOUSING HEIGHT ADJUSTMENT TO ADJUST SCRAPER BAR

After considerable use, the metal scraper bar will have a definite wear pattern. The scraper bar in conjunction with the skids should always be adjusted to allow one-eighth of an inch (3 mm) between the scraper bar and the sidewalk or area to be cleaned.

To adjust the scraper bar, proceed as follows:

1. Position the snow blower on a level surface.
2. Loosen the carriage bolts and nuts securing the scraper bar to the auger housing.
3. Adjust the scraper bar to the proper position. Tighten the carriage bolts and nuts, insuring that the scraper bar is parallel with the working surface.
4. For extended operation, the scraper bar may be reversed. If the scraper bar must be replaced because of wear, remove the carriage bolts and nuts and install a new scraper bar.

TO ADJUST SKID HEIGHT

This snow blower is equipped with two height adjust skids, secured to the outside of the auger housing. These elevate the front of the snow blower.

When removing snow from a hard surface area such as a paved driveway or walk, adjust the skids up to bring the front of the snow blower down.

When removing snow from rock or uneven construction, raise the front of the snow blower by moving the skids down. This will help to prevent rocks and other debris from being picked up and thrown by the augers.

To adjust skids, proceed as follows:

1. Place a block (equal to height from ground desired) under scraper bar near but not under skid.
2. Loosen skid mounting nuts (Figure 28) and push the skid down until it touches the ground. Retighten mounting nuts.
3. Set skid on other side at same height.

NOTE: Make sure that snow blower is set at same height on both sides.



WARNING: Be certain to maintain proper ground clearance for your particular area to be cleared. Objects such as gravel, rocks or other debris, if struck by the impeller, may be thrown with sufficient force to cause personal injury, property damage or damage to the snow blower.

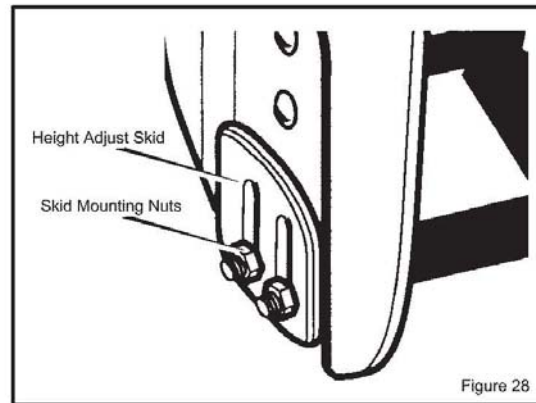


Figure 28

ADJUSTMENT/REPAIR

BELT ADJUSTMENT

Belts stretch during normal use. If you need to adjust the belts due to wear or stretch, proceed as follows.

TRACTION DRIVE BELT

Traction drive belt has constant spring pressure and does not require adjustment.

Replace belt if it is slipping. (See "Belt Replacement" in this section of the manual).

AUGER DRIVE BELT

If your snow blower will not discharge snow, check the control cable adjustment. If it is correct, then check the condition of the auger drive belt. It may be damaged or loose. If it is damaged, replace it (see Belt Replacement in this section of the manual). If the auger drive belt is loose, adjust as follows.

1. Disconnect spark plug wire.
2. Remove belt cover.
3. Loosen nut on auger idler pulley and move auger idler pulley towards belt about 1/8 inch (3 mm) (see Figure 29).
4. Tighten nut.
5. Have someone engage auger drive clutch. Check tension on belt (opposite idler pulley). Belt should deflect about 1/2 inch (12.5 mm) with moderate pressure (Figure 30). You may have to move idler pulley more than once to obtain the correct tension.
6. Reinstall belt cover.
7. Whenever belts are adjusted or replaced, the cables will need to be adjusted. (See "Cable Adjustment" in this section of the manual).
8. Reconnect the spark plug wire.

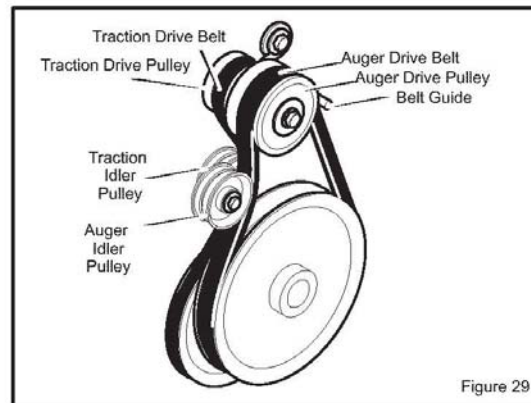


Figure 29

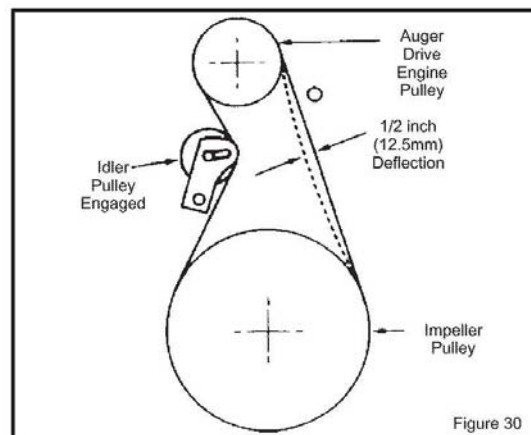


Figure 30

ADJUSTMENT/REPAIR

BELT REPLACEMENT

AUGER DRIVE BELT (SEE FIGURE 29)

1. Drain the gasoline from the fuel tank by removing the fuel line. Drain the gas and reinstall the fuel line.



WARNING: Drain the gasoline outdoors, away from fire or flame.

2. Disconnect spark plug wire.
3. Remove belt cover.
4. Remove top two bolts securing auger housing to motor mount frame. Loosen bottom two bolts. See Figure 31.

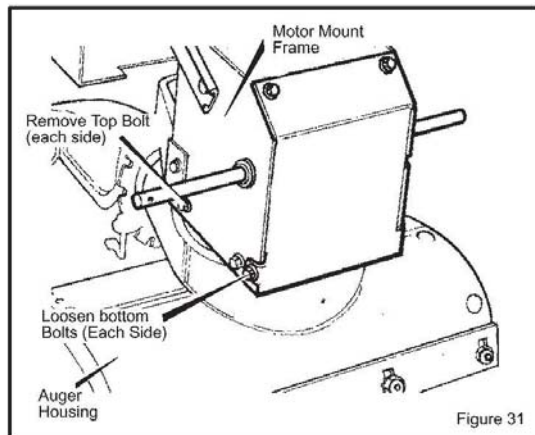


Figure 31

5. Auger housing and motor mount frame will separate, hinged by bottom two bolts.
6. Loosen belt guide and pull away from auger drive pulley. See Figure 29.
7. Loosen the nut on the auger idler pulley and pull idler pulley away from the belt. Note location of idler pulley for later re-installation.
8. Remove belt from auger drive pulley.
9. Remove belt from impeller pulley.
10. Position new belt onto impeller pulley.
11. Position new belt onto auger drive pulley.
12. Adjust auger belt. (See Belt Adjustment).
13. Adjust belt guide. (See Belt Guide Adjustment in this section of the manual).

14. Replace top two bolts. Retighten bottom two bolts. See Figure 31.

15. Reinstall belt cover.

16. Reconnect spark plug wire.

TRACTION DRIVE BELT

Traction drive belt has constant spring pressure and does not require adjustment.

1. Drain the gasoline from the fuel tank by removing the fuel line. Drain the gas and reinstall the fuel line.



WARNING: Drain the gasoline outdoors, away from fire or flame.

2. Disconnect spark plug wire.
3. Remove belt cover.
4. Remove top two bolts securing auger housing to motor mount frame. Loosen bottom two bolts. See Figure 31.
5. Auger housing and motor mount frame will separate, hinged by bottom two bolts.
6. Loosen the nut on the auger idler pulley and pull idler pulley away from the belt. Note location of idler pulley for later re-installation.
7. Loosen belt guide and pull away from auger drive pulley. See Figure 29.
8. Remove auger drive belt from auger pulley.
9. Pull traction drive belt idler pulley away from traction drive belt.
10. Remove traction drive belt.
11. Position new traction drive belt onto traction pulley.
12. Pull idler pulley away from belt, allowing belt to be positioned onto auger pulley.
13. Release idler pulley. Ensure idler pulley is properly engaged with belt.
14. Reinstall auger drive belt.
15. Adjust auger belt. (See Belt Adjustment, in this section of the manual).
16. Adjust belt guide (see Belt Guide Adjustment in this section of the manual).
17. Replace top two bolts. Retighten bottom two bolts. See Figure 31.
18. Reinstall belt cover.
19. Reconnect the spark plug wire.

ADJUSTMENT/REPAIR

BELT GUIDE ADJUSTMENT (SEE FIGURE 32)

1. Remove spark plug wire.
2. Have someone engage auger drive.
3. Measure the distance between the belt guide and belt. The distance should be 1/8 inch (3.175 mm) for guide. See Figure 32
4. If adjustment is necessary, loosen belt guide mounting bolt. Move belt guide to the correct position. Tighten mounting bolt.
5. Reinstall belt cover.
6. Reconnect spark plug wire.

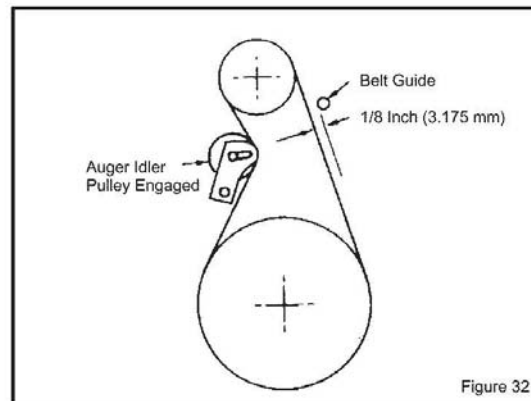


Figure 32

CABLE ADJUSTMENT – TRACTION DRIVE AND AUGER DRIVE

The cables are adjusted at the factory and no adjustment should be necessary. If the cables have become stretched or are sagging adjustment will be necessary.

Whenever belts are adjusted or replaced, the cables will need to be adjusted.

To check for correct adjustment unhook "Z" fitting at clutch lever (see Figure 33):

1. Move clutch lever to the full forward position (just contacting plastic bumper). Holding cable tight, note position of fitting to hole in clutch lever.
2. The center of the "Z" fitting should be between the centre and top of the hole in the clutch lever.

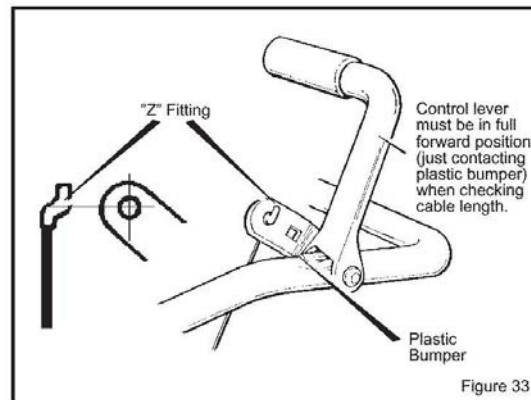


Figure 33

If Adjustment is Necessary (see Figure 34)



WARNING: Drain the gasoline outdoors, away from fire or flame.

1. Remove gas from gas tank.
2. Stand blower on end.
3. Push cable through spring to expose the threaded portion of the cable.
4. Hold square end of threaded portion with pliers and adjust locknut in or out until correct adjustment is reached. Pull cable back through spring and connect cable.

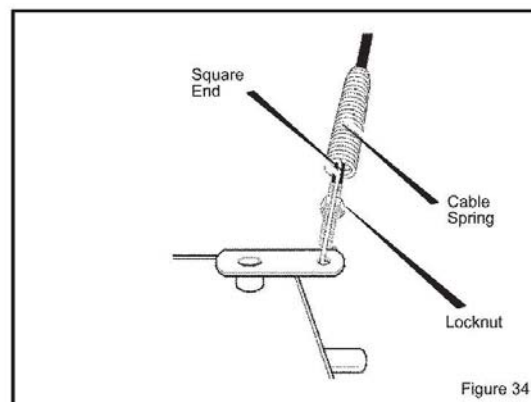


Figure 34

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Appendix J. Operation of rink lights timer

Document1 10/30/03 1:30 PM Page 1

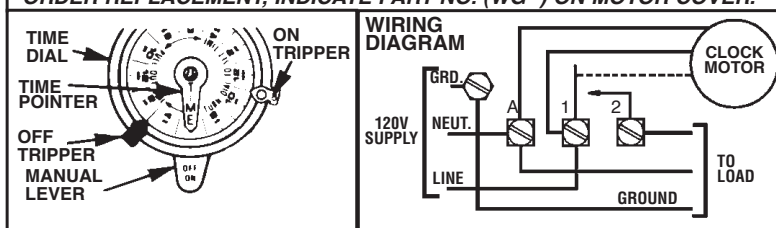
MODEL: T101 24 HOUR DIAL TIME SWITCH

 LR3730

SINGLE POLE SINGLE THROW (SPST)
40 AMP. RESISTIVE, INDUCTIVE, TUNGSTEN
OR 1000 VA PILOT DUTY 120/208/240 VOLT AC;
2 HP (24 FLA) - 120V AC; 5 HP (28 FLA) - 240V AC

CLOCK MOTOR: 110-125 VOLTS - 60 HZ.

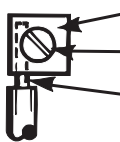
CLOCK MOTOR VOLTAGE AND CYCLE MUST BE AS SPECIFIED. TO ORDER REPLACEMENT, INDICATE PART NO. (WG--) ON MOTOR COVER.



WIRING INSTRUCTIONS: To wire switch follow diagram above. Use solid or stranded **COPPER** **only** wire with insulation to suit installation. See gauge selection table for normal service applications. To make power connections remove 1/2 inch of insulation from wire ends. Insert bare ends of wire under the pressure plate of terminals. Use 3/16 or larger screwdriver to tighten terminal screws firmly. (25 lb-in minimum).

REPLACE INSULATOR BEFORE TURNING ON ELECTRICITY.

MINIMUM COPPER WIRE SIZE (AWG)	MAX. LOAD (AMP)	MIN. INSUL- ATION TEMP(°C)	75°C INSULATION MAX. MOTOR LOAD (HP)			
			SINGLE PHASE		3 PHASE	
			120 V.	240 V.	208 V.	240 V.
14	15	60	1/2	2		
12	20	60	1	2 1/2		
10	30	60	2	3	N/A	N/A
8	40	75	-	5		



PROGRAMMING INSTRUCTIONS

- TO SET "ON" AND "OFF" TIMES:** Hold trippers against edge of **CLOCK-DIAL**, pointing to time (AM or PM) when **ON** and **OFF** operations are desired, tighten tripper screws firmly. For additional tripper pairs on **CLOCK-DIAL** order 156T1978A.
- TO SET TIME-OF-DAY:** Pull **CLOCK-DIAL** outward. Turn in either direction and align the exact time-of-day on the **CLOCK-DIAL** (the time now, when switch is being put into operation) to the pointer. **DO NOT MOVE POINTER.**

OPERATING INSTRUCTIONS

- TO OPERATE SWITCH MANUALLY:** Move **MANUAL LEVER** below **CLOCK-DIAL** left or right as indicated by arrows. This will not effect next operation.
- IN CASE OF POWER FAILURE,** reset **CLOCK-DIAL** to proper time-of-day. See programming instructions.

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SPRING GROVE, ILLINOIS 60081-9698

158TS10941

1. Locate this time in the northeast corner of the sports-equipment storage room. The timer is contained in a metal box. You will see a metal disc with the hours in a.m. and p.m. marked. With the electricity in constant supply, this disc is a clock. The hour indicator is a time pointer in the vertical position according to the diagram above. Check that the time is set correctly.
2. Locate the trippers. These are metal clips with a screw in them that allows them to be attached to the metal disc. If they are not already on the disc, they are in the timer box or they are lost. Check with the building maintenance officer or rink maintenance officer for a spare set.

These trippers are marked ON and OFF. Using a screwdriver, attached them to the metal disc, the ON tripper at the time when you want lights to turn on, and the OFF tripper when you want the lights to turn off. These trippers interact with levers behind the disc that ultimately move the manual ON/OFF lights switch so that the lights are either ON or OFF.

Appendix K. Operation of the natural gas barbeque.

GENESIS® *Silver B*

Gas Grill

weber

Owners Guide

⚠ DANGER

If you smell gas:

1. Shut off gas to the appliance.
2. Extinguish any open flames.
3. Open lid
4. If odor continues, keep away from the appliance and immediately call your gas supplier or your fire department.

Leaking gas may cause a fire or explosion which can cause serious bodily injury or death, or damage to property.

⚠ WARNING

1. Do not store spare liquid propane cylinder within 10 feet (3m) of this appliance.
2. Do not store or use gasoline or other flammable liquids or vapors within 25 feet (8m) of this appliance.

⚠ WARNING: Follow all leak-check procedures carefully in this manual prior to barbecue operation. Do this even if the barbecue was dealer-assembled.

NOTICE TO INSTALLER: These instructions must be left with the owner and the owner should keep them for future use.

THIS GAS APPLIANCE IS DESIGNED FOR OUTDOOR USE ONLY.

⚠ WARNING: Do not try to light this appliance without reading the "Lighting" Instructions section of this manual

Liquid Propane Gas

YOU MUST READ THIS OWNERS GUIDE BEFORE OPERATING YOUR GAS GRILL

A040.g
B003.d
C002.c
D002.g

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⚠ DANGER

Failure to follow the Dangers, Warnings and Cautions contained in this Owner's Manual may result in serious bodily injury or death, or in a fire or an explosion causing damage to property.

⚠ WARNINGS

- ⚠ Do not store a spare or disconnected liquid propane cylinder under or near this barbecue.
- ⚠ Improper assembly may be dangerous. Please carefully follow the assembly instructions in this manual.
- ⚠ After a period of storage, and/or nonuse, the Weber Gas Barbecue should be checked for gas leaks and burner obstructions before use. See instructions in this manual for correct procedures.
- ⚠ Do not operate the Weber gas barbecue if there is a gas leak present.
- ⚠ Do not use a flame to check for gas leaks.
- ⚠ Combustible materials should never be within 24 inches of the top, bottom, back or sides of your Weber gas barbecue.
- ⚠ Do not put a barbecue cover or anything flammable on, or in the storage area under the barbecue.
- ⚠ Your Weber Gas Barbecue should never be used by children. Accessible parts of the barbecue may be very hot. Keep young children away while it is in use.
- ⚠ You should exercise reasonable care when operating your Weber gas barbecue. It will be hot during cooking or cleaning and should never be left unattended, or moved while in operation.
- ⚠ Should the burners go out while in operation, turn all gas valves off. Open the lid and wait five minutes before attempting to relight, using the lighting instructions.
- ⚠ Do not use charcoal or lava rock in your Weber gas barbecue.
- ⚠ Never lean over open grill or place hands or fingers on the front edge of the cooking box.
- ⚠ Should a grease fire occur, turn off all burners and leave lid closed until fire is out.
- ⚠ Do not enlarge valve orifices or burner ports when cleaning the valves or burners.
- ⚠ The Weber Gas Barbecue should be thoroughly cleaned on a regular basis.
- ⚠ Liquid propane gas is not natural gas. The conversion or attempted use of natural gas in a liquid propane unit or liquid propane gas in a natural gas unit is dangerous and will void your warranty.
- ⚠ Do not attempt to disconnect any gas fitting while your barbecue is in operation.
- ⚠ Use heat-resistant barbecue mitts or gloves when operating barbecue.
- ⚠ Combustion byproducts produced when using this product contain chemicals known to the state of California to cause cancer, birth defects, or other reproductive harm.

LIQUID PROPANE GAS UNITS ONLY:

- ⚠ Use the regulator that is supplied with your Weber Gas Barbecue.
- ⚠ Do not attempt to disconnect the gas regulator or any gas fitting while your barbecue is in operation.
- ⚠ A dented or rusty liquid propane cylinder may be hazardous and should be checked by your liquid propane supplier. Do not use a liquid propane cylinder with a damaged valve.
- ⚠ Although your liquid propane cylinder may appear to be empty, gas may still be present, and the cylinder should be transported and stored accordingly.
- ⚠ If you see, smell or hear the hiss of escaping gas from the liquid propane cylinder:
 1. Move away from liquid propane cylinder.
 2. Do not attempt to correct the problem yourself.
 3. Call your fire department.

[Click here to view
addendum sheet](#)

Operating

Lighting

Summary lighting instructions are on the control panel.

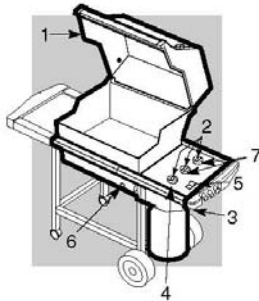
⚠ DANGER

Failure to open the lid while igniting the barbecue's burners, or not waiting 5 minutes to allow the gas to clear if the barbecue does not light, may result in an explosive flame-up which can cause serious bodily injury or death.

Crossover Ignition® System

Note - The Crossover Ignition System ignites the Front burner with a spark from the igniter electrode inside the Gas Catcher™ Ignition Chamber. You generate the energy for the spark by pushing the Crossover Ignition Button until it clicks.

⚠ WARNING: Check hose before each use of barbecue for nicks, cracking, abrasions or cuts. If the hose is found to be damaged in any way, do not use the barbecue. Replace using only Weber authorized replacement hose. Contact the Customer Service Representative in your region using the contact information sheet provided with your manual.



*The grill illustrated may have slight differences than the model purchased.

- 1) Open the lid.
- 2) Make sure all burner control knobs are turned OFF. (Push control knob down and turn clockwise to ensure that it is in the OFF position.)

⚠ WARNING: The burner control knobs must be in the OFF position before turning on the liquid propane cylinder tank valve. If they are not in the OFF position, when you turn on the LP cylinder valve, the "excess gas flow control" feature will activate, limiting the flow of gas from the LP cylinder. If this should occur, turn OFF the LP cylinder valve and burner control knobs. Then start over.

D002.g

⚠ DANGER:

When the "excess gas flow control" feature is activated, a small amount of gas is still flowing to the burners. After turning OFF the cylinder knobs, wait at least 5 minutes for the gas to clear before attempting to light the barbecue. Failure to do so may result in an explosive flame-up, which can cause serious bodily injury or death.

- 3) Turn the cylinder on by turning the cylinder valve counterclockwise.

⚠ WARNING: Do not lean over the open barbecue. Keep your face and body at least one foot away from the matchlight hole when lighting the barbecue.

- 4) Push Front burner control knob down and turn to START/HI.
- 5) Push the Crossover Ignition Button several times, so it clicks each time.
- 6) Check that the burner is lit by looking through the matchlight hole on the front of the cooking box. You should see a flame.

⚠ WARNING: If the burner does not light, turn the Front burner control knob to OFF and wait 5 minutes to let the gas clear before you try again or try to light with a match.

- 7) After the FRONT burner is lit you can turn on the other burner or burners.

Note - Always light the FRONT burner first. The other burner or burners ignite from the FRONT burner.

To Extinguish

Push down and turn each burner control knob clockwise to the OFF position. Turn gas supply OFF at the source.

D-1

Manual Lighting

⚠ DANGER

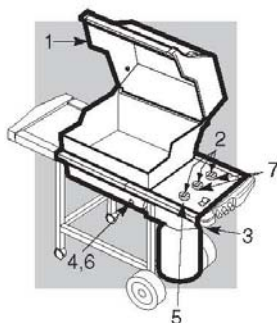
Failure to open the lid while igniting the barbecue's burners, or not waiting 5 minutes to allow the gas to clear if the barbecue does not light, may result in an explosive flame-up which can cause serious bodily injury or death.

- 1) Open the lid.
- 2) Make sure all burner control knobs are turned OFF. (Push each knob down and turn clockwise to ensure they are in the off position.)

⚠ **WARNING:** The burner control knobs must be in the OFF position before turning on the liquid propane cylinder valve. If they are not in the OFF position, when you turn on the LP cylinder valve, the "excess gas flow control" feature will activate, limiting the flow of gas from the LP cylinder. If this should occur, turn OFF the LP tank valve and burner control knobs. Then start over.

⚠ DANGER

When the "excess gas flow control" feature is activated, a small amount of gas is still flowing to the burners. After turning OFF the cylinder and burner control knobs, wait at least 5 minutes for the gas to clear before attempting to light the barbecue. Failure to do so may result in an explosive flame-up, which can cause serious bodily injury or death.



*The grill illustrated may have slight differences than the model purchased.

- 3) Turn the cylinder on by turning the cylinder valve counterclockwise.
- 4) Strike a match and put the flame into the matchlight hole in the front of the cooking box.
- ⚠ **WARNING:** Do not lean over open barbecue. Keep your face and body at least one foot away from the matchlight hole when lighting the barbecue.
- 5) Push Front burner control knob down and turn to START/HI.
- 6) Check that the burner is lit by looking through the matchlight hole on the front of the cooking box. You should see a flame.

⚠ **WARNING:** If the burner does not light, turn the Front burner control knob to OFF and wait 5 minutes to let the gas clear before you try again or try to light with a match.

- 7) After the FRONT burner is lit you can turn on the other burner.

Note - Always light the FRONT burner first. The other burner or burners ignite from the FRONT burner.

To Extinguish

Push down and turn each burner control knob clockwise to the OFF position. Turn gas supply OFF at the source.

Cooking

⚠ WARNING: Do not move the Weber Gas Barbecue when operating or while barbecue is hot.

You can adjust the FRONT and BACK burners as desired. The control settings: High (H), Medium (M), Low (L), or Off (O) are described in your Weber cookbook. The cookbook uses these notations to describe the settings of the FRONT and BACK burners. For example, to sear steaks, you would set all burners at H (high). Then to complete cooking, you would set FRONT and BACK at M (medium). Refer to your Weber cookbook for detailed cooking instructions.

Note: The temperature inside your cooking box for the first few uses, while surfaces are still very reflective, may be hotter than those shown in your cookbook. Cooking conditions. Such as wind and weather, may require the adjustment of the burner controls to obtain the correct cooking temperatures.

⚠ CAUTION: Replace thermometer in lid when not in use. Do not leave thermometer in food while cooking.

If burners go out during cooking, open lid, turn off all burners and wait five minutes before relighting.

Preheating - Your Weber Gas Barbecue is an energy-efficient appliance. It operates at an economical low BTU rate. To preheat: after lighting, close lid and turn all burners to high (HH). Preheating to between 500° and 550° F (260° and 290° C) will take 10 to 15 minutes depending on conditions such as air temperature and wind.

Drippings and grease - The Flavorizer® Bars are designed to "smoke" the correct amount of drippings for flavorful cooking. Excess drippings and grease will accumulate in the catch pan under the slide out bottom tray. Disposable foil drip pans are available that fit the catch pan.

⚠ WARNING: Check the bottom tray for grease build-up before each use. Remove excess grease to avoid a grease fire in the slide out bottom tray.

Storage and/or Nonuse

- The gas must be turned off at the liquid propane cylinder when the Weber Gas Barbecue is not in use.
- When the Weber Gas Barbecue is stored indoors, the gas supply must be DISCONNECTED and the LP cylinder stored outdoors in a well-ventilated space.
- LP cylinder must be stored outdoors in a well-ventilated area out of reach of children. Disconnected LP cylinder must not be stored in a building, garage or any other enclosed area.
- When the LP cylinder is not disconnected from the Weber Gas Barbecue, the appliance and LP tank must be kept outdoors in a well-ventilated space.

■ The Weber Gas Barbecue should be checked for gas leaks and any obstructions in the burner tubes before using. (See Sections: "General Maintenance and Annual Maintenance.")

■ Check that the areas under the control panel and the slide out bottom tray are free from debris that might obstruct the flow of combustion or ventilation air.

■ The Spider /Insect Screens should also be checked for any obstructions. (See Section: "Annual Maintenance.")

Cleaning

⚠ WARNING: Turn your Weber Gas Barbecue OFF and wait for it to cool before cleaning.

⚠ CAUTION: Do not clean your Flavorizer® Bars or cooking grates in a self-cleaning oven.

For availability of replacement cooking grates and Flavorizer Bars contact the Customer Service Representative in your region using the contact information sheet provided with your manual.

Outside surfaces - Use a warm soapy water solution to clean, then rinse with water.

⚠ CAUTION: Do not use oven cleaner, abrasive cleansers (kitchen cleansers) cleaners that contain citrus products, or abrasive cleaning pads on barbecue or cart surfaces.

Slide out Bottom tray - Remove excess grease, then wash with warm soapy water, then rinse

Flavorizer® Bars and Cooking Grates - Clean with a suitable brass bristle brush. As needed, remove from grill and wash with warm soapy water, then rinse with water.

Catch pan - Disposable foil trays are available, or you can line the catch pan with aluminum foil. To clean the catch pan, wash with warm soapy water, then rinse.

Thermometer - Wipe with warm soapy water; clean with plastic scrub ball. Do not put in dishwasher or submerge in water.

Inside cooking module - Brush any debris off of burner tubes. **DO NOT ENLARGE BURNER PORTS (OPENINGS).** Wash inside of cooking box with warm soapy water and a water rinse.

Inside Lid - While lid is warm, wipe inside with paper towel to prevent grease build-up. Flaking built-up grease resembles paint flakes.

Stainless steel surfaces - Wash with a soft cloth and a soap and water solution.

Thermoset surfaces - Wash with a soft cloth and a soap and water solution.

Do not use cleaners that contain acid, mineral spirits or xylene. Rinse well after cleaning.

Thermoset work surfaces are not to be used as cutting boards.

Refilling the Liquid Propane Cylinder

We recommend that you refill the LP cylinder before it is completely empty.

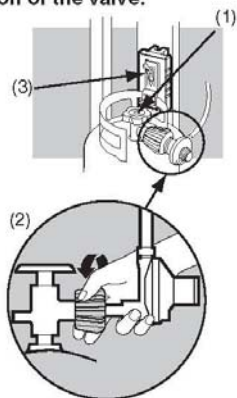
Removal of the LP cylinder

- 1) Close cylinder valve (turn clockwise).
- 2) Unscrew regulator coupling by turning counterclockwise, by hand only.
- 3) Loosen cylinder lock wing nut and turn cylinder lock up out of the way.
- 4) Lift cylinder off.

To refill, take LP cylinder to a "Gas Propane" dealer.

⚠ WARNING: We recommend that your LP cylinder be filled at an authorized LP gas dealer, by a qualified attendant, who fills the cylinder by weight. **IMPROPER FILLING IS DANGEROUS.**

⚠ CAUTION: When transporting the LP cylinder make sure the plastic dust cover is in place over the valve. This will keep dust and dirt from the threaded portion of the valve.



Important LP Cylinder Information

Failure to follow these **DANGER** statements exactly may result in a fire causing death or serious injury.

⚠ DANGER

⚠ NEVER store a spare LP Cylinder under or near this barbecue.

⚠ NEVER fill the tank beyond 80% full.

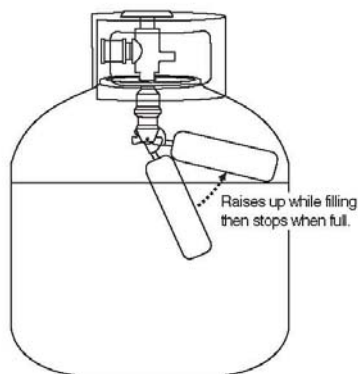
Your Weber gas grill is equipped with a cylinder supply system designed for vapor withdrawal.

⚠ WARNING: Only use this grill outdoors in a well-ventilated area. Do not use in a garage, building, breezeway or any other enclosed area.

The LP cylinder supplied with your barbecue is equipped with an OPD (Overfilling Prevention Device) and a QCC1 or Type 1 (CGA810) cylinder connection. The cylinder connection is compatible with the barbecue connection.

This is a secondary device to prevent the overfilling of your LP cylinder. The proper filling methods for the filling of your cylinder are by weight or volume, as described in NFPA 58. Please make sure your filling station fills your LP cylinder by weight or volume. Ask your filling station to read purging and filling instructions on the LP cylinder before attempting to fill.

⚠ WARNING: Do not exchange the LP tank provided with your barbecue, unless the exchange LP tank is equipped with an OPD. Otherwise you will lose the OPD (Overfilling Prevention Device) feature. If there is not an LP tank available for exchange equipped with an OPD, we recommend that you have your LP tank filled at an authorized LP gas dealer by a qualified attendant.



Safe handling tips for Liquid Propane Gas Cylinders

■ Liquid Propane (LP) gas is a petroleum product as are gasoline and natural gas. LP gas is a gas at regular temperatures and pressures. Under moderate pressure, inside a cylinder, LP gas is a liquid. As the pressure is released, the liquid readily vaporizes and becomes gas.

■ LP gas has an odor similar to natural gas. You should be aware of this odor.

■ LP gas is heavier than air. Leaking LP gas may collect in low areas and prevent dispersion.

■ To fill, take the LP cylinder to an RV center, or look up "gas-propane" in the phone book for other sources of LP gas.

⚠ **WARNING:** We recommend that your LP cylinder be filled at an authorized LP gas dealer, by a qualified attendant, who fills the tank by weight. **IMPROPER FILLING IS DANGEROUS.**

⚠ **WARNING:** If you exchange your LP cylinder, make sure you get a similar tank in return. Your LP cylinder is equipped with a quick closing coupling or type 1 valve and an OPD (Overfilling Prevention Device). Other LP cylinders may not be compatible with your barbecue connection.

■ Air must be removed from a new LP cylinder before the initial filling. Your LP dealer is equipped to do this.

■ The LP cylinder must be installed, transported and stored in an upright position. LP cylinders should not be dropped or handled roughly.

■ Never store or transport the LP cylinder where temperatures can reach 125° F (too hot to hold by hand - for example: do not leave the LP cylinder in a car on a hot day).

Note - A refill will last about 20 hours of cooking time at normal use. The fuel scale will indicate the propane supply so you can refill before running out. You do not have to run out before you refill.

■ Treat "empty" LP cylinders with the same care as when full. Even when the LP tank is empty of liquid there still may be gas pressure in the cylinder. **Always close the cylinder valve before disconnecting.**

⚠ **CAUTION:** When transporting the LP cylinder make sure the plastic dust cover is in place over the valve. This will keep dust and dirt from the threaded portion of the valve.

■ Do not use a damaged LP cylinder. Dented or rusty LP cylinders or LP cylinders with a damaged valve may be hazardous and should be replaced with a new one immediately.

Liquid Propane (LP) Cylinder(s)

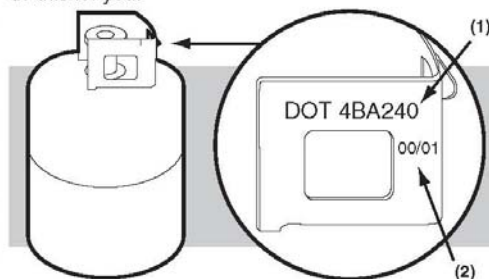
■ The joint where the hose connects to the LP cylinder must be leak tested each time the LP cylinder is reconnected. For example, test each time the LP cylinder is refilled.

■ Be sure the regulator is mounted with the small vent hole pointed downward so that it will not collect water. This vent should be free of dirt, grease, bugs etc.

■ The LP cylinder and connections supplied with your Weber Gas Barbecue have been designed and tested to meet government, American Gas Association, and Underwriters Laboratories requirements.

Liquid Propane Cylinder requirements

■ Replacement LP cylinders supplied by Weber satisfy the above requirements. Check to be sure other cylinders have a D.O.T. certification(1), and date tested(2) is within five years. Your LP gas supplier can do this for you.



If you have questions about spare LP cylinders contact the Customer Service Representative in your region using the contact information sheet provided with your manual.

■ All LP tank supply systems must include a collar to protect the cylinder valve.

■ The LP cylinder must be a 20-lb. size (18 1/4 inches high, 12 1/4 inches in diameter).

■ The LP cylinder must be constructed and marked in accordance with the specifications for LP gas cylinders of the U.S. Department of Transportation (D.O.T.).

For Canada Only

Liquid Propane Cylinder requirements

⚠ **WARNING:** Replacement LP tanks must match the regulator connection supplied with this barbecue.

Note: Your retailer can help you match a replacement tank to your barbecue

■ All LP tank supply systems must include a collar to protect the cylinder valve.

■ The LP cylinder must be a 20-lb. size (18 1/4 inches high, 12 1/4 inches in diameter).

■ The LP cylinder must be constructed and marked in accordance with the specifications for LP gas cylinders, T.C.

Connecting the Liquid Propane Cylinder

⚠ WARNING: Make sure that the LP cylinder valve is closed. Close by turning valve clockwise.

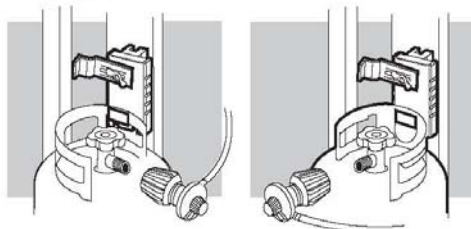
⚠ DANGER

Do not use an open flame to check for gas leaks. Be sure there are no sparks or open flames in the area while you check for leaks. Sparks or flames will result in a fire or explosion which can cause serious bodily injury or death, and damage to property.

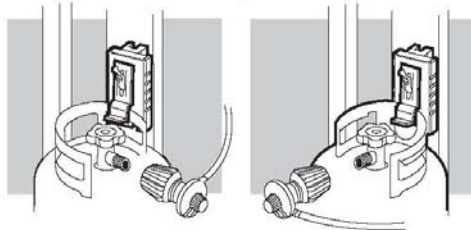
We utilize various LP tank manufacturers. Some of the tanks have differing top collar assemblies. (The top collar is the metal protective ring around the valve.) One series of tanks mount with the valve facing front. The other tanks mount with the valve facing away from the fuel scale. These types of tanks are illustrated below.

You will need: LP cylinder, a soap and water solution and a rag or brush to apply it.

- 1) Turn the LP cylinder so the opening of the valve is either to the front, side or rear of the Weber Gas Barbecue. Lift and hook the cylinder onto the fuel gauge.

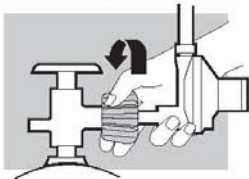


- 2) Loosen the cylinder lock wing nut. Swing the cylinder lock down. Tighten the wing nut.



To Connect the hose to the cylinder:

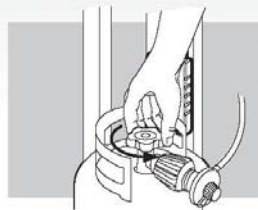
- 3) Remove the plastic dust cover from the valve.
- 4) Screw the regulator coupling onto the tank valve, clockwise, or to the right. Hand-tighten only.



Note: This is a new type of connection. It tightens clockwise and will not allow gas to flow unless the connection is tight. The connection requires tightening by hand only.

⚠ WARNING: Do not use a wrench to tighten the connection. Using a wrench could damage the regulator coupling and could cause a leak.

- 5) Mix soap and water.
- 6) Turn on the cylinder valve.



- 7) Check for leaks by wetting the fitting with the soap and water solution and watching for bubbles. If bubbles form, or if a bubble grows, there is a leak. If there is a leak, turn off the gas and tighten the fitting. Turn the gas back on and recheck with the soap and water solution. If leak does not stop, Contact the Customer Service Representative in your region using the contact information sheet provided with your manual. Do not use the barbecue.
- 8) When leak checking is complete, turn gas supply OFF at the source and rinse connections with water.

Liquid Propane Cylinder

The liquid propane cylinder manufacturer is responsible for the materials, workmanship and performance of the tank. If the tank has a defect malfunctions, or you have a question regarding the tank, call the tank manufacturer's customer service center. The phone number is on the warning decal, which is permanently attached to the tank. If the tank manufacturer has not resolved the issue to your satisfaction, then contact the Customer Service Representative in your region using the contact information sheet provided with your manual.

Annual Maintenance

After a period of nonuse, we recommend that you perform the following maintenance procedures for your safety.

⚠ WARNING: Check the hose before each use of the barbecue for nicks, cracking, abrasions or cuts. If the hose is found to be damaged in any way, do not use the barbecue. Replace using only Weber authorized replacement hose. Contact the Customer Service Representative in your region using the contact information sheet provided with your manual.

■ Inspect the burners for correct flame pattern. Clean if necessary, following the procedures outlined in the "General Maintenance" section of this manual.

■ Check all gas fittings for leaks.

⚠ DANGER

Do not use an open flame to check for gas leaks. Be sure there are no sparks or open flames in the area while you check for leaks. Sparks or flames will result in a fire or explosion, which can cause serious bodily injury or death, and damage to property.

⚠ WARNING: You should check for gas leaks every time you disconnect and reconnect a gas fitting.

Note - All factory-made connections have been thoroughly checked for gas leaks. The burners have been flame tested. As a safety precaution however, you should recheck all fittings for leaks before using your Weber Gas Barbecue. Shipping and handling may have loosened or damaged a gas fitting.

⚠ WARNING: Perform these leak checks even if your barbecue was dealer- or store-assembled.

You will need: a soap and water solution and a rag or brush to apply it.

To perform leak checks: Make sure all Burners are in the off position. Turn on gas supply.

⚠ WARNING: Do not ignite burners while leak checking.

Check for leaks by wetting the connections with the soap and water solution and watching for bubbles. If bubbles form, or if a bubble grows, there is a leak.

Note - Since some leak test solutions, including soap and water, may be slightly corrosive, all connections should be rinsed with water after checking for leaks.

Check:

- 1) Hose-to-manifold connection.
- 2) Regulator-to-Cylinder connection.

⚠ WARNING: If there is a leak at connection (1), retighten the fitting with a wrench and recheck for leaks with soap and water solution.

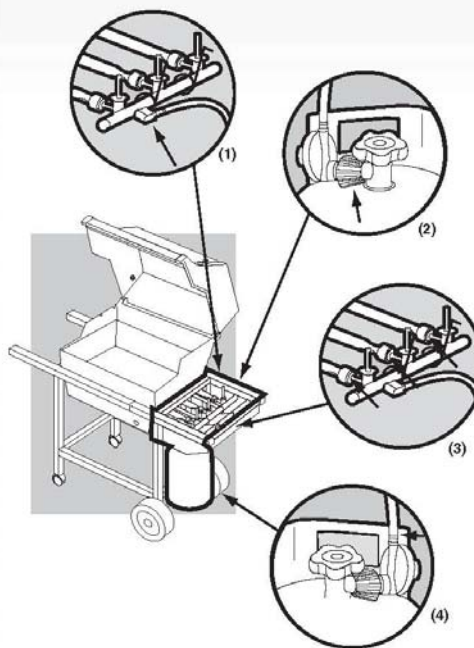
If a leak persists after retightening the fitting, turn OFF the gas. DO NOT OPERATE THE BARBECUE. Contact the Customer Service Representative in your region using the contact information sheet provided with your manual.

Check:

- 3) Valves-to-manifold connections.
- 4) The hose-to-regulator connection.

⚠ WARNING: If there is a leak at connections (2), (3) or (4), turn OFF the gas. DO NOT OPERATE THE BARBECUE. Contact the Customer Service Representative in your region using the contact information sheet provided with your manual.

When leak checks are complete, turn gas supply OFF at the source and rinse connections with water.



Inspection and cleaning of the Spider/Insect screens

To inspect the spider/insect screens, remove the control panel. If there is dust or dirt on the screens, remove the burners for cleaning the screens. Refer to **Maintenance, Replacing Main Burners**. Brush the spider/insect screens, lightly, with a soft bristle brush (i.e. an old toothbrush).

⚠ Caution: Do not clean the spider/insect screens with hard or sharp tools. Do not dislodge the spider/insect screens or enlarge the screen openings.

Lightly tap the burner to get debris and dirt out of the burner tube. Once the spider/insect screens and burners are clean replace the burners.

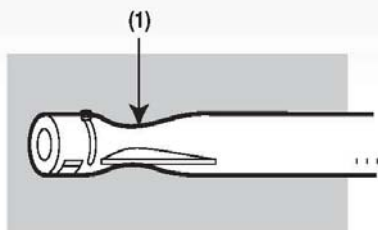
If the spider/insect screen becomes damaged or cannot be cleaned, call Weber-Stephen Products Customer Service for replacement parts.

D-7

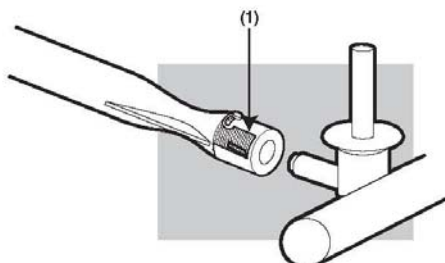
General Maintenance

Weber Spider /Insect screens

Your Weber Gas Barbecue, as well as any outdoor gas appliance, is a target for spiders and other insects. They can nest in the venturi section Venturi(1). This blocks the normal gas flow, and can cause the gas to flow back out of the air shutter. This could result in a fire in and around the air shutters, under the control panel, causing serious damage to your barbecue.



The burner tube air shutter is fitted with a stainless steel screen(1) to prevent spiders and other insects access to the burner tubes through the air shutter openings.



We recommend that you inspect the Spider/Insect screens at least once a year. (See Section “Annual Maintenance”.) Also inspect and clean the the Spider/Insect screens if any of the following symptoms should ever occur:

- 1) The smell of gas in conjunction with the burner flames appearing yellow and lazy.
- 2) Barbecue does not reach temperature.
- 3) Barbecue heats unevenly.
- 4) One or more of the burners do not ignite.

⚠ DANGER

Failure to correct the above mentioned symptoms may result in a fire, which can cause serious bodily injury or death, and cause damage to property.

Main Burner Flame Pattern

The Weber Gas Barbecue burners have been factory set for the correct air and gas mixture. The correct flame pattern is shown.

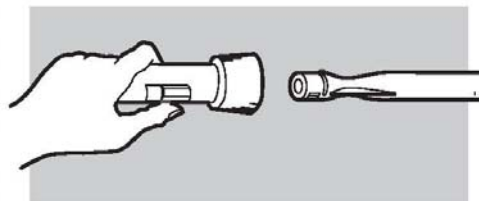
- 1) Burner tube
- 2) Tips occasionally flicker yellow
- 3) Light blue
- 4) Dark blue



If the flames do not appear to be uniform throughout the burner tube, follow the burner cleaning procedures.

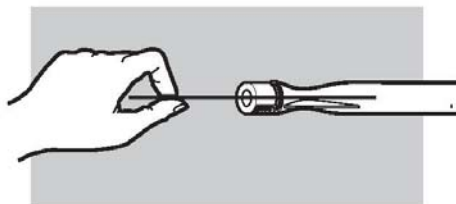
Main Burner Cleaning Procedure

Turn off the gas supply. Remove the manifold. Look inside each burner with a flashlight.



Clean the inside of the burners with a wire (a straightened-out coat hanger will work). Check and clean the air shutter opening at the ends of the burners. Check and clean the valve orifices at the base of the valves. Use a brass bristle brush to clean outside of burners. This is to make sure all the burner ports are fully open.

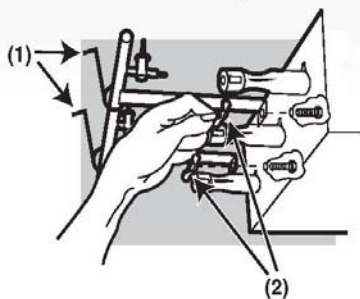
CAUTION: Do not enlarge the burner ports when cleaning.



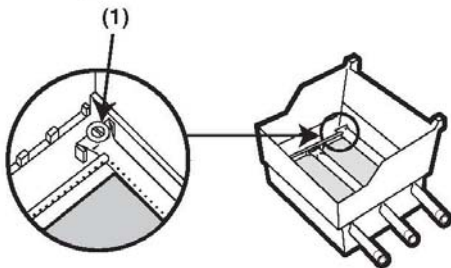
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Replacing Main Burners

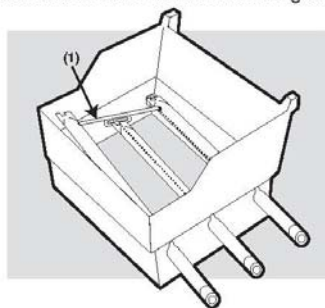
- 1) Your Weber Gas Barbecue must be OFF and cool.
- 2) Turn gas OFF at source.
- 3) To remove control panel: take off the burner control knobs. Remove the screws holding the control panel in place. Lift off the control panel.
- 4) Unhook the manifold bracket(1) and unscrew the two wing nuts(2) that hold the manifold to the cooking box. Pull the manifold and valve assembly out of the burners and carefully set it down.



- 5) Slide the burner assembly out from under the guide screw and washer(1) in the corners of the cooking box.

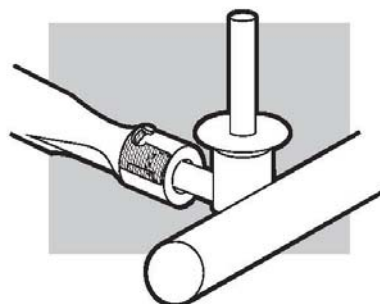
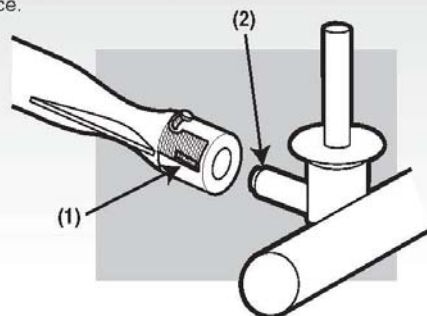


- 6) Lift and twist the burner assembly slightly, to separate the crossover tube(1) from the burners. Remove the burners from the cooking box.



- 7) To reinstall the burners, reverse 3) through 7).

⚠ CAUTION: The burner openings(1) must be positioned properly over the valve orifices(2). Check proper assembly before fastening manifold in place.

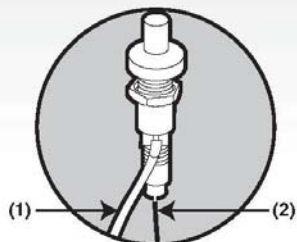


⚠ WARNING: After reinstalling the gas lines, they should be leak checked with a soap and water solution before using the barbecue. (See Step: "Check for gas leaks.")

Crossover® Ignition System Operations

If the Crossover Ignition System fails to ignite the Left burner, light the Left burner with a match. If the Left burner lights with a match, then check the Crossover Ignition System.

■ Check that both the white(1) and black(2) ignition wires are attached properly.



■ Check that the Crossover Ignition button pushes the igniter (button) down, and returns to the up position.

■ Check to see if the igniter is loose in the frame.

Tighten if necessary; See Step "Install igniter" for correct procedure.

If the Crossover Ignition System still fails to light, Contact the Customer Service Representative in your region using the contact information sheet provided with your manual.

Troubleshooting

Problem	Check	Cure
Burners burn with a yellow or orange flame, in conjunction with the smell of gas.	Inspect Weber Spider/Insect Screens for possible obstructions. (Blockage of holes.)	Clean Weber Spider/Insect Screens. (See Section "Annual Maintenance")
Burners do not light. -or- Burners have a small flickering flame in the HIGH position. -or- Barbecue temperature only reaches 250° to 300° in the HIGH position.	The excess flow safety device, which is part of the barbecue to cylinder connection, may have activated.	To reset the excess flow safety device turn all burner control knobs and the cylinder valve OFF. Disconnect the regulator from the cylinder. Turn burner control knobs to HIGH. Wait at least 1 minute. Turn burner control knobs OFF. Reconnect the regulator to the cylinder. Turn cylinder valve on slowly. Refer to "Lighting Instructions".
Burner does not light, or flame is low in HIGH position.	Is LP fuel low or empty?	Refill LP cylinder.
	Is fuel hose bent or kinked?	Straighten fuel hose.
	Does the Front burner light with a match?	If you can light the Front burner with a match, then check the Crossover Ignition System.
Experiencing flare-ups: ⚠ CAUTION: Do not line the bottom tray with aluminum foil.	Are you preheating barbecue in the prescribed manner?	All burners on high for 10 to 15 minutes for preheating.
	Are the cooking grates and Flavorizer bars heavily coated with burned-on grease?	Clean thoroughly. (See Section "Cleaning")
	Is the bottom tray "dirty" and not allowing grease to flow into catch pan?	Clean bottom tray
Burner flame pattern is erratic. Flame is low when burner is on HIGH. Flames do not run the whole length of the burner tube.	Are burners clean?	Clean burners. (See Section "General Maintenance".)
Inside of lid appears to be "peeling." (Resembles paint peeling.)	The lid is porcelain-on-steel, not paint. It cannot "peel". What you are seeing is baked on grease that has turned to carbon and is flaking off. THIS IS NOT A DEFECT.	Clean thoroughly. (See Section "Cleaning".)
If problems cannot be corrected by using these methods, please contact the Customer Service Representative in your region using the contact information sheet provided with your manual.		

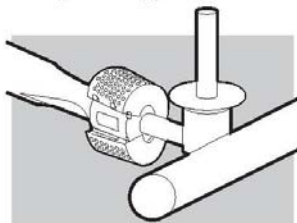
- 1) The smell of gas in conjunction with the burner flames appearing yellow and lazy.
- 2) Barbecue does not reach temperature.
- 3) Barbecue heats unevenly.
- 4) One or more of the burners do not ignite.

⚠ DANGER

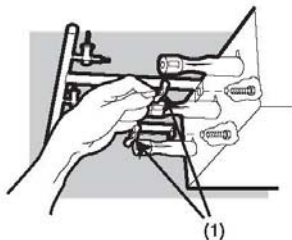
Failure to correct the above mentioned symptoms may result in a fire, which can cause serious bodily injury or death, and cause damage to property.

Replacing Main Burners

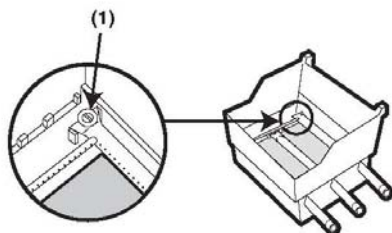
- 1) Your Weber Gas Barbecue must be OFF and cool.
- 2) Turn gas OFF at source.
- 3) To remove control panel: take off the burner control knobs. Remove the screws holding the control panel in place. Lift off the control panel.
- 4) Unlatch the Spider Stopper™ Guards and remove them.



- 5) Remove the manifold bracket and unscrew the two wing nuts(1) that hold the manifold to the cooking box. Pull the manifold and valve assembly out of the burners and carefully set it down.

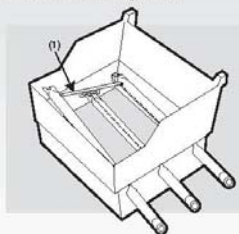


- 6) Slide the burner assembly out from under the guide screw and washer(1) in the corners of the cooking box.

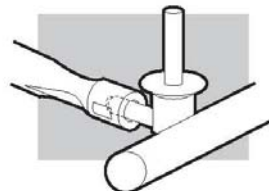
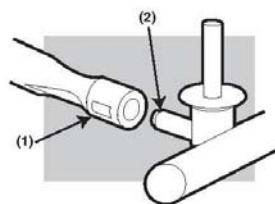


- 7) Lift and twist the burner assembly slightly, to separate

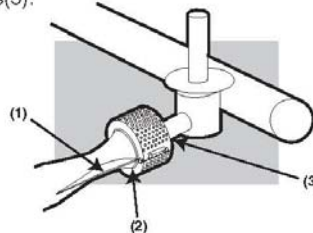
the crossover tube(1) from the burners. Remove the burners from the cooking box.



- 8) To reinstall the burners, reverse 3) through 7).
- ⚠ CAUTION: The burner openings(1) must be positioned properly over the valve orifices(2).** Check proper assembly before fastening manifold in place.



- 9) Reinstall the Spider Stopper Guards. Slightly rotate the Spider Stopper Guards so that the seams are in line with the Venturi fins(1). There should be no gaps in the seams or in the fit around the burners(2) and valves(3).



⚠ CAUTION: If the Spider Stopper Guards do not fit tightly, contact the Customer Service Representative in your region using the contact information sheet provided with your manual.

⚠ WARNING: After reinstalling the gas lines, they should be leak checked with a soap and water solution before using the barbecue. (See Step: "Check for gas leaks.")