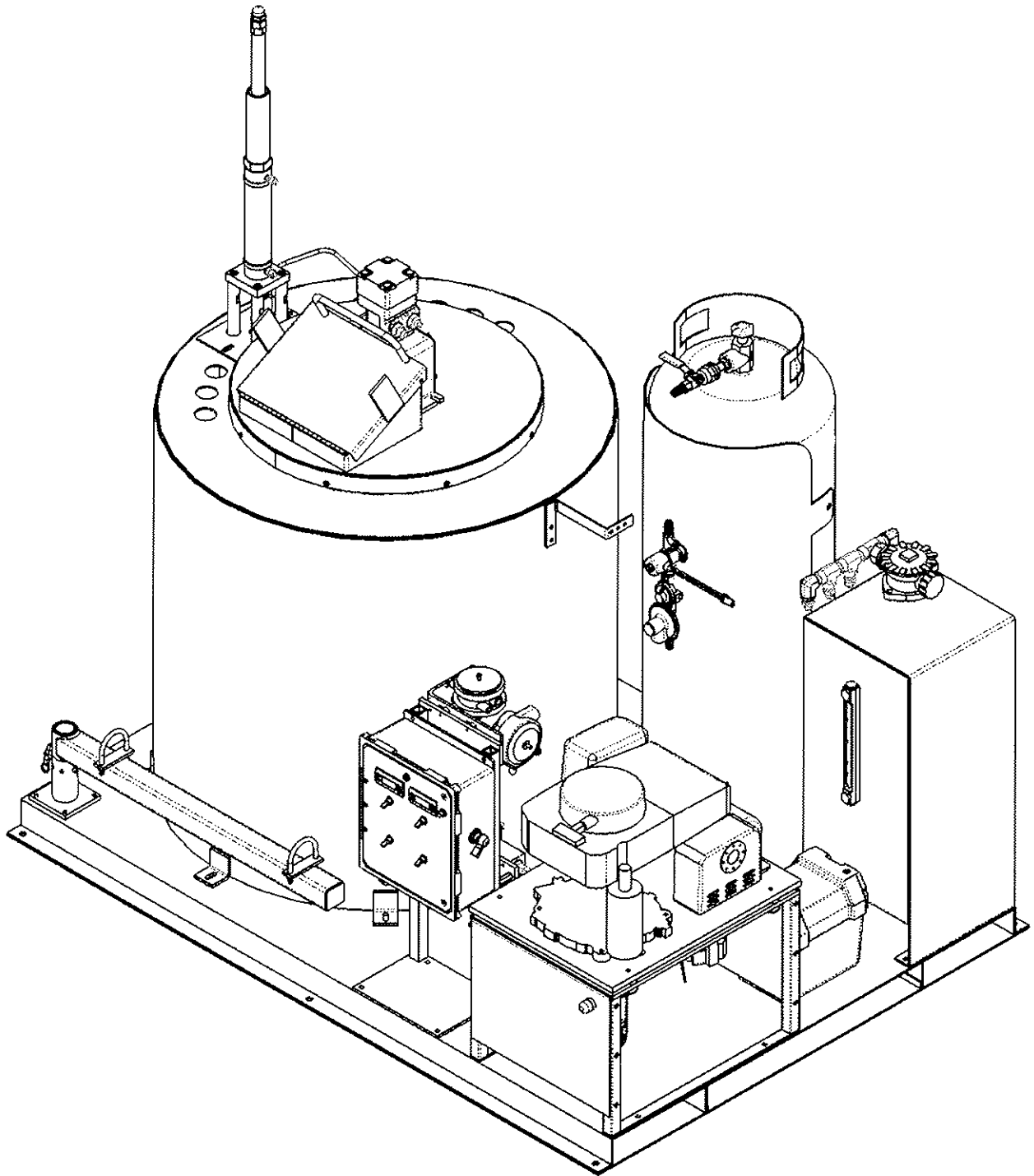


BIGSHOT BITUMINOUS APPLICATOR



Dispensing Technology Corporation
5345 N. Commerce Ave. #1 Moorpark, CA 93021
805-529-7733 Tel 805-529-7732 Fax www.dispensingtech.com



Warning

This symbol alerts you to the possibility of serious injury or death if you do not follow the instructions.



Caution

This symbol alerts you to the possibility of damage to or destruction of equipment if you do not follow the instructions.



WARNING

EQUIPMENT MISUSE HAZARD

Equipment misuse can cause the equipment to rupture or malfunction and result in serious injury.

- This equipment is for professional use only.
- Read all instruction manuals, tags, and labels before operating the equipment.
- Use the equipment only for its intended purpose. If you are not sure, give DTC a call.
- Do not alter or modify the equipment. Only use parts that are compatible with this machine.
- Check equipment daily. Repair or replace worn or damaged parts immediately.
- Do not exceed the maximum working pressure of the lowest rated component in each of the following system. The maximum working fluid pressure of the fluid spray system is 500 PSI. The maximum rated pressure of the hydraulic system is 400 PSI. **NEVER EXCEED 400 PSI HYDRAULIC PRESSURE AS HOSE DAMAGE AND BURSTING COULD OCCUR.**
- **Always wear protective eyewear, gloves, clothing, and respirator as recommended by the fluid and solvent manufacturer.**
- Comply with all applicable local, state, and national fire, electrical, and safety regulations.



WARNING



PERSONAL PROTECTIVE EQUIPMENT

You must wear proper protective equipment when operating, servicing, or when in the operating area of the equipment to help protect you from serious injury, including eye injury, inhalation of toxic fumes, burns, and hearing loss. This equipment includes but is not limited to:

- Protective eyewear
- Clothing and respirator as recommended by the fluid and solvent manufacturer
- Gloves
- Hearing protection
- Always have adequate ventilation for task being performed



TOXIC FLUID OR FUMES HAZARD

Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or the skin, inhaled, or swallowed.

- Read Material Safety Data Sheet (MSDS) to know the specific hazards of the fluids you are using.
- Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.



INJECTION HAZARD

High-pressure fluid from gun, hose leaks, or ruptured components will pierce the skin. This may look like just a cut, but it is a serious injury that can result in amputation. **GET IMMEDIATE MEDICAL ATTENTION!**

- **Do not** point the gun at anyone or at any part of the body.
- **Do not** put your hand over the spray tip.
- **Do not** stop or deflect leaks with your hand, body, glove, or rag.
- Use the lowest possible pressure when flushing, priming, or troubleshooting.
- Engage trigger safety lock when not spraying.
- Tighten all fluid connections before operating the equipment.
- Check hoses, tubes, and couplings daily. Replace worn or damaged parts immediately. High-pressure hose cannot be re-coupled; replace the entire hose.



Burn Hazard

Equipment surfaces and fluid that's heated can become very hot during operation. To avoid severe burns, do not touch hot fluid or equipment. Wait until equipment/fluid has cooled completely.

DAILY STARTUP

BEFORE STARTING ENGINE

1. Check propane fuel level and fill tank if necessary. Use only vapor withdrawal type bottle with the BigShot Applicator.
2. Check oil level in engine and add as needed. Use oil rated **HD 30 only**. Engine is equipped with a low oil level alarm. If high pitched oil alert alarm is heard, stop engine immediately and add oil to the proper fill level. Catastrophic engine damage may occur if engine is operated while oil alert alarm is sounding.
3. Check oil level in hydraulic reservoir, add oil as needed. Only use oil rated ISO 46 and fill until oil is visible in the site glass but not more than $\frac{1}{2}$ the height of the site glass.
4. Check material reservoir and add material if needed. Tank should be no more than $\frac{1}{3}$ full for quickest startup. Do not operate unit with material below the sensor probe (approximately 4").
5. Close material tank lid and be sure that agitator stop switch is actuated if machine is equipped with one (Agitator stop switch is an optional item).
6. Turn ON propane battle valve and $\frac{1}{4}$ turn safety shutoff valve located at bottle outlet.

START-UP

1. Be sure control box switch is in the OFF position prior to starting engine. Also be sure all switches on the front panel of the control box are in the OFF position.
2. Pull choke lever to the full ON position and depress starter button on side of power pack.
3. Continue holding choke in the full ON position until engine starts.
4. Release choke lever when engine starts.
5. Allow engine to warm up for a few minutes before turning ON the control box.
6. When engine has warmed up for several minutes turn the control box to the ON position
7. The temperature controller displays will illuminate and display the actual temperature at the sensors.

NOTE

The display will always indicate the actual process temperature unless you are in the SET mode as described below.

8. Adjust the temperature set points as desired. To adjust the set point, press the SET button on the front of the controller twice in rapid succession. You can now use the UP/DOWN arrow keys to adjust the set point higher or lower.

REMEMBER, NEVER EXCEED 400 DEGREES ON THE HOSE TEMPERATURE OR 425 DEGREES ON THE MATERIAL TEMPERATURE.

9. When you have the temperature set points adjusted as desired wait approximately one minute and the actual temperature will be displayed again. You may also press the function key above the set point key twice in rapid succession to return to the actual temperature indication.

STARTING THE BURNER

1. When the temperature is adjusted as desired, turn the material switch to the ON position. The ignition system will start (clicking sound) and the burner will ignite. Also the green light on the material toggle switch will illuminate. This light will normally be ON only when the controller is calling for heat.
2. Now turn the agitator switch to the ON position. The green light on the agitator toggle switch will illuminate. The agitator will start to turn automatically when the material has softened around the edges sufficiently.

STARTING THE HEATED HOSE

1. The hose will require approximately 20 minutes to come up to temperature. Approximately 20 minutes before you are ready to use the machine, turn the hose toggle switch to the ON position. The green light on the material toggle switch will illuminate. This indicates that the controller is calling for heat. Allow hose to reach the temperature set point prior to dispensing material.

2. DISPENSING ADHESIVE

When the material and the hose have come up to temperature you are ready to begin dispensing.

REMEMBER, HOT MELT MATERIALS CAN CAUSE SERIOUS BURNS. ALWAYS WEAR GLOVES, SAFETY FACE SHIELD AND LONG SLEEVE SHIRT, AS WELL AS ANY OTHER SAFETY EQUIPMENT APPROPRIATE FOR YOUR SPECIFIC OPERATION.

1. Adjust the pump shot size to the desired output by loosening the locknut located at the top of the pump motor and turning the shot adjuster to increase or decrease the material output as desired. Turn the adjuster **CLOCKWISE TO DECREASE** material output or **COUNTER-CLOCKWISE TO INCREASE** material output.
2. Be sure that the **TRIGGER SAFETY SWITCH** is engaged. Turn the pump switch to the **ON** position. Disengage trigger safety and dispense a sample shot of material back into the melter lid or into an appropriate waste container. Adjust shot size desired.
3. Point dispense wand at the spot on ground that you desire material. Duckbill tip should be several inches off of the ground. Pull trigger fully until material stops flowing. Release trigger and place marker.

ALWAYS ENGAGE TRIGGER SAFETY LOCKOUT AND TURN PUMP TO THE OFF POSITION WHEN NOT DISPENSING MATERIAL AND WHEN ADJUSTING OR CHANGING THE DUCKBILL VALVE.

ADDING MATERIAL TO THE MELTER

Extreme care should be used when adding material to the melting tank to avoid being splashed with hot material.

REMEMBER, HOT MELT MATERIALS CAN CAUSE SERIOUS BURNS. ALWAYS WEAR GLOVES, SAFETY FACE SHIELD AND LONG SLEEVE SHIRT, AS WELL AS ANY OTHER SAFETY EQUIPMENT APPROPRIATE FOR YOUR SPECIFIC OPERATION.

1. Open melting tank lid. If unit is equipped with an agitator stop switch(optional) the agitator will stop whenever the lid is open.
2. Place a block material on the open lid. Rapidly in a single motion close lid depositing the material in the tank. Never drop material into the tank with lid in the open position as splashing may occur.

SHUT DOWN PROCEDURE

It is recommended that the melter is left approximately $\frac{1}{4}$ to $\frac{1}{3}$ full when done at the end of the day. This allows a more rapid start up the next time the melter is used.

1. Be sure to engage the trigger safety lock. Stow hose securely for travel.
2. Turn the melter, hose, pump and agitator switches on the front of the control panel to the OFF position.
3. Turn the main control unit power switch on the side of the control box to the OFF position.
4. Turn the $\frac{1}{4}$ turn ball shutoff valve at the propane bottle to the OFF position.
5. Turn the propane bottle valve clockwise to the fully off position.
6. The unit is now ready for overnight storage

MAINTENANCE

PLEASE REFER TO THE INDIVIDUAL EQUIPMENT MANUALS FOR COMPLETE SERVICE AND MAINTENANCE INTERVALS AND PROCEDURES.

DAILY OR EVERY 10 HOURS

- Check oil level in engine and add as needed.
- Check hydraulic oil level in reservoir, add oil as needed.
- Inspect entire machine for leaks, spills worn hoses, loose nuts and bolts etc.

Every 50 hours

- Change engine fluid and filter.
- Inspect and check tension on alternator drive belt.

EVERY 12 MONTHS OR 1000 HOURS OF OPERATION

- Change hydraulic fluid and filter.
- Change agitator drive belt and re-tension.

FLUIDS

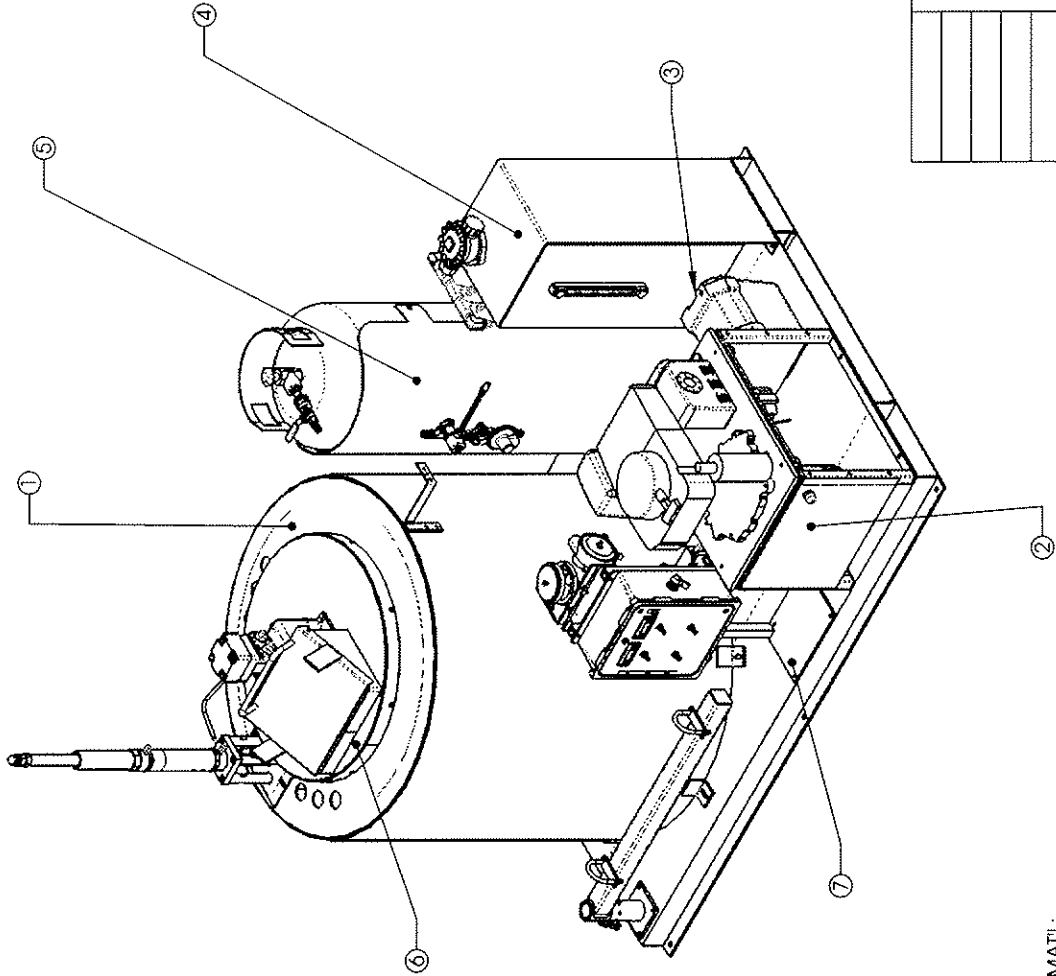
13 HP Honda Propane Ready

H D 30 rated engine oil.

Hydraulic Fluid

DTE 25, Tellus 6 or equal

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	010-10088	MELTER PUMP ASSEMBLY	1
2	010-10091	ENGINE, PUMP & GENERATOR ASSY, PROPANE	1
3	010-10026	BATTERY BOX, U1	1
4	110-10026	HYD RESERVOIR ASSY	1
5	170-10039	PROPANE TANK ASSY	1
6	010-10107	AGITATOR & LID ASSY	1
7	010-10108	CONTROL BOX W/HYD VALVES	1
8	010-00123	BITUMINOUS HOSE SUPPORT	1
9	050-10172	SAE J232 MANUAL HOLDER	1



1. MAT'L: .

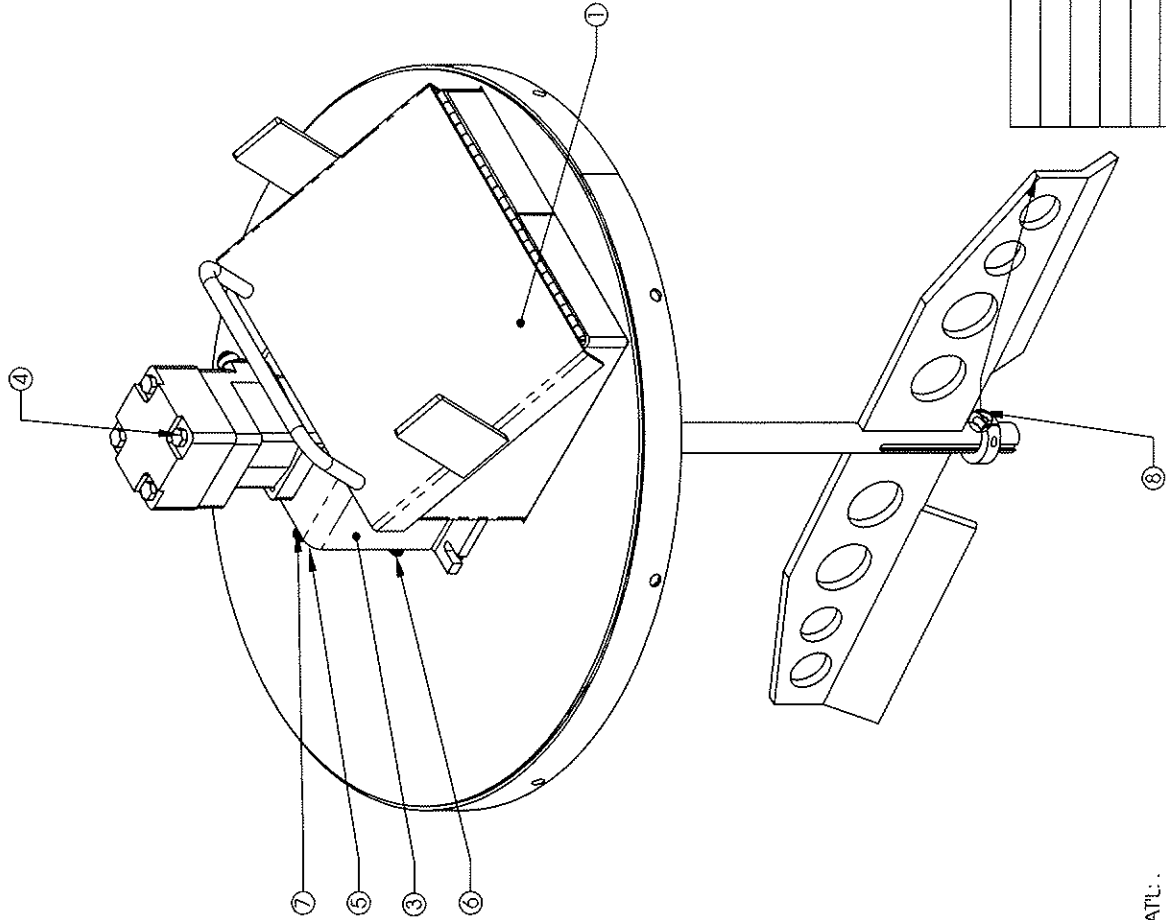
NOTES: UNLESS OTHERWISE SPECIFIED

PART NO		010-10090	
Dispensing Technology Corporation Moorpark, C.A			
DATE	09-02-2005	REV	B
APPROVALS		REV	010-10090
DRAWN		SCALE	1:12
CHECKED		SHEET 1 OF 1	
APPROVED			
DESIGNED			
DO NOT SCALE DRAWING			
WHERE USED			

ALL DIMENSIONS IN INCHES
DIMENSIONS APPLY AFTER
PLATING AND HEAT TREAT.
REMOVE ALL BURRS.
BREAK ALL SHARP EDGES.
TOLERANCES: X.XX ± .01
X.XXX ± .005
X" ± .5"

FIRST USED ON

ITEM NO.	ID	DESCRIPTION	QTY.
1	030-10209	MELTER LID	1
2	030-10212	AGITATOR, 500 LB MELIER	1
3	030-10213	AGITATOR MOTOR BRACKET	1
4	090-10034	AGITATOR DRIVE MOTOR	1
5	030-10214	AGITATOR COVER PLATE	1
6		1/4-20 X 1.5 LING HH BOLT	4
7		1/4 SPLIT LOCK WASHER	4
8	050-10034	SPLIT SHAFT COLLAR, 1"	1
9	050-10075	BEARING, 1" ID 2 BOLT FLANGE	1
10	B16400-6-10-O	NIPPLE, 6 JIC X 10 ORB	1
11	B16400-08-10-O	NIPPLE, 8 JIC X 10 ORB	1
12	050-00164	COUPLING	1



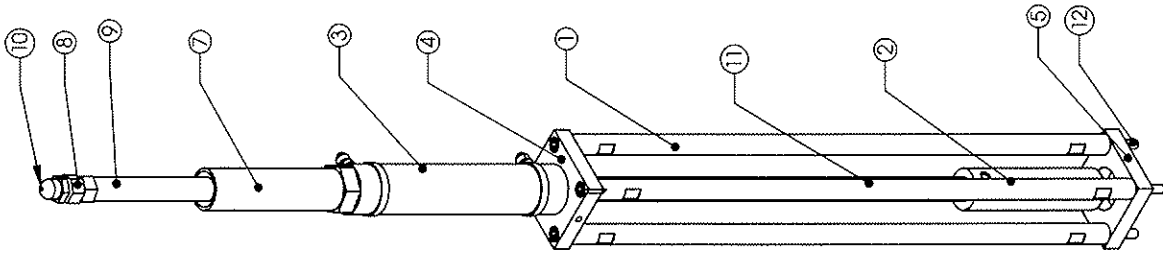
1. MAT'L: .

NOTES: UNLESS OTHERWISE SPECIFIED

PART NO. 010-10107	
Dispensing Technology Corporation Moonpark, CA	
LID & AGITATOR ASSY	
DATE	04-02-2006
APPROVALS	
DRAWN	
CHECKED	
APPROVED	
INSD	
SIZE	B
DWG. NO.	010-10107
BY	B
SCALE	1:4
DO NOT SCALE DRAWING	
SHEET 1 OF 1	

ALL DIMENSIONS IN INCHES.
DIMENSIONS APPLY AFTER
FLATING AND HEAT TREAT.
REMOVE ALL BURRS.
BREAK ALL SHARP EDGES.
TOLERANCES: X.XX ± .01
X.XXX ± .005
X° ± .5°

WHERE USED



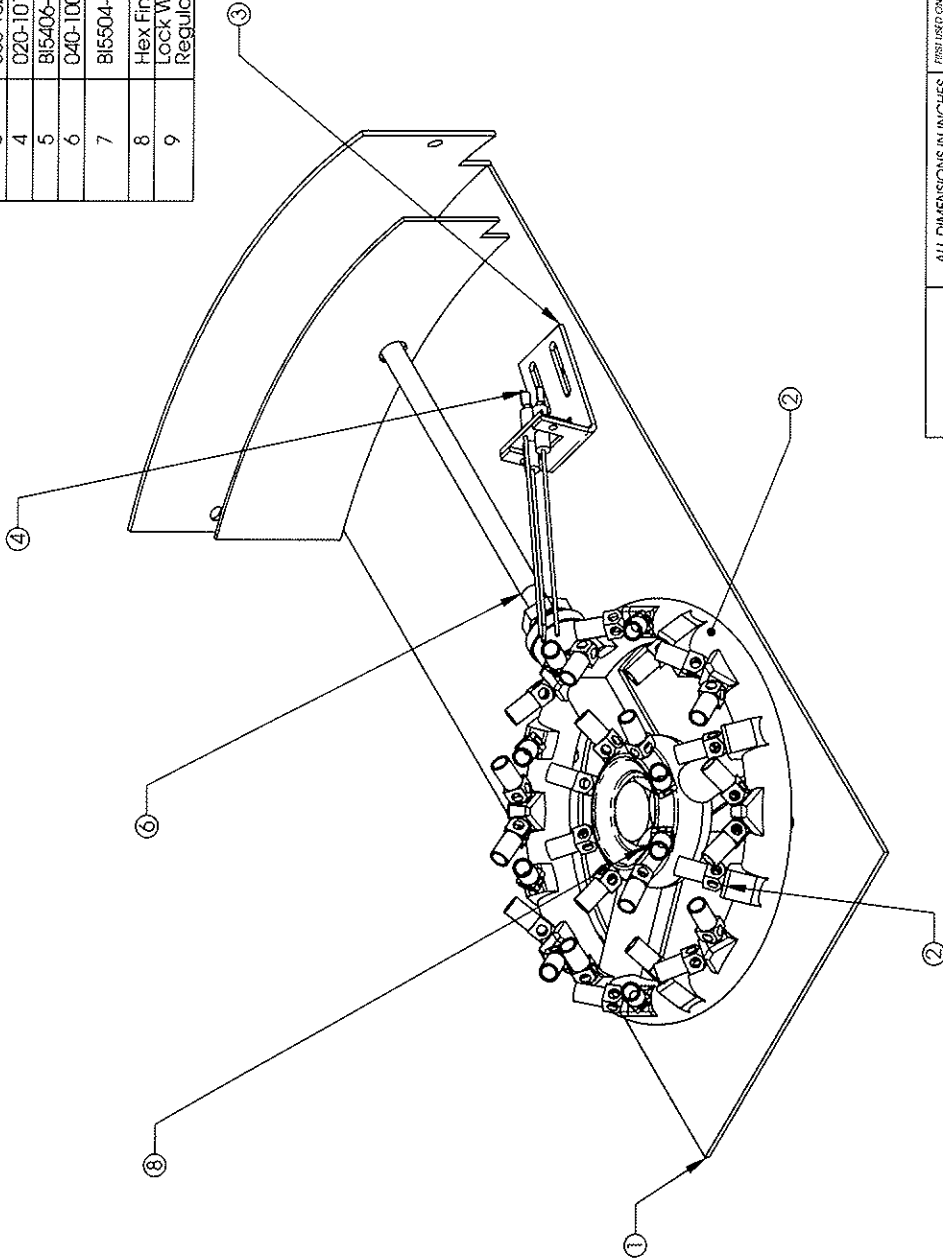
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	030-10189	PUMP TIE RODS	4
2	100-10028	PUMP PISTON	1
3	H-316-DUZ	HYDRAULIC DRIVE CYLINDER	1
4	030-10204	CYLINDER MOUNTING PLATE	1
5	100-10032	PUMP PLATE	1
6	080-10009	TEFLON O-RING	1
7	030-10205	ADJUSTER GUARD	1
8	030-10207	HEAVY NUT 5/8-11 NC	1
9	030-10206	SHOT ADJUSTER	1
10	060-10069	ACORN NUT	1
11	030-10211	PUMP DRIVE ROD	1
12	SSCLPSKT 0.375-16x2.5-HX-N	SHSS, .375-16 X2.5 LONG	4
13	060-10071	SHIM WASHER, 1.25 X 1.75 X .015 THK SS	1
14	060-10070	SHIM WASHER, 1.25 ID X 1.75 OD X .010 THK SS	1
15	B12404-06-04	NIPPLE, 6 JIC X 4 MPT	2
16	Socket Head Cap Screw, A1		4

1. MATL: .

NOTES: UNLESS OTHERWISE SPECIFIED

PART NO		100-10030	
Dispensing Technology Corporation Menlo Park, CA			
APPROVALS		DATE	
DRAWN	CHECKED	21-02-2006	
APPROVED	ISSUED		
DO NOT SCALE DRAWING		SCALE	1:1
ALL DIMENSIONS IN INCHES. DIMENSIONS APPLY AFTER PLATING AND HEAT TREAT. REMOVE ALL BURRS. BREAK ALL SHARP EDGES. TOLERANCES: X.XX ± .01 X.XXX ± .005 X" ± .5"		SIZE	B
WHERE USED		DWG. NO	100-10030
		REV	A
		SHEET	1 OF 1

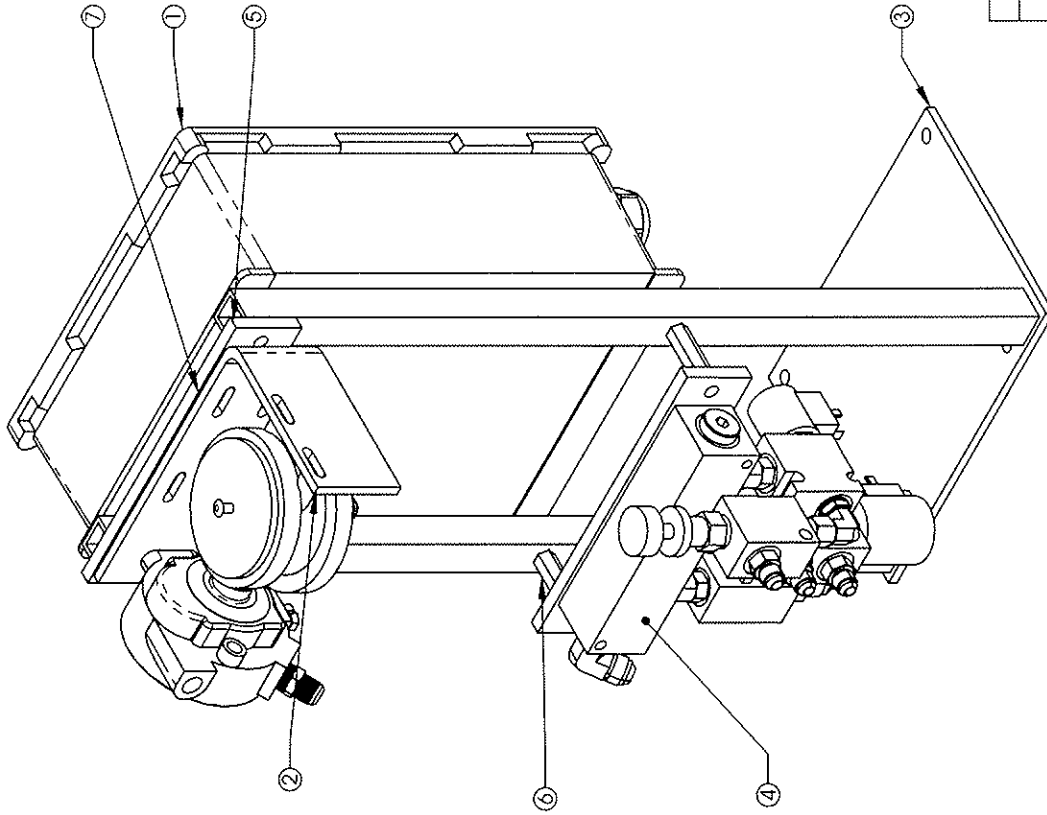
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	030-10215	BURNER MOUNTING TRAY	1
2	170-10014	PROPANE BURNER	1
3	030-10260	IGNITOR.MTG.BRACKET	1
4	020-10123	IGNITOR	1
5	B15406-12-04	FITTING, REDUCING BUSHING	1
6	040-10082	GAS PIPE	1
7	B15504- 04-04	B15504-Tab. configuration:B15504- 04-04	1
8	Hex Finished Bolt_AI		1
9	Lock Washer Spring Regular_AI		1



PART NO		170-10015	
Dispensing Technology Corporation Mtnviewpark, CA			
PROPANE BURNER ASSEMBLY			
SIZE	DWG. NO	REV	
B	170-10015	A	
SCALE		SHEET 1 OF 1	
DO NOT SCALE DRAWING		SCALE 1:8	
FIRST USED ON		DATE	
APPROVALS	04-02-2006		
DRAWN	TITLE		
CHECKED			
APPROVED			
ISSUED			
ALL DIMENSIONS IN INCHES. DIMENSIONS APPLY AFTER PLATING AND HEAT TREAT. REMOVE ALL BURRS. BREAK ALL SHARP EDGES. TOLERANCES: X.XX ± .01 X.XXX ± .005 X" ± .5"			
WHERE USED			

1. MAT'L:
NOTES: UNLESS OTHERWISE SPECIFIED

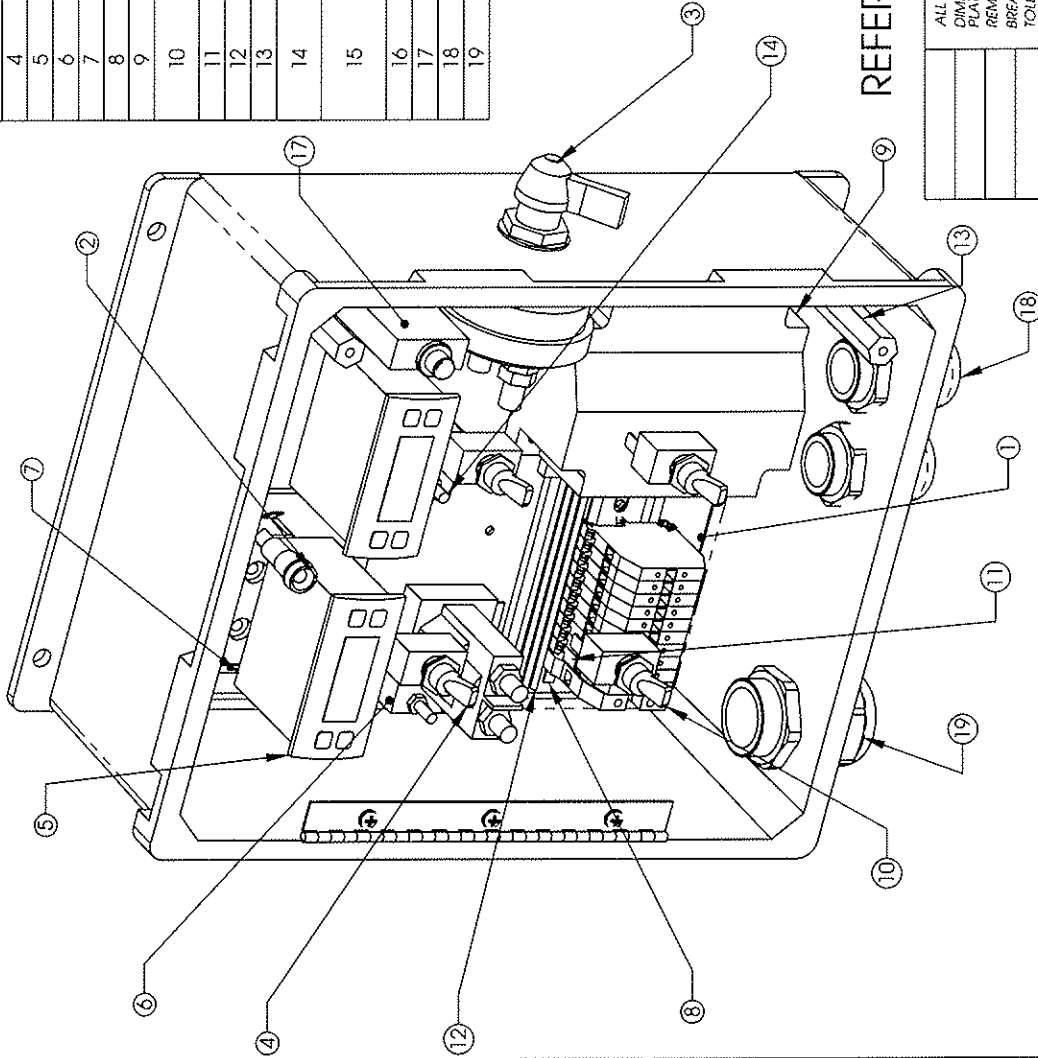
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	010-00142	TEMPERATURE CONTROLLER BITUMINOUS APPLICATOR	1
2	170-10021	PROPANE REGULATOR/SAFETY ASSY	1
3	030-10224	CONTROL MTG STAND	1
4	090-10060	HYDRAULIC CIRCUIT ASSEMBLY	1
5	030-10262	MANIFOLD MOUNTING BRACKET	2
6	050-10115	STANDOFF, 5/16-18 X 1.75 LING	4
7	050-10116	SPACER, 5/16 X 3/8 LING	8



PART NO		010-10108	
Dispensing Technology Corporation Menlo Park, CA			
TITLE		CONTROL BOX, HYD VALVES	
SIZE	DWG NO.	REV	
B	010-10108	B	
DATE		SHEET 1 OF 1	
APPROVALS	DATE	SCALE 1:3	
DESIGNED		DO NOT SCALE DRAWING	
CHECKED			
APPROVED			
<p>ALL DIMENSIONS IN INCHES. DIMENSIONS APPLY AFTER PLATING AND HEAT TREAT. REMOVE ALL BURRS. BREAK ALL SHARP EDGES. TOLERANCES: X.XX ± .01 X.XXX ± .005 X" ± .5"</p>			
WHERE USED			

1. MAT'L.:
NOTES: UNLESS OTHERWISE SPECIFIED

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	020-10107	ENCLOSURE WITH PANELS	1
2	020-10059	GREEN LED, 12 VDC	1
3	020-10074	MAIN DISCONNECT, 12 VDC- 180 AMPS	1
4	020-10058	SWITCH, SPST ON/OFF TOGGLE, GREEN LED INDICATOR	4
5	020-10097	TEMPERATURE CONTROL, DIGITAL	2
6	020-10079	CONTACTOR, 12 VDC, 100 AMP	1
7	020-10081	FUSE BLOCK, 6 ATC W/GROUND	1
8	020-10108	DIN RAIL	1
9	170-0061	GAS IGNITION MODULE	1
10	020-10101	DIN MOUNT CONNECTOR 8MM, 50 AMP	1
11	020-10105	DIN CONNECTOR, 6MM	10
12	020-10118	CONNECTOR, IGNITION MODULE	1
13	050-10119	PANEL DOOR STOP	2
14	020-10129	20 AMP CIRCUIT BREAKERW/ RESET	1
15	CR-PHMS 0.164- 36x0.375x0.375-N	PAN HEAD, 10-24 X .375 LING (LOW)	3
16	050-10120	HINGE, PANEL FRONT	1
17	020-10158	CIRCUIT BREAKER, 70 AMP	1
18	010-00143	3/4" NPT STYLE STRAIN RELIEF W/LOCKNUT	2
19	010-00144	1" NPT STYLE STRAIN RELIEF W/LOCKNUT	1



REFERENCE ELECTRICAL SCHEMATIC D-010-10130

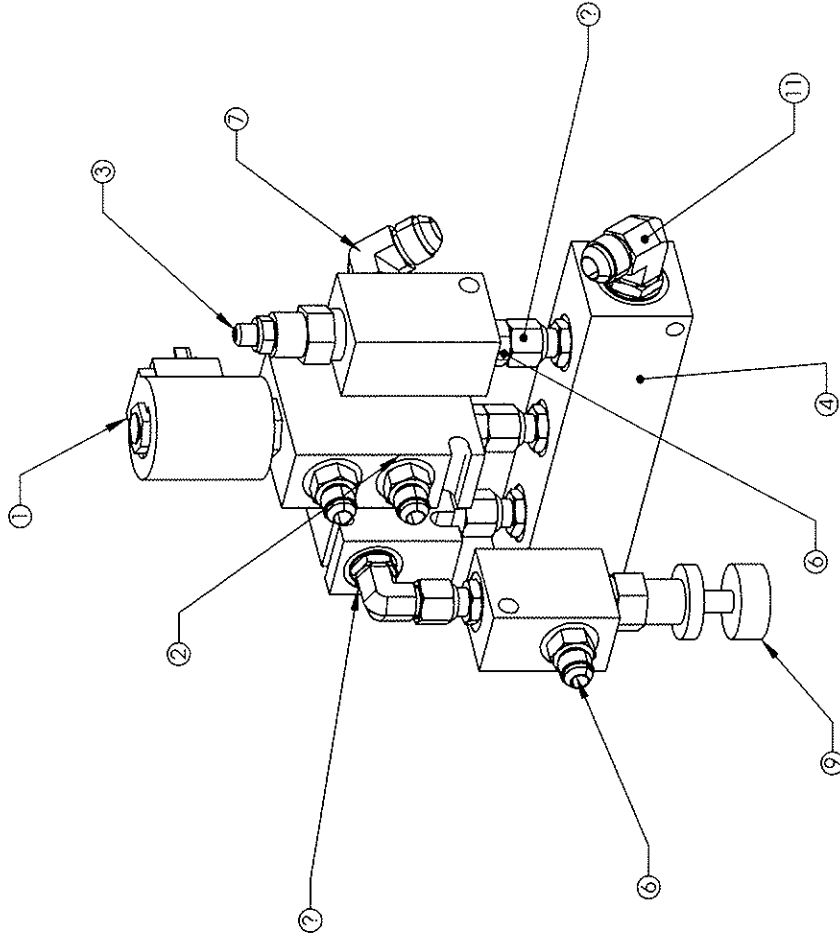
PART NO. 010-00142	
Dispensing Technology Corporation Menlo Park, CA	
TITLE TEMPERATURE CONTROLLER BITUMINOUS APPLICATOR	
REV	REV
SEE B	DWG NO 010-00142
SCALE 1:1	SHEET 1 OF 1
DO NOT SCALE DRAWING	
WHERE USED	

ALL DIMENSIONS IN INCHES.
DIMENSIONS APPLY AFTER
FLAMING AND HEAT TREAT.
REMOVE ALL BURRS.
BREAK ALL SHARP EDGES.
TOLERANCES: X.XX ± .01
X.XXX ± .005
X" ± .5"

APPROVALS
DRAWN
CHECKED
APPROVED
RESED

1. MAT'L:
NOTES: UNLESS OTHERWISE SPECIFIED

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	090-10059	FOUR WAY CARTRIDGE VALVE, 12 VDC	1
2	090-10056	TWO VALVE ASSEMBLY, 12 VDC	1
3	090-10061	RELIF VALVE, -6 PORTS	1
4	040-10074	MANIFOLD, TWO PORT	1
5	B16402-06-06-O	NIPPLE, 6 ORB X 6 FJS	4
6	B16400-06-06-O	NIPPLE, 6 ORB X 6 JIC	6
7	B16801-08-06-NWO	ELBOW, 8 JIC X 6 ORB	2
8	B16408-H-08-O	-8 HOLLOW HEX PLUG	1
9	090-10063	FLOW CONTROL VALVE, ADJUSTABLE	1
10	B16801-06-06-NWO	ELBOW, 6 ORB X 6 JIC 90 DEG EL	1
11	B16801-08-08-NWO	ELBOW, 8 ORB X 8 JIC 90 DEG EL	1



1. MAT'L.:

NOTES: UNLESS OTHERWISE SPECIFIED

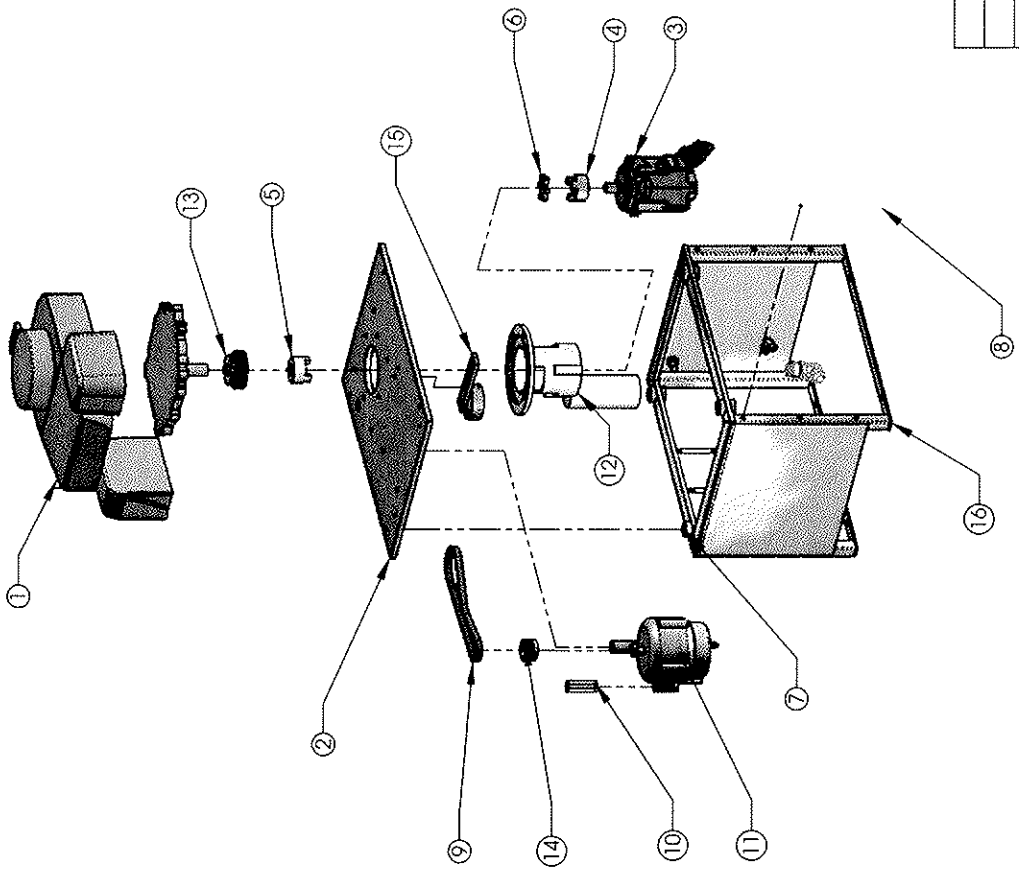
PART NO. 090-10060	
Dispersing Technology Corporation Menlo Park, CA	
TITLE HYDRAULIC CIRCUIT ASSEMBLY	
SIZE B	DWG. NO. 090-10060
SCALE 1:1	SHEET 1 OF 1
DATE 04-02-2006	APPROVALS
DRAWN	CHECKED
APPROVED	ISSUED
DO NOT SCALE DRAWING	
WHERE USED	

ALL DIMENSIONS IN INCHES.
DIMENSIONS APPLY AFTER
PLATING AND HEAT TREAT.
REMOVE ALL BURRS.
BREAK ALL SHARP EDGES.
TOLERANCES: X.XX ± 0.01
X.XXX ± 0.005
X° ± 5°

PREPARED ON

DATE 04-02-2006

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	1	170-10011	HONDA GXV 390 13 HP PROPAPE ENGINE
2	1	030-10210	MOTOR MOUNTING PLATE
3	1	090-10041	HYD PUMP, PRESSURE COMPENSATED
4	1	050-10081	DRIVE COUPLING, 3/4"
5	1	050-10084	DRIVE COUPLING, 1" BORE
6	1	050-10083	COUPLING SPIDER
7	4	050-10022	VIBRATION ISOLATOR
8	2	030-10255	COVER PLATE
9	1	050-10106	DRIVE BELT
10	2	050-10107	ALTERNATOR SPACER
11	1	020-10119	ALTERNATOR W/O PULLEY
12	1	050-10109	HYD PUMP MOUNT
13	1	050-10108	DRIVE PULLEY
14	1	050-10110	ALTERNATOR PULLEY
15	1	050-10111	TENSIONER ASSEMBLY
16	1	030-10256	FRAME
17	1	020-10122	PUSH BUTTON, 50 A 12 VDC MOM
18	1	050-10125	ALTERNATOR MTG STUD, SHORT
19	1	050-10124	ALTERNATOR MTG STUD LONG
20	1	B16801-08-12-NW/O	FITTING, 8 JIC X 12 ORB 90 DEG EL
21	1	B16801-12-12-NW/O	ELBOW, 12 ORB X 12 JIC
22	1	B16801-06-06-NW/O	ELBOW, 6 ORB X 6 JIC 90 DEG EL
23	1	020-10140	STARTER MOTOR, 13 HP HONDA
24	1	020-00144	020-00144



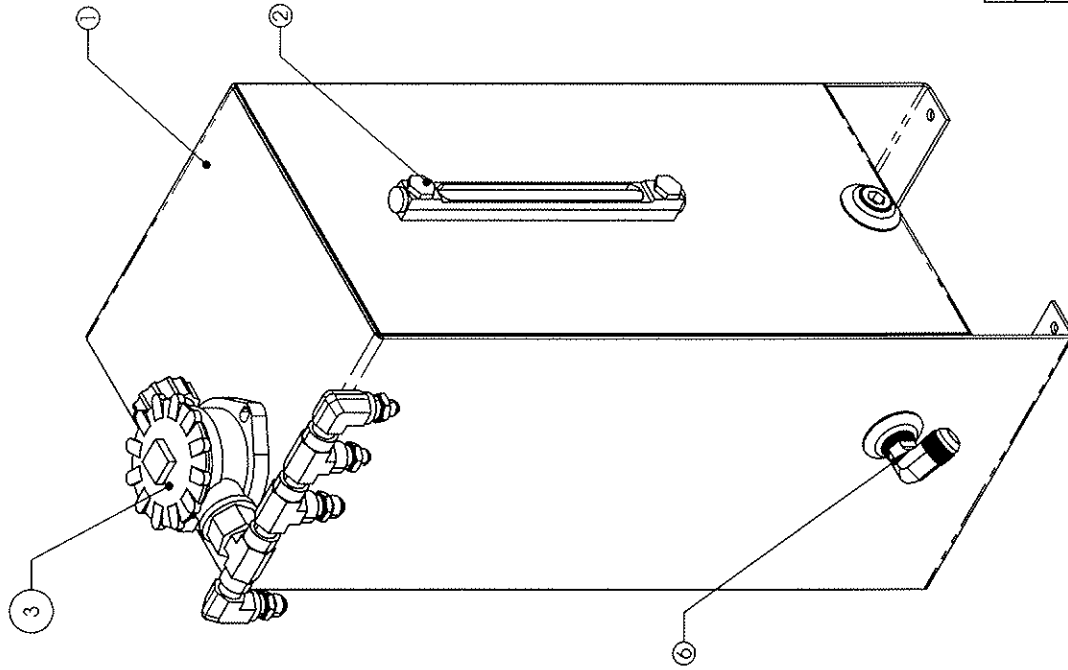
PART NO		010-10091	
Dispensing Technology Corporation Moonpark, CA			
TITLE		HYD POWER PACK	
SIZE	DWG NO	REV	
B	010-10091	B	
SCALE		SHEET 1 OF 1	
DO NOT SCALE DRAWING		SCALE 1:10	
APPROVALS		DATE	
DRAWN			
CHECKED			
APPROVED			
INSD			

ALL DIMENSIONS IN INCHES.
DIMENSIONS APPLY AFTER
PLATING AND HEAT TREAT.
REMOVE ALL BURRS.
BREAK ALL SHARP EDGES
TOLERANCES: X.XX ± .01
X.XXX ± .005
X" ± .5"

1. MATL: .
NOTES: UNLESS OTHERWISE SPECIFIED

WHERE USED

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	110-10025	HYDRAULIC RESERVOIR W/FILTER	1
2	090-10038	HYDRAULIC SIGHT GUAGE	1
3	090-10062	FILTER, HYDRAULIC RETURN LINE	1
4	060-10021	INTANK RETURN LINE	1
5	060-10022	HOSE CLAMP 2" NOM X 1/2 W	1
6	B12501-12-12	FITTING, -12 MP X -12 JIC 90 DEG	1
7	B16405-16-08-O	FITTINGS, 16 ORB X 8 FPT	1
8	FITTING, 1/2 NPT STREET ELBOW	FITTING, 1/2 NPT STREET EL	2
9	B15406-HP-12	B15406-HP-TAB, configuration:Default	2
10	B15602-08-08-08	FITTING, 1/2 STREET TEE	2
11	B15604-08-08-08	FITTING, 1/2 NPT BRANCH TEE	1
12	B12404-6-8	FITTING, 6 JIC X 8 MPT	2
13	B12404-08-08	FITTING, 8 JIC X 1/2 MPT NIPPLE	2

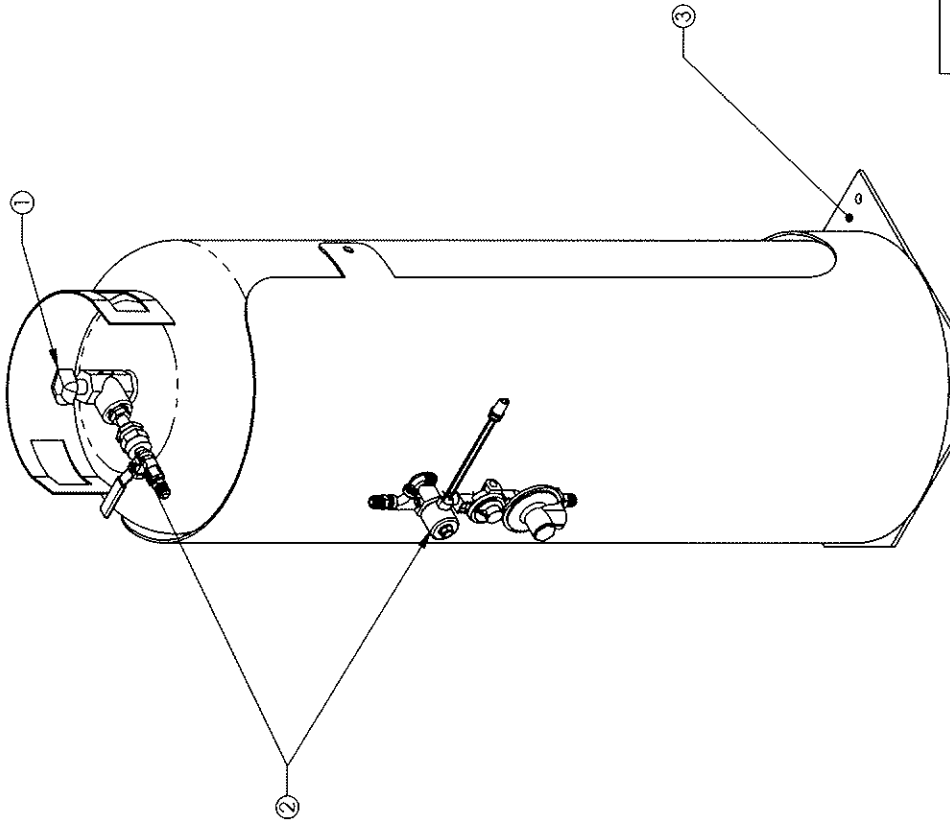


1. MAT'L. .

NOTES: UNLESS OTHERWISE SPECIFIED

PART NO. 110-10026	
Dispensing Technology Corporation Menlo Park, CA	
HYDRAULIC RESERVOIR W/FILTER	
REV. B	REV. A
DATE 10-05-2006	110-10026
APPROVALS	SCALE 1:1
DRAWN	SHEET 1 OF 1
CHECKED	
APPROVED	
RES'D	
DO NOT SCALE DRAWING	
ALL DIMENSIONS IN INCHES DIMENSIONS APPLY AFTER FLANGING AND HEAT TREAT. REMOVE ALL BURRS. BREAK ALL SHARP EDGES TOLERANCES: X.XX ± .01 X.XXX ± .005 X° ± 5°	
WHERE USED	

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	170-10026	PROPANE BOTTLE, 100 LB	1
2	170-10038	REGULATOR FILTER ASSEMBLY	1
3	030-10261	TANK MTG STAND, 100 LB	1



1. MAT'L. :

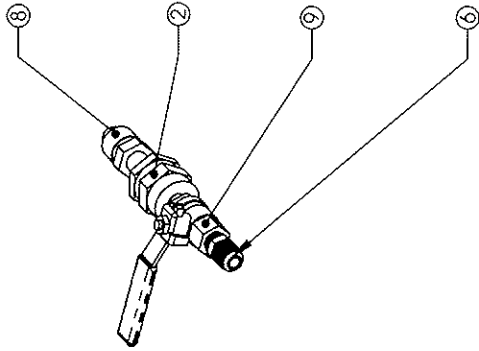
NOTES: UNLESS OTHERWISE SPECIFIED

PART NO		170-10039	
DISPENSING TECHNOLOGY CORPORATION		MIDCOURT, CA	
TITLE		PROPANE TANK ASSY	
SIZE	DWG NO	REV	
B	170-10039	A	
DO NOT SCALE DRAWING		SCALE	1:6
WHERE USED		SHEET 1 OF 1	

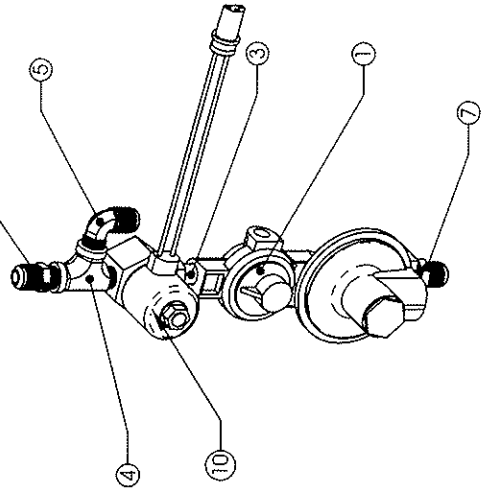
ALL DIMENSIONS IN INCHES.
 DIMENSIONS APPLY AFTER
 PLATING AND HEAT TREAT.
 REMOVE ALL BURRS.
 BREAK ALL SHARP EDGES.
 TOLERANCES: X.XX ± .01
 X.XXX ± .005
 X° ± .5°

FIRST USED ON		DATE
APPROVALS	DATE	04-02-2006
DRAWN		
CHECKED		
APPROVED		
ISSUED		

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	170-10035	TWO STAGE PROPANE REGULATOR	1
2	170-10037	FILTER, 1/4" PROPANE	1
3	B15404-04-04	NIPPLE, 1/4 NPT	1
4	B15602-04-04-04	TEE, 1/4 NPT STREET	1
5	040-10070	ELBOW, 1/4 NPT X -6 SAE 45 DEG	1
6	040-10069	NIPPLE, 1/4 NPT X -6 SAE 45 DEG	2
7	040-10071	NIPPLE, 3/8 NPT X -6 SAE 45 DEG	1
8	170-10034	POL FITTING X 1/4 NPT	1
9	150-10024	BALL VALVE, 1/4 FPT BRASS	1
10	170-10040	GAS VALVE WITH PLUG	1

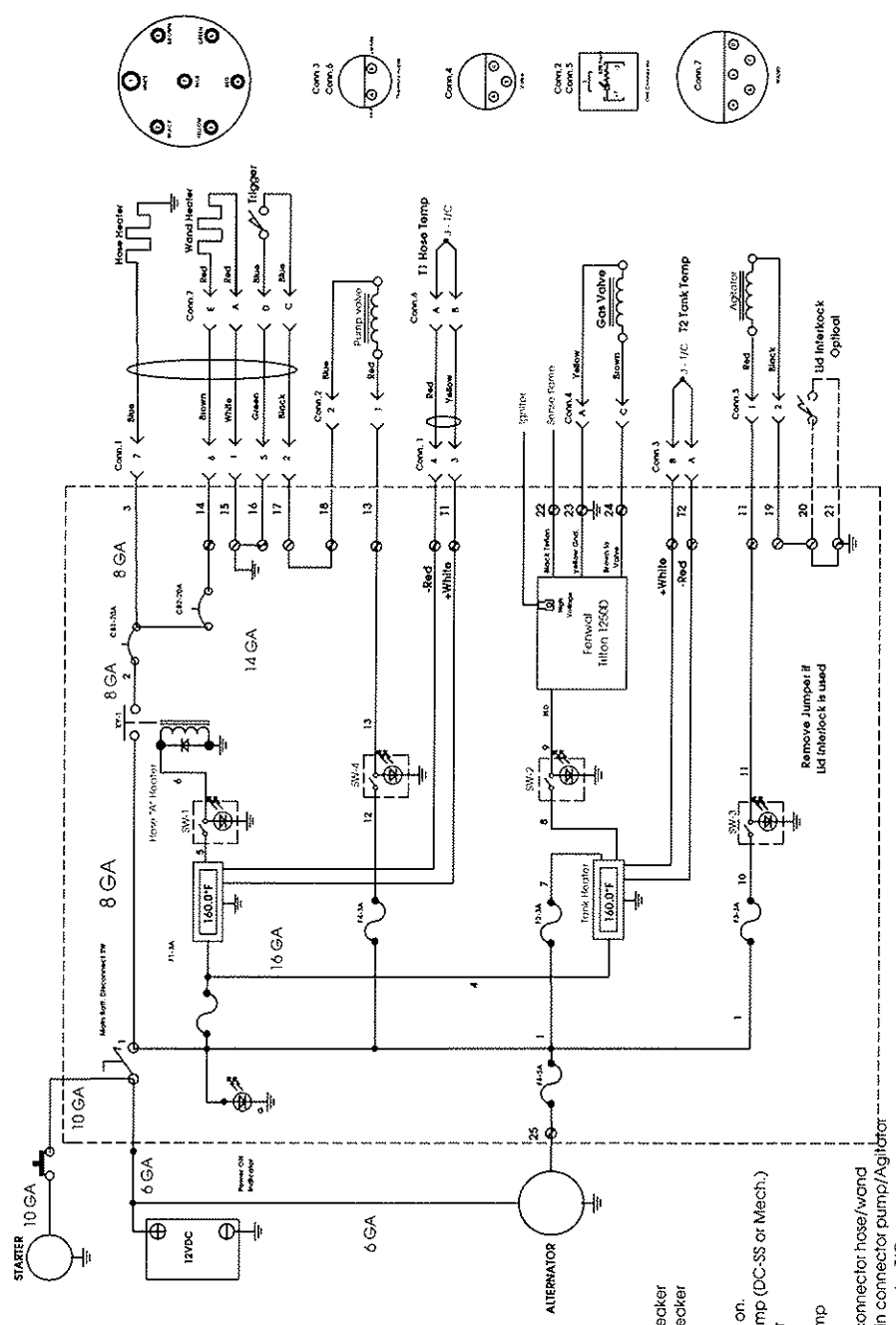


NOTE:
 ASSEMBLE ALL COMPONENTS WITH
 YELLOW, PROPANE RATED TEFLON TAPE

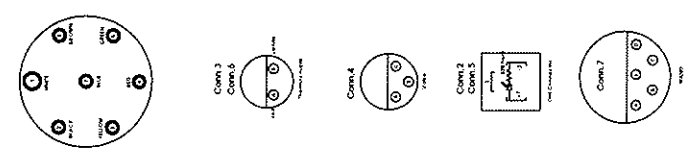


1. MAT'L: .
 NOTES: UNLESS OTHERWISE SPECIFIED

PART NO. 170-10038	
Dispersing Technology Corporation Moorpark, CA	
APPROVALS	DATE
DRAWN	04-02-2006
CHECKED	
APPROVED	
DESIGN	
ALL DIMENSIONS IN INCHES. DIMENSIONS APPLY AFTER PLATING AND HEAT TREAT. REMOVE ALL BURRS. BREAK ALL SHARP EDGES. TOLERANCES: .XXX ± .01 .XXX ± .005 X" ± .5"	
DO NOT SCALE DRAWING	
SCALE 1:2	SHEET 1 OF 1
WHERE USED	



- 1 Master sw.
- 1 Fuse block
- 1 20Amp Circuit Breaker
- 1 50Amp Circuit Breaker
- 43 Amp fuse
- 1 5 Amp fuse
- 1 green led power on.
- 1 power relay 50 Amp (DC-SS or Mech)
- 1 Fenwal controller
- 2 Temp controllers
- 4 control sw's 15 Amp
- 18 terminal points
- 1 Seven pin field connector: hose/wand
- 2 Three pin field Din connector pump/Agitator
- 1 Two pin field connector 1/C
- 1 Three pin field connector Gas Valve



PART NO. D-010-10130	
Dispensing Technology Corporation Moorpark, CA	
TITLE BIGSHOT ELECTRICAL W 70 AMP BREAKER	
REV. B	DWG. NO. D-010-10130
SCALE 1:2	SHEET 1 OF 1

APPROVALS	DATE
DRAWN	
CHECKED	
APPROVED	
DESIGNED	

DO NOT SCALE DRAWING

ALL DIMENSIONS IN INCHES:
 DIMENSIONS APPLY AFTER
 PLATING AND HEAT TREAT.
 REMOVE ALL BURRS.
 BREAK ALL SHARP EDGES.
 TOLERANCES: X.XX ± .01
 X.XXX ± .005
 X" ± .5"

WHERE USED

1. MAT'L:

NOTES: UNLESS OTHERWISE SPECIFIED

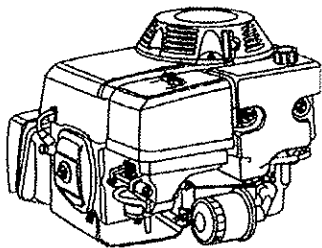
HONDA

ENGINES

OWNER'S MANUAL

GXV340K2•GXV390K1

Gasoline and LPG Fueled Engines



WARNING:

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

31ZF5732
00X31-ZF5-7320

EM3

POM52355E
IPC 20,000,2002.12
PRINTED IN U.S.A.

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INTRODUCTION


Thank you for purchasing a Honda engine. We want to help you to get the best results from your new engine and to operate it safely. This manual contains information on how to do that; please read it carefully before operating the engine. If a problem should arise, or if you have any questions about your engine, consult an authorized Honda servicing dealer.

All information in this publication is based on the latest product information available at the time of printing. American Honda Motor Co., Inc. reserves the right to make changes at any time without notice and without incurring any obligation. No part of this publication may be reproduced without written permission.

This manual should be considered a permanent part of the engine and should remain with the engine if resold.

Review the instructions provided with the equipment powered by this engine for any additional information regarding engine startup, shutdown, operation, adjustments or any special maintenance instructions.

SAFETY MESSAGES

Your safety and the safety of others is very important. We have provided important safety messages in this manual and on the engine. Please read these messages carefully. A safety message alerts you to potential hazards that could hurt you or others. Each safety message is preceded by a safety alert symbol  and one of three words, DANGER, WARNING, or CAUTION.

These signal words mean:

DANGER You WILL be KILLED or SERIOUSLY HURT if you don't follow instructions.

WARNING You CAN be KILLED or SERIOUSLY HURT if you don't follow instructions.

CAUTION You CAN be HURT if you don't follow instructions.

Each message tells you what the hazard is, what can happen, and what you can do to avoid or reduce injury.

DAMAGE PREVENTION MESSAGES

You will also see other important messages that are preceded by the word NOTICE. This word means:

NOTICE Your engine or other property can be damaged if you don't follow instructions.

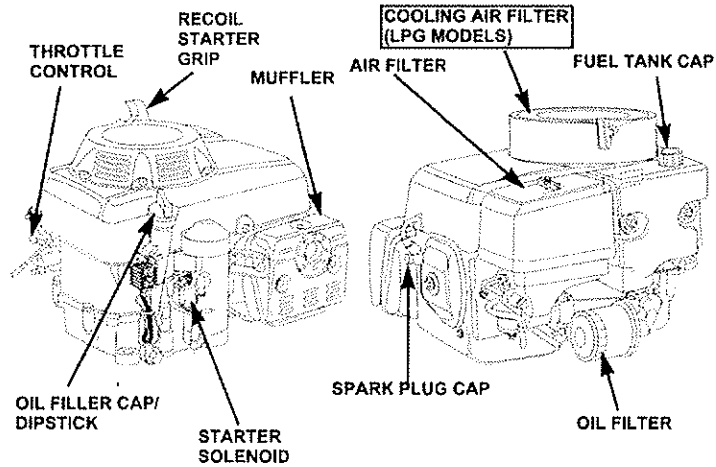
The purpose of these messages is to help prevent damage to your engine, other property, or the environment.

SAFETY INFORMATION

- Understand the operation of all controls and learn how to stop the engine quickly in case of emergency. Make sure the operator receives adequate instruction before operating the equipment.
- Your engine's exhaust contains poisonous carbon monoxide. Do not run the engine without adequate ventilation, and never run the engine indoors.
- The engine and exhaust become very hot during operation. Keep the engine at least 3 feet (1 meter) away from buildings and other equipment during operation. Keep flammable materials away, and do not place anything on the engine while it is running.

Text surrounded by a box is additional information specifically for LPG model engines ONLY. Disregard this information if your engine is operating on gasoline.

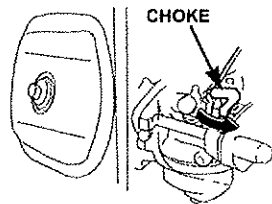
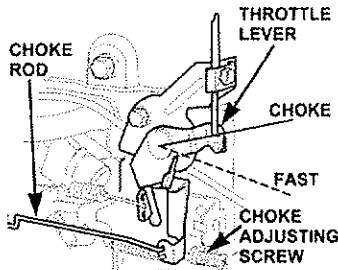
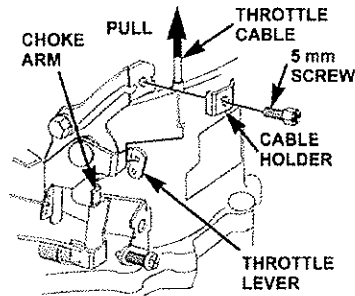
COMPONENT & CONTROL LOCATION



THROTTLE CABLE CONNECTION

The throttle lever is provided with holes for attaching a solid wire throttle cable.

1. Remove the 5 mm screw and the cable holder. Hook the solid wire cable end into the throttle lever as shown.
2. Move the throttle cable control (located on equipment) into the FAST (or HIGH) throttle position.
3. Move the throttle lever by pulling the throttle cable until the throttle lever just contacts the choke arm. Install the cable holder securing the throttle cable and tighten it securely.
4. Move the throttle control (located on equipment) to move the throttle lever to the CHOKE position. Verify the engine choke rod moves the carburetor choke fully closed. Adjust the adjusting screw until it just contacts the choke arm.
5. Start the engine and move the throttle lever to the FAST (or HIGH) position. Using a tachometer, check the engine speed. Loosen the cable holder bolt and move the throttle cable to obtain the top no load engine speed specified by the equipment manufacturer. Tighten the cable holder bolt securely.
6. Move the throttle cable control lever to the STOP position and confirm that the engine stops.



LPG CONNECTIONS

This engine is certified to comply with U.S. EPA and California ARB emission regulations using the Impco Beam regulator specified in the installation instructions (see below). Honda used this regulator and other specific parts and adjustments to demonstrate compliance with the emission regulations. Adjustable fuel system parts must have U.S. EPA and California ARB approved tamper resistant features to limit the available adjustment after the fuel system is correctly installed. If an equipment manufacturer did not install your engine in a product you will need the installation instructions for the Honda certified system (see below). If you choose not to use the Honda fuel system you must use a system that has been certified by the fuel system manufacturer to be used on this Honda engine. Or if you use a fuel system that is not already certified you must have certification test data satisfactory to the U.S. EPA or the California ARB. The test data must prove that the system will meet the emission standard both when the engine is new and at the end of its emission durability period (250 hours).

To obtain a copy of the installation instructions for this engine, contact an independent Honda engine distributor, or our Customer Service Department (page 12).

BATTERY CONNECTIONS

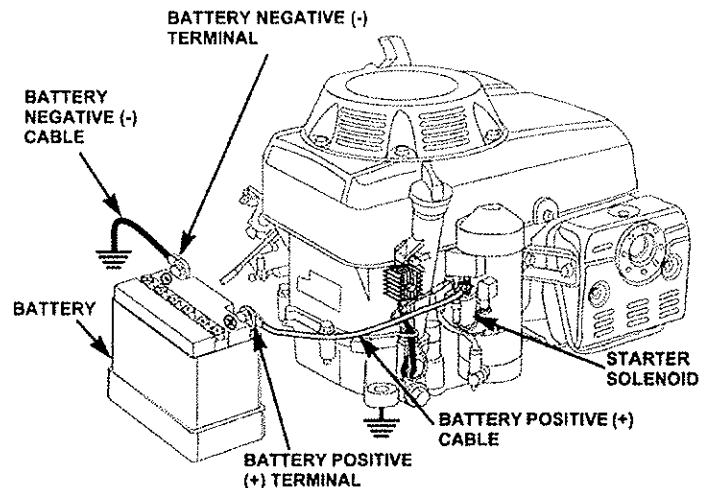
Use a 12 volt battery with an ampere-hour rating of at least 18 AH. Coat the terminals and cable ends with grease. Be careful not to connect the battery in reverse polarity, as this will short circuit the battery charging system.

⚠ WARNING

A battery can explode if you do not follow the correct procedure, seriously injuring anyone nearby.

Keep all sparks, open flames, and smoking materials away from the battery.

1. Connect the battery positive (+) cable to the starter solenoid terminal as shown.
2. Connect the battery negative (-) cable to an engine mounting bolt, frame bolt, or other good engine ground connection.
3. Connect the battery positive (+) cable to the battery positive (+) terminal as shown.
4. Connect the battery negative (-) cable to the battery negative (-) terminal as shown.



BEFORE OPERATION CHECKS

IS YOUR ENGINE READY TO GO?

For your safety, and to maximize the service life of your equipment, it is very important to take a few moments before you operate the engine to check its condition. Be sure to take care of any problem you find, or have your servicing dealer correct it, before you operate the engine.

⚠ WARNING

Improperly maintaining this engine, or failure to correct a problem before operation, can cause a malfunction in which you can be seriously hurt or killed. Always perform a preoperation inspection before each operation, and correct any problem.

Before beginning your preoperation checks, be sure the engine is level and the throttle lever is in the STOP position. Always check the following items before you start the engine:

1. Fuel level (see page 5).
2. Oil level (see page 5).
3. Air cleaner (see page 6).
4. LPG models: cooling air filter (see page 6).
5. General inspection: Check for fluid leaks and loose or damaged parts.
6. Check the equipment powered by this engine.

Review the instructions provided with the equipment powered by this engine for any precautions and procedures that should be followed before engine startup.

LPG EQUIPMENT

Carefully follow the installation and operating instructions of the LPG equipment manufacturer.

OPERATION

SAFE OPERATING PRECAUTIONS

Before operating the engine for the first time, please review the *SAFETY INFORMATION* section on page 1 and the *BEFORE OPERATION CHECKS* section above.

⚠ WARNING

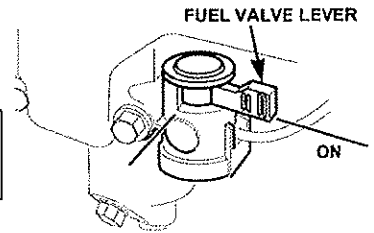
Carbon monoxide gas is toxic. Breathing it can cause unconsciousness and even kill you. Avoid any areas or actions that expose you to carbon monoxide.

Review the instructions provided with the equipment powered by this engine for any safety precautions that should be observed with engine startup, shutdown, or operation.

STARTING THE ENGINE

1. Turn the fuel valve to the ON position.

LPG Models:
Turn the fuel valve on at the source.

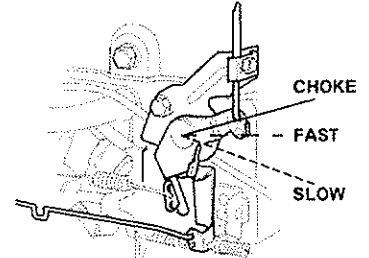


2. **STARTING A COLD ENGINE:**

Move the throttle control to the CHOKE position.

STARTING A WARM ENGINE:

Do not use the CHOKE position when the engine is warm. Move the throttle control slightly past the SLOW position.



LPG Models:
Always use the CHOKE position when starting the engine.

3. *Recoil Start Models*
Pull the starter grip lightly until resistance is felt, then pull briskly.

NOTICE

Do not allow the starter grip to snap back against the engine. Return it gently to prevent damage to the starter.

4. *Electric Start Models*
Turn the engine switch to the START position, and hold it there until the engine starts. When the engine starts, allow the engine switch to return to the ON position.

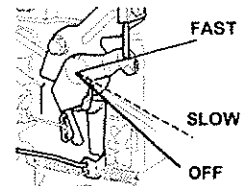
NOTICE

Do not use the starter for more than 5 seconds or starter motor damage may occur. If the engine fails to start, release the switch and wait 10 seconds before operating the starter again.

5. If the choke was used to start the engine, move the throttle to the FAST (or HIGH) position as soon as the engine warms up enough to run smoothly without use of the choke.

SETTING ENGINE SPEED

Position the throttle control for the desired engine speed. For best engine performance, it is recommended the engine be operated with the throttle in the FAST (or high) position.



OIL ALERT® BUZZER (oil alert type only)

The OIL ALERT buzzer will warn you before the engine oil level falls below the safe operating limit. If the buzzer sounds, stop the engine immediately and add oil (see page 5).

NOTICE

The buzzer indicates insufficient oil. Running the engine with insufficient oil can cause serious engine damage.

STOPPING THE ENGINE

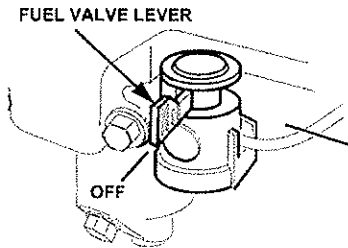
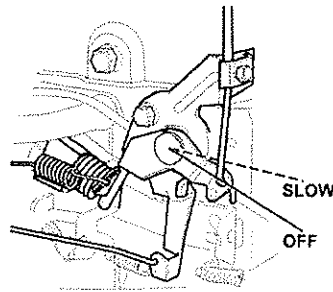
1. **Recoil Start Models**
Move the throttle control to the SLOW position.
2. Move the throttle control to the stop position.

Electric Start Models

Move the throttle control to the slow position, then turn the engine switch to the OFF or STOP position.

3. Turn the fuel valve lever to the OFF position if you do not intend to restart the engine soon.

LPG Models:
Turn the fuel valve OFF at the source.



SERVICING YOUR ENGINE

THE IMPORTANCE OF MAINTENANCE

Good maintenance is essential for safe, economical and trouble-free operation. It will also help reduce pollution.

⚠ WARNING

Improper maintenance, or failure to correct a problem before operation, can cause a malfunction in which you can be seriously hurt or killed. Always follow the inspection and maintenance recommendations and schedules in this owner's manual.

To help you properly care for your engine, the following pages include a maintenance schedule, routine inspection procedures, and simple maintenance procedures using basic hand tools. Other service tasks that are more difficult, or require special tools, are best handled by professionals and are normally performed by a Honda technician or other qualified mechanic.

The maintenance schedule applies to normal operating conditions. If you operate your engine under severe conditions, such as sustained high-load or high-temperature operation, or use in unusually wet or dusty conditions, consult your servicing dealer for recommendations applicable to your individual needs and use.

Maintenance, replacement, or repair of the emission control devices and systems may be performed by any engine repair establishment or individual, using parts that are "certified" to EPA standards.

MAINTENANCE SAFETY

Some of the most important safety precautions follow. However, we cannot warn you of every conceivable hazard that can arise in performing maintenance. Only you can decide whether or not you should perform a given task.

⚠ WARNING

Failure to properly follow maintenance instructions and precautions can cause you to be seriously hurt or killed. Always follow the procedures and precautions in this owner's manual.

SAFETY PRECAUTIONS

- Make sure the engine is off before you begin any maintenance or repairs. This will eliminate several potential hazards:
 - **Carbon monoxide poisoning from engine exhaust.**
Be sure there is adequate ventilation whenever you operate the engine.
 - **Burns from hot parts.**
Let the engine and exhaust system cool before touching.
 - **Injury from moving parts.**
Do not run the engine unless instructed to do so.
- Read the instructions before you begin, and make sure you have the tools and skills required.
- To reduce the possibility of fire or explosion, be careful when working around gasoline. Use only a nonflammable solvent, not gasoline, to clean parts. Keep cigarettes, sparks and flames away from all fuel related parts.

Remember that an authorized Honda servicing dealer knows your engine best and is fully equipped to maintain and repair it. To ensure the best quality and reliability, use only new genuine Honda parts or their equivalents for repair and replacement.

MAINTENANCE SCHEDULE

REGULAR SERVICE PERIOD (3)		Each Use	First Month or 20 Hrs	Every 3 Months or 50 Hrs	Every 6 Months or 100 Hrs	Every Year or 300 Hrs	Page
ITEM	Perform at every indicated month or operating hour interval, whichever comes first.						
Engine oil	Check	○					5
	Replace		○		○		5
Engine oil (LPG models)	Check level	○					5
	Change		○	○			5
Engine oil filter	Replace					○	6
Air filter	Check	○					6
	Clean			○ (1)			6
	Replace					○	6
Cooling air filter (LPG models)	Clean	○ (1)					6
Spark plug	Check-adjust				○		6
	Replace					○	6
Spark arrester (optional part)	Clean				○		7
Idle speed	Check-adjust					○(3)	-
Fuel tank and filter	Clean					○(2)	-
Fuel line	Check				Every 2 years (Replace if necessary)		
Valve clearance	Check-adjust					○(2)	-
Fuel hose (LPG models)	Check	○					-

- (1) Service more frequently when used in dusty areas.
- (2) Change engine oil every 25 hours when used under heavy load or in high ambient temperatures.
- (3) These items should be serviced by an authorized Honda servicing dealer, unless you have the proper tools and are mechanically proficient. Refer to the Honda shop manual for service procedures.
- (4) For commercial use, log hours of operation to determine proper maintenance intervals.

REFUELING

Use unleaded gasoline with a pump octane rating of 86 or higher. This engine is certified to operate on unleaded gasoline. Unleaded gasoline produces fewer engine and spark plug deposits and extends exhaust system life.

⚠ WARNING

Gasoline is highly flammable and explosive, and you can be burned or seriously injured when refueling.

- Stop engine and keep heat, sparks, and flame away.
- Refuel only outdoors.
- Wipe up spills immediately.

NOTICE

Fuel can damage paint and some types of plastic. Be careful not to spill fuel when filling your fuel tank. Damage caused by spilled fuel is not covered under the Distributor's Limited Warranty (see page 11).

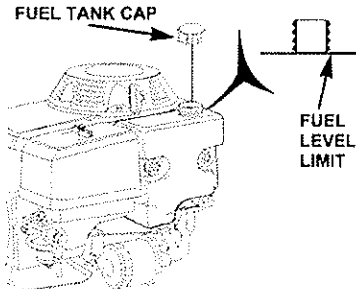
Never use stale or contaminated gasoline or oil/gasoline mixture. Avoid getting dirt or water in the fuel tank.

Adding Fuel

1. Remove the fuel tank cap.
2. Add fuel to the bottom of the fuel level limit in the neck of the fuel tank. Do not overfill. Wipe up spilled fuel before starting the engine.

Fuel tank capacity: 0.61 US gal (2.3 ℓ)

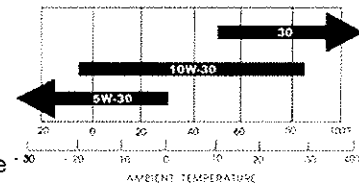
3. Reinstall the fuel tank cap.



ENGINE OIL

Recommended Oil

Use 4-stroke motor oil that meets or exceeds the requirements for API service classification SH, SJ, or equivalent. Always check the API service label on the oil container to be sure it includes the letters SH, SJ, or equivalent.

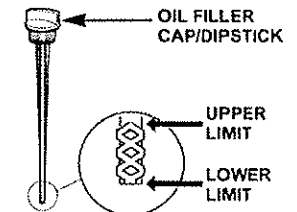
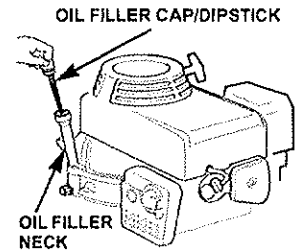


SAE 10W-30 is recommended for general use. Other viscosities shown in the chart may be used when the average temperature in your area is within the indicated range.

Recommended Oil (LPG models)	Use SAE 30, API service classification SG minimum
Use 4-stroke motor oil that is designed for engines operating on LPG fuel. Use one of the recommended oils that meet Honda's requirements.	Pennzoil HD 30 Valvoline HPO 30 Castrol HD 30
For operation in temperatures below 32°F (0°C), 5W-30 synthetic oil may be used for easier starting. Do not use 5W-30 when the air temperature is above 32°F (0°C).	

Oil Level Check

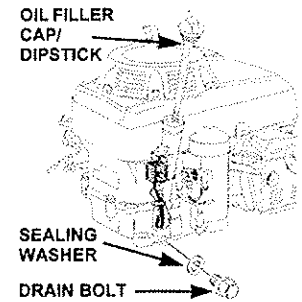
1. Check the oil with the engine stopped and level.
2. Remove the oil filler cap/dipstick and wipe it clean.
3. Insert the oil filler cap/dipstick into the oil filler neck as shown. Do not screw it in, then remove it to check the oil level.
4. If the oil level is near or below the lower limit mark on the dipstick, remove the oil filler cap/dipstick, and fill with the recommended oil to the upper limit mark. Do not overfill.
5. Reinstall the oil filler cap/dipstick.



Oil Change

Drain the engine oil when the engine is warm. Warm oil drains quickly and completely.

1. Place a suitable container next to the oil drain bolt.
2. Wipe the oil filter area clean, then remove the oil filler cap/dipstick.
3. Remove the oil drain bolt and sealing washer and allow the oil to drain into a suitable container. After draining, install the drain bolt with the sealing washer and tighten it securely.
4. Fill with the recommended oil. Do not overfill. Measure the oil level as shown above.



Engine Oil Capacity: 1.16 US qt (1.1 ℓ)
with oil filter: 1.48 US qt (1.4 ℓ)



Please dispose of used motor oil and the oil containers in a manner that is compatible with the environment. We suggest you take used oil in a sealed container to your local recycling center or service station for reclamation. Do not throw it in the trash or pour it on the ground or down a drain.

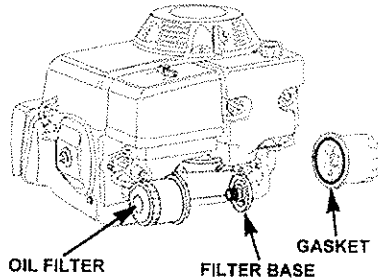
Oil Filter Change (if equipped)

1. Drain the engine oil (see page 5).
2. Remove the oil filter with an oil filter wrench and let the remaining oil drain out. Discard the oil filter.

NOTICE

Use a socket-type wrench to remove and install the oil filter. If other types of oil filter wrenches must be used, be careful to avoid hitting and damaging the fuel line or fuel tank connection.

3. Clean the filter base.
4. Coat the gasket of the new filter with clean engine oil.
5. Reinstall the oil drain bolt and tighten it securely (see page 5).
6. Screw the new oil filter on by hand until the gasket contacts the filter base, then use an oil filter wrench to tighten the filter 7/8 turn.



Oil Filter Torque: 15-17 ft-lb (20-24 N·m)

NOTICE

Use only a genuine Honda oil filter or a filter of equivalent quality specified for your model. Using the wrong Honda filter or a non-Honda filter which is not of equivalent quality may cause engine damage.

7. Add the specified amount of the recommended oil (see page 5). Start the engine and check the filter for leaks.
8. Stop the engine and recheck the oil level. If necessary, add oil to bring it up to the proper level.

AIR CLEANER

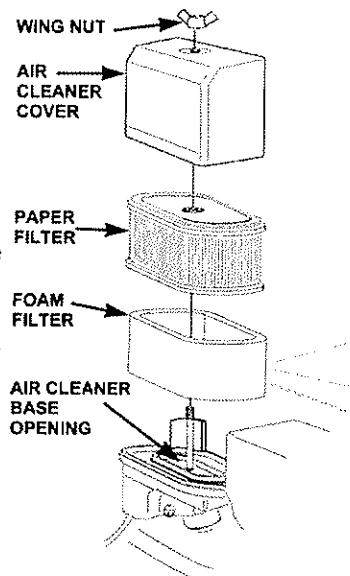
A dirty air cleaner will restrict air flow to the carburetor and cause poor engine performance. Inspect the filter each time the engine is operated. You will need to clean the filters more frequently if you operate the engine in very dusty areas.

NOTICE

Operating the engine without a filter, or with a damaged filter, will allow dirt to enter the engine, causing rapid engine wear. This type of damage is not covered under the Distributor's Limited Warranty (see page 11).

Inspection

1. Remove the wing nut, then remove the air cleaner cover. Be careful to prevent dirt and debris from falling into the air cleaner base opening.
2. Remove the air filter from the air cleaner base.
3. Remove the foam filter from the paper filter.
4. Inspect the paper and foam filters. Replace damaged filters. Clean or replace dirty filters.



Cleaning

1. Remove the air filter, as described in the INSPECTION procedure (see page 6).
2. Remove the air filter from the air cleaner base. Remove the foam filter from the paper filter.
3. Paper filter: Tap the paper filter several times on a hard surface to remove excess dirt, or blow compressed air [not exceeding 30 psi (207kPa)] through the paper filter from the inside out. Never try to brush off dirt; brushing will force dirt into the fibers. Replace the paper filter if it is excessively dirty.
4. Foam filter: Clean in warm, soapy water or nonflammable solvent, rinse and dry thoroughly. Do not use gasoline as a cleaning solvent, because that would create a risk of fire or explosion. Dip the foam filter in clean engine oil, then squeeze out all excess oil.

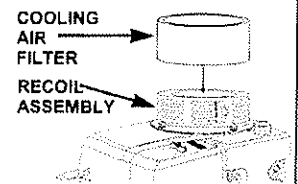
NOTICE

Excess oil will restrict air flow through the foam filter and may transfer to the paper filter, soaking and clogging it.

5. Wipe dirt from the air cleaner base and cover using a moist rag. Be careful to prevent dirt from entering the air duct that leads to the carburetor.
6. Reinstall the air filter, and make sure both foam and paper filters are properly positioned. Install the air cleaner cover and tighten the wing nut securely.

Cooling Air Filter Cleaning (LPG models)

The air filter surrounding the recoil assembly keeps the engine cooling system clean. The air filter must be kept clean so that the engine cooling system operates efficiently.



NOTICE

If the air intake filter is not cleaned regularly, or if the engine is operated without the air intake filter, the engine may overheat and engine damage may occur.

1. Remove the cooling air filter and clean in warm, soapy water.
2. Dry the cooling air filter thoroughly and reinstall it.

SPARK PLUG

Recommended Spark Plugs: NGK BPR5ES
DENSO W16EPR-U

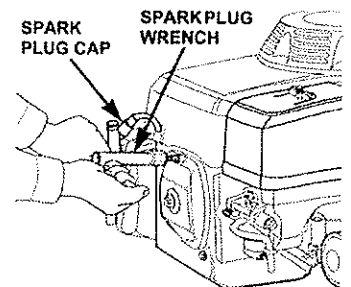
The recommended spark plug is the correct heat range for normal engine operating temperatures.

NOTICE

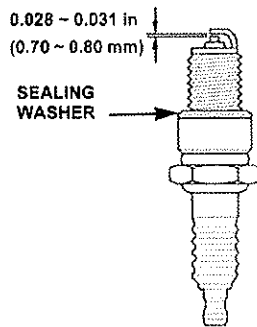
Incorrect spark plugs can cause engine damage.

For good performance, the spark plug must be properly gapped and free of deposits.

1. Disconnect the cap from the spark plug, and remove any dirt from the spark plug area.
2. Use a 13/16 inch (21 mm) spark plug wrench to remove the spark plug.



- Inspect the spark plug. Replace it if damaged, badly fouled, if the sealing washer is in poor condition, or if the electrode is worn.
- Measure the electrode gap with a suitable gauge. The correct gap is 0.028 - 0.031 in (0.70 - 0.80 mm). If adjustment is needed, correct the gap by carefully bending the side electrode.



- Install the spark plug carefully, by hand, to avoid cross-threading. After the spark plug is seated, tighten with the proper size spark plug wrench to compress the washer. When installing a new spark plug, tighten 1/2 turn after the spark plug seats to compress the washer. When reinstalling the original spark plug, tighten 1/8 - 1/4 turn after the spark plug seats to compress the washer.

NOTICE

A loose spark plug can become very hot and can damage the engine. Overtightening the spark plug can damage the threads in the cylinder head.

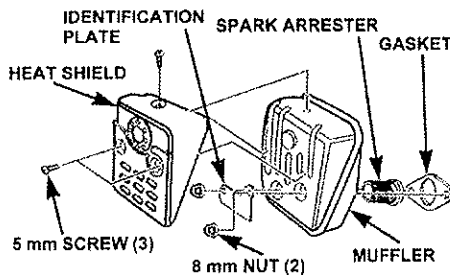
- Attach the spark plug cap to the spark plug.

SPARK ARRESTER (optional equipment)

In some areas, it is illegal to operate an engine without a USDA (United States Department of Agriculture)-qualified spark arrester. Check local laws and regulations. A USDA-qualified spark arrester is available from an authorized Honda servicing dealer. The spark arrester must be serviced every 100 hours to keep it functioning as designed. If the engine has been running, the muffler will be hot. Allow it to cool before servicing the spark arrester.

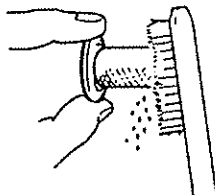
Spark Arrester Removal

- Remove the three 5 mm screws and remove the heat shield.
- Remove the 8 mm nuts and then remove the identification plate, muffler and gasket.
- Remove the spark arrester from the muffler.



Spark Arrester Cleaning & Inspection

- Use a brush to remove carbon deposits from the spark arrester screen. Be careful not to damage the screen. Replace the spark arrester if it has breaks or holes.
- Install the spark arrester in the reverse order of removal.



HELPFUL TIPS & SUGGESTIONS

STORING YOUR ENGINE

Storage Preparation

Proper storage preparation is essential for keeping your engine troublefree and looking good. The following steps will help to keep rust and corrosion from impairing your engine's function and appearance, and will make the engine easier to start when you use it again.

Cleaning

If the engine has been running, allow it to cool for at least half an hour before cleaning.

Fuel

Gasoline will oxidize and deteriorate in storage. Deteriorated gasoline will cause hard starting, and it leaves gum deposits that clog the fuel system. If the gasoline in your engine deteriorates during storage, you may need to have the carburetor, and other fuel system components, serviced or replaced. The length of time that gasoline can be left in your fuel tank and carburetor without causing functional problems will vary with such factors as gasoline blend, your storage temperatures, and whether the fuel tank is partially or completely filled. The air in a partially filled fuel tank promotes fuel deterioration. Very warm storage temperatures accelerate fuel deterioration. Fuel problems may occur within a few months, or even less if the gasoline was not fresh when you filled the fuel tank.

Fuel system damage or engine performance problems resulting from neglected storage preparation are not covered under the *Distributor's Limited Warranty* (see page 11). You can extend fuel storage life by adding a gasoline stabilizer that is formulated for that purpose, or you can avoid fuel deterioration problems by draining the fuel tank and carburetor.

LPG fuel does not require treatment during storage.

Battery (if equipped)

Remove the battery and store it in a cool, dry place. Recharge it once a month.

ADDING A GASOLINE STABILIZER TO EXTEND FUEL STORAGE LIFE

When adding a gasoline stabilizer, fill the fuel tank with fresh gasoline. If only partially filled, air in the tank will promote fuel deterioration during storage. If you keep a container of gasoline for refueling, be sure that it contains only fresh gasoline.

- Add gasoline stabilizer following the manufacturer's instructions.
- After adding a gasoline stabilizer, run the engine outdoors for 10 minutes to be sure that treated gasoline has replaced the untreated gasoline in the carburetor.
- Stop the engine, and turn the fuel valve to the OFF position (see page 4).

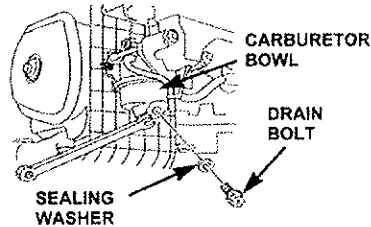
DRAINING THE FUEL TANK AND CARBURETOR

⚠ WARNING

Gasoline is highly flammable and explosive, and you can be burned or seriously injured when handling fuel.

- Stop engine and keep heat, sparks, and flame away.
- Refuel only outdoors.
- Wipe up spills immediately.

1. Remove the carburetor bowl drain bolt and sealing washer with a 10 mm wrench, and drain the carburetor bowl fuel into an approved gasoline container.



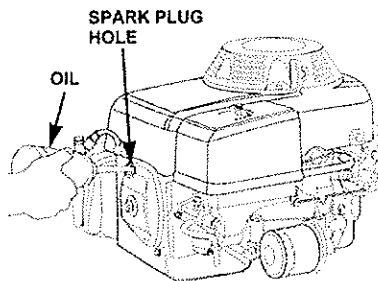
2. Move the fuel valve lever to the ON position (see page 3). This will allow the fuel tank to drain through the carburetor bowl.

3. After draining the carburetor and fuel tank, install the drain bolt and sealing washer and tighten securely.

ENGINE OIL

1. Change the engine oil (see page 5).

2. Remove the spark plug (see page 6) and pour a tablespoon (5 - 10 cc) of clean engine oil into the cylinder. Using the recoil, crank the engine a few revolutions to distribute the oil in the cylinder, then reinstall the spark plug.



3. Pull the starter rope slowly until resistance is felt. This closes the valves and will help to protect the engine from internal corrosion.

STORAGE PRECAUTIONS

If your engine will be stored with gasoline in the fuel tank and carburetor, it is important to reduce the hazard of gasoline vapor ignition. Select a well-ventilated storage area away from any appliance that operates with a flame, such as a furnace, water heater, or clothes dryer. Also avoid any area with a spark-producing electric motor, or where power tools are operated. If possible, avoid storage areas with high humidity, because that promotes rust and corrosion. If there is gasoline in the fuel tank, leave the fuel valve in the OFF position (see page 4). Keep the engine level during storage. Tilting can cause fuel or oil leakage. With the engine and exhaust system cool, cover the engine to keep out dust. A hot engine and exhaust system can ignite or melt some materials. Do not use sheet plastic as a dust cover. A nonporous cover will trap moisture around the engine, promoting rust and corrosion.

REMOVAL FROM STORAGE

Check your engine as described in the *BEFORE OPERATION CHECKS* section of this manual (see page 3). If the fuel was drained during storage preparation, fill the tank with fresh gasoline. If you keep a container of gasoline for refueling, be sure it contains only fresh gasoline. Gasoline oxidizes and deteriorates over time, causing hard starting. If the cylinder was coated with oil during storage preparation, the engine will smoke briefly at startup. This is normal.

TRANSPORTING

Keep the engine level when transporting to reduce the possibility of fuel leakage. Turn the fuel valve to the OFF position (see page 4).

TAKING CARE OF UNEXPECTED PROBLEMS

ENGINE WILL NOT START	Possible Cause	Correction
1. Check throttle lever position.	Throttle lever in wrong position.	Move throttle lever to the choke position unless engine is warm (p. 2)
2. Check fuel.	Out of fuel.	Refuel.
	Fuel valve OFF	Turn fuel valve ON (p. 3)
3. Remove and inspect spark plug.	Bad fuel; engine stored without treating or draining gasoline, or refueled with bad gasoline.	Drain the fuel tank and carburetor (p. 8). Refuel with fresh gasoline.
	Spark plug faulty, fouled, or improperly gapped	Replace the spark plug (p. 6).
4. Take engine to an authorized Honda servicing dealer, or refer to shop manual.	Spark plug wet with fuel (flooded engine).	Dry and reinstall spark plug. Start engine with choke/throttle lever in FAST position.
	Fuel filter clogged, carburetor malfunction, ignition malfunction, valves stuck, etc.	Replace or repair faulty components as necessary.

ENGINE LACKS POWER	Possible Cause	Correction
1. Check air cleaner elements.	Air cleaner elements clogged.	Clean or replace cleaner elements (p. 6).
2. Check fuel.	Bad fuel; engine stored without treating or draining gasoline, or refueled with bad gasoline.	Drain the fuel tank and carburetor (p. 8). Refuel with fresh gasoline (p. 5).
3. Check throttle lever position.	Throttle lever is wrong position.	Position the throttle lever in fast (or high) position.
4. Take engine to an authorized Honda servicing dealer, or refer to shop manual.	Fuel filter clogged, carburetor malfunction, ignition malfunction, compression problem.	Replace or repair faulty components as necessary.

LPG Model

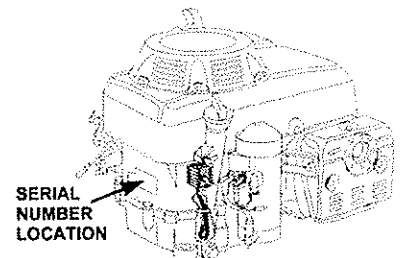
Refer to the LPG equipment manufacturer for troubleshooting information.

TECHNICAL & CONSUMER INFORMATION

TECHNICAL INFORMATION

Serial Number Location

Record the engine serial number in the space below. You will need this information when ordering parts and when making technical or warranty inquiries.



Engine serial number: **GJ03** - _____

Carburetor Modifications for High Altitude Operation

At high altitude, the standard carburetor air-fuel mixture will be too rich. Performance will decrease, and fuel consumption will increase. A very rich mixture will also foul the spark plug and cause hard starting. Operation at an altitude that differs from that at which this engine was certified, for extended periods of time, may increase emissions.

High altitude performance can be improved by specific modifications to the carburetor. If you always operate your trimmer at altitudes above 5,000 feet (1,500 meters), have your servicing dealer perform this carburetor modification. This engine, when operated at high altitude with the carburetor modifications for high altitude use, will meet each emission standard throughout its useful life.

Even with carburetor modification, engine horsepower will decrease about 3.5% for each 1,000-foot (300-meter) increase in altitude. The effect of altitude on horsepower will be greater than this if no carburetor modification is made

NOTICE

When the carburetor has been modified for high altitude operation, the air-fuel mixture will be too lean for low altitude use. Operation at altitudes below 5,000 feet (1,500 meters) with a modified carburetor may cause the engine to overheat and result in serious engine damage. For use at low altitudes, have an authorized Honda servicing dealer return the carburetor to original factory specifications.

LPG Models:

There are no high altitude adjustments for LPG models, however, engine performance will decrease.

Oxygenated Fuels

Some conventional gasolines are being blended with alcohol or an ether compound. These gasolines are collectively referred to as oxygenated fuels. To meet clean air standards, some areas of the United States and Canada use oxygenated fuels to help reduce emissions. If you use oxygenated fuel, be sure it is unleaded and meets the minimum octane rating requirements. Before using an oxygenated fuel, try to confirm the fuel's contents. Some states/provinces require this information to be posted on the pump.

The following are the EPA approved percentages of oxygenates:

- ETHANOL** — (ethyl or grain alcohol) 10% by volume
You may use gasoline containing up to 10% ethanol by volume. Gasoline containing ethanol may be marketed under the name Gasohol.
- MTBE** — (methyl tertiary butyl ether) 15% by volume
You may use gasoline containing up to 15% MTBE by volume.
- METHANOL** — (methyl or wood alcohol) 5% by volume
You may use gasoline containing up to 5% methanol by volume as long as it also contains cosolvents and corrosion inhibitors to protect the fuel system. Gasoline containing more than 5% methanol by volume may cause starting and/or performance problems. It may also damage metal, rubber, and plastic parts of your fuel system.

If you notice any undesirable operating symptoms, try another service station or switch to another brand of gasoline.

Fuel system damage or performance problems resulting from the use of an oxygenated fuel containing more than the percentages of oxygenates mentioned above are not covered under *the Distributor's Limited Warranty* (see page 11).

LPG Fuels

Use LPG fuel with a propane content of 95% or higher. LPG fueled engines are certified to operate on LPG only. Do not use gasoline.

Emission Control System Information

Source of Emissions

The combustion process produces carbon monoxide, oxides of nitrogen, and hydrocarbons. Control of hydrocarbons and oxides of nitrogen is very important because, under certain conditions, they react to form photochemical smog when subjected to sunlight. Carbon monoxide does not react in the same way, but it is toxic. Honda utilizes lean carburetor settings and other systems to reduce the emissions of carbon monoxide, oxides of nitrogen, and hydrocarbons.

The U.S. and California Clean Air Acts

EPA and California regulations require all manufacturers to furnish written instructions describing the operation and maintenance of emission control systems. The following instructions and procedures must be followed in order to keep the emissions from your Honda engine within the emission standards.

Tampering and Altering

Tampering with or altering the emission control system may increase emissions beyond the legal limit. Among those acts that constitute tampering are:

- Removal or alteration of any part of the intake, fuel, or exhaust systems.
- Altering or defeating the governor linkage or speed-adjusting mechanism to cause the engine to operate outside its design parameters.

Problems That May Affect Emissions

If you are aware of any of the following symptoms, have your engine inspected and repaired by an authorized Honda servicing dealer.

- Hard starting or stalling after starting.
- Rough idle.
- Misfiring or backfiring under load.
- Afterburning (backfiring).
- Black exhaust smoke or high fuel consumption.

Replacement Parts

The emission control systems on your Honda engine were designed, built, and certified to conform with EPA and California emission regulations. We recommend the use of genuine Honda parts whenever you have maintenance done. These original-design replacement parts are manufactured to the same standards as the original parts, so you can be confident of their performance. The use of replacement parts that are not of the original design and quality may impair the effectiveness of your emission control system. A manufacturer of an aftermarket part assumes the responsibility that the part will not adversely affect emission performance. The manufacturer or rebuilder of the part must certify that use of the part will not result in a failure of the engine to comply with emission regulations.

Maintenance

Follow the maintenance schedule on page 4. Remember that this schedule is based on the assumption that your machine will be used for its designed purpose. Sustained high-load or high-temperature operation, or use in unusually wet or dusty conditions, will require more frequent service.

AIR INDEX

An Air Index Information hang tag/label is applied to engines certified to an emission durability time period in accordance with the requirements of the California Air Resources Board.

The bar graph is intended to provide you, our customer, the ability to compare the emissions performance of available engines. The lower the Air Index, the less pollution.

The durability description is intended to provide you with information relating the engine's emission durability period. The descriptive term indicates the useful life period for the engine's emission control system. See your *Emission Control System Warranty* (page 11) for additional information.

Descriptive Term	Applicable to Emissions Durability Period
Moderate	50 hours (0-65 cc) 125 hours (greater than 65 cc)
Intermediate	125 hours (0-65 cc) 250 hours (greater than 65 cc)
Extended	300 hours (0-65 cc) 500 hours (greater than 65 cc)

The Air Index Information hang tag/label must remain on the engine until it is sold. Remove the hang tag before operating the engine.

SPECIFICATIONS

Dimensions	GXV340K2 (DN type)	GXV390K1 (DN type)
Length x Width x Height	17.0 x 15.0 x 16.0 in (433 x 382 x 406 mm)	
Dry weight	32.3 lb (71.2 kg)	33.3 lb (73.4 kg)
Engine type	4-stroke, overhead valve, single cylinder	
Displacement	20.6 cu. in (338 cc)	23.7 cu. in (389 cc)
Bore x Stroke	3.2 x 2.5 in (82 x 64 mm)	3.5 x 2.5 in (88 x 64 mm)
Maximum output	11.0 hp @ 3,600 rpm	13.0 hp @ 3,600 rpm
Maximum torque	17.7 ft-lb (24.0 N·m) @ 2,500 rpm	20.3 ft-lb (27.5 N·m) @ 2,500 rpm
Fuel consumption	0.51 lb/hph, 340 g/kW·h	
Cooling system	Forced air	
Ignition system	Transistorized magneto	
Lubrication system	Pressure/Forced splash	
PTO shaft rotation	Counterclockwise (from PTO side)	

TUNEUP SPECIFICATIONS

ITEM	SPECIFICATION	PAGE
Spark plug gap	0.70 - 0.80 mm (0.028 - 0.031 in)	6
Idle speed	1,400 ± 150 rpm	-
Valve clearance (cold)	IN: 0.15 ± 0.02 mm EX: 0.20 ± 0.02 mm	See your authorized Honda dealer
Other specifications	No other adjustments needed.	

Specifications may vary according to the types, and are subject to change without notice.

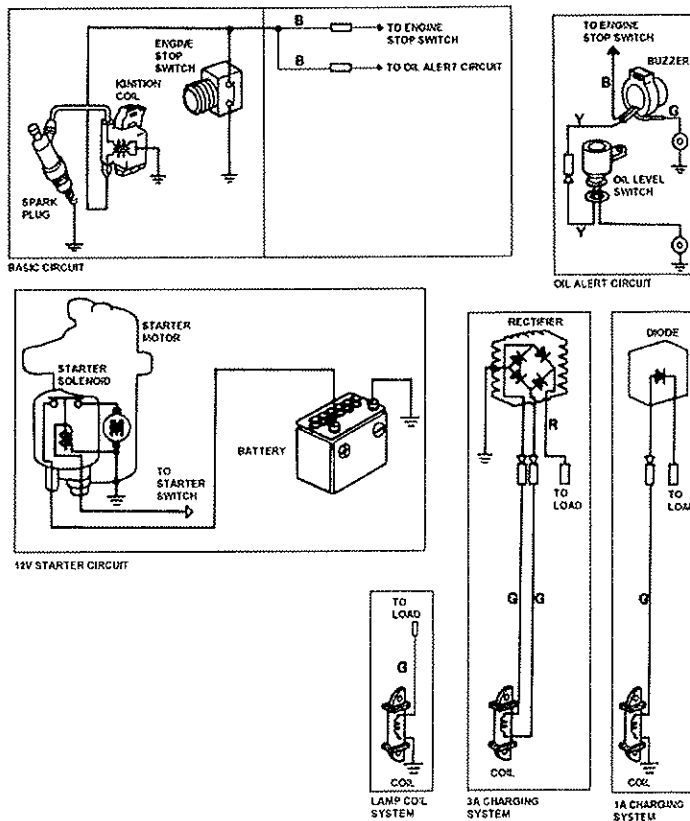
CONSUMER INFORMATION

Honda Publications

These publications will give you additional information in maintaining and repairing your engine. You may order them from an authorized Honda engine servicing dealer.

Shop Manual	This manual covers complete maintenance and overhaul procedures. It is intended to be used by a skilled technician.
Parts Catalog	This manual provides complete, illustrated parts lists.

Wiring Diagram



DISTRIBUTOR'S LIMITED WARRANTY

PRODUCTS COVERED BY THIS WARRANTY:		LENGTH OF WARRANTY: (FROM DATE OF ORIGINAL PURCHASE)	
PRODUCT	APPLICATIONS	NONCOMMERCIAL/ NONRENTAL	COMMERCIAL/ RENTAL
GXV Series Engines	ALL(1)	24 months	24 months

(1) Honda GXV series general purpose engines have a 3 months warranty period when installed on concession type vehicles.

To Qualify for this Warranty:

The Honda general purpose engine must be purchased from a Honda general purpose engine dealer or distributor authorized to sell that product in the United States, Puerto Rico, or the U.S. Virgin Islands. This limited warranty applies to first retail purchaser and each subsequent owner during the applicable warranty time period.

What American Honda Will Repair or Replace Under Warranty:

American Honda will repair or replace, at its option, any part that is proven to be defective in material or workmanship under normal use during the applicable warranty time period. Warranty repairs and replacements will be made without charge for parts or labor. Anything replaced under warranty becomes the property of American Honda Motor Company, Inc. All parts replaced under warranty will be considered as part of the original product and any warranty on those parts will expire coincident with the original product warranty.

To Obtain Warranty Service:

You must take your Honda general purpose engine, or the equipment in which it is installed, together with proof of original retail purchase date, at your expense, to a Honda engine dealer or distributor authorized to sell that product in the United States, Puerto Rico, or the U.S. Virgin Islands, during their normal business hours. Many Honda engine dealers and distributors are listed in the yellow pages of the telephone directory under gasoline engines, lawn & garden equipment & supplies, etc.

If you are unable to obtain warranty service, or are dissatisfied with the warranty service you receive, take the following steps: First, contact the owner of the dealership or distributor involved; normally this should resolve the problem. However, if you should require further assistance, write or call the Power Equipment Customer Relations Department of American Honda Motor Co., Inc. Refer to page 12 for contact information.

Exclusions:

THIS WARRANTY DOES NOT EXTEND TO PARTS AFFECTED OR DAMAGED BY THE PRODUCT IN WHICH THE ENGINE IS INSTALLED, OR BY ACCIDENT AND/OR COLLISION, MISUSE, NEGLIGENCE, PARTS WORN BEYOND SERVICE LIMITS DUE TO NORMAL WEAR/NORMAL SERVICE LIFE, PARTS AFFECTED OR DAMAGED BY THE CONVERSION TO OR USE OF FUEL OTHER THAN THE FUEL(S) WHICH THE ENGINE IS ORIGINALLY MANUFACTURED TO USE, POOR OPERATION RELATED TO FUEL CONTAMINATION OR FUEL QUALITY, PARTS DAMAGED BY FUEL CONTAMINATION, THE INCORPORATION OF, OR USE OF, UNSUITABLE ATTACHMENTS OR PARTS, THE UNAUTHORIZED ALTERATION OF ANY PART OR ANY CAUSES OTHER THAN DEFECTS IN MATERIAL OR WORKMANSHIP OF THE ENGINE. USE OF THE HONDA GENERAL PURPOSE ENGINE FOR RACING OR COMPETITION WILL VOID THIS WARRANTY.

Disclaimer of Consequential Damage and Limitation of Implied Warranties:

AMERICAN HONDA DISCLAIMS ANY RESPONSIBILITY FOR LOSS OF TIME OR USE OF THE ENGINE, OR THE EQUIPMENT IN WHICH THE ENGINE IS INSTALLED, TRANSPORTATION, COMMERCIAL LOSS, OR ANY OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGE. ANY IMPLIED WARRANTIES ARE LIMITED TO THE DURATION OF THIS WRITTEN LIMITED WARRANTY. Some states do not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusions and 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.

Emission Control System Warranty

Your new Honda Power Equipment engine complies with both the U.S. EPA and State of California emission regulations. American Honda provides the same emission warranty coverage for engines sold in all 50 states.

Your Warranty Rights And Obligations:

California

The California Air Resources Board and American Honda Motor Co., Inc. are pleased to explain the emission control system warranty on your Honda Power Equipment engine. In California, new utility and lawn and garden equipment engines must be designed, built and equipped to meet the State's stringent anti-smog standards.

Other States

In other areas of the United States your engine must be designed, built, and equipped to meet the U.S. EPA emission standard for spark-ignited engines at or below 19 kilowatts.

All States

American Honda Motor Co., Inc. must warrant the emission control system on your power equipment engine for the period of time listed below provided there has been no abuse, neglect or improper maintenance of your power equipment engine. Where a warrantable condition exists, American Honda Motor Co., Inc. will repair your power equipment engine at no cost to you including diagnosis, parts and labor.

Your emission control system may include such parts as the carburetor or fuel injection system, the ignition system, and catalytic converter. Also included may be hoses, connectors and other emission-related assemblies.

Manufacturer's Warranty Coverage:

The 1995 and later power equipment engines are warranted for two years. If any emission-related part on your engine is defective, the part will be repaired or replaced by American Honda Motor Co., Inc.

Owner's Warranty Responsibility:

As the power equipment engine owner, you are responsible for the performance of the required maintenance listed in your owner's manual. American Honda Motor Co., Inc. recommends that you retain all receipts covering maintenance on your power equipment engine, but American Honda Motor Co., Inc. cannot deny warranty coverage solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

As the power equipment engine owner, you should however be aware that American Honda Motor Co., Inc. may deny you warranty coverage if your power equipment engine or a part has failed due to abuse, neglect, improper maintenance, or unapproved modifications.

You are responsible for presenting your power equipment engine to a Honda Power Equipment dealer as soon as a problem exists. The warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days.

If you have any questions regarding your warranty rights and responsibilities, you should write or call the Honda Power Equipment Customer Relations Department. Refer to page 12 for contact information.

Warranty Coverage:

Honda power equipment engines manufactured after January 1, 1995 and sold in the State of California, and U.S. EPA certified engines manufactured on or after September 1, 1996 and sold in all of the United States, are covered by this warranty for a period of two years from the date of delivery to the original retail purchaser. This warranty is transferable to each subsequent purchaser for the duration of the warranty period.

Warranty repairs will be made without charge for diagnosis, parts or labor. All defective parts replaced under this warranty become the property of American Honda Motor Co., Inc. A list of warranted parts is on the reverse side of this warranty statement. Normal maintenance items, such as spark plugs and filters, that are on the warranted parts list are warranted up to their required replacement interval only.

American Honda Motor Co., Inc. is also liable for damages to other engine components caused by a failure of any warranted part during the warranty period.

Only Honda approved replacement parts may be used in the performance of any warranty repairs and must be provided without charge to the owner. The use of replacement parts not equivalent to the original parts may impair the effectiveness of your engine emission control system. If such a replacement part is used in the repair or maintenance of your engine, and an authorized Honda dealer determines it is defective or causes a failure of a warranted part, your claim for repair of your engine may be denied. If the part in question is not related to the reason your engine requires repair, your claim will not be denied.

To Obtain Warranty Service:

You must take your Honda Power Equipment engine or the product on which it is installed, along with your warranty registration card or other proof of original purchase date, at your expense, to any Honda Power Equipment dealer who is authorized by American Honda Motor Co., Inc. to sell and service that Honda product during his normal business hours. Claims for repair or adjustment found to be caused solely by defects in material or workmanship will not be denied because the engine was not properly maintained and used.

If you are unable to obtain warranty service, or are dissatisfied with the warranty service you received, contact the owner of the dealership involved. Normally this should resolve your problem. However, if you require further assistance, write or call the Power Equipment Customer Relations Department of American Honda Motor Co., Inc.

Exclusions:

FAILURES OTHER THAN THOSE RESULTING FROM DEFECTS IN MATERIAL OR WORKMANSHIP ARE NOT COVERED BY THIS WARRANTY. THIS WARRANTY DOES NOT EXTEND TO EMISSION CONTROL SYSTEMS OR PARTS WHICH ARE AFFECTED OR DAMAGED BY OWNER ABUSE, NEGLIGENCE, IMPROPER MAINTENANCE, MISUSE, MISFUELING, IMPROPER STORAGE, ACCIDENT AND/OR COLLISION, THE INCORPORATION OF, OR ANY USE OF, ANY ADD-ON OR MODIFIED PARTS, UNSUITABLE ATTACHMENTS, OR THE UNAUTHORIZED ALTERATION OF ANY PART.

THIS WARRANTY DOES NOT COVER REPLACEMENT OF EXPENDABLE MAINTENANCE ITEMS MADE IN CONNECTION WITH REQUIRED MAINTENANCE SERVICES AFTER THE ITEM'S FIRST SCHEDULED REPLACEMENT AS LISTED IN THE MAINTENANCE SECTION OF THE PRODUCT OWNER'S MANUAL, SUCH AS: SPARK PLUGS AND FILTERS.

Disclaimer of Consequential Damage and Limitation of Implied Warranties:

AMERICAN HONDA MOTOR CO., INC. DISCLAIMS ANY RESPONSIBILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES SUCH AS LOSS OF TIME OR THE USE OF THE POWER EQUIPMENT, OR ANY COMMERCIAL LOSS DUE TO THE FAILURE OF THE EQUIPMENT; AND ANY IMPLIED WARRANTIES ARE LIMITED TO THE DURATION OF THIS WRITTEN WARRANTY. THIS WARRANTY IS APPLICABLE ONLY WHERE THE CALIFORNIA OR U.S. EPA EMISSION CONTROL SYSTEM WARRANTY REGULATION IS IN EFFECT.

Emission Control System Warranty Parts:

SYSTEMS COVERED BY THIS WARRANTY:	PARTS DESCRIPTION:
Fuel Metering	Carburetor assembly, Fuel injection pump, Fuel injection nozzle, Fuel regulator
Exhaust	Catalyst
Air Induction	Air filter housing, Air filter element*, Crankcase breather tube
Ignition	Flywheel magneto, Ignition pulse generator, Ignition coil assembly, Ignition control module, Spark plug cap, Spark plug*
Miscellaneous Parts	Tubing, fittings, seals, gaskets, and clamps associated with these listed systems.

* Covered up to the first required replacement only. See the Maintenance Schedule on page 4.

Distributor/Dealer Locator Information

To find an Authorized Honda Engine Distributor/Dealer anywhere in the United States:

Call (800) 426-7701

or visit our website: www.honda-engines.com

Customer Service Information

Honda engine dealership personnel are trained professionals. They should be able to answer any question you may have. If you encounter a problem that your dealer does not solve to your satisfaction, please discuss it with the dealership's management. The Service Manager or General Manager can help. Almost all problems are solved in this way.

If you are dissatisfied with the decision made by the dealership's management, contact the Honda Power Equipment Customer Service Office. You can write:

American Honda Motor Co., Inc.

Power Equipment Division

Customer Service Office

4900 Marconi Drive

Alpharetta, GA 30005-8847

Or telephone: (770) 497-6400, M-F, 8:30 am - 5:00 pm EST

When you write or call, please give us this information:

- Model and serial numbers (see page 8)
- Name of the dealer who sold the engine to you
- Name and address of the dealer who services your engine
- Date of purchase
- Your name, address, and telephone number
- A detailed description of the problem

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