Litter Conveyor

SERIAL # _____

WORK ORDER # _____

Table of Contents

Chandler Equipment Company Personnel

Bill Chandler	**Chief Executive Officer** **Advertising & Marketing** **Dealer / Distributor Arrangements**
Brannon Chandler	**General Manager** **Production & Scheduling** **Warranty, Sales and Service**
Andrea Thompson	**Administrative Assistant**
Lisa Johnson	**Accounts Receivable** **Collections**
Michael Sosebee	**Sales Manager**
Gene Dye	**Outside Sales** **Mid-South Regional Sales Manager**
Dan McCorvey	**Outside Sales** **Southeast Regional Sales Manager**
Richard Wray	**Outside Sales** **Western Regional Sales Manager**
Matt Farmer	**Inside Sales**
Andrew Weinman	**Precision Ag Products**
Bryan Tullis	**Equipment Service**
Tim Leach	**Parts & Service**
Dylan Berta	**Parts & Service**

Warranty Policy

A) Standard Warranty:

Chandler Equipment Company warrants that equipment manufactured by Chandler Equipment Company, under normal conditions of use and service, shall be free from material defects due to faulty manufacturing for the period listed below.

a. Poultry Litter Spreaders and Conveyors – Six (6) Months
b. Fertilizer and Lime Pull Type Spreader – Six (6) Months
c. Fertilizer Tenders (Trailer or Truck Mounted) – Six (6) Months
d. Fertilizer and Lime Chassis Mounted Spreaders – One (1) Year

This warranty period is from the date of delivery to the original owner.
(Warranty period is on equipment built after July 1, 2012)

B) Warranty Approval:

a. Any and All warranty claims must be approved in writing by Chandler Equipment Company prior to any work being done.
b. **ANY WORK DONE WITHOUT PRIOR WRITTEN APPROVAL WILL NOT BE COVERED UNDER WARRANTY AND THE CUSTOMER / DEALER WILL BE RESPONSIBLE FOR ALL COST.**

C) Warranty Claim Forms: (Dealer Only)

a. Warranty claim form / forms will be supplied to Dealer upon request.
b. Warranty claim forms are available in 2 part paper form or in an electronic format.
c. All warranty claims must include serial number, date of purchase, customer name and date of sale to original owner. (See attached warranty claim instructions for guidelines on filling out warranty claim form)
d. Improperly filed or misleading information on warranty claims shall result in warranty claim being denied.
e. ALL WARRANTY CALIMS MUST BE FAXED TO (770) 535-1265.

D) Labor and Repair Cost: (Dealers Only)

a. Labor for any repairs must be approved prior to any work being done.
b. Labor rate (per hour) will be determined by Chandler Equipment Company, See Chandler Labor Rate List.
c. Also Chandler Equipment Company retains the right to adjust any and all warranty claims.

E) Dealer Responsibility:

a. Dealer shall be first line in all communications with the customer.
b. Dealer shall also maintain good and open communications between the customer and Chandler Equipment in order to resolve warranty issues.
c. Dealer shall be responsible for informing the customer of operating procedures, safety precautions and normal maintenance to help avoid any warranty issues.

d. Promptly inform Chandler Equipment of any possible warranty issues.
e. Dealer is responsible for making every effort to resolve warranty issues in a timely manner.

f. Notify Chandler Equipment on any possible non-warranty issues, such as any modification made to equipment.

F) Original Chandler Genuine Parts:

a. Chandler Equipment Company will only warranty equipment that uses Chandler Genuine Parts. Any equipment that is sold by a dealer with parts other than Original Chandler Genuine parts shall Void Any and All warranties

G) Replacement Parts Shipping:

a. Chandler Equipment Company shall send Chandler Genuine Parts for warranty replacement. Chandler Equipment shall NOT warranty any part or parts replaced by the Customer/Dealer that are not Chandler Genuine Parts.
b. Cost of any part or parts that are replaced by the Customer / Dealer that are not Chandler Genuine Parts shall be the sole responsibility of the Customer / Dealer.
   All replacement parts covered under warranty will be shipped via regular UPS. The cost of any parts shipped **UPS-Next Day Air** will be the sole responsibility of the Customer/Dealer.

H) Parts Returns:

a. All parts replaced under warranty will be returned to Chandler Equipment Company within 20 days of replacement for warranty evaluation. All parts returned for warranty evaluation must be in its original state free of modifications. Any modifications will result in the warranty claim being denied and the part or parts returned back to the customer/dealer.
b. Any hydraulic components returned must be assembled (in original state) and with the ports plugged to prevent any contamination. Any hydraulic component that has been disassembled will VOID the warranty claim and the part or parts returned back to the customer/dealer.
c. All Returned Parts for warranty evaluation must be clearly tagged with the following information.
   I. RMA number
   II. Customer or Dealer Name, address, phone number and contact person
   III. Equipment serial number
   IV. Complete description of problem

I) Misuse or Improper Installation:

a. Any equipment, parts, or components that have been damaged by improper installation or misuse will **NOT** be covered under this warranty.
b. Chandler Equipment accepts no responsibility or liability of any kind due to improper installation of equipment or parts on any product manufactured by Chandler Equipment Company. This includes, but is not limited to, any damages to personal property, crops, or any other equipment.

J) Incomplete Equipment and Dealer Add-Ons:

a. Chandler Equipment does not warrant any equipment sold **INCOMPLETE**. This includes (but is not limited to) axles, tires, any hydraulic components or paint.

b. Any Non Genuine Chandler Parts that are installed as aftermarket add-ons by anyone not approved in writing by Chandler Equipment Company shall **VOID ALL WARRANTIES.**

c. Chandler Equipment Company accepts no responsibility, nor shall warrant any equipment or any component that is damaged due to any type Control System not sold and installed by Chandler Equipment Company.

K) Items Not Covered Under this Warranty:

a. Any equipment that has been modified from its original state.

b. Any equipment used for any other purpose that what it was originally designed for.

c. Any travel time, cleaning of equipment, unloading of material, or towing.

d. Any cost of materials that have been applied improperly due to the lack of customer / dealer not following proper operating instructions.

Litter Conveyor Safety

WARNING!

- **DO NOT CLIMB ON CONVEYOR FOR ANY REASON**
- **BE CAREFUL WHEN RAISING OR LOWERING CONVEYOR**
- **LOWER CONVEYOR BEFORE TRANSPORTING**
- **SHUT OFF ENGINE BEFORE REPAIRING CONVEYOR**

THINK SAFETY!

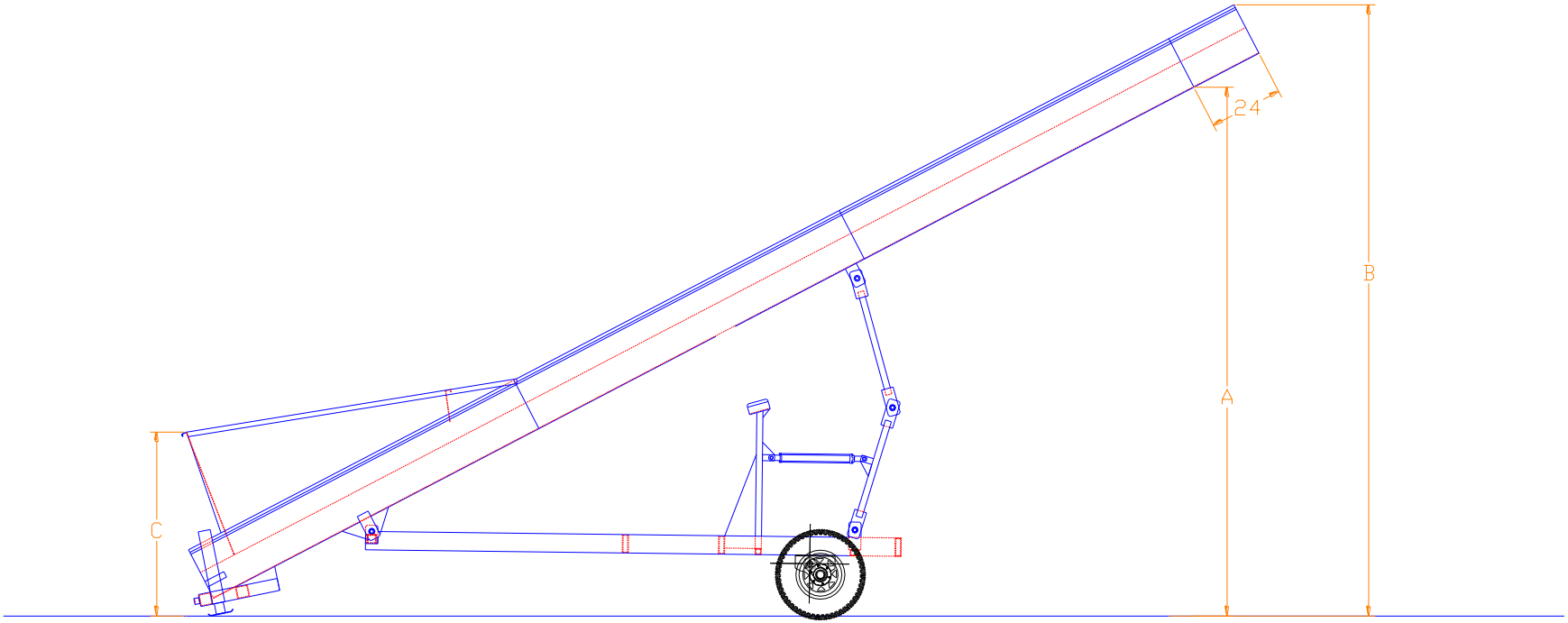
Safety Precautions

1) Be sure all guards or other safety devices, and decals are in place and functioning properly.
2) Stay away from moving parts when conveyor is in operation.
3) Check lug nuts daily; refer to Section 3 of this manual for torque specifications.
4) Maintain proper tire pressure, according to Section 3 of this manual.
5) If conveyor becomes clogged, turn off engine before entering hopper or cleaning the conveyor.
6) Be sure to fully lower conveyor before transporting.
7) While transporting check for clearance of low underpasses (i.e. bridges, power lines, etc.)

Section 1

Basic Information

Discharge Height



A= Discharge Height (measured 24” from end)
B= Overall Height
C= Loading Height of Hopper

	A	B	C
Raised	**14' 3"**	**16' 6"**	**5'**
Lowered	**10' 1"**	**12' 1"**	**5' 1"**

Caution:

While operating a Chandler Equipment Co. Litter Conveyor, make sure that the conveyor has sufficient clearance when it is fully raised.

When transporting a Chandler Equipment Co. Litter Conveyor, make sure that the conveyor is completely lowered and resting on the stops. Also make sure that the jacks are fully raised, and all safety pins on the hitch assembly are in place.

1) Hydraulic Drive System Requirements

The Chandler Litter Conveyor comes standard with a Honda 18 H.P. V-Twin gasoline engine coupled to a Vickers V-10 vain style hydraulic pump. The conveyor requires approximately 15 GPM @ 2200 PSI.

- GPM (Gallons Per Minute)
- PSI (Pounds per Square Inch)

Hydraulic Oil Requirements

Please use:

Oil Type – 46 Series (10 to 15 W)

2) Conveyor Pressure Settings

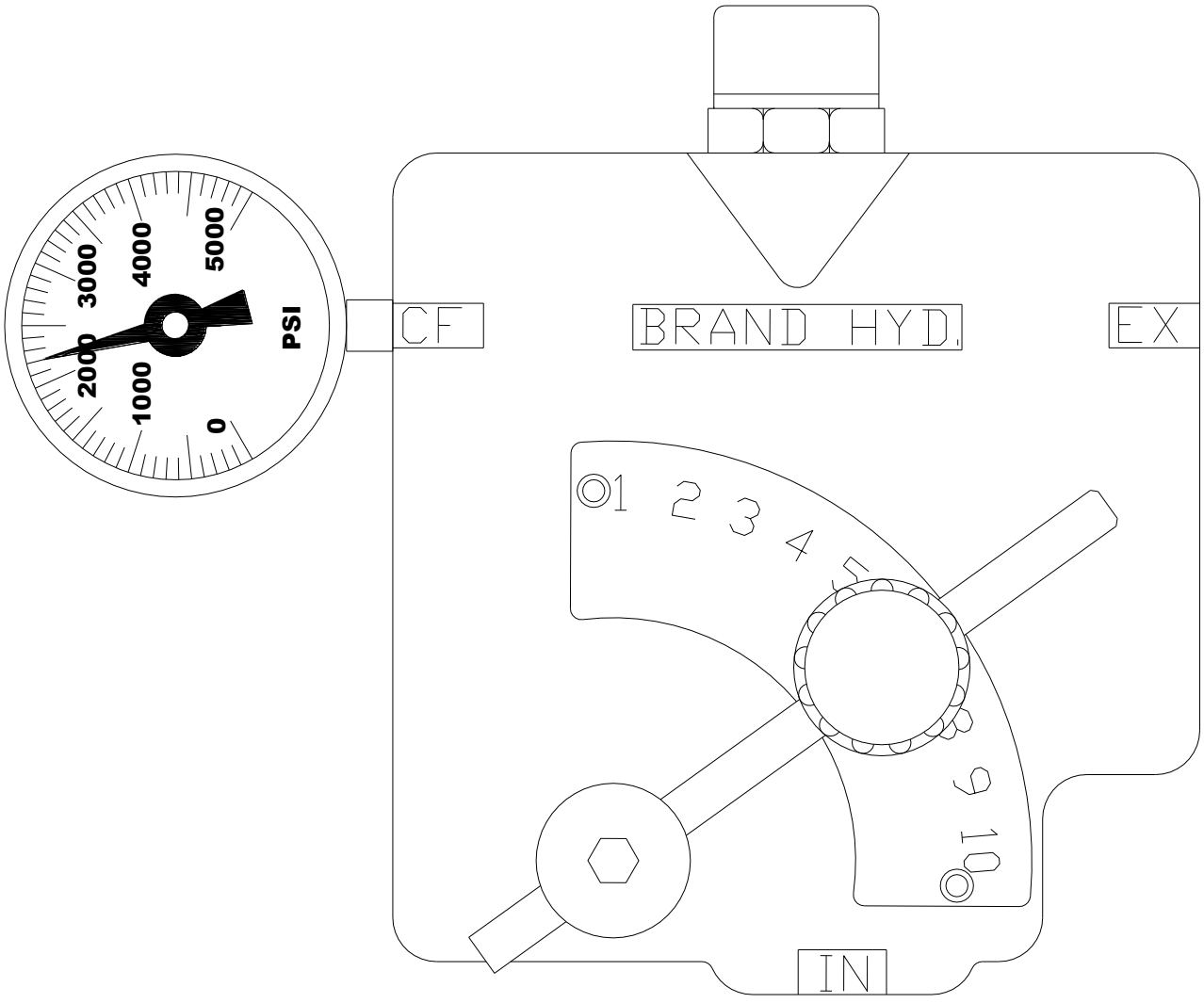
1) **Checking Pressure**
   a) Run unit empty at ordinary operating speed for approximately 10 minutes. This allows oil to reach operating temperatures.
   b) Shut engine off and install pressure gauge into "CF" port on flow control valve. (Refer to hydraulic flow control valve drawing – **page 1-5**).
   c) Restart engine with flow control valve on 0.
   d) Slowly open flow control valve to 10 while watching pressure gauge
   e) Pressure gauge should read 2200 psi. If not adjust pressure as outlined below.

<u>Caution:</u> When checking pressure, never allow conveyor to run over a few seconds with pump running and gauge installed in line. Once pressure reading is taken shut off engine <u>immediately.</u>

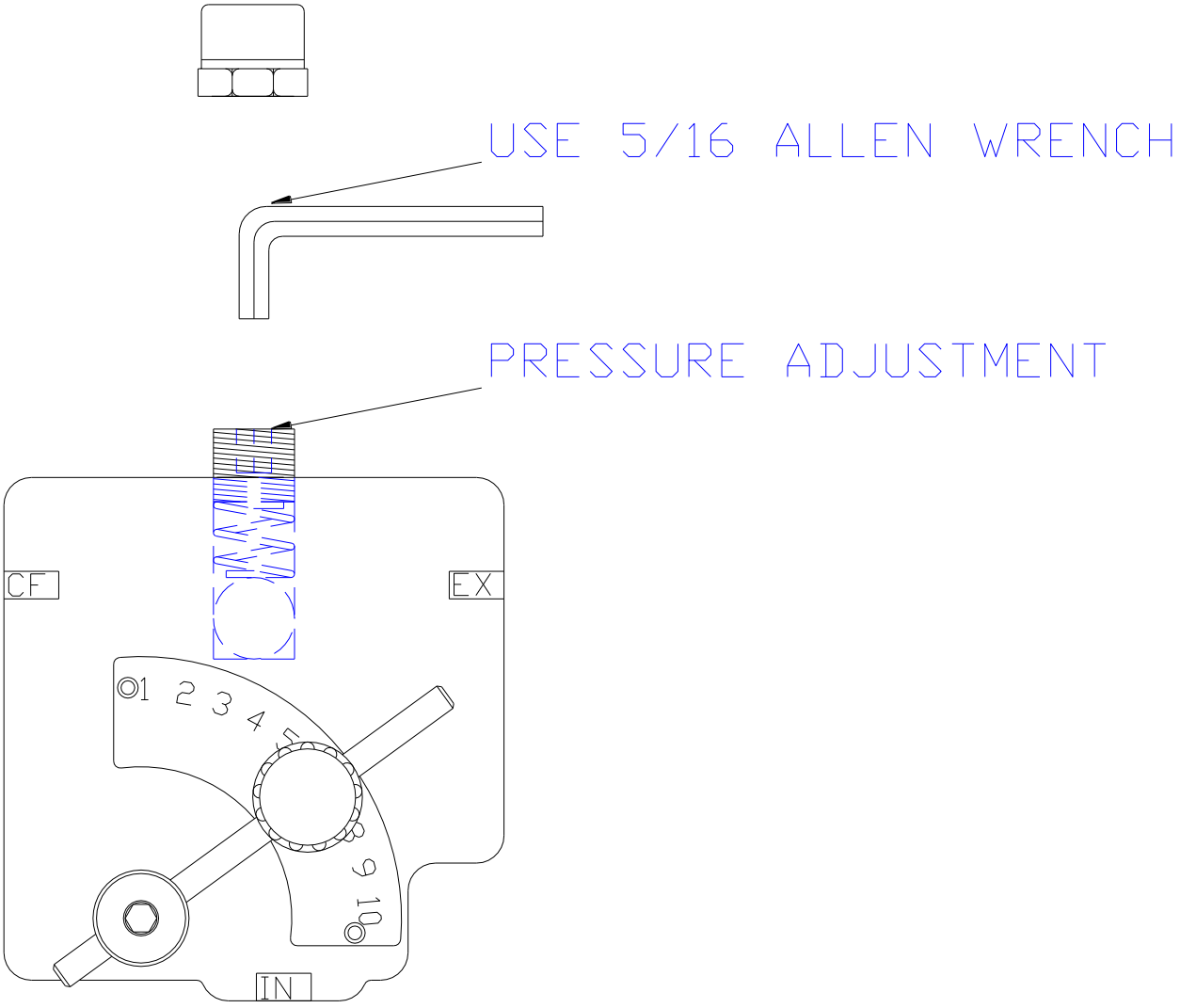
2) **Adjusting Hydraulic Flow Control Valve Pressure: (**Refer to **page 1-6)**
   a) Remove cap nut on flow control valve (located on top of valve).
   b) Using a 5/16 Allen wrench turn adjustment screw "IN" to increase pressure or "OUT" to decrease pressure.
   c) Turn adjustment screw one half turn, then check pressure setting as outlined above.
   d) Continue this procedure until pressure gauge reads **2200 psi.**

<u>NOTE:</u> If unable to obtain 2200 psi contact your local dealer or Chandler Equipment Service Department at 1-800-243-3319.

3) How to Install Pressure Gauge



4) How to Adjust Relief Pressure



1) Remove cap nut on flow control valve (located on top of valve).

2) Using a 5/16 Allen wrench turn adjustment screw “IN” (Clockwise) to increase pressure or “OUT” (Counter Clockwise) to decrease pressure.

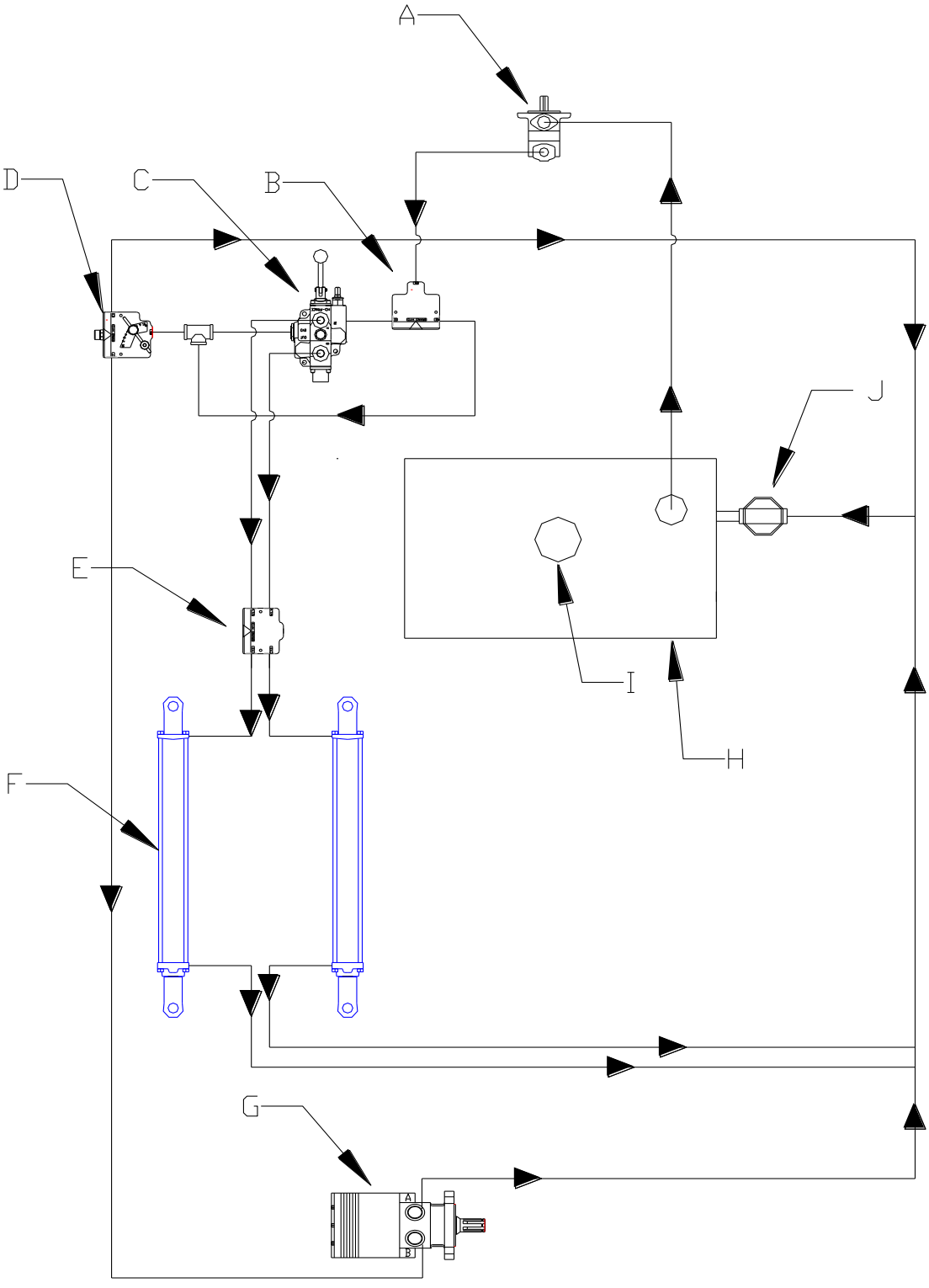
3) Turn adjustment screw one half turn, then check pressure setting as outlined above.

4) Continue this procedure until pressure gauge reads **2200 psi.**

Section 2

Hydraulic System

Hydraulic System Litter Conveyor

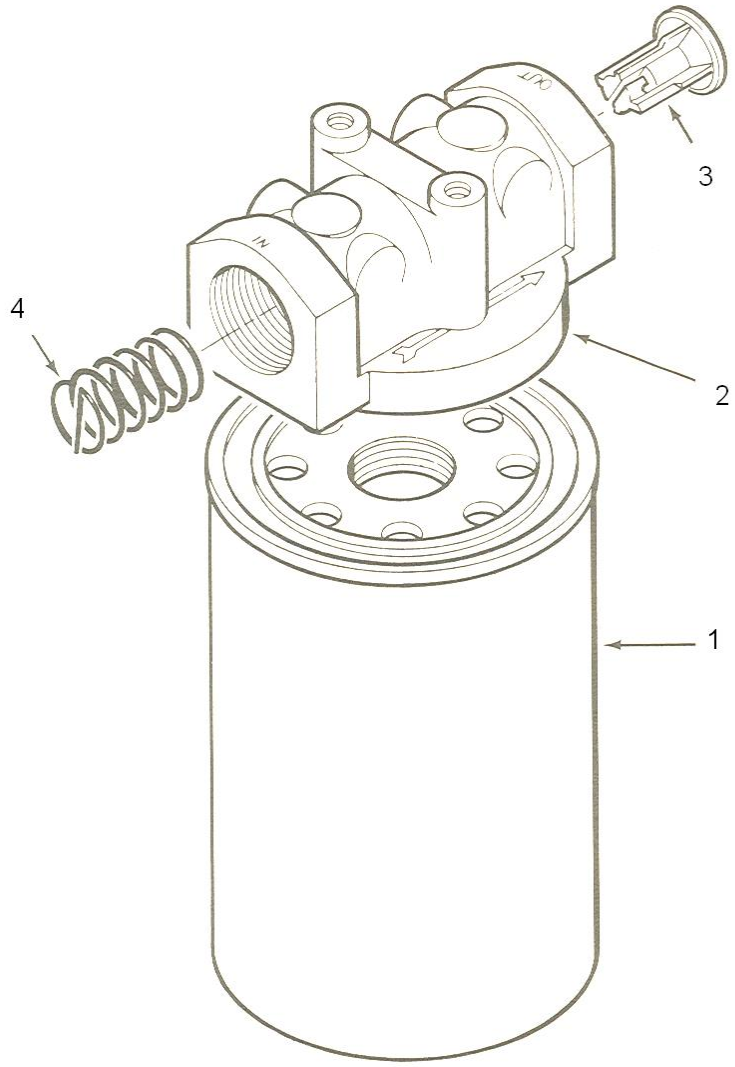


Hydraulic System Parts List

Ref.	Part #	Description	QTY
A	400-R-112	Vickers V10 Pump	1
B	400-1-314	¾” Splitter Valve 2:1 Ratio	1
C	400-1-335	Valve for Cylinder (RD516CB5A4B1)	1
D	400-1-313	Flow Control Valve (FCR-51-75-125AE)	1
E	400-1-338	LOD-50 Check Valve	1
F	400-1-296	2.5" x 20" Cylinder	2
G	400-R-106	MB180102 Torque Motor	1
H	400-C-214	18gal Hydraulic Tank	1
*	400-C-216	Hydraulic Oil (46 Series)	18 Gal
I	400-1-317	Hydraulic Tank Breather Cap	1
J	400-1-318	Filter Assembly - Small	1
*	400-1-319	Filter Element - Small	1
*	400-1-322	Oil Site Gauge	1

*** Not Shown**

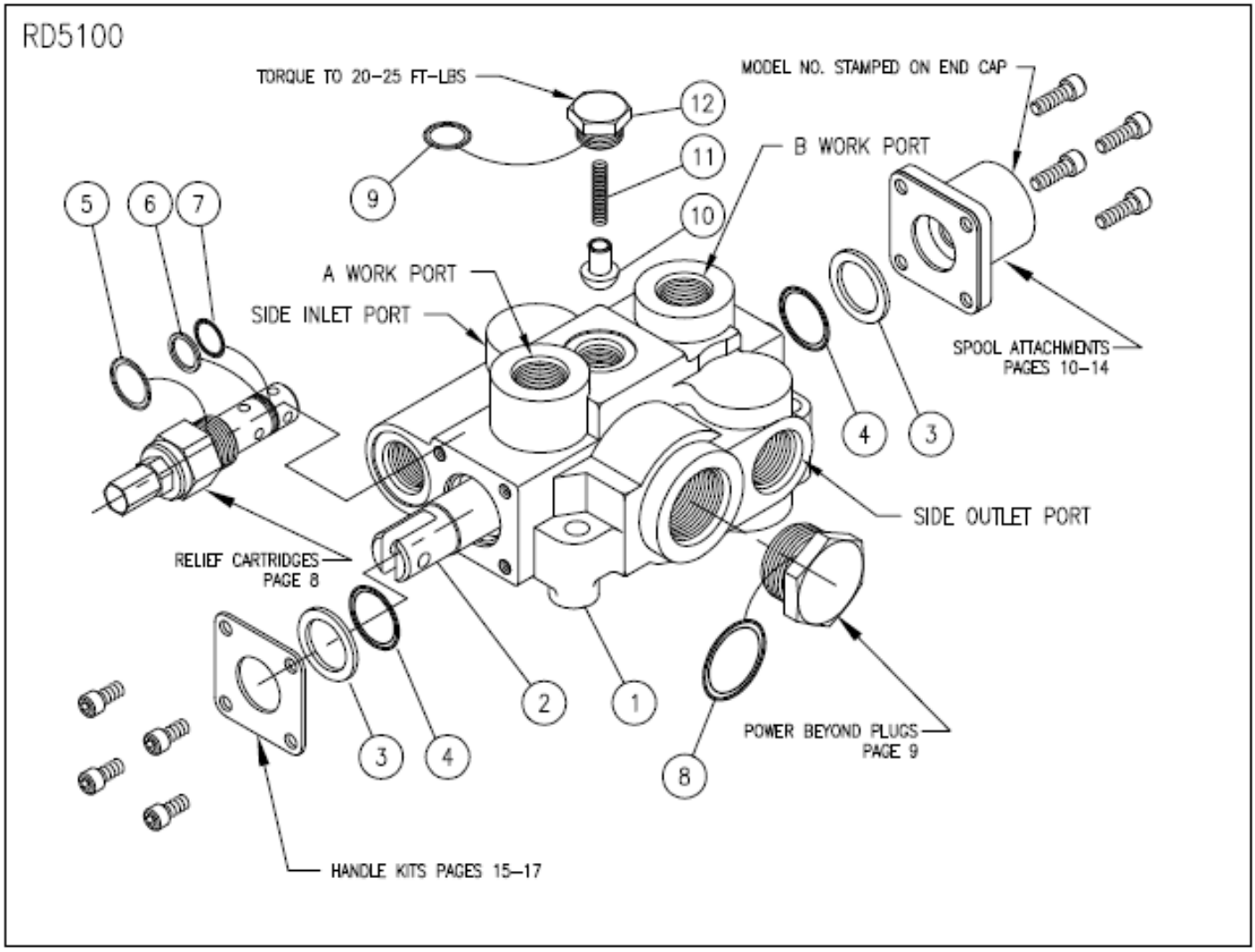
Hydraulic Filter Assembly



1) Filter Element **400-1-319**
2) Filter Head **400-1-318 (when ordering this part # items 3 & 4 are included)**

Cross Reference #'s: WIX Filter# 51551 Napa Gold Filter# 1551 Baldwin# BT839-10

Hydraulic Valve (Prince – RD5100 Series)

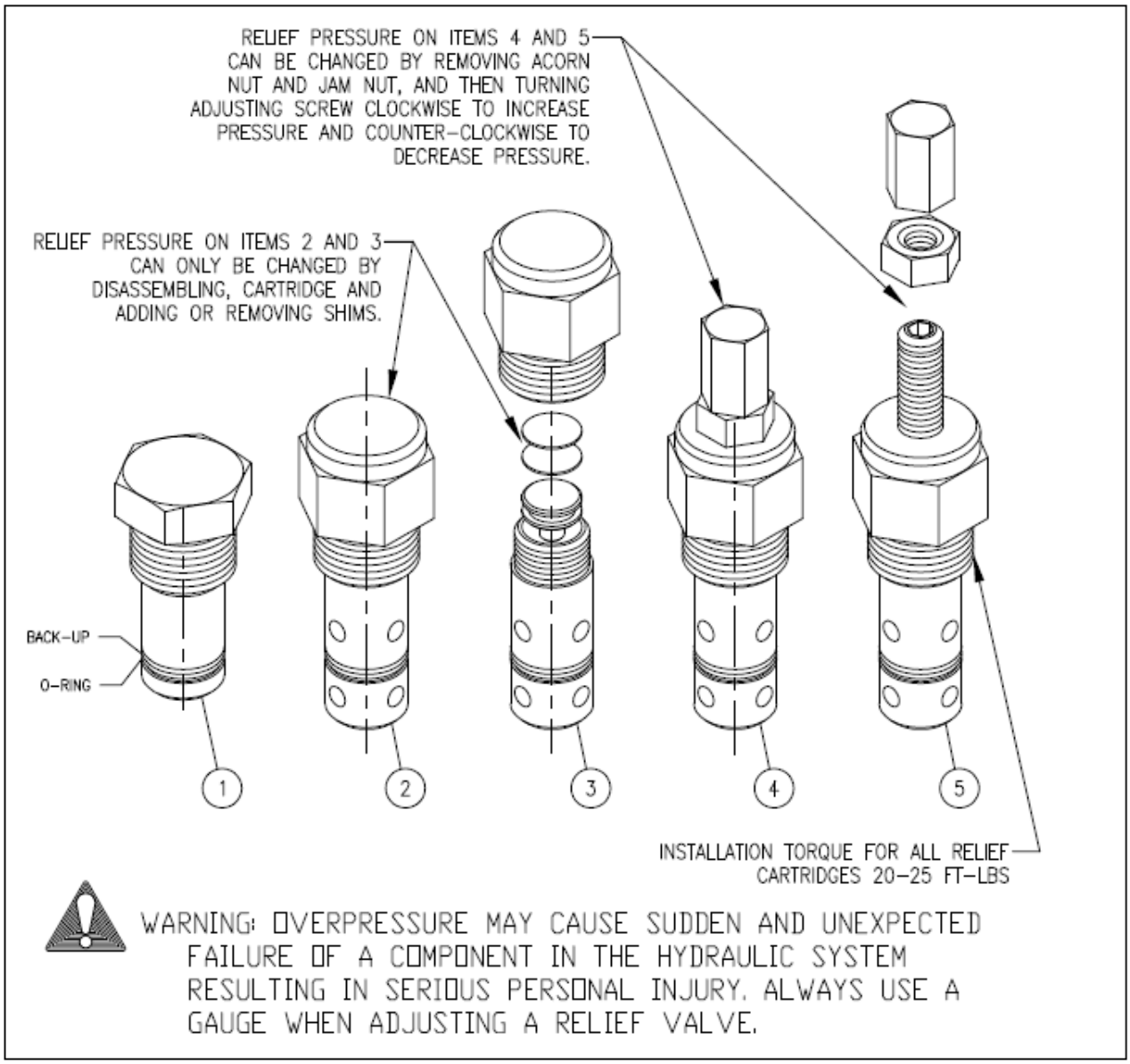


RD5100 1 SPOOL MONO–BLOCK VALVE

ITEM	QTY	PART NO.	DESCRIPTION
1	1		1 SPOOL VALVE BODY } These are matched parts and are not sold seperately.
2	1	SEE NOTE 1	SPOOL }
3	2	670500010	SPOOL SEAL BACK–UP
4	2	240000213	213 O–RING
5	1	240000116	116 O–RING
6	1	240019015	015 BACK–UP } SEAL KIT 660551001 (PLUS OTHERS)
7	1	240000015	015 O–RING
8	1	240000916	916 O–RING
9	1	240000908	908 O–RING
10	1	670100001	LOAD CHECK POPPET } LOAD CHECK KIT, NO. 660150015
11	1	670300007	LOAD CHECK SPRING
12	1	671600001	LOAD CHECK PLUG

NOTE: Chandler Equipment only stocks a limited selection of replacement parts for this style valve. Please check with your local dealer or our Parts Department for availability of replacement parts.

Hydraulic Valve – Relief Pressure Adjustment

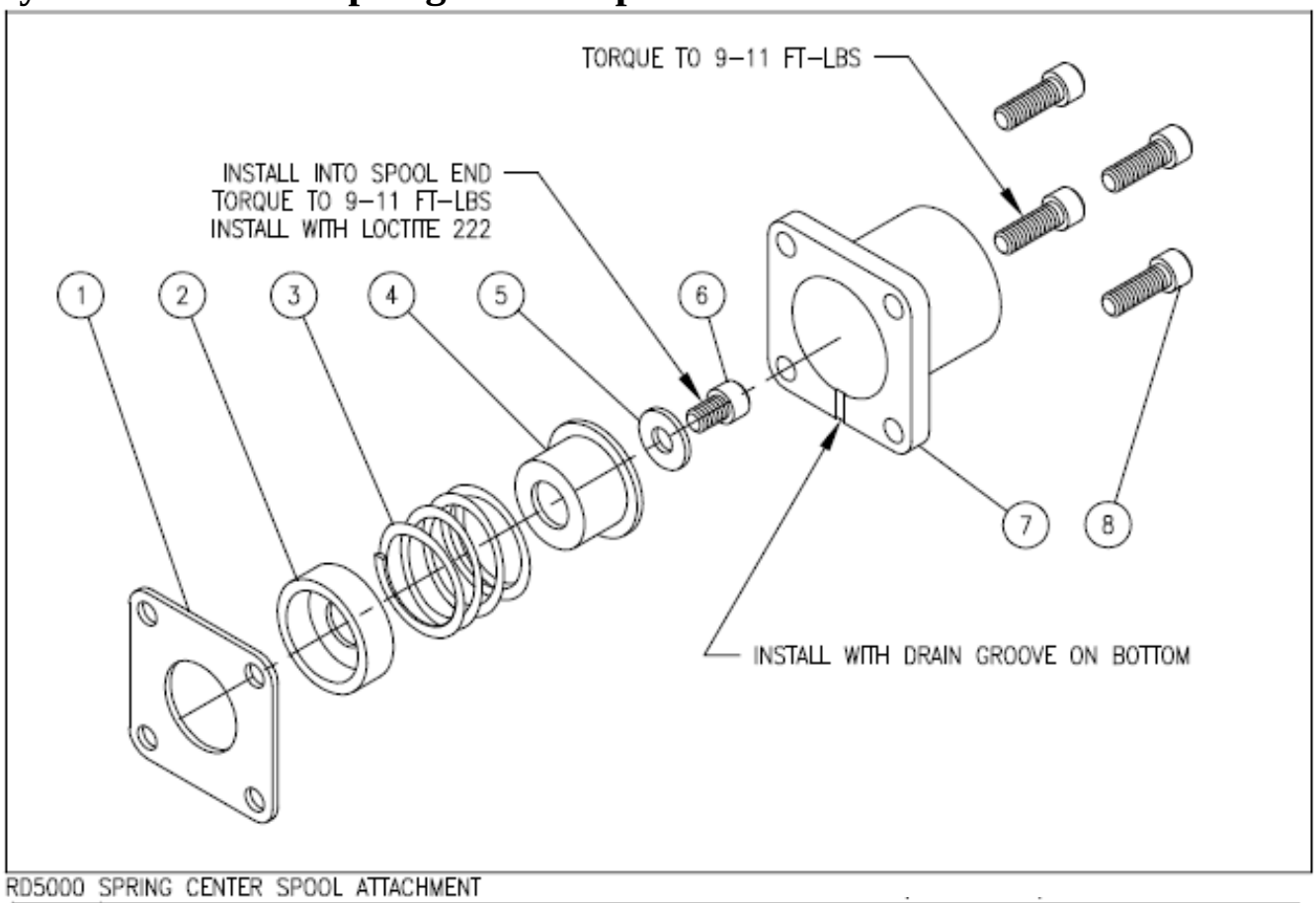


RD5000 RELIEF CARTRIDGES

ITEM	QTY	PART NO. (UNTESTED)	DESCRIPTION	PRESET CARTRIDGE	SETTING
1	1	660250006	NO RELIEF PLUG (OPTION 1)		
2	1	660250005	SHIM ADJUSTABLE RELIEF 500-1500 (OPTION 2)	RV-0NL	1000 PSI
3	1	660250004	SHIM ADJUSTABLE RELIEF 1500-3000 (OPTION 3)	RV-0NH	2000 PSI
4	1	660250003	ADJUSTABLE RELIEF 500-1500 (OPTION 4)	RV-0L	1000 PSI
5	1	660250002	ADJUSTABLE RELIEF 1500-3000 (OPTION 5)	RV-0H	2000 PSI
		672000101	.015 SHIM		
		672000102	.033 SHIM		
		672000103	.060 SHIM		

NOTE: Refer to relief cartridges 4 and 5 for relief pressure adjustment.
NOTE: Chandler Equipment only stocks a limited selection of replacement parts for this style valve. Please check with your local dealer or our Parts Department for availability of replacement parts.

Hydraulic Valve – Spring Center Spool Attachment



RD5000 SPRING CENTER SPOOL ATTACHMENT

ITEM	QTY	PART NO.	DESCRIPTION	
1	1	670500003	RETAINER PLATE	SPRING CENTER KIT NO. 660150001
2	1	671400001	STOP CUP (INNER)	
3	1	670300001	CENTERING SPRING*	
4	1	671400011	STOP CUP (OUTER)	
5	1	670500004	WASHER	
6	1	170003007	SOCKET HD. CAP SCREW	
7	1	670500005	END CAP	
8	4	170003008	SOCKET HD. CAP SCREW	

*STANDARD CENTERING SPRING CAN BE REPLACED WITH MEDIUM HEAVY SPRING PART NO. 670300047 OR HEAVY SPRING 670300043.

NOTE: Chandler Equipment only stocks a limited selection of replacement parts for this style valve. Please check with your local dealer our Parts Department for availability of replacement parts.

Hydraulic Cylinder

Seal Replacement Guide for Tie Rod Cylinders

1. Remove all port obstructions and make sure all oil has been drained from the cylinder.
2. Clamp rod end mount (6) in vise and fully extend cylinder. If there is no mount. Protect rod threads while clamping.
3. Remove the 4 tie bolt nuts (7) on gland end and un-thread the bolts from the base end.
4. Remove the base (5) and slip the tube off of the gland (3) if necessary, gently tap the gland and base with a rubber Mallet to loosen.
5. Remove piston nut (13) and slip piston (4) and gland off rod (1) drive piston off with gland. Remove gland from the piston end of the rod.
6. Remove old seals from gland, piston and base.
7. Wash and check all parts for excessive wear or obvious defect which might interfere with operation.
8. Lubricate all new seals with STP or heavy oil before assembling.
9. Install new seals (15) (16) (18) & (19) in gland taking care to position the I. D. U-cup (15) toward the pressure as shown in Figure 1.
10. Install piston seal & energizer (17) and internal o-ring (20) into piston.
11. Install o-ring (18) and back-up (19) on the base. See Figure 2 for o-ring/back-up orientation.
12. With a twisting motion push gland onto rod from the piston end.
13. Torque piston nut (13) according to Table #1. Lube gland & piston seals.
14. Slide tube over piston and onto gland. Replace base making sure parts are properly aligned to avoid cutting o-rings.
15. Replace tie rods and torque nuts as specified in Table #1. Use a cross-tightening pattern.
16. Hand stroke cylinder to check for binding.
17. Your cylinder is now ready for operation.

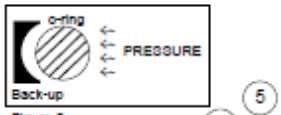


Figure 2

Figure 1.

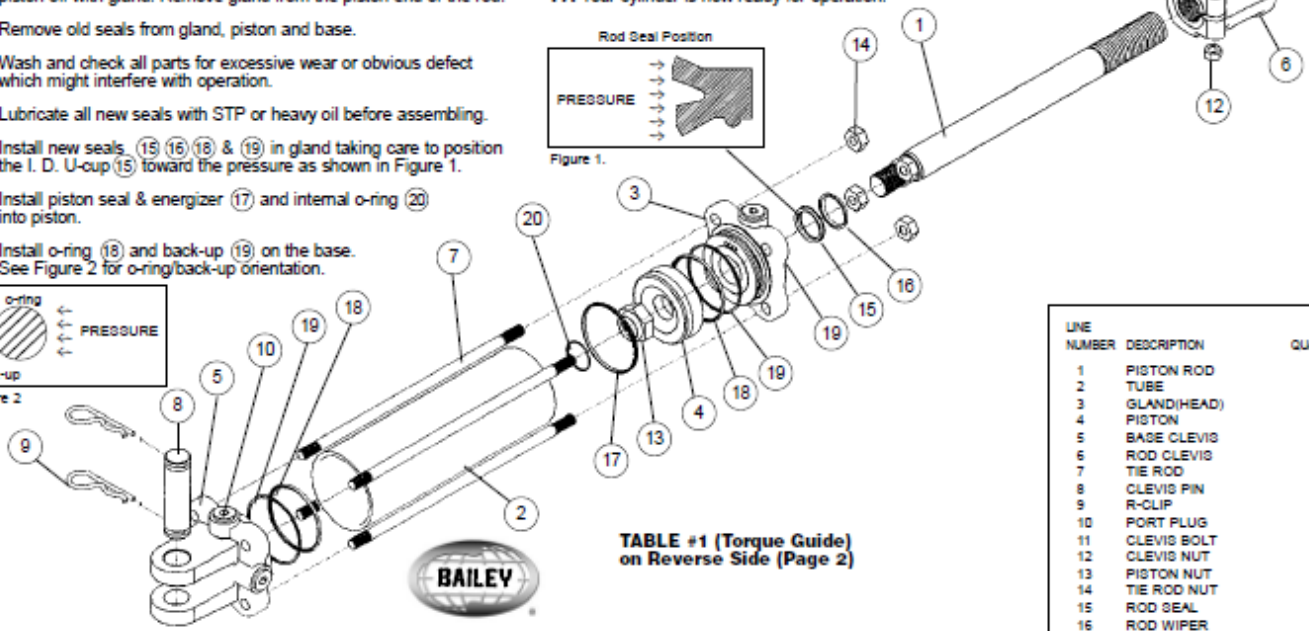


TABLE #1 (Torque Guide) on Reverse Side (Page 2)

LINE NUMBER	DESCRIPTION	QUANTITY
1	PISTON ROD	1
2	TUBE	1
3	GLAND(HEAD)	1
4	PISTON	1
5	BASE CLEVIS	1
6	ROD CLEVIS	1
7	TIE ROD	4
8	CLEVIS PIN	2
9	R-CLIP	4
10	PORT PLUG	3
11	CLEVIS BOLT	1
12	CLEVIS NUT	1
13	PISTON NUT	1
14	TIE ROD NUT	4
15	ROD SEAL	1
16	ROD WIPER	1
17	PISTON SEAL/ENERGIZER	1
18	ORING	2
19	ORING BACK-UP	2
20	PISTON INTERNAL ORING	1

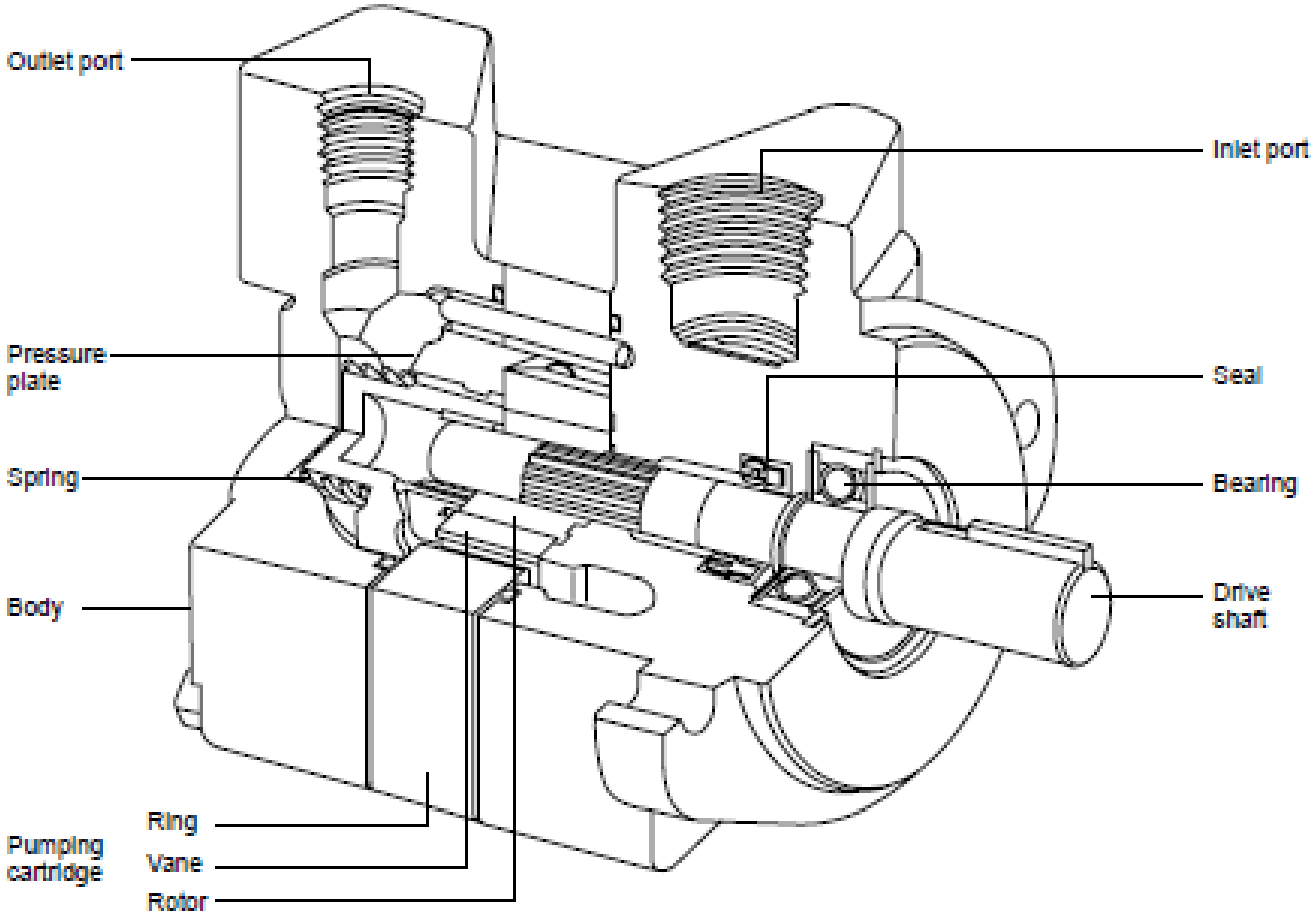
BAILEY

Page 1

Parts Available from Chandler Equipment

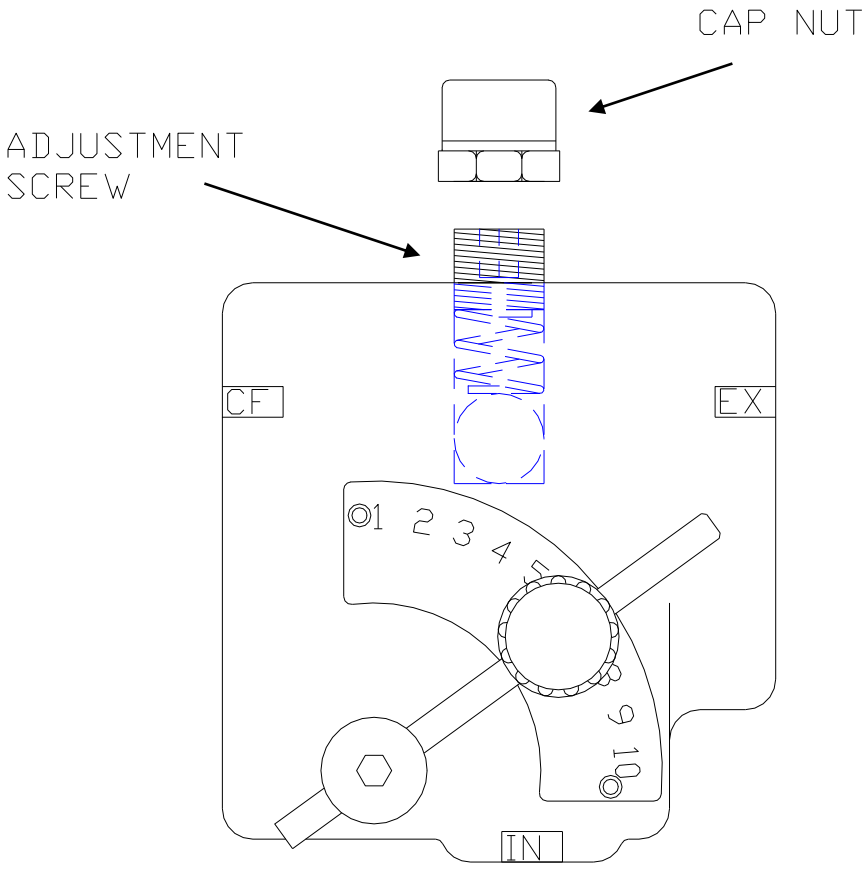
Part #	Description	QTY
400-1-296	2.5" x 20" Hydraulic Cylinder	1
400-1-298A	Seal Kit - 2.5" Cylinder	1
400-1-293	Clevis Pin Kit	2

Vickers V10 – Single Pump



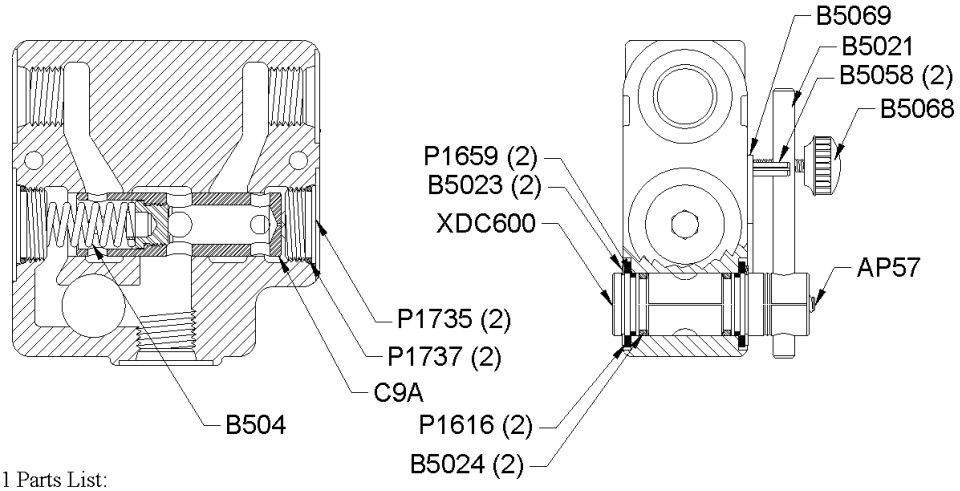
NOTE: Chandler Equipment only stocks a limited selection of replacement parts for this style pump. Please check with your local dealer or our Parts Department for availability of replacement parts not listed.

FCR – 51 - .75 Flow Control Valve



<u>Note</u>: Never bottom out adjustment screw. This could damage hydraulic system.

FC51 (Manual Flow Control and 0-30 gpm):

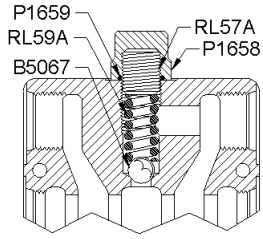


FC51 Parts List:

AP57	1/4-20 x 1/4 Set Screw	B5069	FC51 Dial Plate	P1735	#12 SAE Plug
B5021	Handle	C9A	Spool (Standard)	P1737	O-ring 2-021 90D
B5023	Snap Ring	C9A-093	Spool (.093 Dash Pot)	P1740	Identification Tag
B5024	O-ring 2-116	C9A-2P	Spool (2 Port)	XDC598	Spool (30 gpm)
B504	Spring	C9AS	Spool (.020 Dash Pot)		
B5058	3/16 x 7/8 Spring Pin	P1616	Nylon Seal Retainer		
B5068	10-32 x 3/4 Thumb Screw	P1659	O-ring 2-019 90D		

FC Options:

FCR51 (BALL SPRING RELIEF)

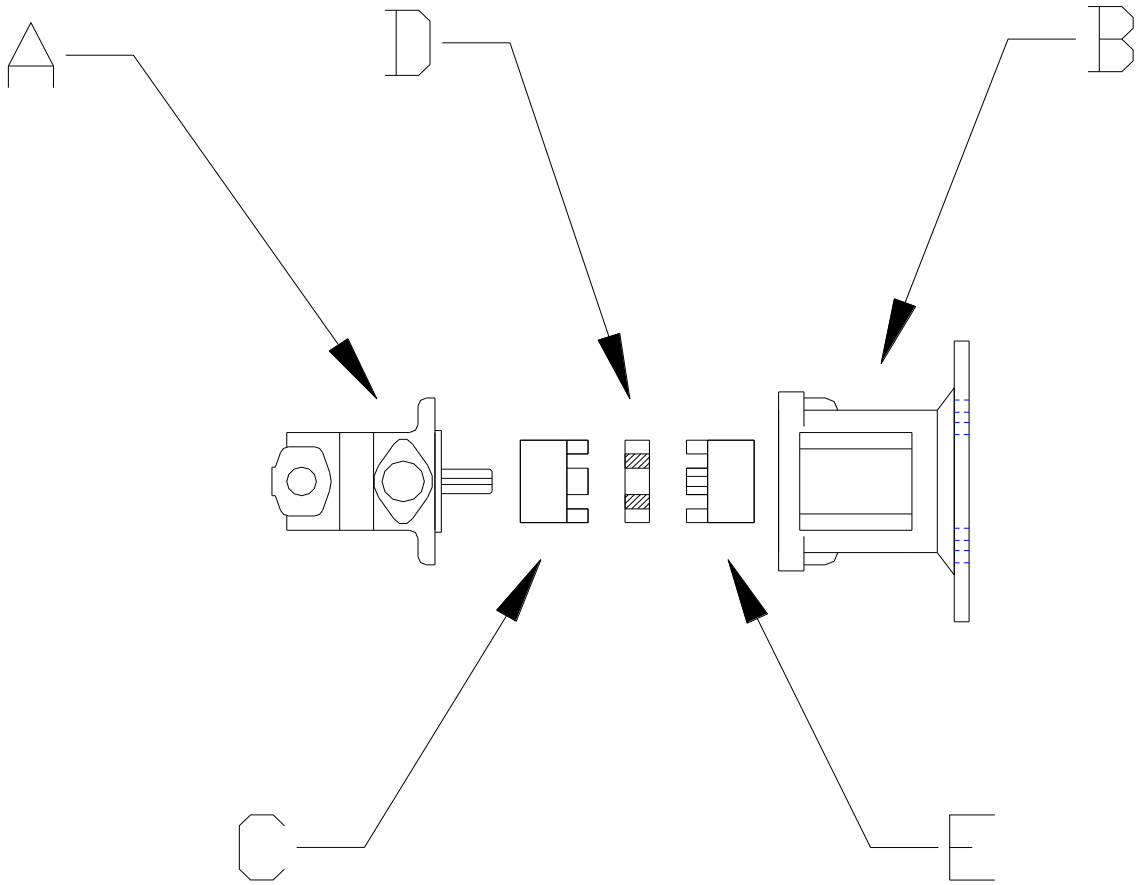


FCR51 Parts List:

B5067	1/2 Steel Ball
P1658	Cap Nut
P1659	O-ring 2-019 90D
RL57A	Adjusting Screw
RL59A	Spring

Note: Casting not sold separately.
Replace with new valve.

Pump Mount Components

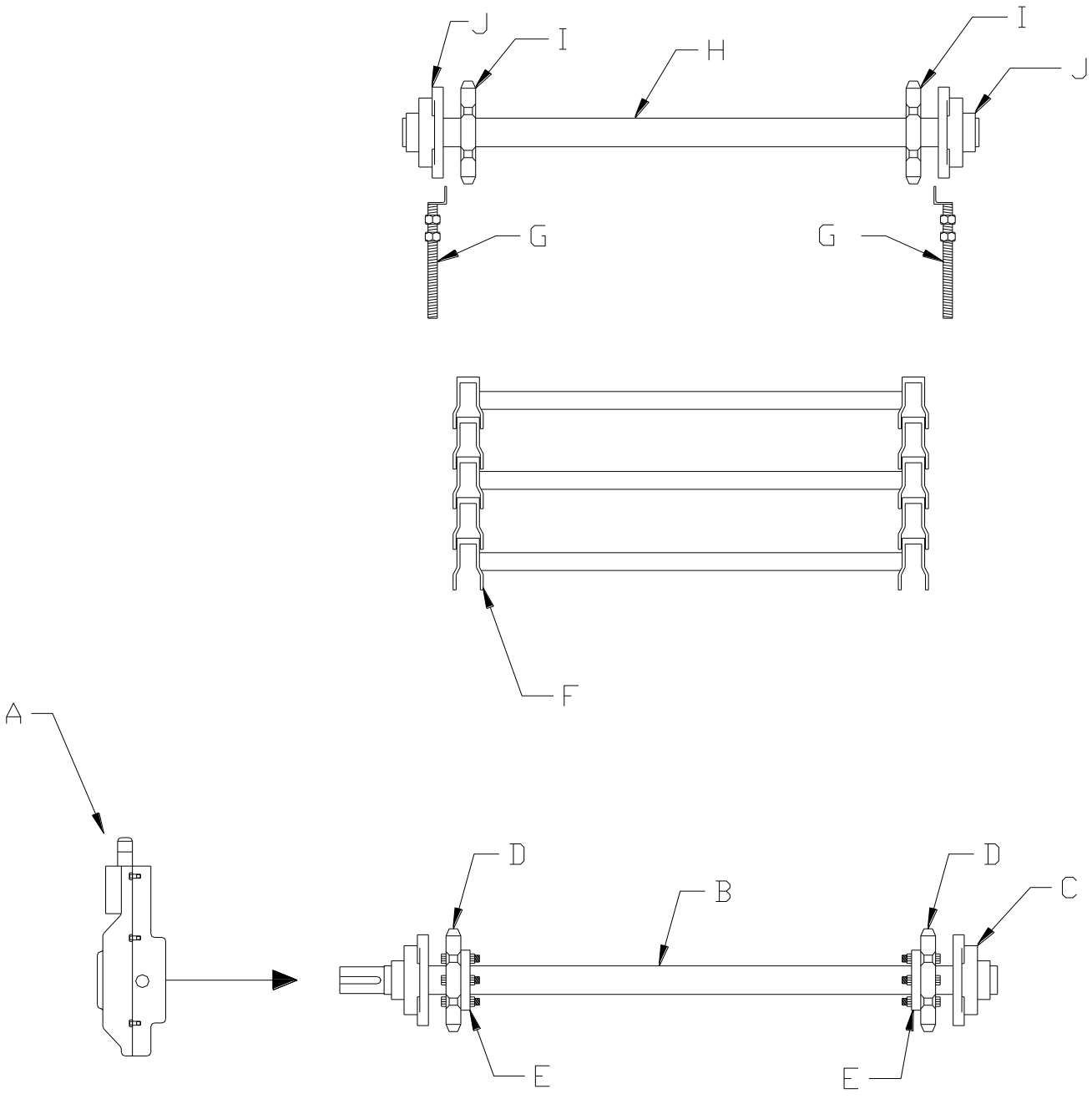


Pump Mount – Parts List

	Part #	Description	QTY
*	900-1-126B	18 Hp Honda Engine	1
*	400-C-350	18gal Gas Tank Kit w/Filter	1
A	400-R-112	Vickers V10 Pump	1
B	400-R-113	Pump Mount	1
C	1400-LJ-110	L100 3/4" - 3/16" Key (to Pump)	1
D	1400-LJ-104	L100 Sock	1
E	1400-LJ-101	L100 1" - 1/4" Key (to Engine)	1

*** Not Shown**

Hydraulic Drive Components

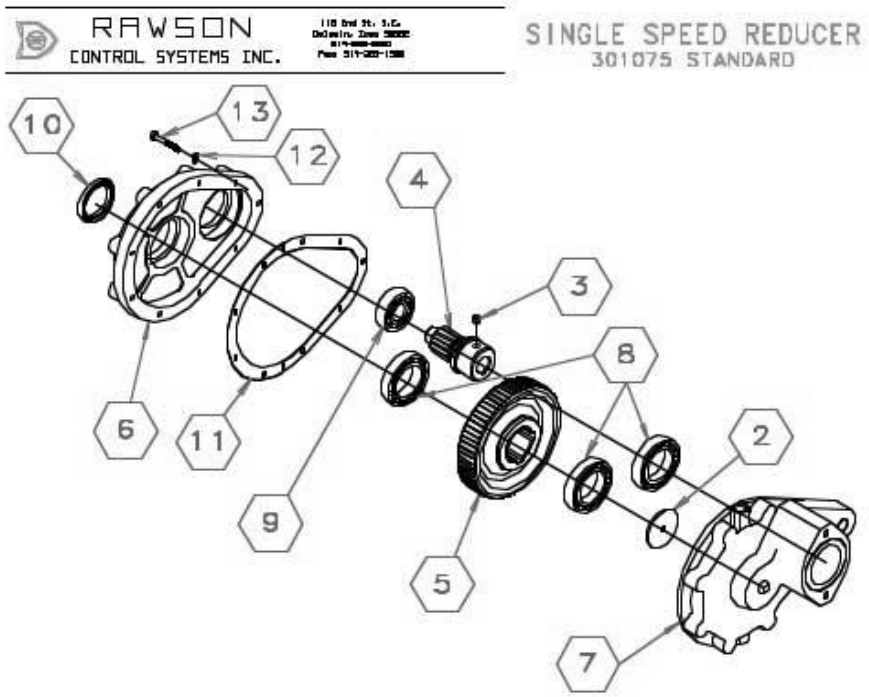


Hydraulic Drive Components – Parts List

	Part #	Description	QTY
A	100-R-1-01	Single Aluminum Gear Case	1
*	400-R-106	MB180102 Torque Motor	1
B	300-C-208	2" x 43" Rear Roller Shaft	1
C	UFC-211-32	UCF-211-32 Bearings Rear Roller	2
D	700-2-208	8 Tooth Cogs, for 2" Rear Roller	2
E	700-2-209	Weld-on Hubs, for 2" Rear Roller	2
F	500-2-210	D-667X Chain - Bars Every Other Link	65'
G	300-C-017	Front Roller Adjustment Rods	2
H	300-C-006	1-1/2" x 39" Front Roller Shaft	1
I	700-2-210	8 Tooth Cogs, for 1-1/2" Front Roller	2
J	UFC-208-24	UCF-208-24 Bearings Front Roller	2

*** Not Shown**

Single Aluminum Gear Case



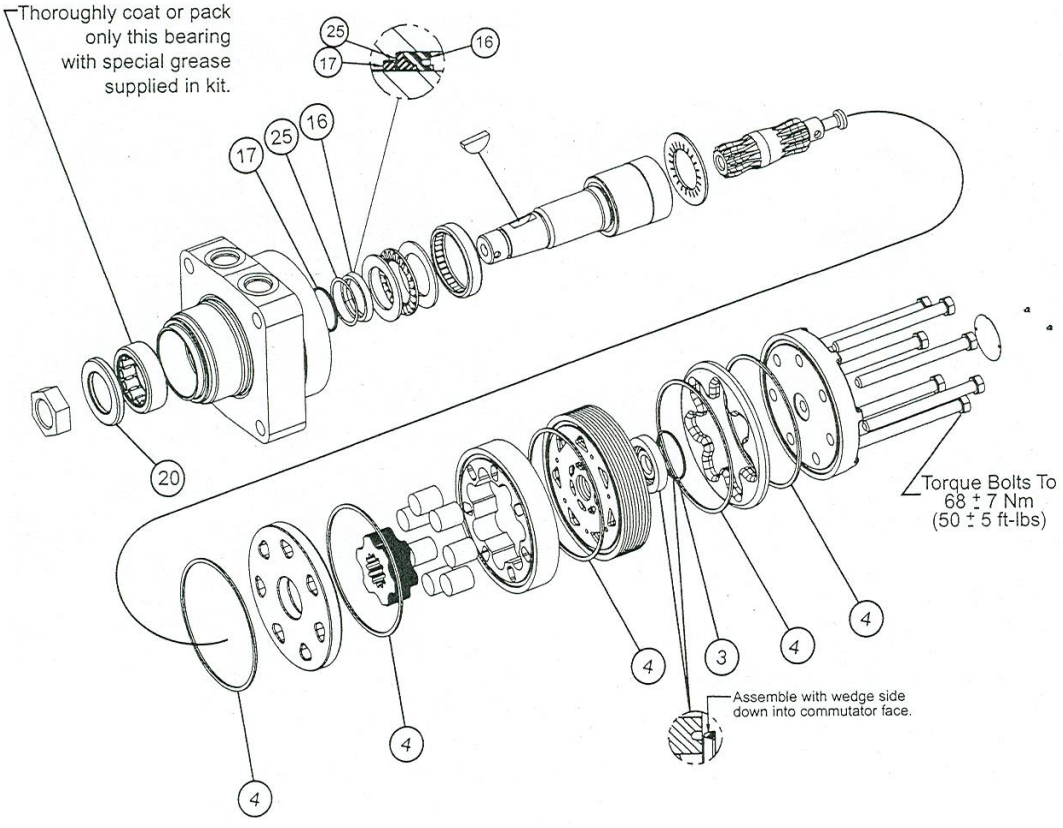
	Description	Part #
1)	Single Gear Case (complete)	100-R-1-01
2)	N/A	
3)	N/A	
4)	Pinion Gear	100-R-1-08
5)	67T Gear	100-R-1-07
6)	Inboard Housing	100-R-1-09
7)	Outboard Housing	100-R-1-10
8)	Bearing - 50MM	100-R-1-03
9)	Bearing - 25MM	100-R-1-04
10)	Seal	100-R-1-05
11)	Gasket - Single	100-R-1-06
12)	Lock Washer	100-R-1-13
13)	Cap screw 5/16"	100-R-1-14
14)	Key - ½" (not shown)	100-R-1-11
15)	Breather Plug (not shown)	100-R-1-12

***** When Ordering these parts have serial number available to insure proper parts**

Conveyor Motor MB-18

Service Bulletin 050016
Issued February 2003
For TF (MB) and TG (ME) Torqmotor Seal Kits
SK000092 (Buna), SK000093 (Fluorocarbon),
SK000099 (Vespel Commutator Seal)
Reference Torqmotor Service Manual SM1512.

QTY	Item	Description	Buna P/N	Fluorocarbon P/N	Vespel P/N
1	17	Back up ring	028515	028515	028515
1	25	Back up washer	029118	029118	029118
1	3	Commutator Seal	032435	032435	032439
1	16	Shaft Seal	032817	032818	032817
6	4	Body Rings	032819	032820	032819
1	20	D&W Seal	478035	478035	478035
1		Bearing Lubricant	406018	406018	406018
1		Service Bulletin	050016	050016	050016

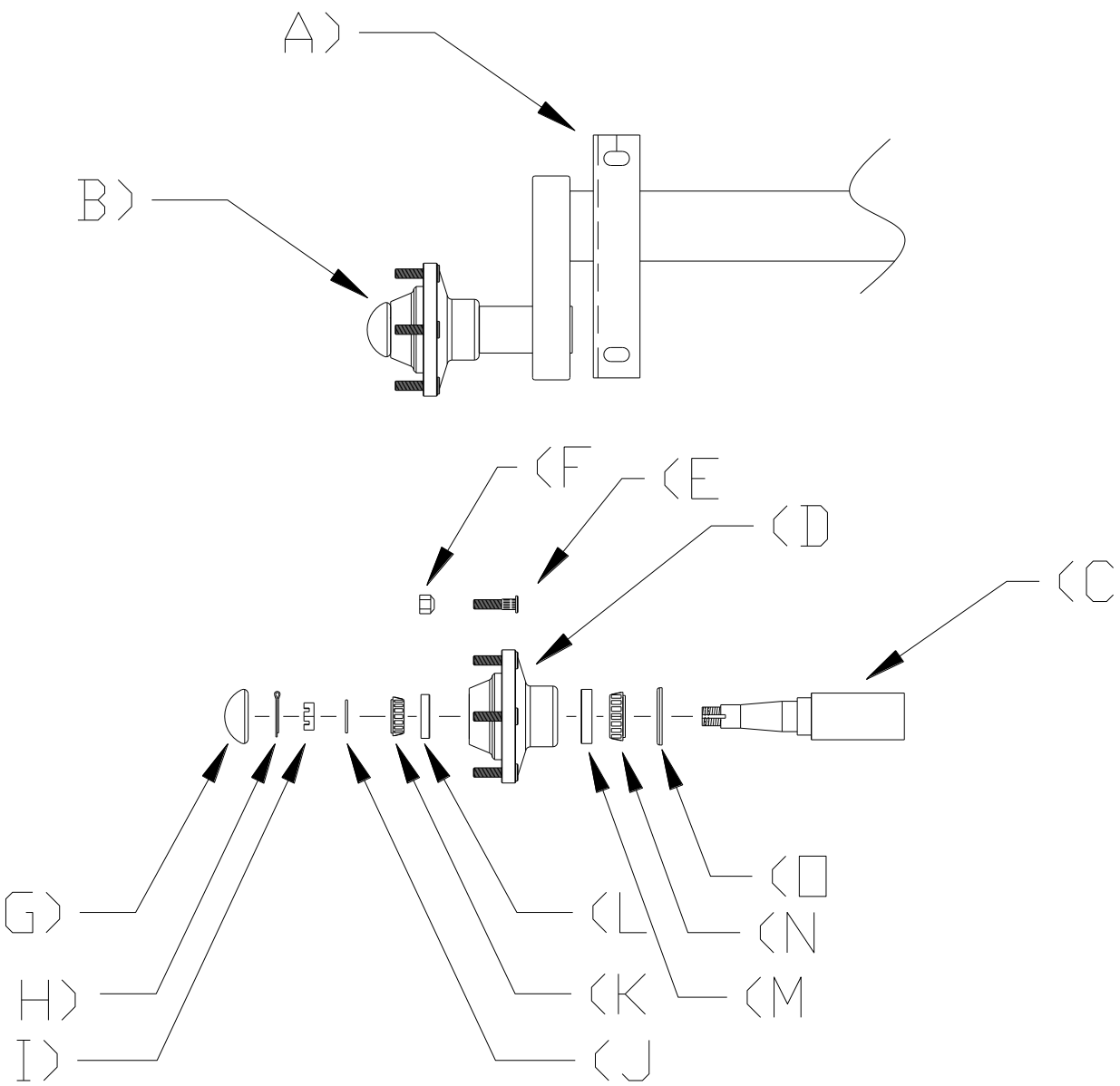


Section 3

Axle Assembly

Complete Axle Assembly

7,000 LB. HIGH SPEED AXLES
AXLE-HUB ASSY.



Axle Assembly Parts List

Ref.	Part Number	Part Description	QTY
A	800-8-101	7000 # High Speed Axle Assembly Complete	1
B	800-8-102	6 Bolt Hub Assy. (High Speed)	2
C	800-8-103	Spindle (High Speed)	2
D	800-8-104	Hub Only (High Speed)	2
E	800-8-105	Wheel Stud (High Speed)	12
F	800-8-106	Wheel Nut *Torque to 110-125 ft•lbs	12
G	800-8-107	Hub Cap (High Speed)	2
H	800-8-108	Cotter Pin	2
I	800-8-109	Slotted Nut (High Speed)	2
J	800-8-110	Washer (High Speed)	2
K	800-8-111	Outer Cone (High Speed)	2
L	800-8-112	Outer Race (High Speed)	2
M	800-8-113	Inner Race (High Speed)	2
N	800-8-114	Inner Cone (High Speed)	2
O	800-8-115	Oil Seal (High Speed)	2
*		245/65R16 Tire and Wheel	2

*** Not Shown**

Section 4

Operation & Maintenance

Basic Operation of Chandler Litter Conveyor

Basic Start Up:

1) Starting Gas Engine

A) Follow engine manufactures supplied manual.

2) Adjusting Discharge Height

A) Using the raise and lower valve (located in front of the engine) adjust conveyor to desired discharge height.

3) Starting Conveyor Chain

A) Start Conveyor by moving the lever on the Flow Control Valve from 0.

4) Setting Engine Speed

A) Using Engine Throttle Control set engine to desired run RPM.

5) Stopping Conveyor Chain

A) Turn off flow control valve
B) Lower conveyor to rest position
C) Shut off engine

Maintenance

We are pleased you selected our equipment. We feel, as we are sure you do, that equipment must be maintained properly and made to last as long as possible. Outlined below are areas to be properly maintained.

1) Bearings:

Although Chandler conveyors come with factory pre-greased bearings, we recommend that you grease all bearings before using your conveyor.

Do NOT over grease bearings

Only one shot of grease per day.
Over greasing bearings will shorten the life of the bearings.

2) Hydraulic System:

Hydraulic filters should be changed every 120-200 hours or every four months.

Chandler conveyors come with 10-micron filters.
Use of filters not meeting these specifications could damage hydraulic components and void warranty.

Hydraulic Oil

Kendall Four Seasons
ISO VG 46
SAE 15W

Hydraulic Oil Level – Chandler conveyors come with oil level sight gauge.

Oil level should be to the top line on the gauge. Never let oil level get less than half way down on sight gauge.

3.) Fuel:

Chandler Equipment recommends using Ethanol-Free fuel in your Honda GX630 engine.

Please use fuel stabilizer when storing.

Section 5

Honda GX630 – Gas Engine

INTRODUCTION

Thank you for purchasing a Honda engine. We ant to help you to get the best results from your ne engine and to operate it safely. This manual contains information on ho to do that please read it carefully before operating the engine. If a problem should arise or if you have any uestions 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. Honda Motor Co. Ltd. reserves the right to make changes at any time ithout notice and ithout incurring any obligation. No part of this publication may be reproduced ithout ritten permission.

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

Revie the instructions provided ith the e uipment po ered by this engine for any additional information regarding engine startup shutdo n operation adjustments or any special maintenance instructions.

United States Puerto Rico and U.S. Virgin Islands
We suggest you read the arranty policy to fully understand its coverage and your responsibilities of o nership. The arranty policy is a separate document that should have been given to you by your dealer.

SAFETY MESSAGES

Your safety and the safety of others are 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 ords DANGER WARNING or CAUTION.

These signal ords mean

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

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

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

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

DAMAGE PREVENTION MESSAGES

You ill also see other important messages that are preceded by the ord NOTICE.

This ord means

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

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

HONDA

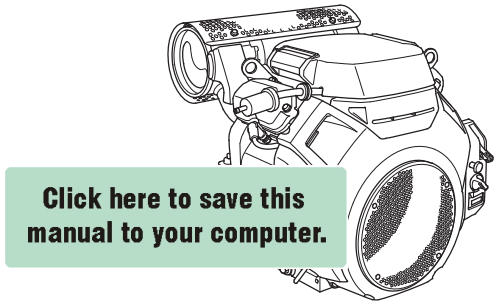
ENGLISH

FRANÇAIS

ESPAÑOL

OWNER'S MANUAL
MANUEL DE L'UTILISATEUR
MANUAL DEL PROPIETARIO

GX630 · GX660 · GX690



Click here to save this manual to your computer.

⚠ WARNING: ⚠

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

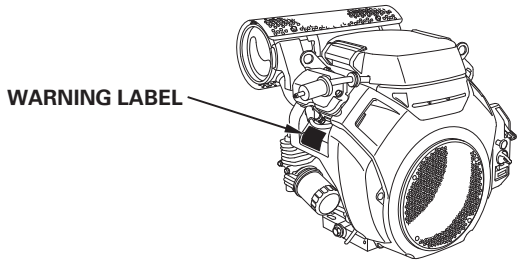
CONTENTS

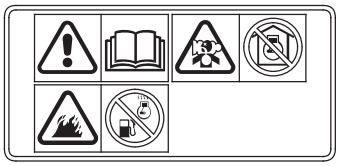
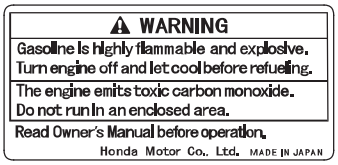
SAFETY INFORMATION

- Understand the operation of all controls and learn ho to stop the engine uickly in case of emergency. Make sure the operator receives ade uate instruction before operating the e uipment.
- Do not allo children to operate the engine. Keep children and pets a ay from the area of operation.
- Your engine's exhaust contains poisonous carbon monoxide. Do not run the engine ithout ade uate ventilation and never run the engine indoors.
- The engine and exhaust become very hot during operation. Keep the engine at least meter (3 feet) a ay from buildings and other e uipment during operation. Keep flammable materials a ay and do not place anything on the engine hile it is running.

SAFETY LABEL LOCATION

This label arns you of potential hazards that can cause serious injury. Read it carefully.
If the label comes off or becomes hard to read contact your Honda servicing dealer for replacement.

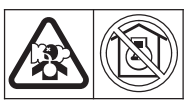


WARNING LABEL	For EU	Except EU
	attached to product	supplied ith product
	supplied ith product	attached to product
	supplied ith product	supplied ith product

Honda factory e uipped muffler.

MUFFLER CAUTION LABEL	
	not included
	supplied ith product
	supplied ith product

Gasoline is highly flammable and explosive.
Stop the engine and let cool before refueling.

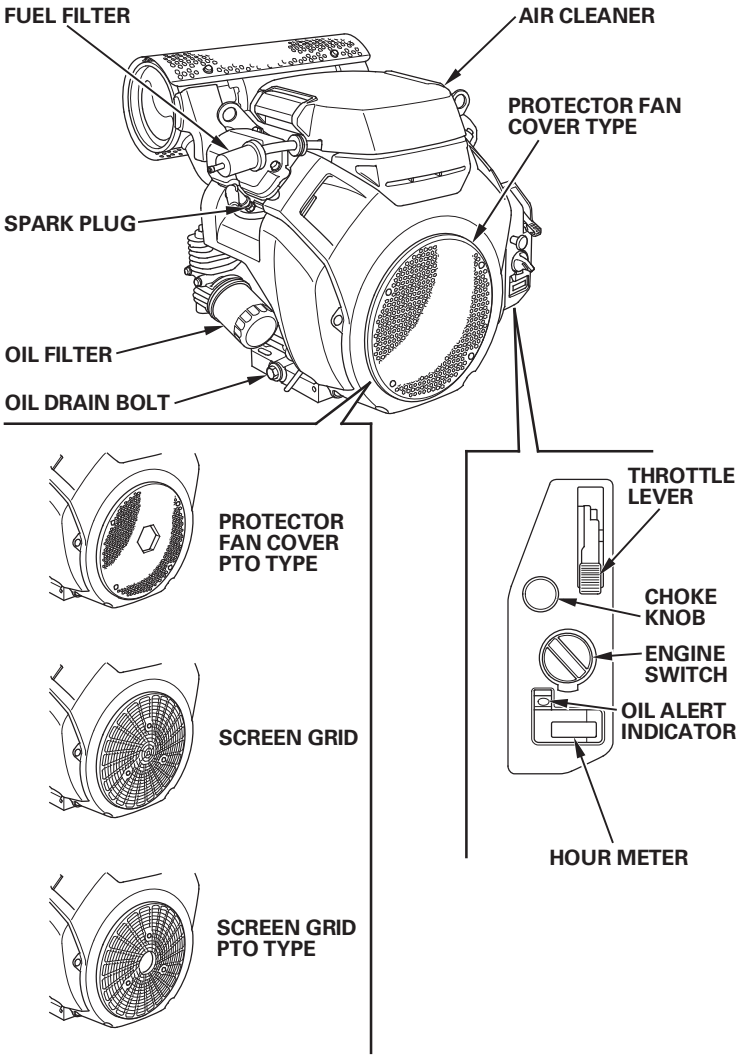


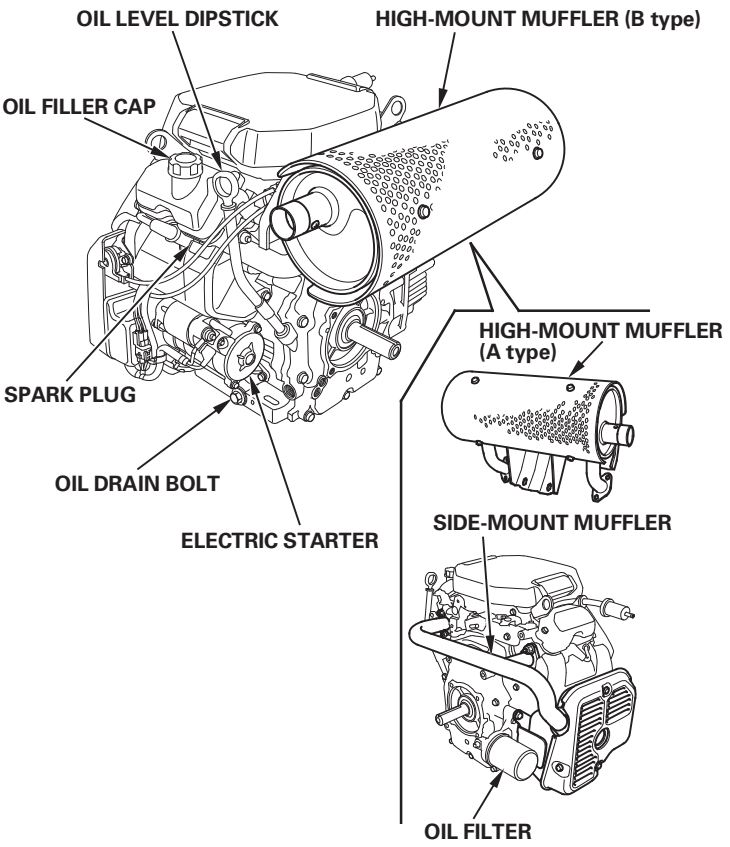
The engine emits toxic poisonous carbon monoxide gas. Do not run in an enclosed area.

Read O ner's Manual before operation.

Hot muffler can burn you.
Stay a ay if engine has been running.

COMPONENT & CONTROL LOCATION





FEATURES

Oil Alert® System (applicable types)

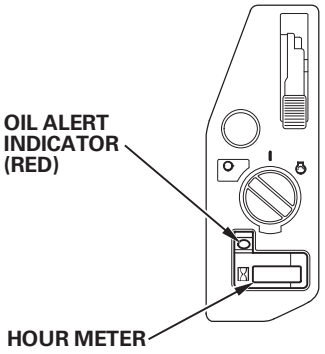
Oil Alert is a registered trademark in the United States''

The Oil Alert system is designed to prevent engine damage caused by an insufficient amount of oil in the crankcase. Before the oil level in the crankcase can fall belo a safe limit the Oil Alert indicator (red) comes on and the Oil Alert system ill automatically stop the engine (the engine s itch ill remain in the ON position).

If the engine stops and ill not restart check the engine oil level (see page) before troubleshooting in other areas.

Hour Meter

After starting the engine the elapsed time of the engine in use ill be count.
It ill not count the elapsed time of the engine operation by just turning the engine s itch ON.



Fuel-cut Solenoid

The engine is e uipped ith a fuel-cut solenoid that allo s fuel to flo to the carburetor main jet hen the engine s itch is in the ON or START position and stops the flo of fuel to the main jet hen the engine s itch is in the OFF position.

The engine must be connected to the battery to energize the fuel-cut solenoid allo ing the engine to run. If the battery is disconnected fuel flo to the carburetor ill stop.

BEFORE OPERATION CHECKS

IS YOUR ENGINE READY TO GO

For your safety and to maximize the service life of your e uipment it is very important to take a fe 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 hich you can be seriously hurt or killed.

Al ays perform a pre-operation inspection before each operation and correct any problem.

Before beginning your pre-operation checks be sure the engine is level and the engine s itch is in the OFF position.

Al ays check the follo ing items before you start the engine

Check the General Condition of the Engine

. Look around and underneath the engine for signs of oil or gasoline leaks.

. Remove any excessive dirt or debris especially around the muffler.

3. Look for signs of damage.

4. Check that all shields and covers are in place and all nuts bolts and scre s are tightened.

Check the Engine

. Check the fuel level. Starting ith a full tank ill help to eliminate or reduce operating interruptions for refueling.

. Check the engine oil level (see page). Running the engine ith a lo oil level can cause engine damage.

The Oil Alert system (applicable types) ill automatically stop the engine before the oil level falls belo safe limits. Ho ever to avoid the inconvenience of an unexpected shutdo n al ays check the engine oil level before startup.

3. Check the air filter element (see page 9). A dirty air filter element ill restrict air flo to the carburetor reducing engine performance.

4. Check the e uipment po ered by this engine.

Revie the instructions provided ith the e uipment po ered by this engine for any precautions and procedures that should be follo ed before engine startup.

OPERATION

SAFE OPERATING PRECAUTIONS

Before operating the engine for the first time please revie the *SAFETY INFORMATION* section on page and the *BEFORE OPERATION CHECKS* on page 4 .

For your safety do not operate the engine in an enclosed area such as a garage. Your engine's exhaust contains poisonous carbon monoxide gas that can collect rapidly in an enclosed area and cause illness or death.

⚠ WARNING

Exhaust contains poisonous carbon monoxide gas that can build up to dangerous levels in closed areas. Breathing carbon monoxide can cause unconsciousness or death.

Never run the engine in a closed or even partly closed area here people may be present.

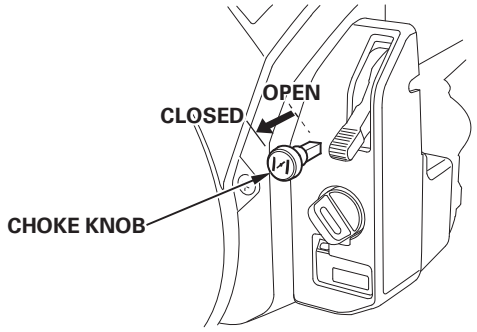
Revie the instructions provided ith the e uipment po ered by this engine for any safety precautions that should be observed ith engine startup shutdo n or operation.

Do not operate the engine on slopes greater than 0 .

STARTING THE ENGINE

. If the fuel tank is e uipped ith a valve be sure the fuel valve is in the OPEN or ON position before attempting to start the engine.

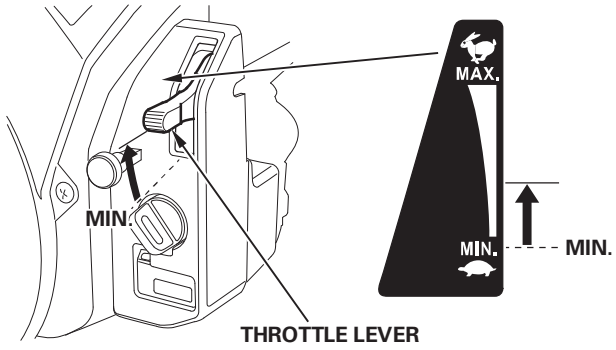
. To start a cold engine pull the choke knob out to the CLOSED position.



To restart a arm engine leave the choke knob in the OPEN position.

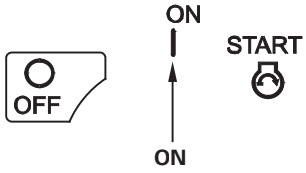
Some engine applications use a remote-mounted choke control rather than the engine-mounted choke knob sho n here. Refer to the instructions provided by the e uipment manufacturer.

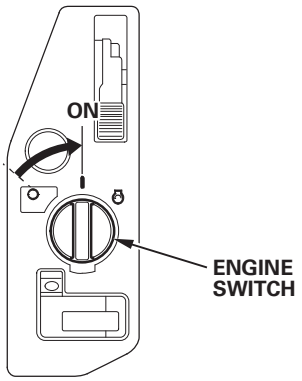
3. Move the throttle lever a ay from the MIN. position about 3 of the ay to ard the MAX. position.



Some engine applications use a remote-mounted throttle control rather than the engine-mounted throttle lever sho n here. Refer to the instructions provided by the e uipment manufacturer.

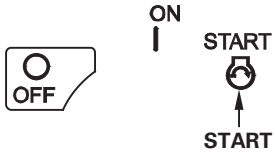
4. Turn the engine s itch to the ON position.





. Operate the starter.

Turn the engine s itch to the START position and hold it there until the engine starts.

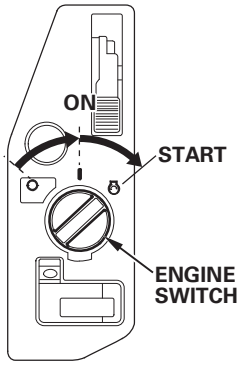


If the engine fails to start ithin seconds release the engine s itch and ait at least 0 seconds before operating the starter again.

NOTICE

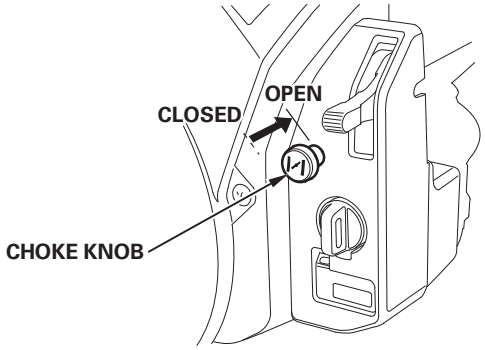
Using the electric starter for more than 5 seconds at a time will overheat the starter motor and can damage it.

When the engine starts release the engine s itch allo ing it to return to the ON position.



6. Warm up the engine for or 3 minutes.

. If the choke knob as pulled to the CLOSED position to start the engine gradually push it to the OPEN position as the engine arms up.

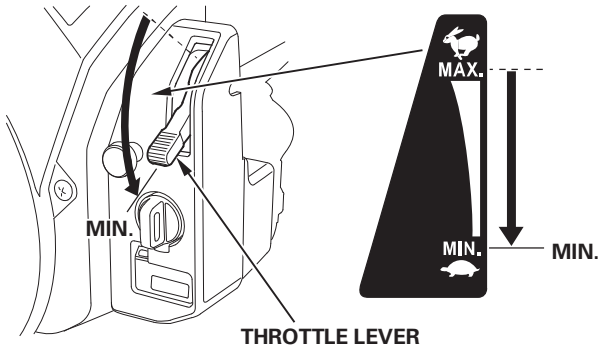


STOPPING THE ENGINE

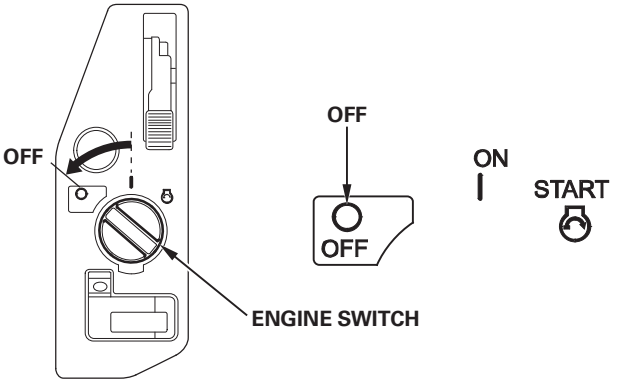
To stop the engine in an emergency simply turn the engine s itch to the OFF position. Under normal conditions use the follo ing procedure. Refer to the instructions provided by the e uipment manufacturer.

. Move the throttle lever to the MIN. position.

Some engine applications use a remote-mounted throttle control rather than the engine-mounted throttle lever sho n here.



. Turn the engine s itch to the OFF position.



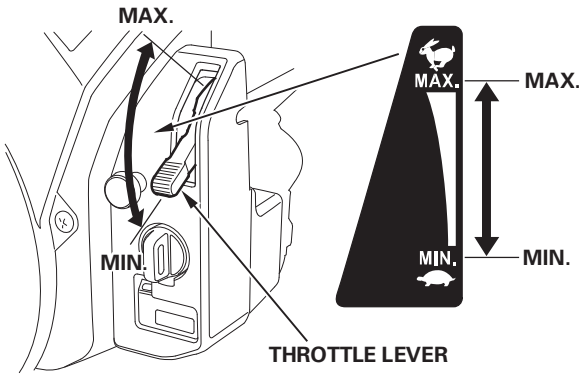
3. If the fuel tank is e uipped ith a valve turn the fuel valve to the CLOSED or OFF position.

SETTING ENGINE SPEED

Position the throttle lever for the desired engine speed.

Some engine applications use a remote-mounted throttle control rather than the engine-mounted throttle lever sho n here. Refer to the instructions provided by the e uipment manufacturer.

For engine speed recommendations refer to the instructions provided ith the e uipment po ered by this engine.



Do not disconnect the battery from the engine hile the engine is running. Disconnecting the battery causes the fuel-cut solenoid to shut off the flo of fuel to the carburetor main jet and the engine ill stop.

SERVICING YOUR ENGINE

THE IMPORTANCE OF MAINTENANCE

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

⚠ WARNING

Improper maintenance or failure to correct a problem before operation can cause a malfunction in hich you can be seriously hurt or killed.

Al ays follo the inspection and maintenance recommendations and schedules in this o ner's manual.

To help you properly care for your engine the follo ing pages include a maintenance schedule routine inspection procedures and simple maintenance procedures using basic hand tools. Other service tasks that are more difficult or re uire special tools are best handled by professionals and are normally performed by a Honda technician or other ualified 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 et or dusty conditions consult your Honda 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 follo . Ho ever e cannot arn you of every conceivable hazard that can arise in performing maintenance. Only you can decide hether or not you should perform a given task.

⚠ WARNING

Failure to properly follo maintenance instructions and precautions can cause you to be seriously hurt or killed.

Al ays follo the procedures and precautions in this o ner's manual.

SAFETY PRECAUTIONS

- Make sure the engine is off before you begin any maintenance or repairs. To prevent accidental startup disconnect the spark plug cap. This ill eliminate several potential hazards
  - —Carbon monoxide poisoning from engine exhaust. Operate outside a ay from open indo s or doors.
  - —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 re uired.

- To reduce the possibility of fire or explosion be careful hen orking around gasoline. Use only a non-flammable solvent not gasoline to clean parts. Keep cigarettes sparks and flames a ay from all fuel related parts.

Remember that an authorized Honda servicing dealer kno s your engine best and is fully e uipped to maintain and repair it.

To ensure the best uality and reliability use only ne Honda Genuine parts or their e uivalents for repair and replacement.

MAINTENANCE SCHEDULE

REGULAR SERVICE PERIOD (3) Perform at every indicated month or operating hour interval hichever comes first. / ITEM		Each Use	First Month or 0 Hrs	Every 6 Months or 00 Hrs	Every Year or 300 Hrs	Every Years or 00 Hrs	Refer to Page
Engine oil	Check level	○					
	Change		○	○			
Engine oil filter	Replace	Every 00 Hrs.					9
Air cleaner	Check	○					9
	Clean			○ ( )			9
	Replace					○ *	
Spark plug	Check-adjust			○			0
	Replace				○		
Spark arrester (applicable types)	Clean			○ (4)			
Idle speed	Check-adjust				○ ( )		* *
Valve clearance	Check-adjust				○ ( )		* *
Combustion chamber	Clean	After every 000 Hrs. ( )					* *
Fuel filter	Replace				○ ( )		* *
Fuel tube	Check	Every years (Replace if necessary) ( )					* *

* Replace the paper filter element only.
* * Refer to the Shop Manual.

( ) Service more fre uently hen used in dusty areas.

( ) These items should be serviced by your Honda servicing dealer unless you have the proper tools and are mechanically proficient. Refer to the Honda shop manual for service procedures.

(3) For commercial use log hours of operation to determine proper maintenance intervals.

(4) In Europe and other countries here the machinery directive 006 4 EC is enforced this cleaning should be done by your servicing dealer.

Failure to follo this maintenance schedule could result in non-arrantable failures.

REFUELING

Recommended Fuel

Unleaded gasoline		
	U.S.	Pump octane rating 6 or higher
	Except U.S.	Research octane rating 9 or higher
		Pump octane rating 6 or higher

This engine is certified to operate on unleaded gasoline ith a pump octane rating of 6 or higher (a research octane rating of 9 or higher).
Refuel in a ell ventilated area ith the engine stopped. If the engine has been running allo it to cool first. Never refuel the engine inside a building here gasoline fumes may reach flames or sparks.
You may use unleaded gasoline containing no more than 0 ethanol (E 0) or methanol by volume. In addition methanol must contain cosolvents and corrosion inhibitors. Use of fuels ith content of ethanol or methanol greater than sho n above may cause starting and or performance problems. It may also damage metal rubber and plastic parts of the fuel system. Engine damage or performance problems that result from using a fuel ith percentages of ethanol or methanol greater than sho n above are not covered under the Warranty.

If your e uipment ill be used on an infre uent or intermittent basis please refer to the fuel section of the STORING YOUR ENGINE chapter (see page) for additional information regarding fuel deterioration.

⚠ WARNING

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

- Stop the engine and keep heat sparks and flame a ay.
- 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.**

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

With the engine stopped and on a level surface remove the fuel filler cap and check the fuel level. Refill the tank if the fuel level is lo .
Refer to the instructions provided ith the e uipment po ered by this engine for refuelling.

Refuel in a ell-ventilated area before starting the engine. If the engine has been running allo it to cool. Refuel carefully to avoid spilling fuel. It may be necessary to lo er the fuel level depending on operating conditions. After refueling tighten the fuel tank cap securely.

Keep gasoline a ay from appliance pilot lights barbecues electric appliances po er tools etc.

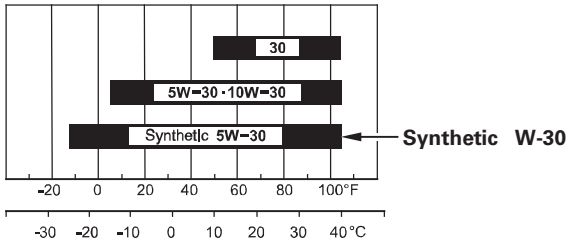
Spilled fuel is not only a fire hazard it causes environmental damage. Wipe up spills immediately.

ENGINE OIL

Oil is a major factor affecting performance and service life. Use 4-stroke automotive detergent oil.

Recommended Oil

Use 4-stroke motor oil that meets or exceeds the re uirements for API service category S or later (or e uivalent). Al ays check the API service label on the oil container to be sure it includes the letters S or later (or e uivalent).



SAE 0W-30 or W-30 is recommended for general use. Use a full synthetic W-30 for starting operating temperatures bet een F (— C) and — 3 F (— C). Other viscosities sho n in the chart may be used hen the average temperature in your area is ithin the indicated range.

Oil Level Check

Check the engine oil level ith the engine stopped and in a level position.

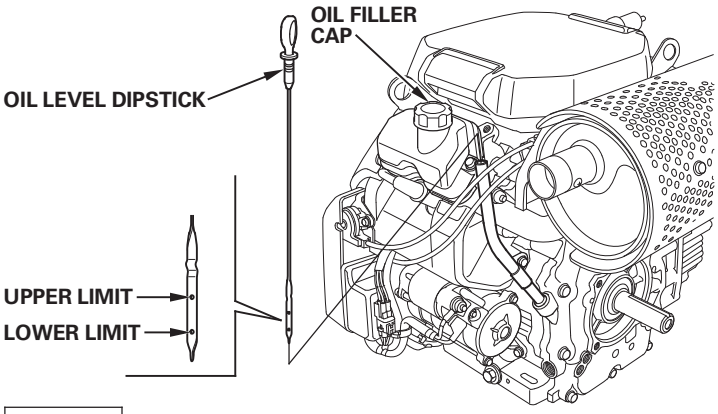
. Start the engine and let it idle for or minutes. Stop the engine and ait for or 3 minutes.

. Remove the oil level dipstick and ipe it clean.

3. Fully insert the oil level dipstick then remove it to check the oil level.

4. If the oil level is lo remove the oil filler cap and fill ith the recommended oil to the upper limit mark on the oil level dipstick.

. Reinstall the oil level dipstick and oil filler cap.



NOTICE

Running the engine with a low oil level can cause engine damage. This type of damage is not covered by the **Distributor's Limited Warranty.**

The Oil Alert system (applicable types) ill automatically stop the engine before the oil level falls belo the safe limit. Ho ever to avoid the inconvenience of an unexpected shutdo n al ays check the engine oil level before startup.

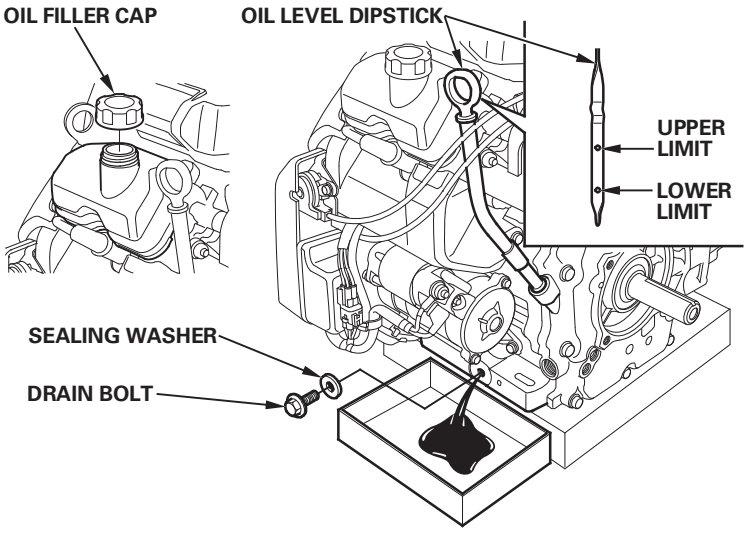
Oil Change

Drain the used oil hen the engine is arm. Warm oil drains uickly and completely.

. Place a suitable container belo the engine to catch the used oil then remove the oil filler cap drain bolt and sealing asher.

. Allo the used oil to drain completely then reinstall the drain bolt and ne sealing asher and tighten the drain bolt securely.

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



3. With the engine in a level position fill ith the recommended oil to the upper limit mark on the oil level dipstick.

NOTICE

Running the engine with a low oil level can cause engine damage. This type of damage is not covered by the **Distributor's Limited Warranty.**

The Oil Alert system (applicable types) ill automatically stop the engine before the oil level falls belo the safe limit. Ho ever to avoid the inconvenience of an unexpected shutdo n fill to the upper limit and check the oil level regularly.

4. Reinstall the oil filler cap and oil level dipstick securely.

OIL FILTER

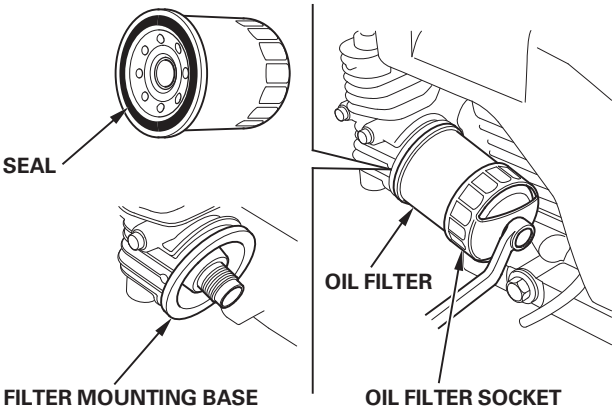
Change

. Drain the engine oil and retighten the drain bolt securely.

. Remove the oil filter and drain the oil into a suitable container. Dispose the used oil and filter in a manner compatible ith the environment.

NOTICE

Use an oil filter socket, rather than a strap wrench, to avoid striking and damaging the oil pressure switch.



3. Clean the filter mounting base and coat the seal of the ne oil filter ith clean engine oil.

NOTICE

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

4. Scre on the ne oil filter by hand until the seal contacts the filter mounting base then use an oil filter socket tool to tighten the filter an additional 3 4 turn.

Oil filter tightening tor ue N·m (. kgf·m 9 lbf·ft)

. Refill the crankcase ith the specified amount of the recommended oil (see page). Reinstall the oil filler cap and oil level dipstick.

6. Start the engine and check for leaks.

. Stop the engine and check the oil level as described on page . If necessary add oil to bring the oil level to the upper limit mark on the oil level dipstick.

AIR CLEANER

A dirty air cleaner ill restrict air flo to the carburetor reducing engine performance. If you operate the engine in very dusty areas clean the air filter more often than specified in the MAINTENANCE SCHEDULE (see page).

NOTICE

Operating the engine without an air filter, or with a damaged air filter, will allow dirt to enter the engine, causing rapid engine wear. This type of damage is not covered by the **Distributor's Limited Warranty.**

Inspection

Remove the air cleaner cover and inspect the filter elements. Clean or replace dirty filter elements. Al ays replace damaged filter elements.

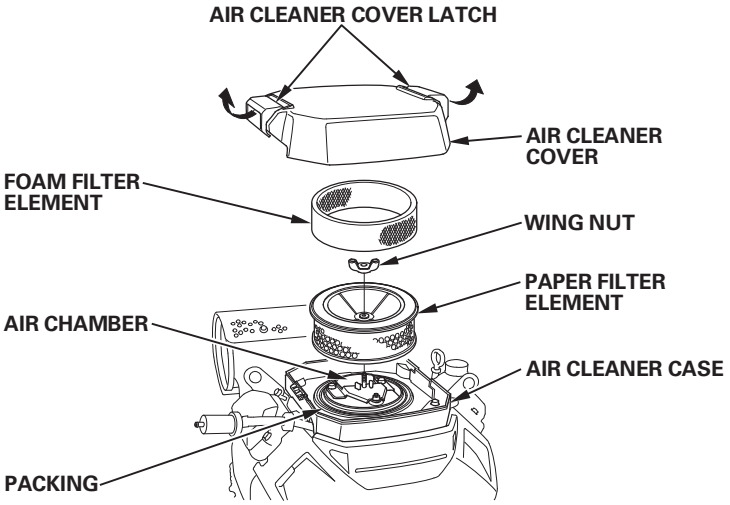
Cleaning

. Pull the air cleaner cover latch to the unlocked position and remove the cover.

. Remove the ing nut from the paper filter element.

3. Remove the paper filter element and foam filter element from the air cleaner case.

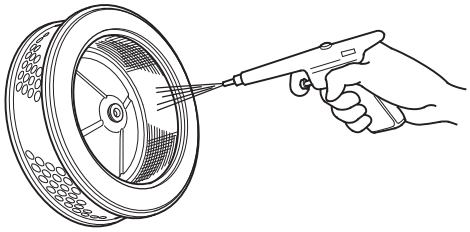
4. Remove the foam filter element from the paper filter element.



. Inspect both filter elements and replace them if they are damaged. Al ays replace the paper filter element at the scheduled interval (see page).

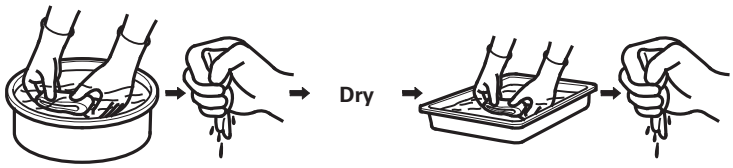
6. Clean the filter elements if they are to be reused.

Paper filter element Tap the filter element several times on a hard surface to remove dirt or blo compressed air not exceeding 0 kPa (. kgf cm² 30 psi) through the filter element from the air cleaner case side.



Never try to brush off dirt brushing ill force dirt into the fibers. Replace the paper filter element if it is excessively dirty.

Foam filter element Clean in arm soapy ater rinse and allo to dry thoroughly. Or clean in non-flammable solvent and allo to dry. Dip the filter element in clean engine oil then s ueeze out all excess oil. The engine ill smoke hen started if too much oil is left in the foam.



. Wipe dirt from the inside of the air cleaner body and cover using a moist rag. Be careful to prevent dirt from entering the air chamber that leads to the carburetor.

. Place the foam filter element over the paper filter element and reinstall the assembled filter element. Be sure the packing is in place beneath the filter element. Tighten the ing nut securely.

9. Lock the air cleaner cover latch securely.

SPARK PLUG

Recommended Spark Plug FR F (NGK)

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

NOTICE

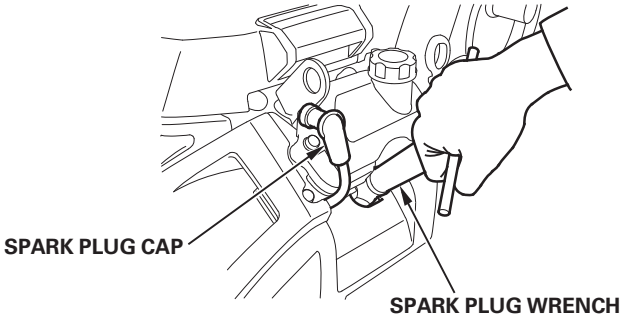
Incorrect spark plugs can cause engine damage.

If the engine has been running let it cool before servicing the spark plugs.

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

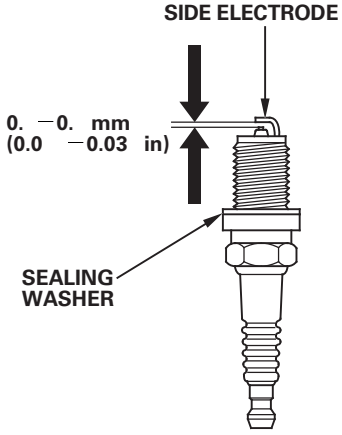
. Disconnect the spark plug caps and remove any dirt from around the spark plug area.

. Remove the spark plugs ith a -inch spark plug rench.



3. Inspect the spark plugs. Replace them if damaged badly fouled if the sealing asher is in poor condition or if the electrode is orn.

4. Measure the spark plug electrode gaps ith a ire-type feeler gauge. Correct the gap if necessary by carefully bending the side electrode.
The gap should be
0. —0. mm (0.0 —0.03 in)



. Install the spark plug carefully by hand to avoid cross-threading.

6. After the spark plug is seated tighten ith a -inch spark plug rench to compress the sealing asher.

When installing a ne spark plug tighten turn after the spark plug seats to compress the asher.

When reinstalling the original spark plug tighten — 4 turn after the spark plug seats to compress the asher.

NOTICE

A loose spark plug can overheat and damage the engine. Overtightening the spark plug can damage the threads in the cylinder head.

. Attach the spark plug caps to the spark plugs.

SPARK ARRESTER (applicable types)

In Europe and other countries here the machinery directive 006 4 EC is enforced this cleaning should be done by your servicing dealer.

Your engine is not factory-e uipped ith a spark arrester. The spark arrester is optional part. In some areas it is illegal to operate an engine ithout a spark arrester. Check local la s and regulations. A spark arrester is available from authorized Honda servicing dealers.

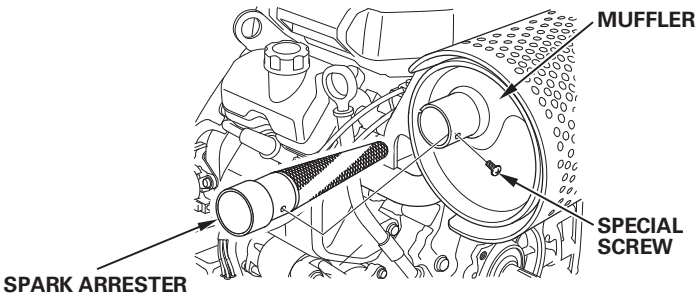
The spark arrester must be serviced every 00 hours to keep it functioning as designed.

If the engine has been running the muffler ill be hot. Allo it to cool before servicing the spark arrester.

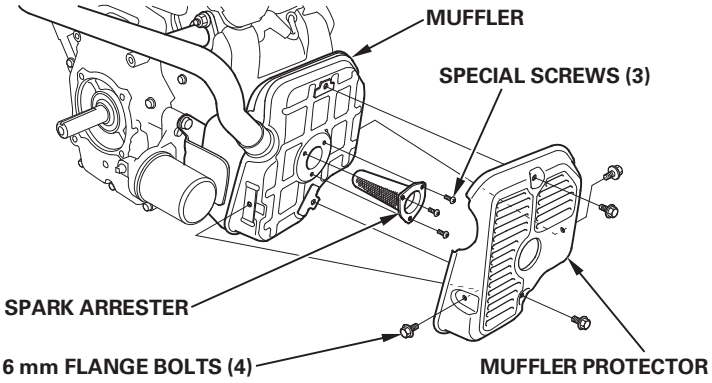
Spark Arrester Cleaning & Inspection

. Remove the spark arrester

HIGH-MOUNT MUFFLER TYPE Remove the special scre from the muffler and remove the spark arrester.



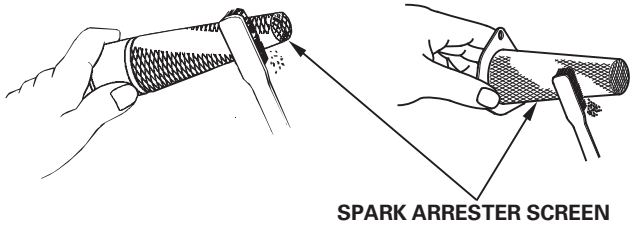
SIDE-MOUNT MUFFLER TYPE Remove the 6 mm flange bolts from the muffler protector and remove the muffler protector. Remove the special scre s from the spark arrester and remove the spark arrester from the muffler.



. Use a brush to remove carbon deposits from the spark arrester screen. Be careful to avoid damaging the screen.

The spark arrester must be free of breaks and holes. Replace the spark arrester if it is damaged.

HIGH-MOUNT MUFFLER TYPE **SIDE-MOUNT MUFFLER TYPE**



3. Install the spark arrester and muffler protector in the reverse order of disassembly.

HELPFUL TIPS & SUGGESTIONS

STORING YOUR ENGINE

Storage Preparation

Proper storage preparation is essential for keeping your engine trouble-free and looking good. The follo ing steps ill help to keep rust and corrosion from impairing your engine's function and appearance and ill make the engine easier to start hen you use it again.

Cleaning

If the engine has been running allo it to cool for at least half an hour before cleaning. Clean all exterior surfaces touch up any damaged paint and coat other areas that may rust ith a light film of oil.

NOTICE

Using a garden hose or pressure washing equipment can force water into the air cleaner or muffler opening. Water in the air cleaner will soak the air filter, and water that passes through the air filter or muffler can enter the cylinder, causing damage.

Fuel

NOTICE

Depending on the region where you operate your equipment, fuel formulations may deteriorate and oxidize rapidly. Fuel deterioration and oxidation can occur in as little as 30 days and may cause damage to the carburetor and/or fuel system. Please check with your servicing dealer for local storage recommendations.

Gasoline ill oxidize and deteriorate in storage. Deteriorated gasoline ill 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 ithout causing functional problems ill vary ith such factors as gasoline blend your storage temperatures and hether the fuel tank is partially or completely filled. The air in a partially filled fuel tank promotes fuel deterioration. Very arm storage temperatures accelerate fuel deterioration. Fuel deterioration problems may occur ithin a fe months or even less if the gasoline as not fresh hen 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.*

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.

Adding a Gasoline Stabilizer to Extend Fuel Storage Life

When adding a gasoline stabilizer fill the fuel tank ith fresh gasoline. If only partially filled air in the tank ill 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 follo ing the manufacturer's instructions.

. After adding a gasoline stabilizer run the engine outdoors for 0 minutes to be sure that treated gasoline has replaced the untreated gasoline in the carburetor.

3. Stop the engine and if the fuel tank is e uipped ith a fuel valve move the fuel valve to the CLOSED or OFF position.

Draining the Fuel Tank and Carburetor

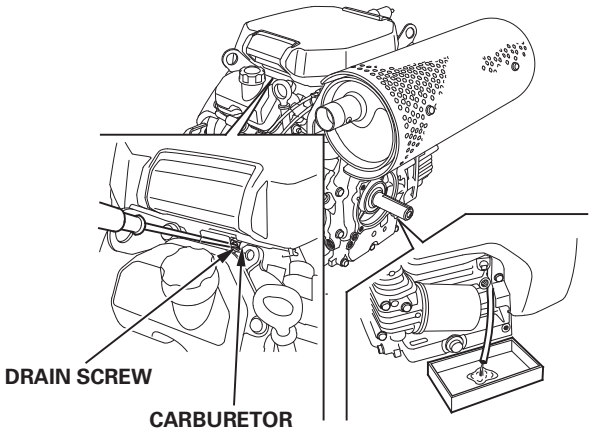
⚠ WARNING

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

- **Stop the engine and keep heat sparks and flame a ay.**
- **Handle fuel only outdoors.**
- **Wipe up spills immediately.**

. **Disconnect the fuel line to the engine and drain the fuel tank into an approved gasoline container. If the fuel tank is e uipped ith a valve turn the fuel valve to the OPEN or ON position to enable draining. After draining is completed reconnect the fuel line.**

. **Loosen the carburetor drain scre and drain the carburetor into an approved gasoline container. After draining is completed tighten the carburetor drain scre .**



Engine Oil

. **Change the engine oil (see page).**

. **Remove the spark plugs (see page 0).**

3. **Pour — 0 cm³ (— 0 cc — teaspoons) of clean engine oil into each cylinder.**

4. **Turn the engine for a fe seconds by turning the engine s itch to the START position to distribute the oil in the cylinders.**

. **Reinstall the spark plugs.**

Storage Precautions

If your engine ill be stored ith gasoline in the fuel tank and carburetor it is important to reduce the hazard of gasoline vapor ignition. Select a ell ventilated storage area a ay from any appliance that operates ith a flame such as a furnace ater heater or clothes dryer. Also avoid any area ith a spark-producing electric motor or here po er tools are operated.

If possible avoid storage areas ith high humidity because that promotes rust and corrosion.

Keep the engine level in storage. Tilting can cause fuel or oil leakage.

Unless all fuel has been drained from the fuel tank leave the fuel valve in the CLOSED or OFF position to reduce the possibility of fuel 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 ill trap moisture around the engine promoting rust and corrosion.

If installed remove the battery and store it in a cool dry place. Recharge the battery once a month hile the engine is in storage. This ill help to extend the service life of the battery.

Removal from Storage

Check your engine as described in the *BEFORE OPERATION CHECKS* section of this manual (see page 4).

If the fuel as drained during storage preparation fill the tank ith 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 cylinders ere coated ith oil during storage preparation the engine may smoke briefly at startup. This is normal.

TRANSPORTING

If the engine has been running allo it to cool for at least minutes before loading the engine-po ered e uipment on the transport vehicle. A hot engine and exhaust system can burn you and can ignite some materials.

Keep the engine level hen transporting to reduce the possibility of fuel leakage. If the fuel tank is e uipped ith a fuel valve move the fuel valve lever to the CLOSED or OFF position.

TAKING CARE OF UNEXPECTED PROBLEMS

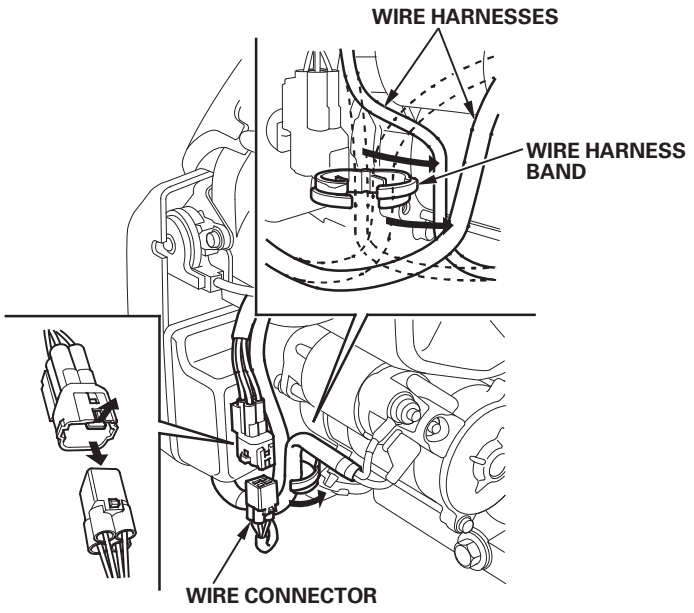
ENGINE WILL NOT START	Possible Cause	Correction
. Electric starting Check battery and fuse.	Battery discharged.	Recharge battery.
	Fuse burnt out.	Replace fuse.
. Check control positions.	Fuel valve CLOSED or OFF. (If e uipped)	Move lever to OPEN or ON position.
	Choke OPEN.	Move knob to CLOSED position unless the engine is arm (p. 4).
	Engine s itch OFF.	Turn engine s itch to ON position (p.).
3. Check engine oil level.	Engine oil level lo (Oil Alert stops engine).	Fill ith the recommended oil to the proper level (p.).
4. Check fuel.	Out of fuel.	Refuel (p.).
	Stale fuel engine stored ithout treating or draining gasoline or refueled ith stale gasoline.	Drain fuel tank and carburetor (p.). Refuel ith fresh gasoline (p.).
. Remove and inspect spark plugs.	Spark plugs faulty fouled or improperly gapped.	Gap or replace spark plugs (p. 0).
	Spark plugs et ith fuel (flooded engine).	Dry and reinstall spark plugs (p. 0). Start engine ith throttle lever in MAX. position (p. 6).
6. Take engine to an authorized Honda servicing dealer or refer to shop manual.	Fuel filter restricted carburetor malfunction ignition malfunction valves stuck etc.	Replace or repair faulty components as necessary.

ENGINE LACKS POWER	Possible Cause	Correction
. Check air filter.	Filter element(s) restricted.	Clean or replace filter element(s) (p. 9).
. Check fuel.	Stale fuel engine stored ithout treating or draining gasoline or refueled ith stale gasoline.	Drain fuel tank and carburetor (p.). Refuel ith fresh gasoline (p.).
3. Take engine to an authorized Honda servicing dealer or refer to shop manual.	Fuel filter restricted carburetor malfunction ignition malfunction valves stuck etc.	Replace or repair faulty components as necessary.

FUSE REPLACEMENT

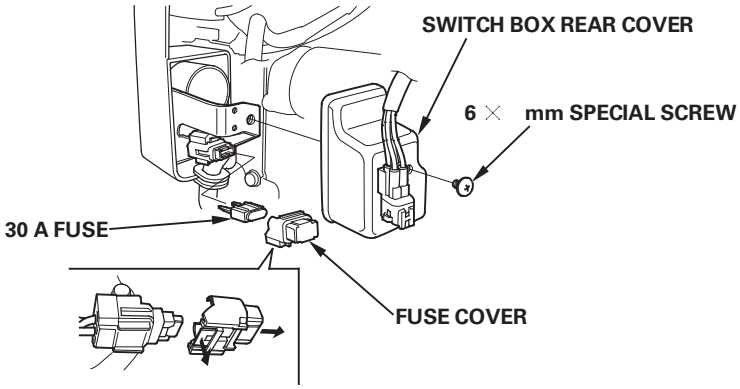
The electric starter relay circuit and battery charging circuit are protected by a 30-ampere fuse. If the fuse burns out the electric starter ill not operate.

. Disconnect the ire connector and remove the ire harnesses from the ire harness band.



. Remove the 6 × mm special scre from the rear cover of the engine s itch box and remove the rear cover.

3. Remove the fuse cover and inspect the fuse.



If the fuse is burnt out remove the fuse cover then pull out and discard the burnt-out fuse. Install a ne 30-ampere fuse and reinstall the fuse cover.

NOTICE

Never use a fuse with a rating greater than 30 amperes. Serious damage to the electrical system or a fire could result.

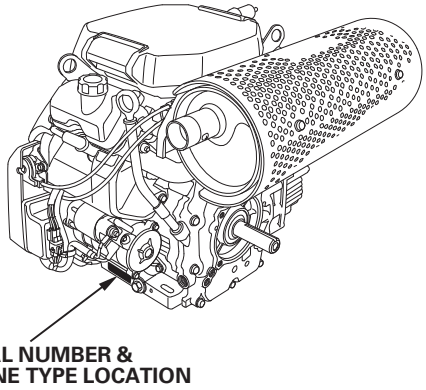
4. Reinstall the rear cover. Install the 6 × mm special scre and tighten it securely.

Fre uent fuse failure usually indicates a short circuit or an overload in the electrical system. If the fuse burns out fre uently take the engine to a Honda servicing dealer for repair.

TECHNICAL INFORMATION

Serial Number Location

Record the engine serial number type and purchase date in the spaces belo . You ill need this information hen ordering parts and hen making technical or arranty in uiries.



**SERIAL NUMBER &
ENGINE TYPE LOCATION**

Engine serial number —

Engine type

Date Purchased

Battery Connections for Electric Starter

Recommended Battery

GX630	V—36 Ah
GX660	
GX690	

Be careful not to connect the battery in reverse polarity as this ill short circuit the battery charging system. Al ays connect the positive (+) battery cable to the battery terminal before connecting the negative (—) battery cable so your tools cannot cause a short circuit if they touch a grounded part hile tightening the positive (+) battery cable end.

⚠ WARNING

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

Keep all sparks open flames and smoking materials a ay from the battery.

WARNING Battery posts terminals and related accessories contain lead and lead compounds. Wash hands after handling.

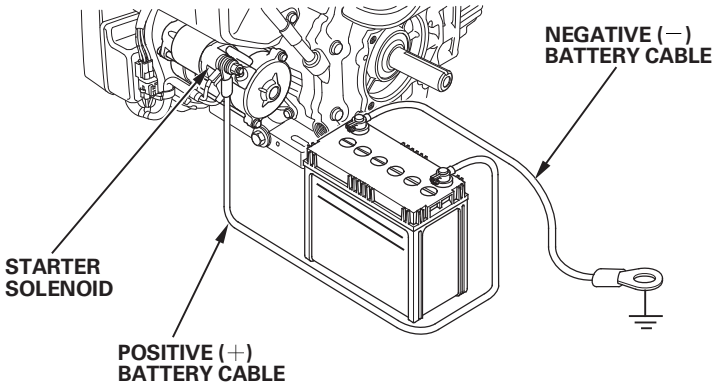
. Connect the battery positive (+) cable to the starter solenoid terminal as sho n.

. 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 sho n.

4. Connect the battery negative (—) cable to the battery negative (—) terminal as sho n.

. Coat the terminals and cable ends ith grease.



**NEGATIVE (—)
BATTERY CABLE**

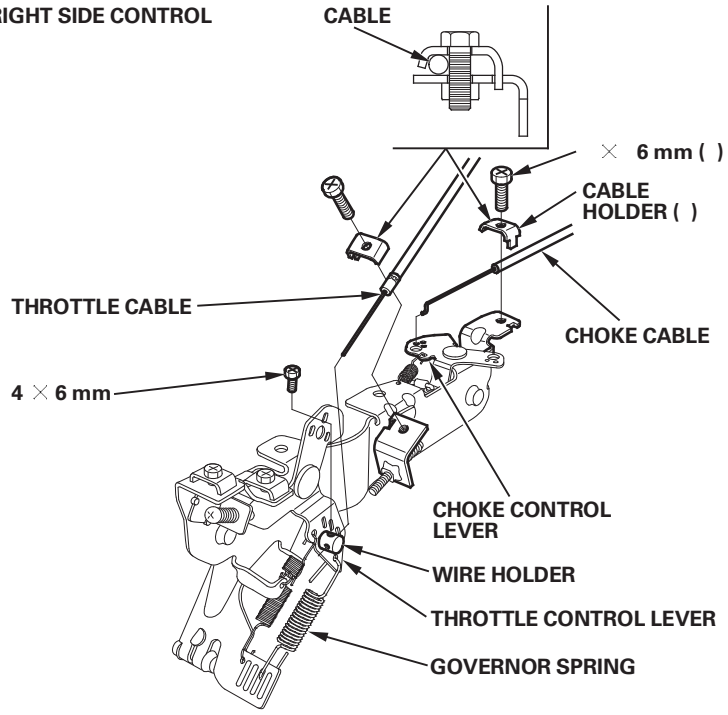
**STARTER
SOLENOID**

**POSITIVE (+)
BATTERY CABLE**

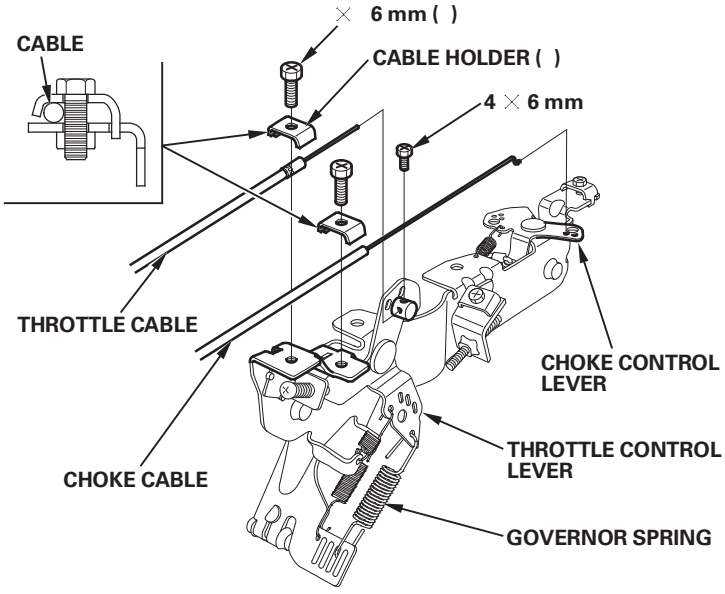
Remote Control Linkage

The throttle and choke control levers are provided ith holes for optional cable attachment. The follo ing illustrations sho installation examples for a solid ire cable and for a flexible braided ire cable.

RIGHT SIDE CONTROL

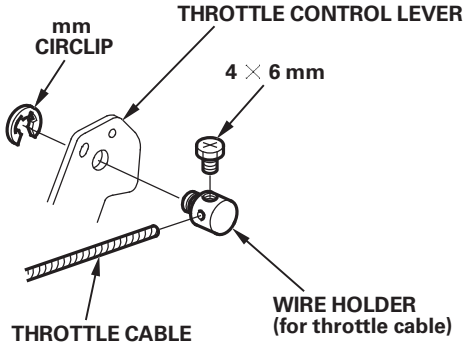


LEFT SIDE CONTROL

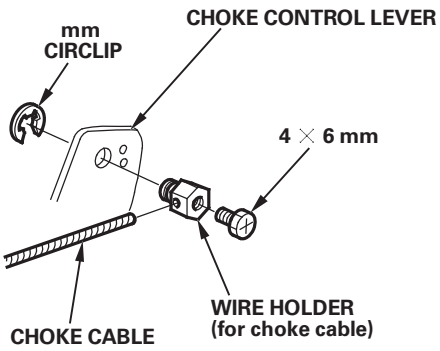


WIRE HOLDER

- For Throttle Cable



- For Choke Cable



Carburetor Modifications for High Altitude Operation

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

High altitude performance can be improved by specific modifications to the carburetor. If you al ays operate your engine at altitudes above 00 meters (000 feet) have your servicing dealer perform this carburetor modification. This engine hen operated at high altitude ith the carburetor modifications for high altitude use ill meet each emission standard throughout its useful life.

Even ith carburetor modification engine horsepo er ill decrease about 3. for each 300 meter (000 foot) increase in altitude. The effect of altitude on horsepo er ill 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 1,500 meters (5,000 feet) with a modified carburetor may cause the engine to overheat and result in serious engine damage. For use at low altitudes, have your servicing dealer return the carburetor to original factory specifications.

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 hen subjected to sunlight. Carbon monoxide does not react in the same ay but it is toxic.

Honda utilizes appropriate air fuel ratios and other emissions control systems to reduce the emissions of carbon monoxide oxides of nitrogen and hydrocarbons.
Additionally Honda fuel systems utilize components and control technologies to reduce evaporative emissions.

The U.S. California Clean Air Act and Environment Canada EPA California and Canadian regulations re uire all manufacturers to furnish ritten instructions describing the operation and maintenance of emission control systems.

The follo ing instructions and procedures must be follo ed in order to keep the emissions from your Honda engine ithin the emission standards.

Tampering and Altering

Tampering ith 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 a are of any of the follo ing symptoms have your engine inspected and repaired by your 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 ere designed built and certified to conform ith EPA California (models certified for sale in California) and Canadian emission regulations. We recommend the use of Honda Genuine parts henever 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 uality may impair the effectiveness of your emission control system.

A manufacturer of an aftermarket part assumes the responsibility that the part ill not adversely affect emission performance. The manufacturer or rebuilder of the part must certify that use of the part ill not result in a failure of the engine to comply ith emission regulations.

Maintenance

Follo the maintenance schedule on page . Remember that this schedule is based on the assumption that your machine ill be used for its designed purpose. Sustained high-load or high-temperature operation or use in unusually et or dusty conditions ill re uire more fre uent service.

Air Index
(Models certified for sale in California)

An Air Index Information label is applied to engines certified to an emission durability time period in accordance ith the re uirements 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 lo er the Air Index the less pollution.

The durability description is intended to provide you ith information relating to 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* for additional information.

Descriptive Term	Applicable to Emissions Durability Period
Moderate	0 hours (0— 0 cc inclusive) hours (greater than 0 cc)
Intermediate	hours (0— 0 cc inclusive) 0 hours (greater than 0 cc)
Extended	300 hours (0— 0 cc inclusive) 00 hours (greater than 0 cc) 000 hours (cc and greater)

Specifications

GX630 (AF-Type)

Length × Width × Height	40 × 4 0 × 43 mm (.9 × 6. × . in)
Dry mass eight	44.4 kg (9 .9 lbs)
Engine type	4-stroke overhead valve cylinders (90 V-T in)
Displacement Bore × Stroke	6 .0 cm³ (4 .9 cu-in) .0 × .0 mm (3.0 × . 3 in)
Net po er (in accordance ith SAE 349*)	. kW (. PS 0. bhp) at 3 600 rpm
Max. Net tor ue (in accordance ith SAE 349*)	4 .3 N·m (4.93 kgf·m 3 .6 lbf·ft) at 00 rpm
Engine oil capacity	Without oil filter replacement . L (.6 US t .3 Imp t) With oil filter replacement . L (. US t . Imp t)
Cooling system	Forced air
Ignition system	CDI type magneto ignition
PTO shaft rotation	Counterclock ise

GX660 (TAF-Type)

Length × Width × Height	4 9 × 4 0 × 43 mm (6.9 × . × . in)
Dry mass eight	4 .3 kg (99.9 lbs)
Engine type	4-stroke overhead valve cylinders (90 V-T in)
Displacement Bore × Stroke	6 .0 cm³ (4 .9 cu-in) .0 × .0 mm (3.0 × . 3 in)
Net po er (in accordance ith SAE 349*)	6.0 kW (. PS . bhp) at 3 600 rpm
Max. Net tor ue (in accordance ith SAE 349*)	4 .3 N·m (4.93 kgf·m 3 .6 lbf·ft) at 00 rpm
Engine oil capacity	Without oil filter replacement . L (.6 US t .3 Imp t) With oil filter replacement . L (. US t . Imp t)
Cooling system	Forced air
Ignition system	CDI type magneto ignition
PTO shaft rotation	Counterclock ise

GX690 (TAF-Type)

Length × Width × Height	4 9 × 4 0 × 43 mm (6.9 × . × . in)
Dry mass eight	4 .3 kg (99.9 lbs)
Engine type	4-stroke overhead valve cylinders (90 V-T in)
Displacement Bore × Stroke	6 .0 cm³ (4 .9 cu-in) .0 × .0 mm (3.0 × . 3 in)
Net po er (in accordance ith SAE 349*)	6. kW (.4 PS . bhp) at 3 600 rpm
Max. Net tor ue (in accordance ith SAE 349*)	4 .3 N·m (4.93 kgf·m 3 .6 lbf·ft) at 00 rpm
Engine oil capacity	Without oil filter replacement . L (.6 US t .3 Imp t) With oil filter replacement . L (. US t . Imp t)
Cooling system	Forced air
Ignition system	CDI type magneto ignition
PTO shaft rotation	Counterclock ise

***The po er rating of the engine indicated in this document is the net po er output tested on a production engine for the engine model and measured in accordance ith SAE 349 at 3 600 rpm (Net Po er) and at 00 rpm (Max. Net Tor ue). Mass production engines may vary from this value.**
Actual po er output for the engine installed in the final machine ill vary depending on numerous factors including the operating speed of the engine in application environmental conditions maintenance and other variables.

Tuneup Specifications GX630 660 690

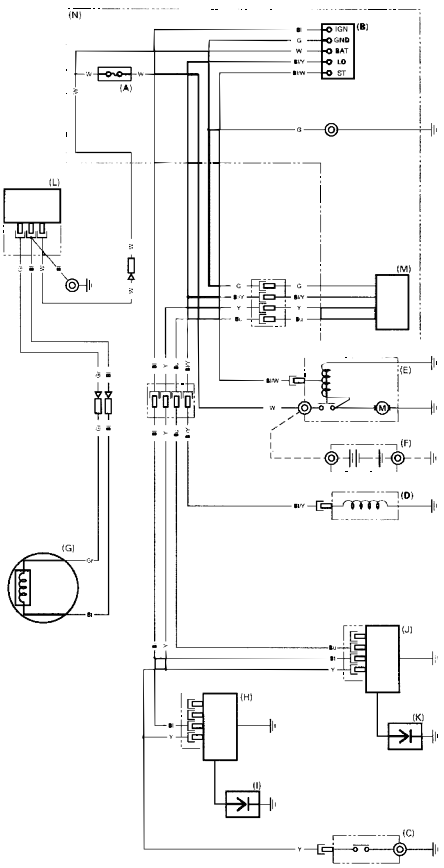
ITEM	SPECIFICATION	MAINTENANCE
Spark plug gap	0. —0. mm (0.0 —0.03 in)	Refer to page 0
Idle speed	400 ± 0 rpm	See your authorized Honda dealer
Valve clearance (cold)	IN 0.0 ± 0.0 mm EX 0. 0 ± 0.0 mm	See your authorized Honda dealer
Other specifications	No other adjustments needed.	

uick Reference Information

Fuel	Unleaded gasoline (Refer to page).	
	U. S.	Pump octane rating 6 or higher
	Except U. S.	Research octane rating 9 or higher Pump octane rating 6 or higher
Engine oil	SAE 0W-30 API S or later for general use. Refer to page .	
Spark plug	FR F (NGK)	
Maintenance	Before each use • Check engine oil level. Refer to page . • Check air filter. Refer to page 9.	
	First 0 hours • Change engine oil. Refer to page .	
	Subse uent Refer to the maintenance schedule on page .	

Wiring Diagrams

2.7 A Charge Coil and With Control Box Type

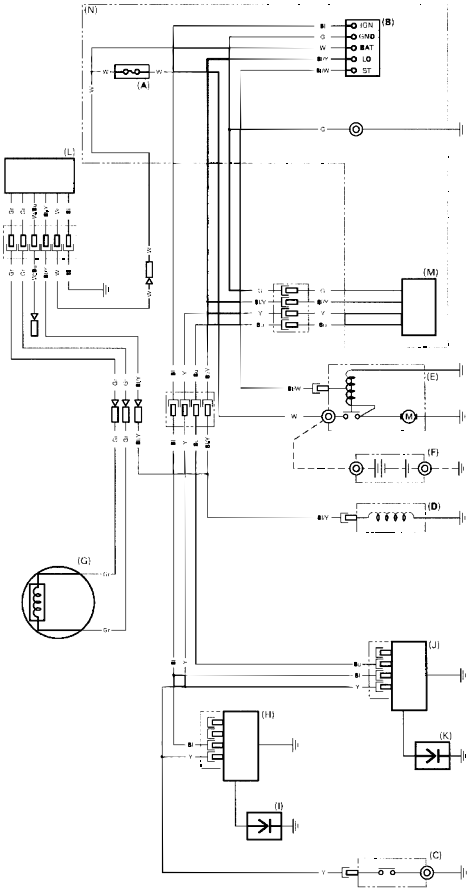


	IG	E	BAT	LO	ST
OFF					
ON					
START					

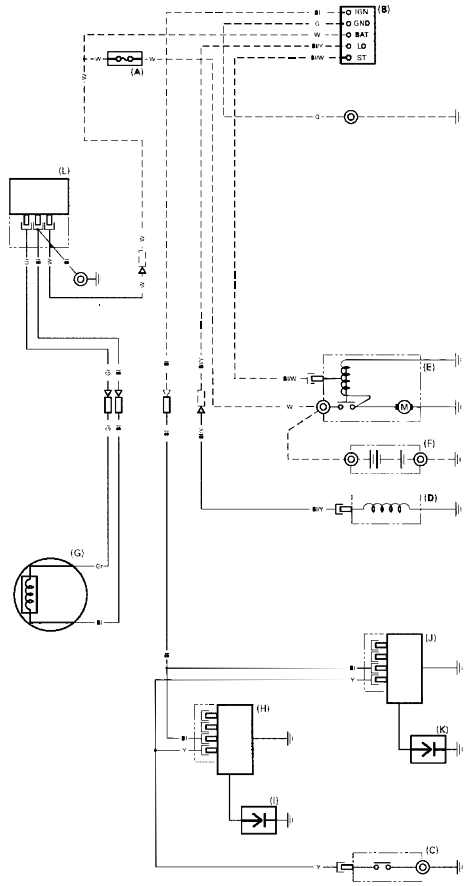
Bl	Black	Br	Bro n
Y	Yello	O	Orange
Bu	Blue	Lb	Light blue
G	Green	Lg	Light green
R	Red	P	Pink
W	White	Gr	Gray

(A)	MAIN FUSE
(B)	ENGINE SWITCH
(C)	OIL LEVEL SWITCH
(D)	FUEL CUT SOLENOID
(E)	STARTER MOTOR
(F)	BATTERY
(G)	CHARGE COIL
(H)	LEFT IGNITION COIL
(I)	LEFT SPARK PLUG
( )	RIGHT IGNITION COIL
(K)	RIGHT SPARK PLUG
(L)	REGULATOR RECTIFIER
(M)	HOUR METER
(N)	CONTROL BOX

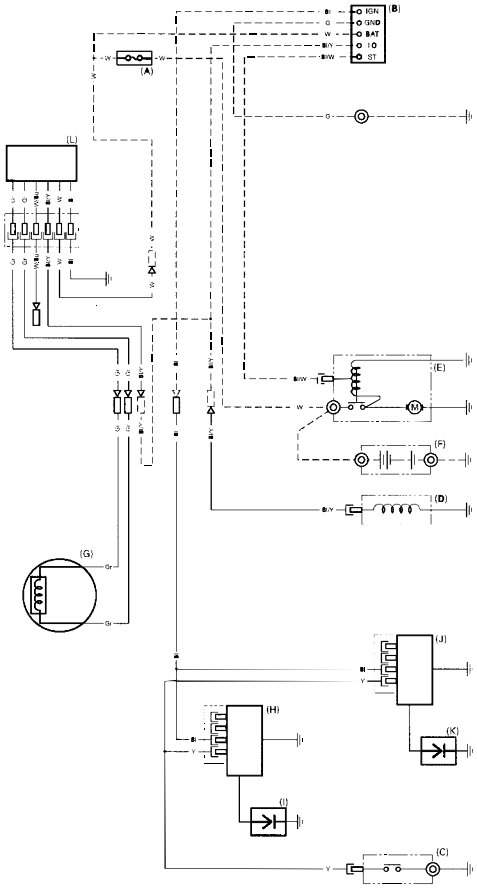
17 A Charge Coil and With Control Box Type



2.7 A Charge Coil and Without Control Box Type



17 A Charge Coil and Without Control Box Type



CONSUMER INFORMATION

WARRANTY AND DISTRIBUTOR DEALER LOCATOR INFORMATION

United States Puerto Rico and U.S. Virgin Islands
Visit our ebsite .honda-engines.com

Canada
Call ( ) 9HONDA9
or visit our ebsite .honda.ca

For European Area
Visit our ebsite http .honda-engines-eu.com

Australia
Call (03) 9 0 34
or visit our ebsite .hondampe.com.au

CUSTOMER SERVICE INFORMATION

Servicing dealership personnel are trained professionals. They should be able to ans er any uestion you may have. If you encounter a problem that your dealer does not solve to your satisfaction please discuss it ith the dealership's management. The Service Manager General Manager or O ner can help. Almost all problems are solved in this ay.

United States Puerto Rico and U.S. Virgin Islands

If you are dissatisfied ith the decision made by the dealership's management contact the Honda Regional Engine Distributor for your area.

If you are still dissatisfied after speaking ith the Regional Engine Distributor you may contact the Honda Office as sho n.

All Other Areas
If you are dissatisfied ith the decision made by the dealership's management contact the Honda Office as sho n.

《Honda's Office》
When you rite or call please provide this information

- **E uipment manufacturer's name and model number that the engine is mounted on**
- **Engine model serial number and type (see page 4)**
- **Name of dealer ho sold the engine to you**
- **Name address and contact person of the dealer ho services your engine**
- **Date of purchase**
- **Your name address and telephone number**
- **A detailed description of the problem**

United States Puerto Rico and U.S. Virgin Islands
American Honda Motor Co. Inc.
Po er E uipment Division
Customer Relations Office
4900 Marconi Drive
Alpharetta GA 3000 - 4

Or telephone (0) 49 -6400 30 am - 00 pm ET

Canada
Honda Canada Inc.
Please visit .honda.ca
for address information

Telephone ( ) 9HONDA9 Toll free
( ) 946-63 9
Facsimile ( ) 939-0909 Toll free

Australia
Honda Australia Motorcycle and Po er E uipment Pty. Ltd.
9 4— 9 6 Hume High ay
Campbellfield Victoria 306

Telephone (03) 9 0
Facsimile (03) 9 0 33

For European Area
Honda Europe NV.
European Engine Center

http .honda-engines-eu.com

All Other Areas
Please contact the Honda distributor in your area for assistance.

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