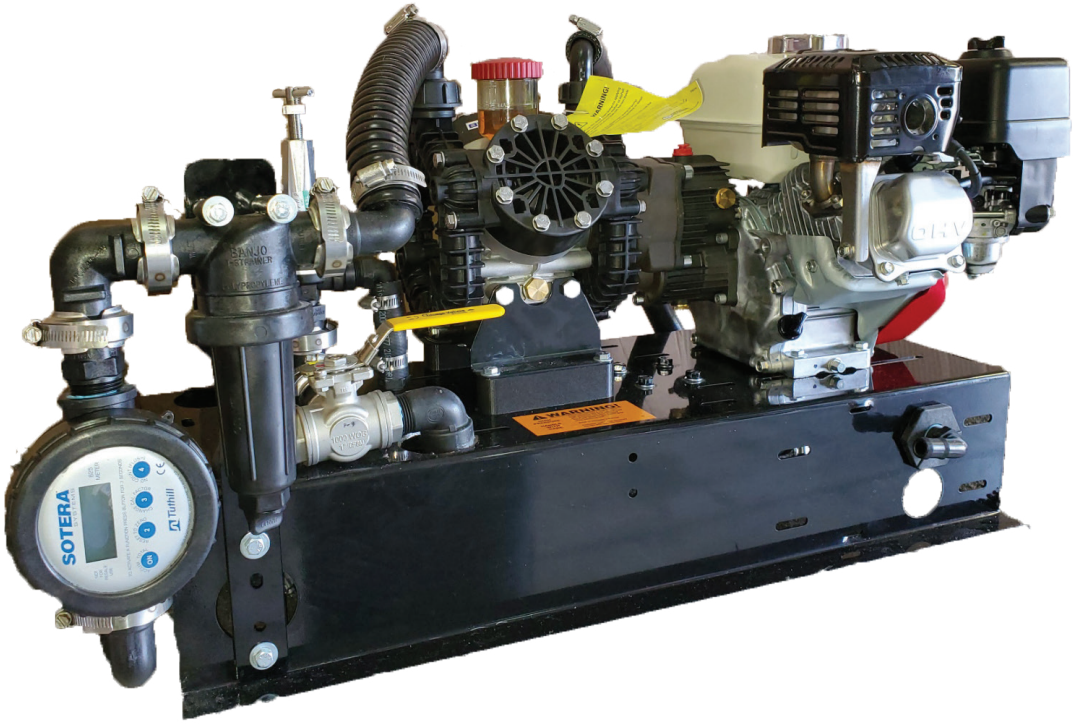
GX 50 LFP GAS

agxcel
2106 F AVENUE
KEARNEY NE 68847
877.218.1981



SN# STICKER

DISCLAIMER

AgXcel has taken every effort to ensure the correctness of this document, to ensure the highest quality and accuracy. However, AgXcel assumes no responsibility for omissions and errors, nor is any liability assumed for damages resulting from the use of information contained within this document as there are many uncontrolled variables.

AgXcel shall not be responsible or liable for accompanying or significant reparations or a loss of expected benefits or profits, loss or delay of work, or inaccuracies of data arising out of the use, or inability to use, this system or any of its components. AgXcel shall not be held responsible for any modifications or repairs made outside our facilities, nor damages resulting from inadequate maintenance of this system.

CAUTION

Read this document carefully before installing, testing and using the AgXcel GX50 LFP GAS injection system.

- Follow all safety information presented within this document.
- Keep safety labels in good condition. Replace missing or damaged safety labels as necessary and verify labels are included on replacement parts or new equipment components.
- If you require assistance with any portion of the installation or service of this solution contact your local AgXcel Dealer or contact AgXcel directly.

SOME OF THE MOST IMPORTANT SAFETY PRECAUTIONS ARE INCLUDED IN THIS MANUAL. HOWEVER WE CANNOT WARN YOU OF EVERY CONCEIVABLE HAZARD THAT CAN ARISE IN OPERATION AND MAINTENANCE. ONLY YOU CAN DECIDE WHETHER OR NOT YOU SHOULD PERFORM THE GIVEN TASKS.

CHEMICAL HANDLING AND SAFETY

Chemicals used in agricultural applications may be harmful to your health or the environment if not used responsibly. Review the safe, effective, and legal use and disposal of agricultural chemicals with the chemical supplier.

- Always follow safety labels and instructions provided by the chemical manufacturer or supplier.

CAUTION

CAUTION – THE GX50 LFP GAS INJECTION UNIT IS CAPABLE OF INJECTING UP TO 290 PSI

YOU CAN BE KILLED OR SERIOUSLY HURT IF YOU DO NOT FOLLOW INSTRUCTIONS!!

The installation of the GX50 LFP GAS INJECTION unit is very versatile however for the best performance please follow the best practices below.

1. Positioning the Unit – The GX50 LFP GAS may be placed in any location that is not a high traffic area. However, the unit must be secured, and must be positioned on level ground or plat- form. Ensure that it is not in a location where vehicles, fork lifts, or pill tanks will directly hit the unit as these could damage the outer casing of the pump or filters and hoses.

2. Tank Feed – When plumbing the product tote to the unit, be sure tote is no more than 30 Feet in length. AgXcel Recommends keeping tote level with the Unit. This will ensure that the unit does not have to work harder to draw the chemical from the tank. Shorter Hose length will ensure easier flushing of the unit. Less chemical will be in the tank to pump line.

3. Injection Feed – The injection hose is 1" in diameter and 30 feet in length. The quick acting valve has a special locking clasp on the valve's operating handle, which minimizes the chance of accidental opening. This also helps to minimize the loss of product when disconnecting, by locating the seat disc in the bottom of the filler coupling.

A. Check Valve - 2 1" Stainless steel check valves are installed on the discharge side of the GX50 injection pump. Should a check valve fail the 2nd check valve will ensure no chemical or vapors will push back into the product pump and tote.

4.High Pressure – The GX50 LFP GAS is a high-pressure injection unit with the ability to inject up to 290 PSI. However, AgXcel highly recommends the following precautions:

A. Safety Bypass Kunkle Valve - This factory calibrated valve will open when pressures exceed 230 PSI Excess pressure and liquid will bypass back into the tote to ensure there is no loss of product nor risk of product exposure.
B. Diaphragm Pressure Relief Valve - Set at 150 Psi this will keep the system at a safe pressure and still allow for injection at peak gallons per minute. Valve is calibrated before shipment.

5. Operating Temperatures - This equipment has the capability of operating at a max of 180 F, and a minimum of 35 F. If Attempting to operate at lower temperatures, precautions need to be taken to ensure damage to the electric motor or pump is prevented. For help on this subject please contact AgXcel.

PRO TIP

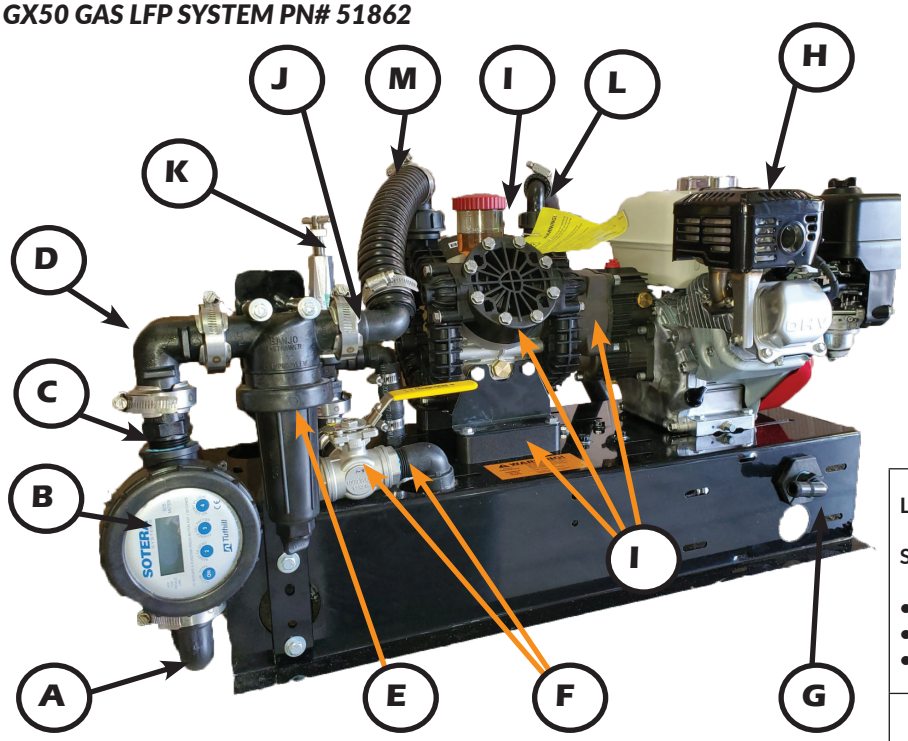
Pro tip - Operating temperature refers to the temperature inside the system while powered on and performing its designating function. Ambient temperatures refer to outside air/weather. These two often differ from each other.

GX50 LFP GAS

The AgXcel GX50 N-fuse Gas series is specifically designed for in field applications, for safely injecting nitrification inhibitors into Anhydrous Ammonia.

The solution is able to inject into an anhydrous nurse tank located in the customers field at up to 11 GPM at 200 psi. Multiple features keep this system and the end-user safe. Give AgXcel a call for additional details and requirements.

GX50 GAS LFP SYSTEM PN# 51862



- 230 PSI safety bypass back to tank
- Adjustable relief valve
- Safe and simple to use
- Pull start engine
- 86 Octane or higher
- Universal mounting bracket
- Sotera Flow Meter
- Full tank 1.5 hours of usage at full throttle
- Full tank 3 hours of usage at 50% throttle
- No need for electrial power

LFP45 - Diaphragm Pump Oil

Specifically formulated for GX5 Diaphragm pumps.

- Advanced Lubrication Technology
- BlueFlex Diaphragm compatible
- SAE 30 Non-Detergent Oil

31326	LFP45 OIL QUART (CRANKCASE OIL CAPACITY 13 oz)
49536	HONDA OIL QUART (ENGINE OIL CAPACITY 20 oz.)
49538	GEAR BOX OIL QUART - 90W (GEARBOX OIL CAPACITY 15 oz)

GX50 LFP GAS COMPONENTS		
PN#		DESCRIPTION
A (options given for inlet of flow kit - see pg.6.)	33132	1" WORM SCREW CLAMP
	50016	3/4" EPDM GASKET
	50877	1" MPT TO 1 1/4" HB
	52195	1 1/4" PRESSURE CLAMP
	51338	1" MANIFOLD TO 1" MPT
B	51087	SOTERA FLOW METER
C	51338	1" MANIFOLD TO 1" MPT
D	51333	1" MANIFOLD COUPLING 90 DEGREE
E	51842	50 MESH 1" FLANGE STRAINER
F	56651	3-WAY BALL VALVE STAINLESS
	52148	1" STREET ELBOW
H	56654	HONDA ENGINE GX200
	56808	HONDA ENGINE GX160

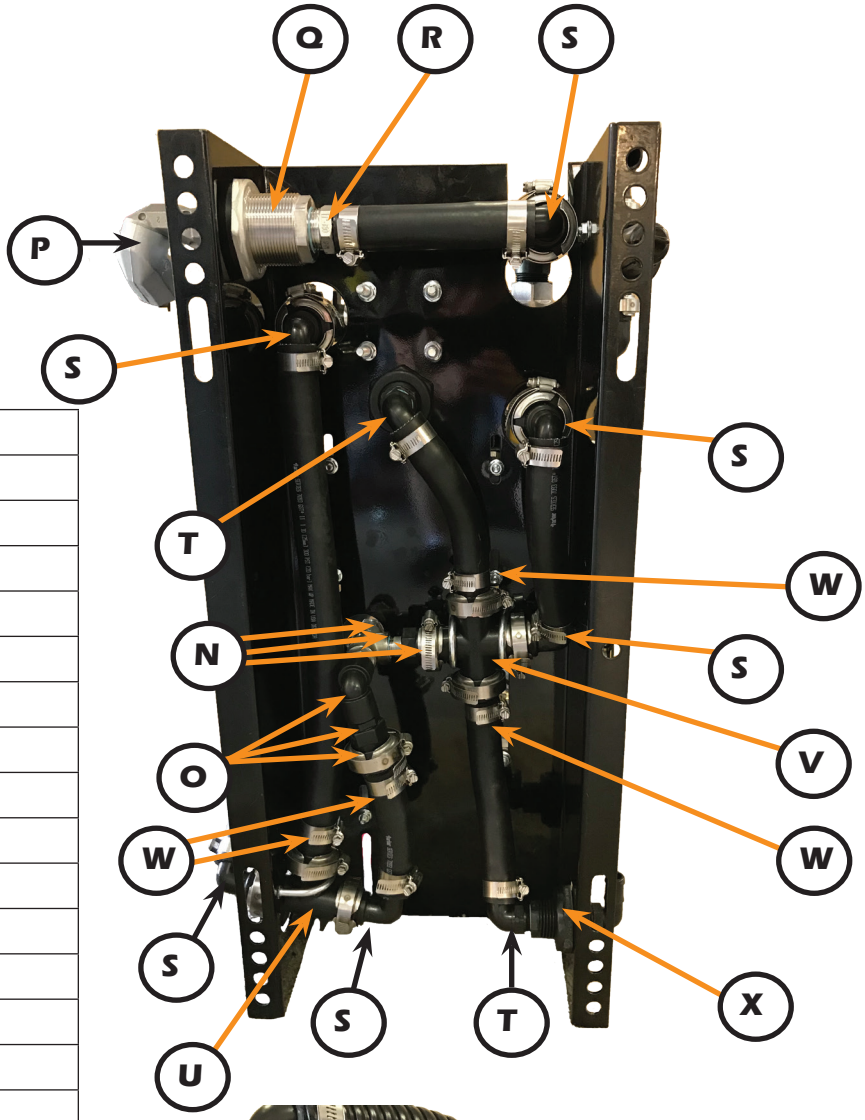
GX50 LFP GAS COMPONENTS		
PN#		DESCRIPTION
I	17954	LFP BASE LIFT (SET OF 2)
	38380	GX5 LFP 45 PUMP ONLY .5 - 11 GPM
	56204	GEARBOX FOR LFP45
J	51321	1" FLANGE X 1 1/4" BARB-90 ELB
	33132	1" WORM SCREW CLAMP
	50016	3/4" EPDM GASKET
	52195	PRESSURE CLAMP FOR 1 1/4" HOSE
K	56631	PRESSURE RELIEF VALVE
	20844	2.5 SS LIQUID FILLED 400 PSI GAUGE
	50574	1/4" PIPE ELBOW
	32395	1/4" NIPPLE

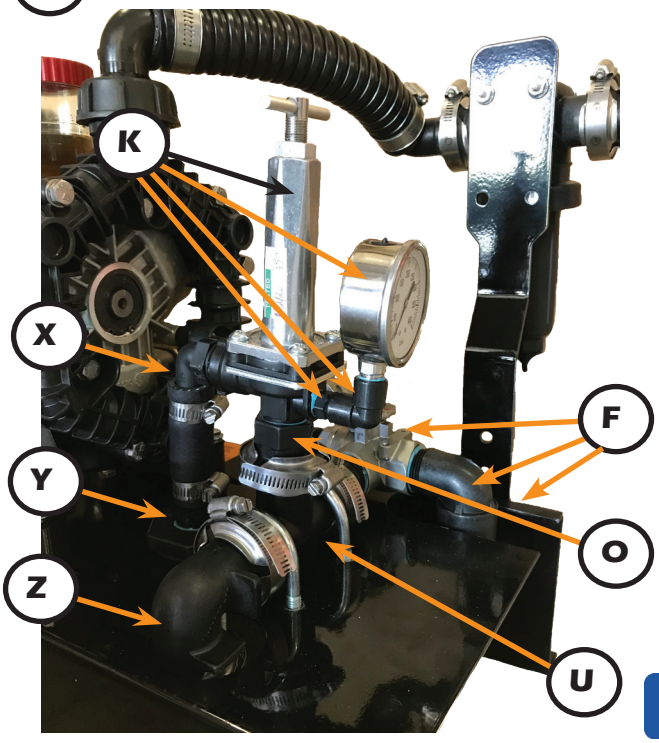
NOTE! System should be properly rinsed after use to prevent causing long term damage to system components

Proper maintenance of unit will extend the life of the system.

CLAMPS & HOSE	56629	1" 300 PSI BLK HOSE
	52194	1" PRESSURE CLAMP
	33132	1" WORM CLAMP
	50016	1" WORM CLAMP GASKET

PN#		DESCRIPTION
L "PUMP OUT"	55771	1" ELBOW
	55770	RING NUT
	55920	O RING VITON FOR LFP45
	56629	1" 300 PSI BLK HOSE
	52194	1" CLAMP (NOT SHOWN)
M "PUMP IN"	55577	1 1/4" ELBOW
	55761	RING NUT
	55915	O RING VITON FOR LFP45
N	56588	KUNKLE PRESSURE RELIEF
	20603	1/2" SS NIPPLE
	51311	1" FLANGE TO 1/2" FPT
O	50576	PIPE ELBOW 1/2"
	52105	3/4" REDUCING NIPPLE 1/2"
	51315	1" FLANGE 3/4" FPT
P	56528	SWIVEL NOZZEL
Q	56537	1" BUNG SS
R	56536	1" KING HB SS
S	51328	1" MANIFOLD ELBOW
T	50872	1" HB 3/4" MPT ELBOW
U	51347	1" FLANGE TEE
V	51334	1" FLANGE CROSS
	53767	UBOLT
W	51326	1" FLANGE HB
X	52237	3/4" BUNG
Y	50863	3/4" MPT HB
Z	51333	1" MANIFOLD COUPLER 90 DEGREE



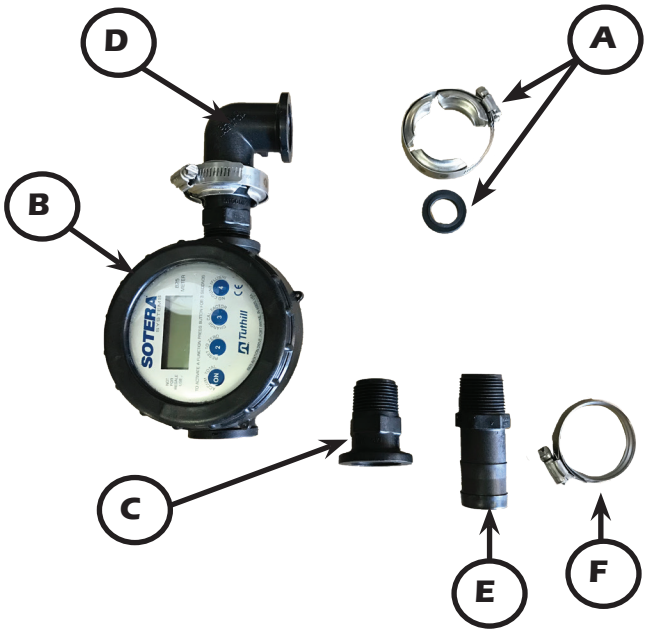


GX50 N-FUSE MISC COMPONENTS		
PN#		DESCRIPTION
	56531	HOSE END ANGLE VALVE See page xx for valve repair kits and diagram of unit.
	49695	2" PLUG
	49596	2" COUPLER
	52084	REDUCER BUSHING 2" TO 1 1/4"
	50882	1 1/4" HB MPT
56527		NH3 30FT 1" MPT ENDS
53580		1 1/4" SPIRAL HOSE (15FT standard w/system)
	50243	1" CHECK VALVE
	56619	1" NIPPLE SS316
	56528	SWIVEL NOZZLE 1" MNPT X 1" FNPT
	49637 51193	HYDROSTATIC RELIEF VALVE RELIEF VALVE ADAPTER

REPAIR KITS FOR PN#56531		
	56265	STEM & EXTENSION ASSEMBLY
	56261	HANDLE ASSEMBLY
	56240	REPAIR KIT
*SEE OPPOSITE PAGE FOR AVAILABLE KIT DIAGRAM **		

CLAMPS & HOSE		
	56629	1" 300 PSI BLK HOSE
	52194	1" PRESSURE CLAMP
	33132	1" WORM CLAMP
	50016	1" WORM CLAMP GASKET
	53580	1 1/4" SPIRAL HOSE
	52195	1 1/4" PRESSURE CLAMP
	308	3/4" BLACK HOSE
	19646	#12 CLAMPS

GX50 GAS LFP FLOW KIT ONLY PN# 51111



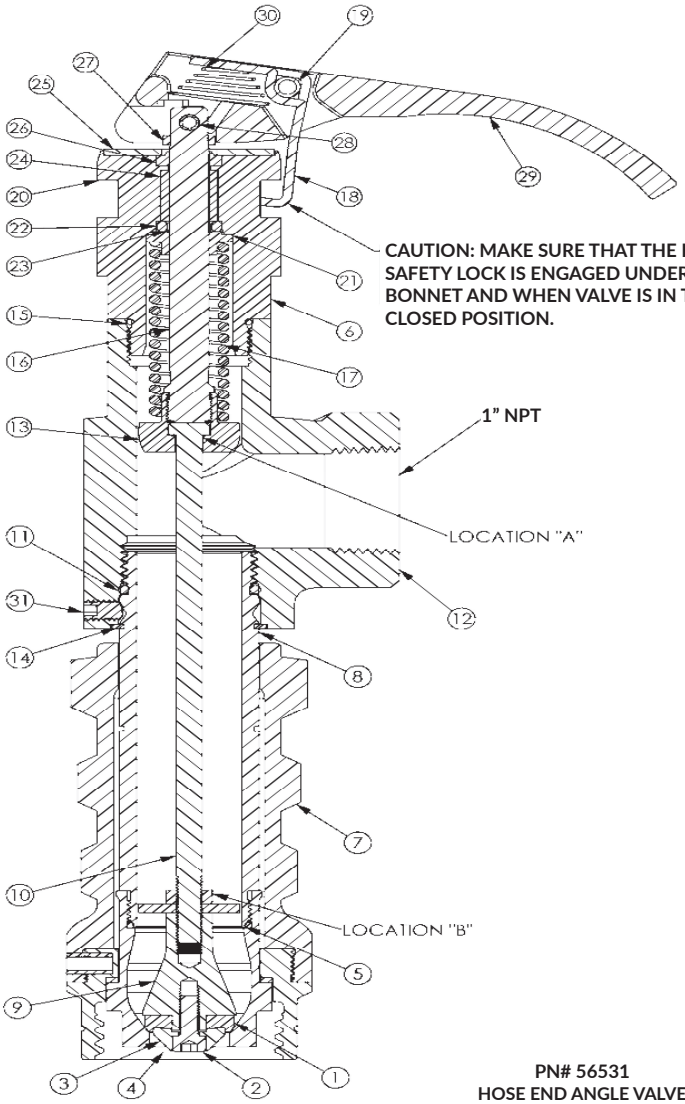
GX50 LFP GAS FLOW KIT		
PN#		DESCRIPTION
A	33132	1" WORM SCREW CLAMP (QTY 2)
	50016	3/4" EPDM GASKET (QTY 2)
B	51087	SOTERA FLOW METER
C	51338	1" MANIFOLD TO 1" MPT (QTY 2)
D	51333	1" MANIFOLD COUPLING 90 DEGREE
E	50877	1" MPT TO 1 1/4" HB
F	52195	1 1/4" PRESSURE CLAMP

LFP45 HYDRAULIC PUMP REPAIR KITS		
	37735	LFP45 ORING KIT
	55566	LFP45 VALVE KIT
	55568	LFP45 VITON DIAPHRAGM KIT
	55564	LFP45 BLUEFLEX DIAPHRAGM KIT

WARNING! If the Valve is closed slowly by holding the Handle as it is moved toward the CLOSED position, be sure the Handle reaches its STOP position. The Handle Safety Lock must engage beneath the Bonnet flange.

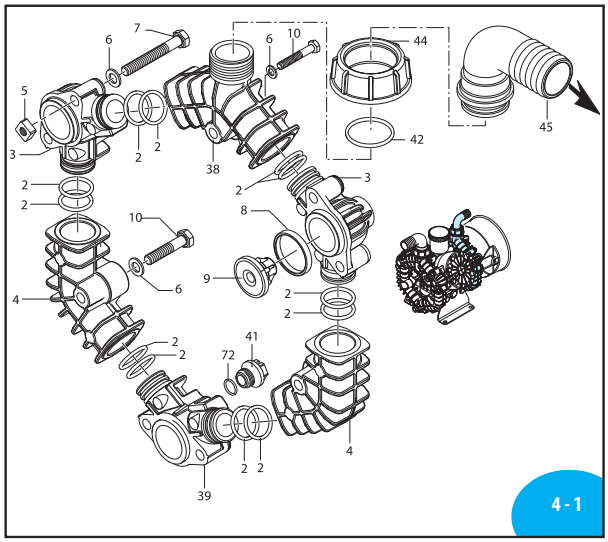
AVAILABLE KITS		
Kit Number	**Kit Name & Items Included**	**Assembly Procedure**
PN# 56240	Seal Kit ①②③⑮ ㉑㉒㉓㉔	Steps 1 thru 9
PN# 56261	Handle Assy. ⑱⑲㉘㉙ ㉚	Step 9
PN# 56265	Stem & Extension Assy. ①②③⑨ ⑩⑬⑯	Steps 4 thru 9

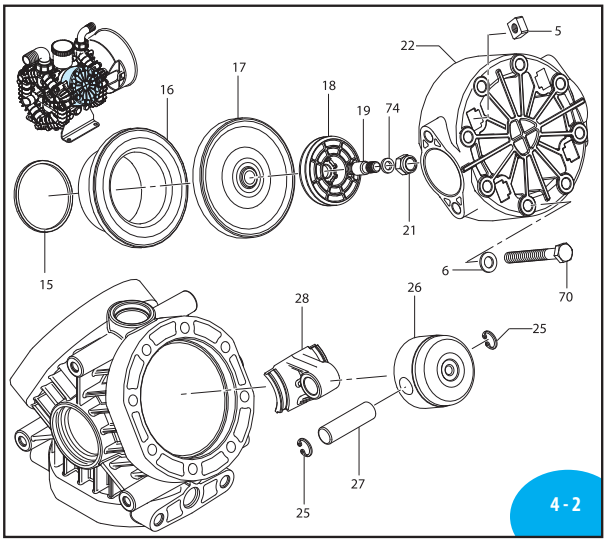
Item	Qty.	Description
1	1	Disc
2	2	Cap Screw
3	1	Seat Retainer
4	1	Seat
5	1	Nozzle/Seat Seal
6	1	Inlet Label
7	1	Speed Drive Swivel
8	1	Nozzle
9	1	Disc Holder
10	1	Stem Extension
11	1	Body/Nozzle Seal
12	1	Body (Angle)
13	1	Seat Retainer
14	1	Spiral Retainer Ring
15	1	Body/Bonnet Seal
16	1	Stem
17	1	Stem Spring
18	1	Handle Safety Lock
19	1	Pin
20	1	Bonnet
21	1	Seal Retainer
22	1	Stem Seal
23	1	Seal Sleeve
24	1	Bonnet Bushing
25	1	Handle Bearing
26	1	Wiper Ring
27		
28	1	Handle Pivot Roll Pin
29	1	Handle
30	1	Handle Spring
31	1	Set Screw

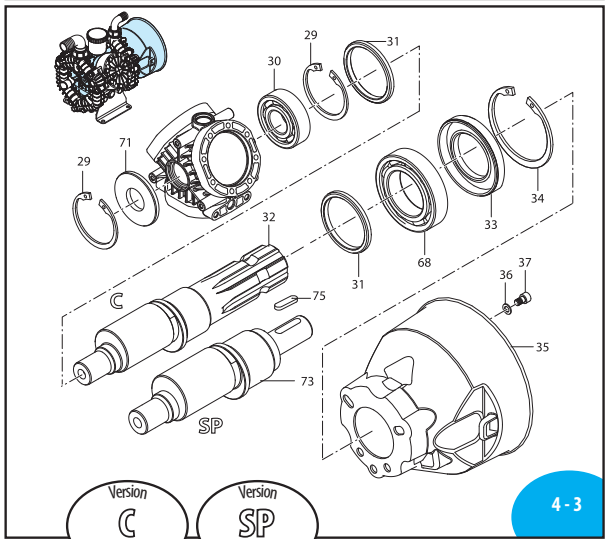


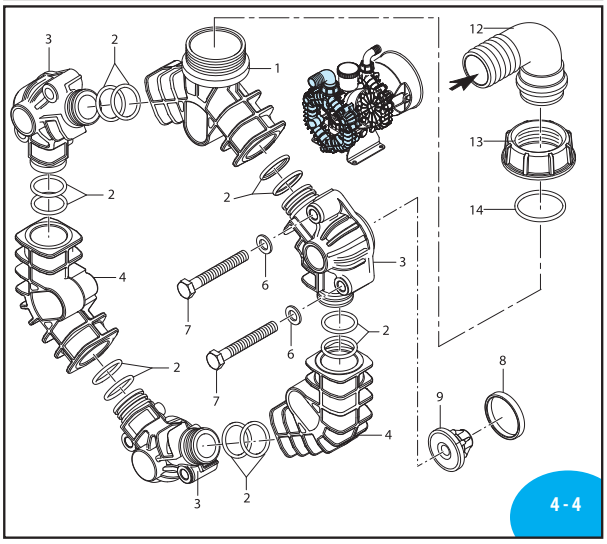
PN# 56531
HOSE END ANGLE VALVE

GX50 LFP45 PUMP BREAK DOWN

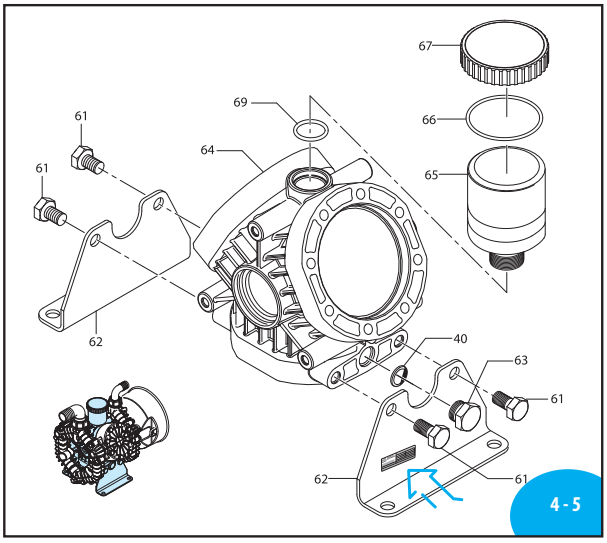








56204	GEARBOX FOR LFP45



Pos	Code	Description		Qty	Note
1	3120410	Manifold	suction	1	
2	720030	O-ring	Ø 22.22x2.62	24	AR45bp
	720031	O-ring	Ø 22.22x2.62	24	Viton AR45LFP
3	3120050	Manifold		5	
4	3120060	Manifold		4	
5	3120510	Nut	M8	12	SS
6	3120761	Washer		42	Z/B AR45bp
	3120760	Washer		42	SS AR45LFP
7	3120251	Screw	TE M8x60	12	T90* AR45bp
	3120250	Screw	TE M8x60	12	SS T90* AR45LFP
8	3120230	Gasket		6	AR45bp
	3120680	Gasket		6	Viton AR45LFP
9	3129051	Complete valve		6	AR45LFP
	3129050	Complete valve		6	AR45bp
10	621782	Screw	TE M8x40	6	SS T90* AR45LFP
	621780	Screw	TE M8x40	6	T90* AR45bp
12	751200	Elbow	1 1/4"	1	
13	750670	Ring nut	1 1/2" G	1	
14	1880460	O-ring	Ø 29x3	1	Viton AR45LFP
	390290	O-ring	Ø 29x3	1	AR45bp
15	3120130	Piston ring		3	
16	3120090	Sleeve		3	
17	3120080	Diaphragm		3	NBR AR45bp
	3120082	Diaphragm		3	BlueFlex™ AR45LFP
	3120081	Diaphragm		3	Viton
	3120085	Diaphragm		3	Desmopan
18	3120120	Plate		3	
19	3120101	Hub pin	AISI 316L	3	T220* (a) AR45LFP
	3120100	Hub pin	AISI 316L	3	T220* (a) AR45bp
21	3120790	Nut	M8 AISI 304	3	T180* (a) AR45LFP
	3120110	Nut	M8 AISI 304	3	SS T180* AR45bp
22	3120020	Head		3	
25	1880450	Ring	circlip Øi 14	6	
26	3120070	Piston	Ø 54	3	
27	380300	Pin		3	
28	3120180	Connecting-rod		3	
29	1460490	Ring	circlip Øi 47	2	
30	380230	Bearing		1	
31	1300120	Ring	connecting rod	2	
32	3120500	Shaft	marked DD	1	AR45bp/LFP C
33	3120160	Ring	seal	1	
34	961790	Ring	circlip Øi 68	1	
35	3240290	Shield		1	
36	320620	Washer		4	AR45bp
37	820670	Screw	TCEI M10x16	4	T90* AR45bp
38	3120380	Manifold		1	
	3120330	Manifold	for GS25 Controller	1	Not Shown
39	3120051	Line		1	

Pos	Code	Description		Qty	Note
40	740290	O-ring	Ø 14x1.78	1	
41	3120690	Plug		1	T15*
42	1140450	O-ring	Ø 20.24x2.62	1	AR45bp
	1140451	O-ring	Ø 20.24x2.62	1	Viton AR45LFP
44	3120440	Ring nut	1" G	1	
45	3120460	Elbow	1"	1	
61	620342	Screw	TE M10x20	4	SS T265* AR45LFP
	620340	Screw	TE M10x20	4	T265* AR45bp
62	3120140	Foot		2	
63	880530	Plug	3/8" G	1	T180*
64	3120010	Pump body		1	
65	3120240	Tank		1	T180*
66	650920	O-ring	Ø 53.65x2.62	1	
67	1040320	Plug	red	1	
68	961780	Bearing		1	
69	720030	O-ring	Ø 22.22x2.62	1	
70	3120271	Screw	TE M8x65	24	SS T90* AR45LFP
	3120270	Screw	TE M8x65	24	T90* AR45bp
71	3120640	Ring	seal	1	
72	2840891	O-ring	Ø 14x2	1	Viton AR45LFP
	2840890	O-ring	Ø 14x2	1	AR45bp
73	3120170	Shaft	marked DL	1	AR45bp/LFP SP
74	3120760	Washer		3	SS
75	2280950	Key		1	(d)
76	3129013	Complete Discharge	manifold	1	AR45bp-SP
77	3129015	Complete inlet	manifold	1	AR45bp
78	3129000	Piston ConRod	assembly	3	Not shown
79	43883	Complete Discharge	manifold	1	AR45LFP-GCI Not shown
80	43821	Controller Assembly		1	AR45LFP-GCI Not shown

(a) Screw with Loxeal 83-21 thread lock STRONG
(d) Supplied in kit applications.

* Torque: in-lbs +/- 10%

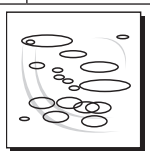
55564	LFP45/BP45 BLUE FLEX DIAPHRAGM KIT
55568	LFP 45 VITON DIAPHRAGM KIT

Pos.	Qty
8	6
17	3

55566	LFP 45 VALVE KIT
55565	BP 45 VALVE KIT

Pos.	Qty
8	6
9	6

37735	LFP 45 O'RING KIT
37760	BP 45 O'RING KIT



Pos.	Qty
2	24
14	1
40	1
42	1
66	1
69	1
72	1

Diaphragm Pump Oil

Specifically formulated for GX5 Diaphragm pumps.

- Advanced Lubrication Technology
- BlueFlex Diaphragm compatible
- SAE 30 Non-Detergent Oil

31326	OIL QUART (32oz)

CRANKCASE OIL CAPACITY 13 oz.

GX 50 LFP GAS

This section will assist you with the setup of your new GX50 LFP injection unit.

During the un-boxing of the GX50 unit, please be sure to review the packing list to make certain no items are missing.

The GX50 uses the GX200 Honda motor to drive the pump system. The motor requires regular 87 octane grade gasoline to run the system. Ensure you do not overfill the gasoline tank. (Be sure to reference included engine manual for maintenance and for troubleshooting of engine)

Located on the GX50 there are 3 reservoirs for oil:

#1 - Honda Engine - Check levels of the engine oil. Confirm level with dipstick and fill if needed.
#2 - AR31185 Gear Reduction Box - Takes SAE 85W - 140 Gear oil. Confirm level with dipstick and fill if needed.
#3 - ARLFP 45 - Requires non - detergent SAE 30 oil. Confirm level through visual gauge.

After checking all fluid levels and adding gasoline into Honda tank, connect enclosed anhydrous/ammonia hose and valve to GX50 injection unit. Properly goop threads as to not allow any leaks from the connection.

Flow meter - A Sotera 825 digital meter is provided in the package. Remove from box and install on inlet side of filter. This unit needs 2 x AA batteries to run. Be sure to keep fresh batteries handy, in the case of batteries getting weak or drained a battery icon will appear and flash on the sotera screen.

Tote Setup - Agxcel has included a tote connection kit, this needs to be assembled and connected to product tote. Confirm that the product tote that the GX50 injection unit is connected to is a product that is approved for use by AgXcel.

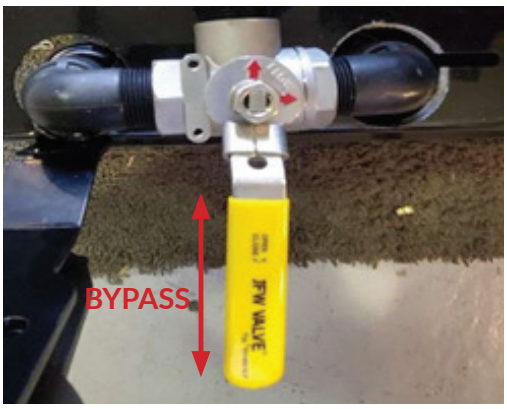
Tote Note - most product totes have vented caps/lids. In the case of a non-vented tote, customer needs to find a way to vent so suction will not collapse tote.

Priming System - Now that every item is connected, you are now ready to start the engine and prime the line.

IMPORTANT NOTE:

For initial startup and/or after storage, it is AgXcel's recomendation to prime anhydrous valve prior to attaching to nurse tank.

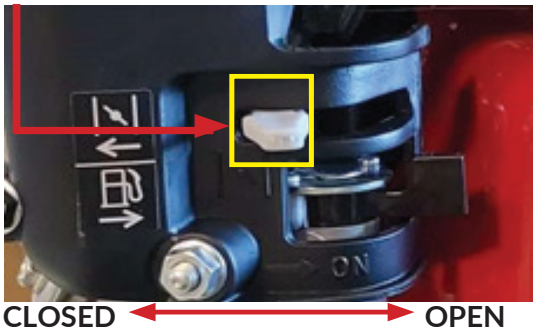
1 - Ensure bypass lever is set back to tote. This will allow the engine to start without creating excess pressure.



2 - Move the fuel valve lever to the "ON" position.

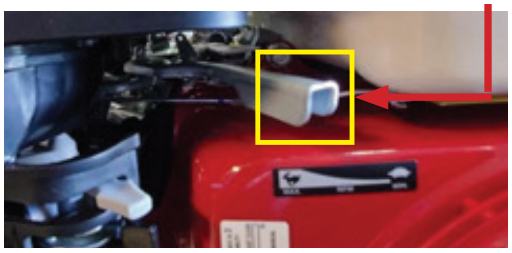
OFF ON

3 - To start a cold engine, move the choke lever to the closed position.

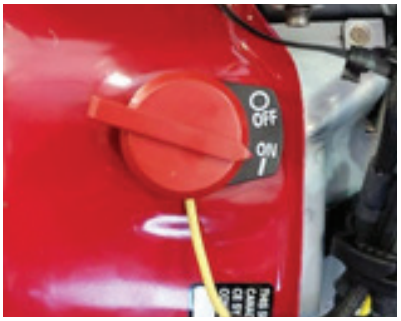


CLOSED OPEN

4 - Move the throttle lever away from the "MIN" position, about 1/3 of the way toward the "MAX" position.

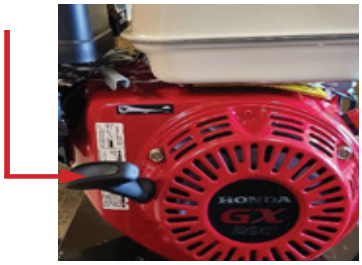


5 - Turn the engine switch to the "ON" position.



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

6 - Operate the starter:
Pull the starter grip lightly until you feel resistance, then pull briskly in the direction of the arrow as shown below. Return the starter grip gently.



CLOSED OPEN

7 - If the choke lever was moved to the CLOSED position to start the engine, gradually move it to the OPEN position as the engine warms up.

OPERATIONAL FUNCTIONS

- Turns meter on when off.
- Displays accumulated total as long as it is held on. If accumulated total is larger than 9999, the numbers will scroll across the screen.

- When held for 1 second, it resets current total to zero. Also resets to normal operating mode when in CAL or FLSH mode.

- When held for 3 seconds, it allows changes to the calibration factor displayed in the bottom left corner. Repeated activation will increment the number up to 19 and back to zero. When desired number is displayed, press button (2) to lock in the new number and return to normal operation.

- When held for 3 seconds, FLSH is displayed. Fluid dispensed will not be added to either the accumulated total or current total. Press button (2) to return to normal operation.

USE

CAUTION: Meter will count air if you dispense air. Before initial operation or when air has entered the system, prime the meter by dispensing fluid until all trapped air has been removed. Meter is now ready to operate

1. Press (ON) button to turn meter on. Current total, unit of measure, and calibration factor are displayed. The meter also turns on automatically and begins recording when fluid starts flowing through it.

2. Hold button (2) for one second to set current total to "0.00."
3. Begin dispensing.

NOTE: Meter display automatically goes blank after 60 seconds of inactivity and automatically comes back on when flow resumes. *No data is lost during periods of inactivity.*

CAUTION: Wear proper safety equipment when handling hazardous fluids.

CALIBRATION USING THE "CAL" FACTOR

The thinner the fluid, the lower the CAL number.
The thicker the fluid, the higher the CAL number.

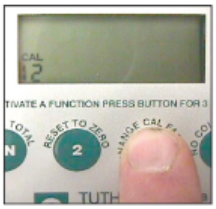
- **CAL 4 is set for thin fluids like water.**
- **CAL 19, the highest number, is set for very thiok fluids like oold molasses.**
- **Eaoh number ohanges the meter aoouraoy by about 1%.**

Table #1: Suggested CAL Factor settings for Common Fluids

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
				Water		Kerosene		GRAMOXONE INTEON™ @ 50°F		Anti-Freeze @ 70°F		ROUNDUP® @ 50°F TREFLAN™ @ 50°F	ATRAZINE 4L @ 50°F	10 wt Oil @ 70°F	DUAL® @ 50°F		BICEP® @ 50°F		Molasses @ 32°F

Note: The suggested CAL factors are for REFERENCE ONLY.

CHANGING THE CAL FACTOR



- Hold button (3) until the display only shows CAL and number.
- Press (3) repeatedly until you reach the desired number. Note – number will increment up to 19, then back to zero.
- Press (2) to return to normal operating mode.

A) Set CAL factor to 10

• Hold button (3) for three seconds. Press (3) again until the number "10" shows below CAL (Note: If you go past 10, keep pressing (3) because the number returns to 0 after 19).

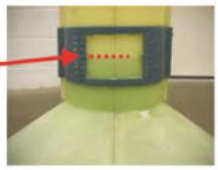
Press (2) to get back to normal operating mode.

Note: If your fluid is listed on Table 1, use that number in step (A) above in place of 10.

B) Prime Pump and meter by dispensing 2-3 gal of fluid back into the bulk tank.

• With outlet valve closed and pump still running, reset meter to 0.00.

C) Fill Proving Can exactly to the 5.0 gallon line.



Focus on the Proving Can, do not look at the meter at this point.

(While filling Proving can, keep the hose end nozzle wide open as long as possible for best accuracy).

D) Adjust Meter CAL Factor.

• If meter reads high, increase the CAL factor. Each CAL # changes the accuracy by about 1%. For a 5 gallon proving can, 1%=0.05 gallons.

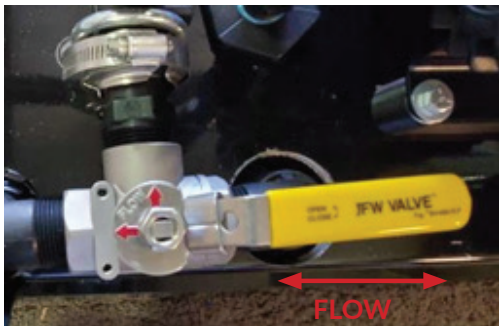
• If 5.10 is displayed, this is 2% over 5.00; thus, change CAL to 12.

• Press (2) to return to normal mode and to reset to 0.00 Meter is now ready.

• On the other hand, if the meter reads low, lower the CAL factor. If 4.90 is displayed, it is 2% less than 5.00, so this meter should be set on CAL 8.

8 - Once gase engine is running (WITH DIGITAL METER CALIBRATED) attach anhydrous valve to nurse tank. Once attached, open anhydrous valve.

9 - Once ready to inject into anhydrous nurse tank revert bypass valve back to outlet/flow. This will start they injection. Monitor tote until desired amount of product has been injected. Once finished revert bypass valve back to tote.



TROUBLESHOOTING	
POSSIBLE CAUSE	**SOLUTION/CORRECTION**
FUEL VALVE LEVER OFF	MOVE LEVER TO “ON” POSITION
CHOKE OPEN	MOVE LEVER TO “CLOSED” POSITION UNLESS ENGINE IS WARM
ENGINE SWITCH OFF	TURN ENGINE SWITCH ON
OUT OF FUEL	RE-FUEL
BAD FUEL: ENGINE STORED WITHOUR TREATING AND/OR DRAINING GASOLINE, OR REFUELED WITH BAD GASOLINE	DRAIN FUEL TANK AND CARBURATOR **SEE HONDA ENGINE MANUAL FOR FURTHER INSTRUCTIONS**
SPARK PLUG FUAULTY, FOULED OR IMPROPERLY GAPPED	GAP AND/OR REPLACE SPARK PLUG
SPARK PLUG WET WITH FUEL (FLOODED ENGINE)	DRY AND RE-INSTALL SPARL PLUG. START ENGINE WITH THROTTLE LEVER IN MAX POSITION.
FUEL FILTER RESTRICTED, CARBURETOR MALFUNCTION, VALVES STUCK..ETC.	TAKE ENGINE TO YOUR SERVICING DEALER
SOTERA DIGITAL METER TROUBLESHOOTING	
DEAD BATTERIES	REPLACE BATTERIES
CURRENT TOTAL HAS ROLLED OVER	RESET DISPLAY TO ZERO BY PRESSING BUTTON 2
FLASHING/DIM DISPLAY	REPLACE BATTERIES
METER WON’T COUNT	CLEAN METER CHAMBER - IF ISSUE PERSISTS CALL VENDOR
METER READS HIGH	CHECK CALIBRATION PRIME SYSTEM
METER READS LOW BY 10% OR LESS	USE LOWER CALIBRATION - RECALIBRATE
METER IS NOT CONSISTENT	POSSIBLE SUCTION LEAK. FIX/RECALIBRATE/CALL VENDOR.
FUEL FILTER RESTRICTED, CARBURETOR MALFUNTION, IGNITION MALFUNCTION, VALVES STUCK, ETC.	TAKE ENGINE TO YOUR SERVICING DEALER
LFP45 PUMP TROUBLESHOOTING	
PUMP DOES NOT PRIME PROPERLY	INTAKE CIRCUIT NOT AIRTIGHT - TIGHTEN, REPAIR AND/OR REPLACE HOSES AND FITTINGS AS NECESSARY
PRESSURE GAUGE NEEDLE WOBBLES	INTAKE CIRCUIT NOT AIRTIGHT - RESIDUAL AIR IN PUMP - TIGHTEN, REPAIR AND/OR REPLACE HOSES AND FITTINGS AS NECESSARY

GOOD MAINTENANCE IS ESSENTIAL FOR SAFE, AND TROUBLE FREE OPERATION. FOR MORE IN-DEPTH MAINTENANCE SCHEDULE PLEASE SEE ALL INCLUDED MANUALS PROVIDED WITH SYSTEM.

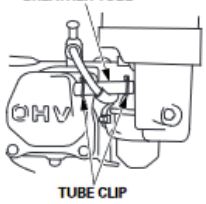
HONDA GX200 SERIES ENGINE

MAINTENANCE SCHEDULE

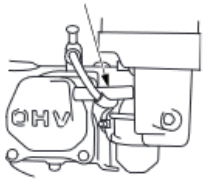
REGULAR SERVICE PERIOD (3) Perform at every indicated month or operating hour interval, whichever comes first. / ITEM		Each Use	First Month or 20 Hrs	Every 3 Months or 50 Hrs	Every 6 Months or 100 Hrs	Every Year or 300 Hrs	Refer to Page
Engine oil	Check level	o					8
	Change		o		o		9
Reduction case oil (applicable types)	Check level	o					8-10
	Change		o		o		10
Air cleaner	Check	o					10
	Clean			o (1)	o *(1)		10-12
	Replace					o **	
Sediment cup	Clean				o		12
Spark plug	Check-adjust				o		12
	Replace					o	
Spark arrester (applicable types)	Clean				o (4)		13
Idle speed	Check-adjust					o (2)	13
Valve clearance	Check-adjust					o (2)	Shop manual
Combustion chamber	Clean	After every 500 Hrs. (2)					Shop manual
Fuel tank & filter	Clean				o (2)		Shop manual
Fuel tube	Check	Every 2 years (Replace if necessary) (2)					Shop manual

* • Internal vent carburetor with dual element type only.
• Cyclone type every 6 months or 150 hours.

INTERNAL VENT CARBURETOR TYPE



STANDARD TYPE



** • Replace paper element type only.
• Cyclone type every 2 years or 600 hours.

(1) Service more frequently when used in dusty areas.

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

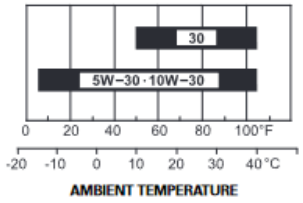
(3) For commercial use, log hours of operation to determine proper maintenance intervals.

(4) In Europe and other countries where the machinery directive 2006/42/EC is enforced, this cleaning should be done by your servicing dealer.

Failure to follow this maintenance schedule could result in non-warrantable failures.

Recommended Oil

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

Oil Level Check

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

1. Remove the oil filler cap/dipstick and wipe it clean.
2. Insert the oil filler cap/dipstick into the oil filler neck as shown, but do not screw it in, then remove it to check the oil level.
3. If the oil level is near or below the lower limit mark on the dipstick, fill with the recommended oil (see page 8) to the upper limit mark (bottom edge of the oil fill hole). Do not overfill.

REFUELING

Recommended Fuel

Unleaded gasoline		
	U.S.	Pump octane rating 86 or higher
	Except U.S.	Research octane rating 91 or higher
		Pump octane rating 86 or higher

This engine is certified to operate on unleaded gasoline with a pump octane rating of 86 or higher (a research octane rating of 91 or higher).
Refuel in a well ventilated area with the engine stopped. If the engine has been running, allow it to cool first. Never refuel the engine inside a building where gasoline fumes may reach flames or sparks.
You may use unleaded gasoline containing no more than 10% ethanol (E10) or 5% methanol by volume. In addition, methanol must contain cosolvents and corrosion inhibitors. Use of fuels with content of ethanol or methanol greater than shown 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 with percentages of ethanol or methanol greater than shown above are not covered under the Warranty.

If your equipment will be used on an infrequent or intermittent basis, please refer to the fuel section of the STORING YOUR ENGINE chapter (see page 13) for additional information regarding fuel deterioration.
Never use gasoline that is stale, contaminated, or mixed with oil. Avoid getting dirt or water in the fuel tank.

AR 45 LFP SERIES LIQUID PUMP

Make sure the pump is depressurised before any maintenance occurs.

Filter - Inspect filter cartridge; Check and make sure it is free of debris, and in good condition
Pump Oil - Maintain oil level. Visual gauge will indicate the level of oil for the pump. Be sure to use Non-Detergent SAE 30 oil.
Pump - Inspect mounting of pump, fittings & bolts need to remain tight.
Leaks - If leaks start to occur, check and tighten up fittings.

2106 F Ave, Kearney NE 68847

877.218.1981

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