



AN O'HANRAHAN COLEMAN COMPANY



DSI PUMP STAND MANUAL



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CUSTOMER 1st

Coleman Hanna Carwash Systems promises to be the leading car wash equipment manufacturer by embracing a culture in which we exceed your expectations.

We focus our values and policies around **providing innovative high quality products** and helping **you, our valued customer**, experience excellence in all aspects of the car care business.

**COLEMAN HANNA CAR WASH SYSTEMS
5842 WEST 34TH STREET
HOUSTON, TEXAS 77092
1-800-999-9878
713-683-9878
WWW.COLEMANHANNA.COM**

EQUIPMENT DESCRIPTION

The Coleman Hanna DSI Pump Stand is constructed of stainless steel tubing. Each leg has a specially machined 1¼" stainless steel leveling bolt in it so that the unit can be leveled and bolted to the floor.

In the middle of the pump stand you will find a Cat Pump model #3535 (can be substituted upon customers discretion), which is capable of pumping 35 gallons per minute. Driving the pump are 3 V-belts connected to a 25 HP Electric motor.

On top of the pump frame is a cold-water rinse tank. There is mounted a 1-½ HP pump to deliver water to the DSI chemical delivery system. The 1-½ HP pump will turn on when the gantry is sending a signal to deliver chemicals. Each chemical system has a separate solenoid and injector to deliver consistent chemicals.

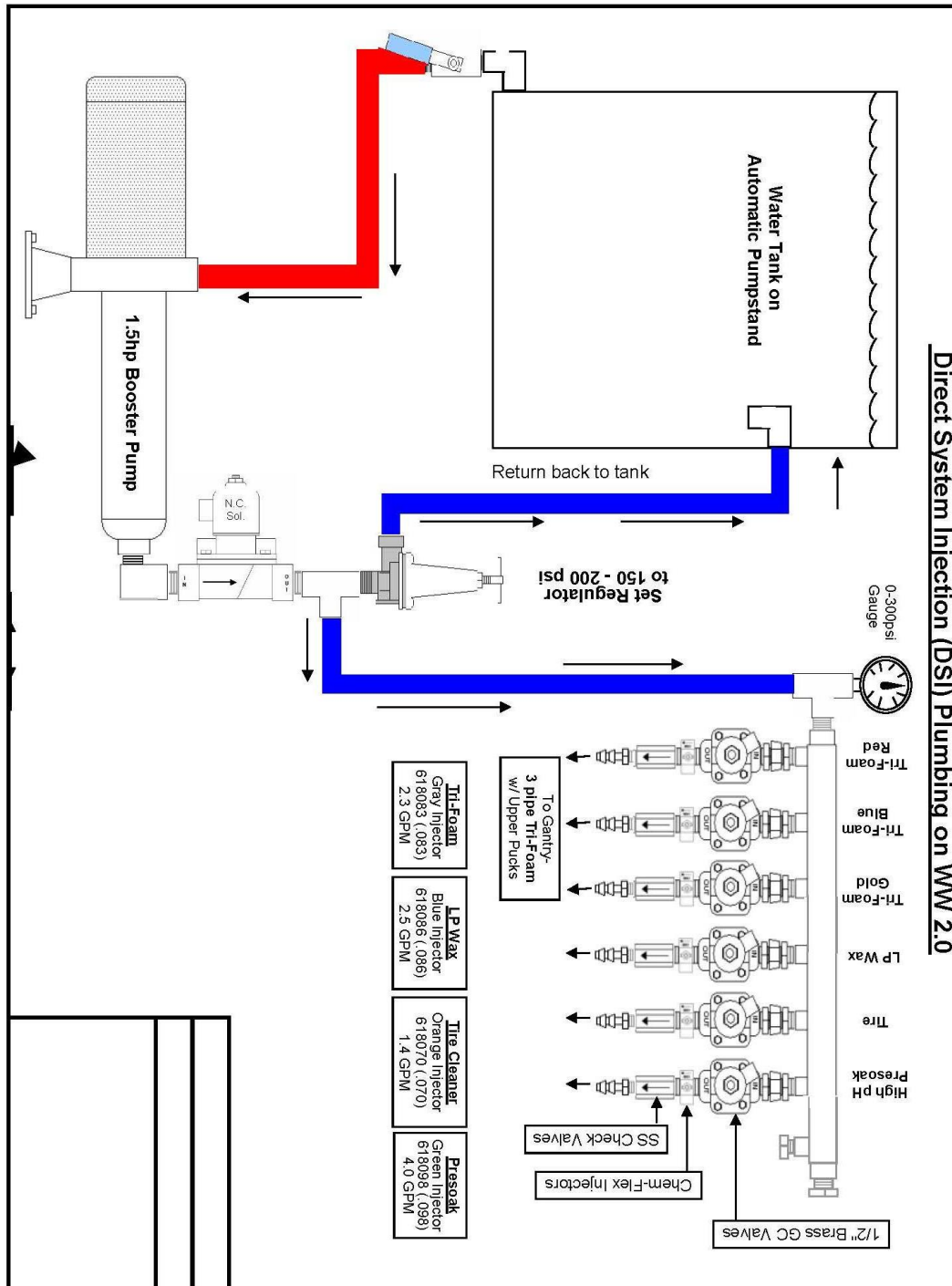
OPERATIONS DESCRIPTION

The DSI system consists of a 1-1/2 HP pump that you can adjust the pressure at the pressure regulator. We recommend that the pressure be set at 175 PSI. Do not exceed 190 PSI on this system. When the pump is running excess water from the pump regulator is being returned back to the tank.

Each Chemical has a separate solenoid that turns on when the Gantry is delivering the chemical. The water flows through the solenoid and then through an injector. The injector creates the suction to draw the chemical. The Injectors are available in different sizes based upon flow rates. The chart below shows the recommended injector for the Water Wizard and Fusion units. Each injector has a suction hose and hose barb. When you pull off the suction hose you can screw in a metering tip to change the dilution of the chemicals. There are two styles of tips that are available the standard lean tips and the Ultra Lean tips. Please note the GPM flow rates for the different functions on this machine, the injector flow rate is sized to be less than the cumulative flow thru the tips or nozzles for that function. If the cumulative flow of the nozzles is less than the flow rate of the injector it will not work or draw chemical properly. This creates backpressure and stops the suction.

The dilution that you get with your chemicals will vary based upon the viscosity of the chemicals. Your Chemical supplier will set up your machine with the proper tips and dilution ratios for the chemicals you are using.

STANDARD LAYOUT FOR TYPICAL DSI PUMP STAND



INJECTOR COLOR GUIDE

DSI System on Automatics using Chemicals

Low Pressure Product Name	HFI Injector Color	HFI Injector Size - GPM	Listed Ratio on Tip Chart	Metering Tip Color	
High pH Presoak	Green	.098 - 4.0 GPM	102:1	Tan	
Low pH Presoak	Green	.098 - 4.0 GPM	143:1	Burgundy	ultra-lean
Brush Lube	Gray	.083 - 2.3 GPM	230:1	Pumpkin	ultra-lean
Tire Cleaner	Red	.057 - 1.0 GPM	75:1	Orange	
Red Tri-Foam, Std. puck	Blue	.086 - 2.5 GPM	60:1	Turquoise	
Blue Tri-Foam, Std. puck	Blue	.086 - 2.5 GPM	60:1	Turquoise	
Gold Tri-Foam, Std. puck	Blue	.086 - 2.5 GPM	60:1	Turquoise	
Red Tri-Foam, 3 pipe	Red	.057 - 1.0 GPM	60:1	Turquoise	
Blue Tri-Foam, 3 pipe	Red	.057 - 1.0 GPM	60:1	Turquoise	
Gold Tri-Foam, 3 pipe	Red	.057 - 1.0 GPM	60:1	Turquoise	
Low Press. Wax	Blue	.086 - 2.5 GPM	102:1	Tan	
Glass Treatment (RainX)	Gray	.083 - 2.3 GPM	102:1	Tan	

PUMP STAND WIRE COLOR CHART

FLOATS & SOLENOIDS				
JUNCTION BOX 1	COLOR	FUNCTION	ID16	ROC16
1	Red	Medium Pressure		2002.03
2	Gray	Undercarriage		2002.02
3	Brown	High Pressure Soap		2002.00
4	Pink	High Pressure Wax		2002.01
5				
6				
7				
8	Orange	Water Tank Float	2009.15	
9				
10	Blue	24VDC (-)		
11	Red/Yellow	Triple Shine (yellow)		2003.06
12	Red/Black	Triple Shine (blue)		2003.05
13	Red/Green	Triple Shine (red)		2003.04
14	Orange/Black	Reclaim (optional)		2002.09
15	Gray/White	Cold Water Solenoid		2003.03
16	White	Neutral 24VAC		
17	Green	Ground		

INSTALLATION

RECOMMENDED TOOLS

Here are the basic tools required to perform a proper installation:

- Hammer Drill and bits
- Hammer
- Transit
- Laser Level
- Level
- Chalk line
- Measuring tape
- 2 -Adjustable wrenches 10 (25cm)-12 inch (30cm)
- Phillips and Straight screwdrivers - assorted sizes
- 2 - Mule or Johnson Bars or 1-Mule and 1- floor jack
- 3/4 inch siphon hose - 8 feet long
- Other helpful tools include:
 - 1 3/8ths and 1 1/2 inch open end wrenches
 - Electric impact wrench with 3/4 inch deep well socket
 - Right angle grinder with cut-off wheel
 - Voltmeter with AC & DC scales

INSTALLATION PROCEDURES

WATER and ELECTRIC REQUIREMENTS

**230VAC – 3phase - 125 AMP MINIMUM
Fusible Disconnect Switch w/125 Amp Dual Element Fuses**

120VAC - 20 AMP DEDICATED

1" SOFT COLD WATER LINE

Find a secure location inside the equipment room to place the pump stand.

A standard hook-up is when the automatic bay is next to equipment room. If the automatic bay is not next to the equipment room, you will need an extended bay installation kit. As a rule of thumb, add 20' of hose for each bay between the equipment room and the automatic bay.

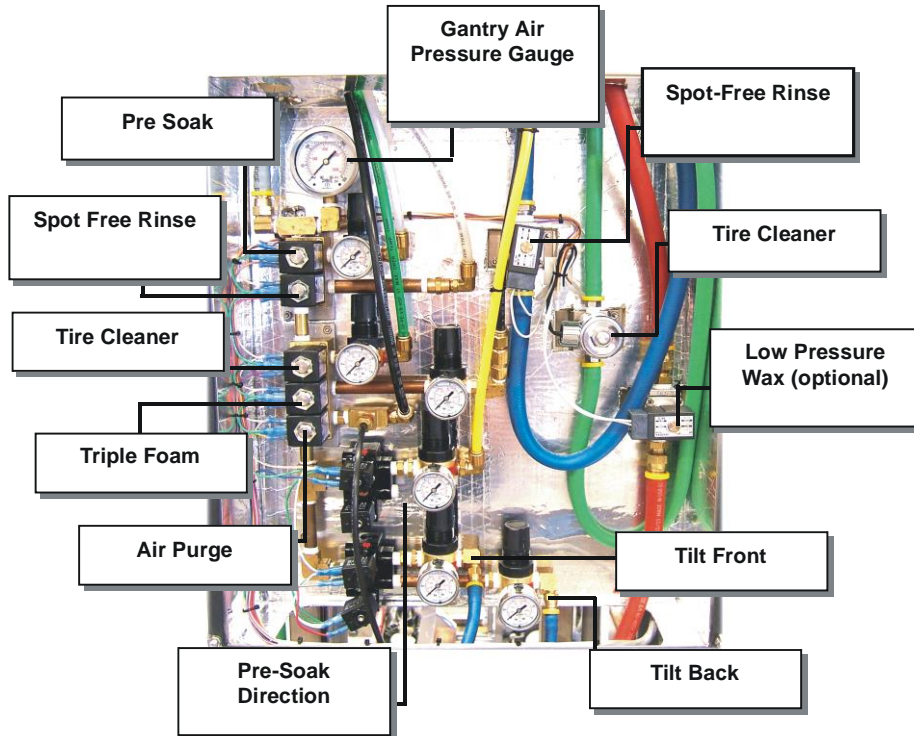
All hoses for the products will hook to appropriate connector on the back of the pumping plant, except the blue $\frac{3}{4}$ " R. O. hose. The R. O. hose connects to the R. O. pump on the R. O. system. Each hose will then go to the appropriate connector on the back of the disconnect box mounted on the wall. In the case of a remote bay, the connectors will be located on top of the box.

The following table shows how we identify each hose function by color and size:

Function	Hose Color	Hose Size
Low PH Presoak	Red	1/2"
High PH Presoak	Blue	1/2"
Circulating presoak	Blue	1/2"
Low pressure wax	Green	1/2"
Triple Shine	Yellow	1/2"
Tire Cleaner	Green	3/8"
Air	Gray	3/8"
Spot-free Rinse	Blue	3/4"

1. Connect the hoses to the low pressure disconnect plate in the top of the gantry.

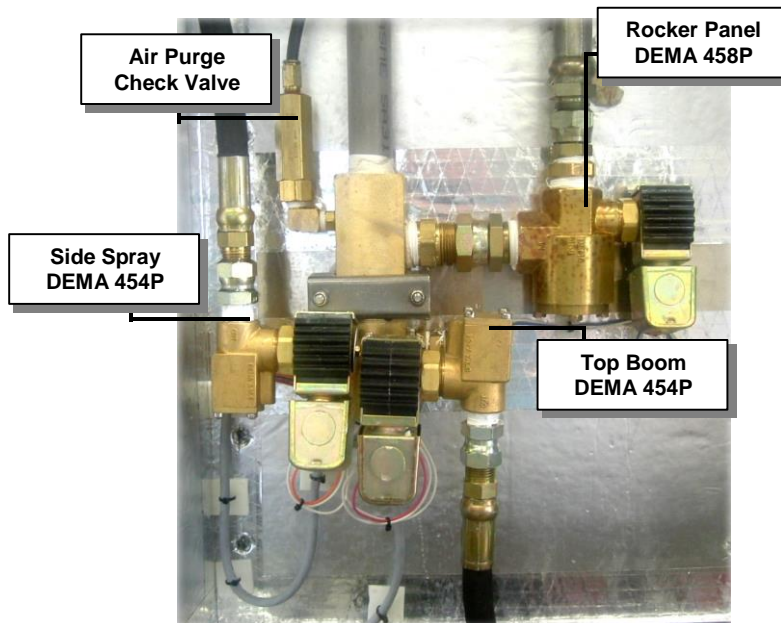
Begin connecting the hoses for the low-pressure functions at the chemical pump on the pump stand and run the hoses to the back of the transition/disconnect box. Then, connect the hoses between the wall-mounted boom and the gantry-mounted boom. Finally, connect the hoses from the low-pressure manifold to the gantry-mounted boom.



Low Pressure Box on Gantry (Driver's Side)

2. Connect hoses to the high-pressure box

The 3/4" push lock hose connects to the Automatic R.O. Delivery pump on the Self-Serve or Stand Alone R.O. System to the transition box. From inside of the transition box connect a 3/4" push lock hose, run the hose through the wall and gantry boom to the 3/4" fitting on the gantry disconnect plate located at the top of the wash gantry.



High Pressure Box on Gantry (Passenger's Side)

3. Connect the Undercarriage Bar

The 1/2" wire braid hose will connect to the 1/2" 454P DEMA located in lower front center of pumping plant. This hose will connect to stainless steel undercarriage spray bar. Leave tips out until the hose and bar have been flushed out for 1 minute.

4. Install Plumbing to Water Supply

Simply connect the 1" soft cold water line to the back of the tank so the float valve can fill the tank with water.

TROUBLESHOOTING THE DSI SYSTEM

Chemical is not being drawn up the suction tube.

1. Go to the Red lion controller and turn on the chemical that you are having a problem with.
2. Does water flow out the tips on the gantry.
3. If yes then the water solenoid is on and water is flowing through the injector.
4. Pull off the suction hose on the chemical and remove the lean or ultra-lean tip. Make sure the lean or ultra-lean tip is not clogged. Check to see that all of the nozzles are spraying properly and not causing backpressure. Clean Nozzles as required.
5. The best method is to install a vacuum gauge with a short hose on the hose barb and see if the injector is creating suction. If you have 20" of suction then the injector is working properly and the lean tip is clogged or the chemical is too thick to draw properly.
6. If you are not getting any suction or less than 10" there are two causes of the problem. The injector has to flow the proper amount of water to create the suction.

Example:

If the injector is Blue and is sized for 2.5 gallons per minute the tips on the gantry have to be sized to flow at least 2.5 GPM. If some of the tips are clogged then the tips are only flowing 2.0 GPM and then the injector will not create any suction.

- a. Check to see if the injector is clogged
- b. Check to make sure there are no tips on the gantry that are clogged.
- c. If no tips are clogged then go to the gantry and remove one of the tips and turn on and see if the injector has suction.
- d. Under the barb of the injector is a built in check valve with Teflon ball and spring.
- e. Remove the barb very carefully to make sure you don't lose the ball, spring or o-ring and clean as necessary.

Notes: When technicians are having a problem with the injector not drawing up the correct amount of chemical they usually want to increase the size of the injector. This does not solve the problem and only makes the problem worse. The tips or hockey puck foamer have to be sized to dispense more water than the injector is rated to flow. If the tips are too small then there will be backpressure and it will cause the injectors to stop drawing chemicals.

Tip Color	Ratio	Style	Tip Color	Ratio	Style
Copper	230:1	Ultra Lean	Green	16:1	Lean
Pumpkin	175:1	Ultra Lean	Blue	13:1	Lean
Burgundy	143:1	Ultra Lean	Yellow	9:1	Lean
Lime	100:1	Ultra Lean	Black	6:1	Lean
Tan	102:1	Lean	Purple	15:1	Lean
Orange	75:1	Lean	Gray	4:1	Lean
Turquoise	60:1	Lean	None	3.6:1	Lean
Pink	43:1	Lean			
Light Blue	33:1	Lean			
Brown	28:1	Lean			
Red	22:1	Lean			
White	18:1	Lean			

Ratio is based upon water thin products. Please field test to determine the actual ratio.

PUMPS

The Coleman Hanna DSI Pump System will use one of two pump. Either the 3535 CAT Pump, or the HTCK4050S General Pump. Below are spec sheets for both products to help troubleshoot problems and identify parts for repairs.



PICTURED
LEFT
HTCK4050S
GENERAL
PUMP



PICTURED
RIGHT
3535 CAT
PUMP

GENERAL PUMP *A member of the Interpump Group*

HTCK4050S

FEATURES

- Features patent-pending “high tech” packings:
 - dynamic low-pressure seal retainer
 - superior low-pressure seal
 - innovative intermediate ring
 - superior high-pressure seal
- Ceramic plungers
- Patent-pending inlet/outlet valve cage
- Nickel-plated forged brass manifold with an exclusive lifetime warranty
- Heavy-duty tapered roller bearings
- Specifically designed to handle rigorous duty cycles, high temperatures and chemicals
- Ideal for use in car wash and other high pressure cleaning applications



SPECIFICATIONS

Pump Model	HTCK4050S
Maximum Volume	36.0
Maximum Pressure	1500
Maximum RPM	800
Maximum Inlet Pressure	125 PSI
Minimum Inlet Pressure	3 ft. water (2.6 in. Hg)
Maximum Fluid Temperature	185°F
Bore (in / mm)	1.6 in./40 mm
Stroke (in / mm)	1.9 in./50 mm
Oil Capacity	124.4 oz.
Inlet Port Thread	1-1/2"-11 BSP-F
Discharge Port Thread	1"-11 BSP-F
Shaft Diameter	1.9 in./40 mm
Weight	157 lbs.
Dimensions - Nominal	20.7" x 14.5" x 9.9"

EMPEROR

EMPEROR



General Pump
is a member of
the Interpump Group

Ref 300607 Rev.D
01-13



GENERAL PUMP *A member of the Interpump Group*

Emperor
Pumps That Rule Any Environment

HTCK4050S

Instructions and Recommendations for the Installation of *HT Series Pumps*

The high-temperature pumps of the HT series have been designed for use in applications where the water must be pre-heated, such as in carwash, food and pharmaceutical industries.

Maximum temperature of the water through the pump is 185°F (85°C).

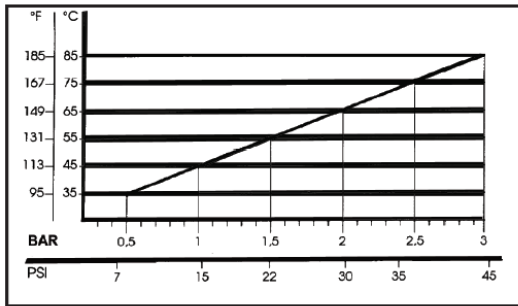
In order to obtain maximum performance in terms of duration of seals and valves, it is necessary to respect a few simple rules, as follows:

- 1) **In order to avoid damage caused by cavitation, the pump must be pressure fed.**

The higher the inlet pressure, the longer the life of the wet end of the pump.

When working at 185°F (85°C), the minimum feed pressure - measured directly in the inlet port of the pump when it is working - is 45 psi (3 bar).

The minimum feed pressure according to the different temperatures are:



Naturally, if the application allows for feeding the pump with 45 psi (3 bar) even at low temperatures (for example: 115°F/45°C the life of the wet end of the pump will be even longer.

- 2) **The plumbing which feeds the pump must be of a diameter at least equal to the inlet port.**

Also, follow the suggestions below:

- a) Make the plumbing as short and straight as possible, preferably in an upward direction to facilitate the expulsion of eventual air bubbles naturally if compatible with the requirements of the system.
- b) It is always useful to put a filter at the inlet with capacity of 4 to 5 times the flow of

the pump, for example for a 4 gpm (15 l/min) pump, put a filter from 16 to 20 gpm (60-75 l/mi). The mesh size suitable for this application is 0.016" (.4 mm).

- c) It is extremely important to put a pressure switch on the suction port of the pump, and in any case downstream from the filter, so that it can stop the pump should the feed pressure drop by 20% due to the filter clogging or failure of the feed pump, etc.

3) Change of oil

We recommend the **first oil change after the first 50 hours**, with the **pump stopped** and the **oil still warm**.

This change is not recommended because the oil has lost its properties, but rather to eliminate the impurities that have gotten into the oil during the running-in phase. If these impurities are not removed, but are allowed to remain in the oil, they may cause *premature wear* to the moving parts and the oil seals. **After this initial change, the oil can then be changed every three months or 300 hours of operation thereafter.**

Please note: If the pump works in conditions with high humidity and with sharp temperature changes, it is possible that condensation will appear inside the crankcase, which mixing with the oil can change its properties. This is easy to see because the oil changes to a white, milky color.

If the pump does not have excessive water leaking from the packings, and the oil becomes milky, the oil has to be changed more frequently. The percentage of water in the oil must not exceed 20%.

Use oil per the following chart:

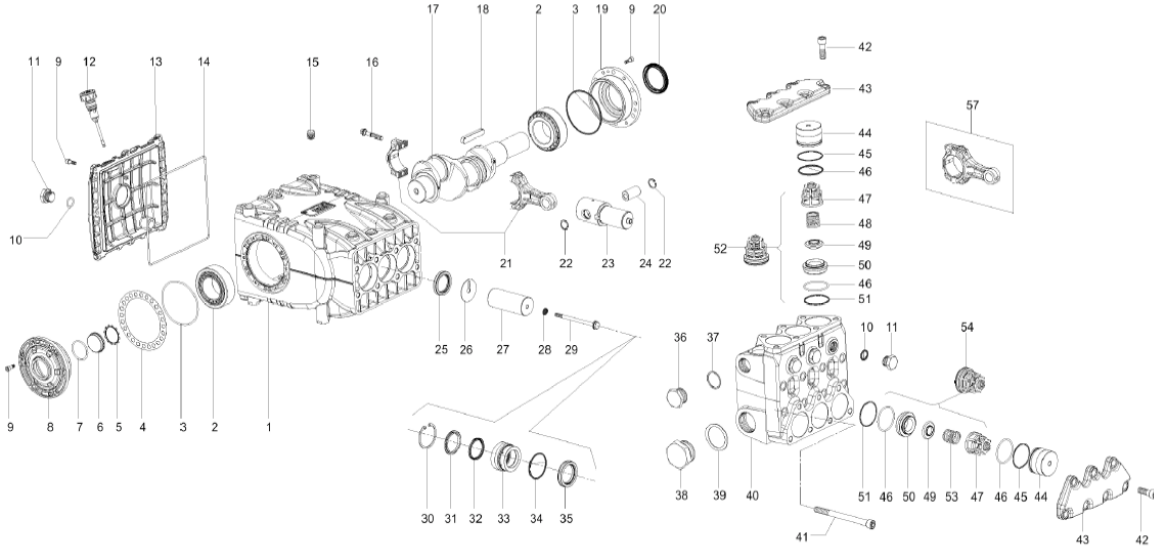
CHART OF COMPATIBLE OILS SAE 15W40	
GENERAL PUMP	SERIES 100
BP	VISCO 2000
CASTROL	CWX
MOBIL	SUPER
SHELL	HELIX SUPER
TOTAL	QUARTZ 4000-5000

Ref 300607 Rev.D
01-13

GENERAL PUMP *A member of the Interpump Group*



HTCK4050S



PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1.	71010022	Crankcase	1	18.	91500000	Key	1	40.	71123241	Manifold, Nickel-plated, 40 mm, G	1
2.	91859000	Bearing, Tapered Roller	2	19.	71150022	Crankcase Cover, Open	1		71123341	Manifold, Nickel-plated, 40 mm, NPT	1
3.	90391800	O-ring	2	20.	90170000	Crankshaft Oil Seal	1	41.	99448000	Screw, M12 x 150	8
4.	71220081	Shim	1	21.	71030043	Connecting Rod	3	42.	99429500	Screw, M12 x 35	14
	71220381	Shim	1	22.	90060600	Circlip	6	43.	71210136	Valve Cover	2
5.	90075600	Retainer	1	23.	71050015	Plunger Guide	3	44.	71211170	Plug	6
6.	70211801	Oil Level Indicator	1	24.	97743000	Wrist Pin	3	45.	90525000	Anti-extrusion Ring	6
7.	90387700	O-ring	1	25.	90167800	Plunger Rod Oil Seal	3	46.	90388900	O-ring	12
8.	71150122	Side Cover, Sight Glass	1	26.	96714000	Flinger Washer	3	47.	36204551	Valve Guide	6
9.	99186700	Screw, M6 x 18	20	27.	71040509	Plunger, 40 mm	3	48.	94755000	Spring, Outlet	3
10.	90384100	O-ring	4	28.	90367100	O-ring	3	49.	36204456	Valve Poppet	6
11.	98218100	Plug, 1/2" G Nickel-plated	4	29.	71219566	Plunger Bolt	3	50.	36204156	Valve Seat	6
12.	98212000	Oil Dipstick	1	30.	90079700	Circlip	3	51.	90524000	Anti-extrusion Ring	6
13.	71160022	Crankcase Cover, Rear	1	31.	71218970	Spacer	3	52.	36713701	Valve Assy., Outlet	3
14.	90400000	O-ring	1	32.	90245000	L.P. Seal, 40 mm	3	53.	94754000	Spring, Inlet	3
15.	98206000	Rubber Plug	7	33.	71216670	Retainer, Intermediate, 40 mm	3	54.	36713601	Valve Assy., Inlet	3
16.	99313800	Screw	6	34.	90389100	O-ring	3	57.	71030001	Connecting Rod	3
17.	71020035	Crankshaft	1	35.	90246000	H.P Seal, 40 mm	3				
				36.	98232600	Plug, 1" G, Nickel-plated	1				
				37.	93198500	Washer	1				
				38.	98244000	Plug, 1-1/2" G, Nickel-plated	1				
				39.	93199000	Washer	1				
								HT 150RCK		Rail Conversion Kit	

REPAIR KITS

KIT NO.	K2012	K2013	K2033	K2034
ITEM NO'S INCLUDED IN KIT	46, 47, 49 50, 51, 53 (54)	46, 47, 48, 49, 50, 51, (52)	32, 35	30, 31, 32, 33, 34, 35
NUMBER OF ASSY'S IN KIT	3	3	3	1
NO. OF CYLINDERS KIT SERVICES	3	3	3	1

TORQUE SPECS*

Position	Ft.-Lbs.	Nm.
9	7.4	10
11	29.5	40
16	28.0	38
29**	14.7	20
36	110.6	150
38	110.6	150
41	59.0	80
42	88.5	120
56	16.2	22

Ref 300607 Rev.D
01-13

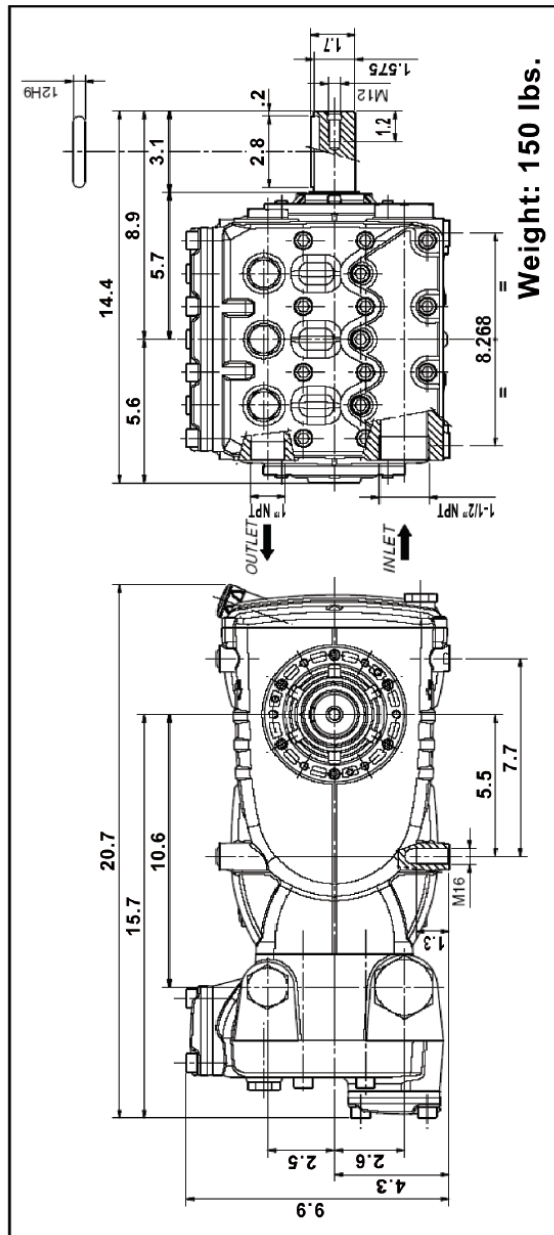
*Decrease torque by 20% if threads are lubricated.
**Use Loctite 542.

GENERAL PUMP *A member of the Interpump Group*

HTCK4050S

Emperor
Pumps That Rule Any Environment

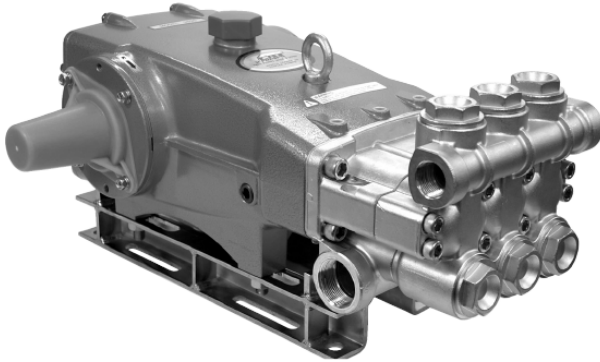
DIMENSIONS



Ref 300607 Rev.D
01-13



GENERAL PUMP 1174 Northland Drive Mendota Heights, MN 55120
Phone: 651.686.2199 FAX: 800.535.1745 e-mail: sales@gpcompanies.com www.generalpump.com



Model 3535 Shown
(Shaft protector included, mounting rails sold separately)

FEATURES

- Triplex design delivers high efficiency and low pulsation.
- Durable dual V-Packings are lubricated and cooled by pumped liquid.
- Pre-set Lo-Pressure Seals provide secondary protection against external leaks and require no packing adjustments.
- Special high-density, polished, concentric plungers provide a true wear surface and extended seal life.
- Specially formulated Seals and V-Packings offer unmatched performance and extended life.
- Interchangeable inlet and discharge valves for easy servicing.
- Wet-end easily serviced without entering crankcase.

⚠ CAUTIONS AND WARNINGS

All High Pressure Systems require a primary pressure regulating device (i.e. regulator, unloader) and a secondary pressure relief device (i.e. pop-off valve, relief valve). Failure to install such relief devices could result in personal injury or damage to pump or property. CAT PUMPS does not assume any liability or responsibility for the operation of a customer's high pressure system.

Read all CAUTIONS and WARNINGS before commencing service or operation of any high pressure system. The CAUTIONS and WARNINGS are included in each service manual and with each Data sheet. CAUTIONS and WARNINGS can also be viewed online at www.catpumps.com/cautions-warnings or can be requested directly from CAT PUMPS.

WARRANTY

View the Limited Warranty on-line at www.catpumps.com/warranty.

35 Frame Plunger Pump

Brass
Standard and Flushed **3535, 3535C**

Stainless Steel
Standard and Flushed **3531, 3531C**

Nickel Aluminum Bronze
Standard **3537**

SPECIFICATIONS

	U.S. Measure	Metric Measure
Flow	36 gpm	(136l/m)
Pressure Range	100 to 1200 psi	(7 to 85 bar)
Inlet Pressure Range	Flooded to 70 psi	(Flooded to 4.9 bar)
RPM.....	800 rpm	(800 rpm)
Bore.....	1.575"	(40 mm)
Stroke.....	1.890"	(48 mm)
Crankcase Capacity	4.2 Qts.	(4 l)
Maximum Liquid Temperature	160°F	(70°C)
Above 130°F call CAT PUMPS for inlet conditions and elastomer recommendations.		
Inlet Ports (2)	1-1/2" NPTF	(1-1/2 NPTF)
Flushing Ports (2) (3531C,3535C).....	1/4" NPTF	1/4" NPTF
Discharge Ports (2).....	1" NPTF	(1" NPTF)
Pulley Mounting.....	Either Side	(Either Side)
Shaft Diameter.....	1.378"	(35 mm)
Weight	139 lbs.	(63 kg)
Dimensions (3535, 3535C)	23.87 x 18.11 x 9.72"	(606.5 x 460 x 247 mm)
Dimensions (3531,3531C, 3537)	24.33 x 18.11 x 9.72"	(618 x 460 x 247 mm)

ELECTRIC HORSEPOWER REQUIREMENTS

U.S. gpm	FLOW l/m	PRESSURE			rpm	DRIVE Consult CAT PUMPS for Pump and Motor Pulley Sizes
		psi 800	psi 1000	psi 1200		
36	136	19.8	24.7	29.7	800	
30	114	16.5	20.6	24.7	667	
25	95	13.7	17.2	20.6	556	

DETERMINING THE PUMP rpm $\frac{\text{Rated gpm}}{\text{Rated rpm}} = \frac{\text{"Desired" gpm}}{\text{"Desired" rpm}}$

DETERMINING THE REQUIRED H.P. $\frac{\text{gpm} \times \text{psi}}{1460} = \frac{\text{Electric Brake H. P. Required}}{1}$

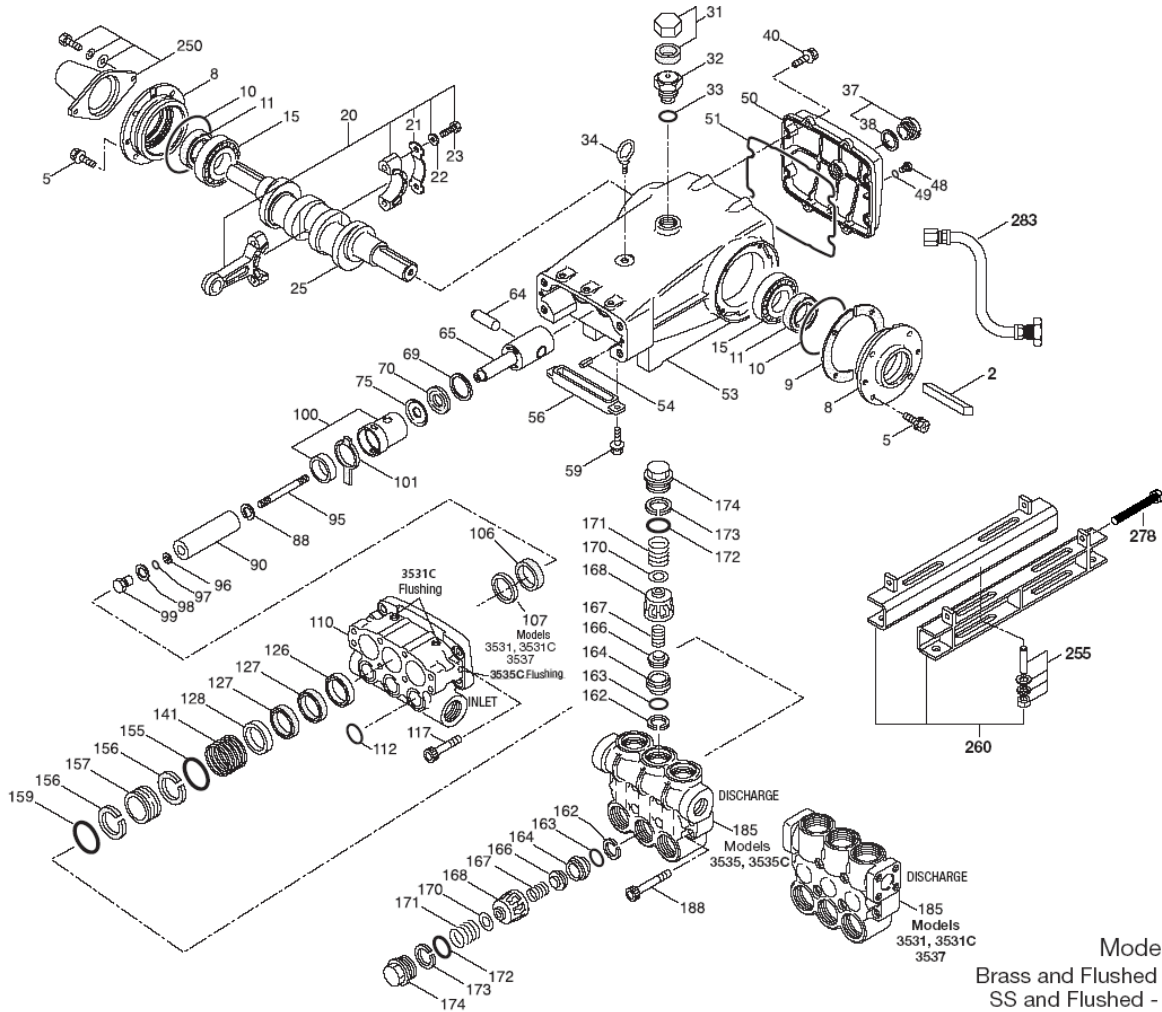
DETERMINING MOTOR PULLEY SIZE $\frac{\text{Motor Pulley O.D.}}{\text{Pump rpm}} = \frac{\text{Pump Pulley O.D.}}{\text{Motor rpm}}$

See complete Drive Packages [Incls: Pulleys, Belts, Hubs, Key] Tech Bulletin 003.
Refer to pump Service Manual for repair procedure and additional technical information.

"Customer confidence is our greatest asset"

PARTS LIST

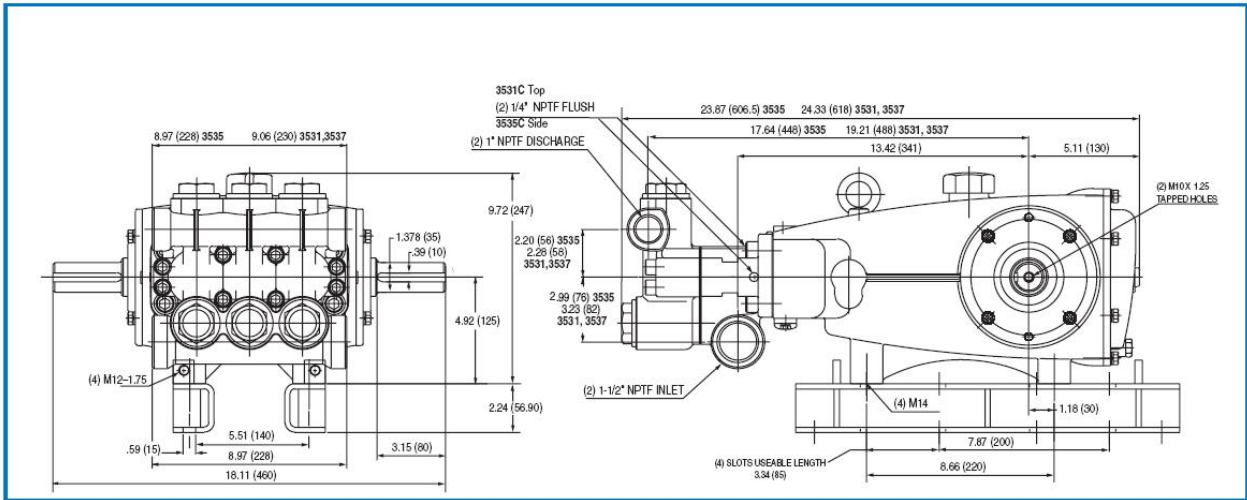
ITEM	3535		3531		3537		DESCRIPTION	QTY
	MATL	MATL	MATL	MATL	MATL	MATL		
2	34021	STL	34021	STL	34021	STL	Key (M10x8x70)	1
5	125753	S	125753	S	125753	S	Screw, HHC Sems (M8x25)	8
8	44542	AL	44542	AL	44542	AL	Cover, Bearing	2
9	815279	FBR	815279	FBR	815279	FBR	Shim, Split 2-Pc	4
10	12398	NBR	12398	NBR	12398	NBR	O-Ring, Bearing Cover - 70D	2
11	13296	NBR	13296	NBR	13296	NBR	Seal, Oil, Crankshaft	2
15	29326	STL	29326	STL	29326	STL	Bearing, Roller	2
20	121467	TNM	121467	TNM	121467	TNM	Rod, Connecting Assy (Incls: 21,22,23) [10/00]	3
21	126749	STCP R	126749	STCP R	126749	STCP R	Locking Washer (M10)	3
22	126574	STZP R	126574	STZP R	126574	STZP R	Washer, Flat (M10)	6
23	122045	STZP	122045	STZP	122045	STZP	Screw, HH (M10x55)	6
25	29325	FCM	29325	FCM	29325	FCM	Crankshaft, Dual End	1
31	828710	—	828710	—	828710	—	Protector, Oil Cap w/Foam Gasket	1
32	43211	ABS	43211	ABS	43211	ABS	Cap, Oil Filler	1
33	14177	NBR	14177	NBR	14177	NBR	O-Ring, Oil Filler Cap - 70D	1
34	126743	STCP R	126743	STCP R	126743	STCP R	Bolt, Eye (M12x1.75) (For Lifting Pump Only)	1
37	92241	—	92241	—	92241	—	Gauge, Oil, Bubble w/Gasket	1
38	44428	NBR	44428	NBR	44428	NBR	Gasket, Flat, Oil Gauge - 80D	1
40	125753	S	125753	S	125753	S	Screw, HHC Sems (M8x25)	8
48	25625	STCP	25625	STCP	25625	STCP	Plug, Drain (1/4"x19BSP)	1
49	23170	NBR	23170	NBR	23170	NBR	O-Ring, Drain Plug - 70D	1
50	45936	AL	45936	AL	45936	AL	Cover, Rear	1
51	16612	NBR	16612	NBR	16612	NBR	O-Ring, Crankcase Cover - 70D	1
53	44487	AL	44487	AL	44487	AL	Crankcase Assy (Incls: 34, 54)	1
54	27488	S	27488	S	27488	S	Pins, Guide	2
56	27790	POP	27790	POP	27790	POP	Pan, Oil	1
59	92538	S	92538	S	92538	S	Screw, HHC Sems (M6x16)	2
64	43864	CM	43864	CM	43864	CM	Pin, Crosshead	3
65	45116	SSZZ	45116	SSZZ	45116	SSZZ	Rod, Plunger	3
69	126587	STCP R	126587	STCP R	126587	STCP R	Washer, Oil Seal	3
70	100488	NBR	100488	NBR	100488	NBR	Seal, Oil, Crankcase	3
	44739	FPM	44739	FPM	44739	FPM	Seal, Oil, Crankcase	3
75	43865	S	43865	S	43865	S	Slinger, Barrier	3
88	45676	S	45676	S	45676	S	Washer, Keyhole (M16)	3
90	43921	CC	43921	CC	43921	CC	Plunger (M40x145)	3
95	89778	SS	89778	SS	89778	SS	Stud, Plunger Retainer (M10x135)	3
96	20189	PTFE	20189	PTFE	20189	PTFE	Back-up-Ring, Plunger Retainer	3
97	11345	NBR	11345	NBR	11345	NBR	O-Ring, Plunger Retainer - 70D	3
	11375	FPM	11375	FPM	11375	FPM	O-Ring, Plunger Retainer	3
	701490	EPDM	701490	EPDM	701490	EPDM	O-Ring, Plunger Retainer	3
98	44085	SS	44085	SS	44085	SS	Gasket, Retainer	3
99	44084	SS	44084	SS	44084	SS	Retainer, Plunger (M10)	3
100	814279	PVDF	814279	PVDF	814279	PVDF	Retainer, Seal, 2 Pc. (See Tech Bulletin 105)	3
101	44112	—	44112	—	44112	—	Wick, Long Tab	3
106	44113	NBR	44113	NBR	44113	NBR	Seal, LPS w/SS-Spg	3
	44740	FPM	44740	FPM	44740	FPM	Seal, LPS w/SS-Spg	3
	46955	EPDM	46955	EPDM	46955	EPDM	Seal, LPS w/S-Spg	3
107	—	—	45381	SS	44115	NAB	Spacer, Lo-Pressure Seal	3
110	49464	BBCP R	45365	SS	45124	NAB	Manifold, Inlet	1
	49464C	BBCP R	125397	SS	—	—	Manifold, Inlet, Flushed (1/4" Flush Ports)	1
112	11379	NBR	11379	NBR	11379	NBR	O-Ring, Inlet Manifold - 70D	3
	14183	FPM	14183	FPM	14183	FPM	O-Ring, Inlet Manifold	3
	701491	EPDM	701491	EPDM	701491	EPDM	O-Ring, Inlet Manifold - 70D	3
117	44585	S	44585	S	44585	S	Screw, HSH (M14x40)	4
126	46494	BB	48391	D	48391	D	Adapter, Female (See Tech Bulletin 087)	3
	—	—	45367	SS	45367	SS	Adapter Female	3
127	44609	STG*	44609	STG*	44609	STG*	V-Packing	6
	44741	SFG	44741	SFG	44741	SFG	V-Packing	6
128	43928	BB	45368	SS	45368	SS	Adapter, Male	3
141	49519	SS	49519	SS	49519	SS	Spring, Large Coil (See Tech Bulletin 108)	3
155	48860	NBR	48860	NBR	48860	NBR	O-Ring, V-Packing Spacer - 90D	3
	20137	FPM	20137	FPM	20137	FPM	O-Ring, V-Packing Spacer - 70D	3
	701492	EPDM	701492	EPDM	701492	EPDM	O-Ring, V-Packing Spacer	3
156	48362	D	48362	D	48362	D	Back-up-Ring, V-Packing Spacer	3
157	49478	BB	49520	SS	49521	NAB	Spacer, V-Packing (See Tech Bulletin 108)	3
158	48362	D	48362	D	48362	D	Back-up-Ring, V-Packing Spacer	3
159	48860	NBR	48860	NBR	48860	NBR	O-Ring, V-Packing Spacer - 90D	3
	20137	FPM	20137	FPM	20137	FPM	O-Ring, V-Packing Spacer - 70D	3
	701492	EPDM	701492	EPDM	701492	EPDM	O-Ring, V-Packing Spacer	3
162	48363	D	48363	D	48363	D	Back-up-Ring, Valve Seat	6
163	26142	NBR	26142	NBR	26142	NBR	O-Ring, Seat - 80D	6
	14330	FPM	14330	FPM	14330	FPM	O-Ring, Seat	6
	701493	EPDM	701493	EPDM	701493	EPDM	O-Ring, Seat	6
164	44727	S	44612	SS	44612	SS	Seat, Stepped	6
166	43932	S	44108	SS	44108	SS	Valve	6
167	44109	SS	44109	SS	44109	SS	Spring	6
168	44728	PVDF	44728	PVDF	44728	PVDF	Retainer, Spring	6
170	44729	SS	44729	SS	44729	SS	Washer, Spring Retainer	6
171	44644	SS	44644	SS	44644	SS	Coil Spring (70kg), Valve Plug	6
172	89827	NBR	89827	NBR	89827	NBR	O-Ring, Valve Plug - 90D	6
	11747	FPM	11747	FPM	11747	FPM	O-Ring, Valve Plug - 90D	6
	701494	EPDM	701494	EPDM	701494	EPDM	O-Ring, Valve Plug - 70D	6
173	48364	D	48364	D	48364	D	Back-up-Ring, Valve Plug	6
174	46444	FBB	49300	SSD	44643	NAB	Plug, Valve	1
185	49465	BBCP R	49299	SSD	76335	NAB	Manifold, Discharge (See Tech Bulletin 099 and 109)	6
188	89981	S	89981	S	89981	S	Screw, HSH (M12x70)	8
250	44516	NY	44516	NY	44516	NY	Protector, Shaft w/2 Screws, Lockwashers and Washers (Included With Pump)	1



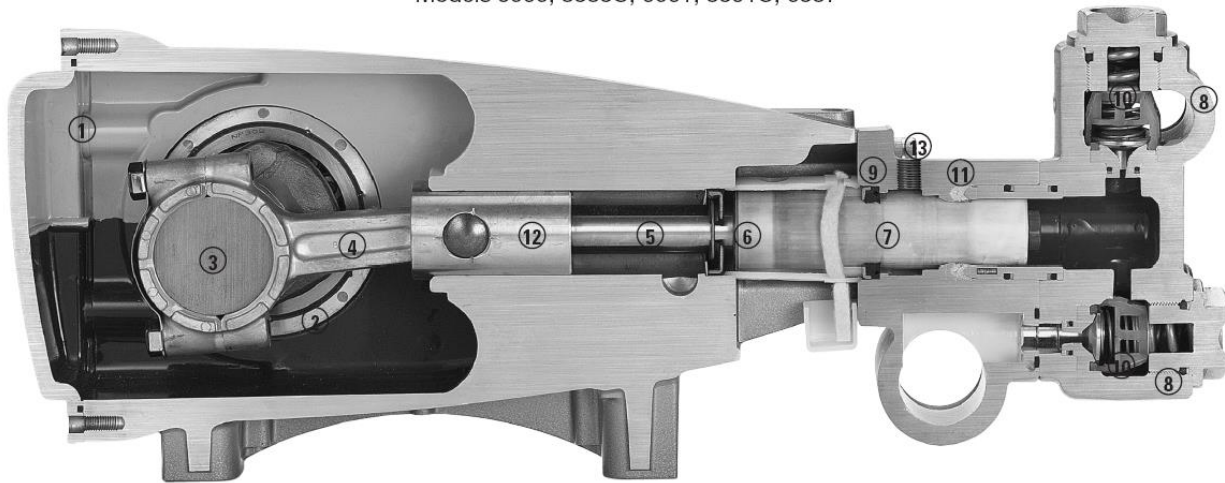
Models
Brass and Flushed - 3535, 3535C
SS and Flushed - 3531, 3531C
NAB and Flushed - 3537
March 2010

	3535	3531	3531C	3537				
	3535C	MATL	3531C	MATL	3537	MATL		
255	34018	STZP R	34018	STZP R	34018	STZP R	Kit, Direct Mount	1
	34039	S	34039	S	34039	S	Kit, Direct Mount	1
260	92674	STZP R	92674	STZP R	92674	STZP R	Mounting, Box Assy (Incls: 34018)	1
275	990013	STL	990013	STL	990013	STL	Hub, 'B' 35mm w/Keyway (See Tech Bulletin 003)	1
278	80540	ZP	80540	ZP	80540	ZP	Screw, HH (M12x100) (Rail Adjusting Screw)	1
279	30278	STZP	30278	STZP	30278	STZP	Oiler (1 oz.)	3
281	30967	—	30967	—	30967	—	Glass, Oiler	3
282	10069	NBR	10069	NBR	10069	NBR	Gasket, Oiler	3
283	34314	—	34314	—	34314	—	Kit, Oil Drain (3/8" x 48")	1
290	6124	—	6124	—	6124	—	Gasket, Liquid (3 oz.)	1
299	818427	BBCP R	818372	SS	814522	NAB	Complete Head (Models 3535,3531,3537 Only)	1
300	31040	NBR*	31040	NBR*	31040	NBR*	Kit, Seal (Incls: 97,106,112,127,155,156,158,159)	1
	33055	FPM	33055	FPM	33055	FPM	Kit, Seal (Incls: 97,106,112,127,155,156,158,159)	1
	◆33262	EPDM*	◆33262	EPDM*	◆33262	EPDM*	Kit, Seal (Incls: 97,106,112,127,155,156,158,159)	1
310	34235	NBR	34017	NBR	34017	NBR	Kit, Valve, Preassembled (Incls: 162,163,164,166,167,168,170,172,173)	2
	31955	FPM	31955	FPM	31955	FPM	Kit, Valve, Preassembled (Incls: 162,163,164,166,167,168,170,172,173)	2
	◆31952	EPDM	◆31952	EPDM	◆31952	EPDM	Kit, Valve, Preassembled (Incls: 162,163,164,166,167,168,170,172,173)	2
	819000	F	819000	F	819000	F	Assy, Crankcase, Cast Iron Conversion	1
390	714500	SS	714500	SS	714500	SS	C.A.T. (Inlet pressure stabilizer for RO and boosted inlet applications)	1
391	714506	SS	714506	SS	714506	SS	Adapter (2 per C.A.T.) (See Data Sheet for complete selection)	2
392	701828	SS	701828	SS	701828	SS	Elbow Assy used with Adapter Assy 714506	1
	6575	—	6575	—	6575	—	Plunger Pump Service DVD	1
	6100	—	6100	—	6100	—	Oil, Case (12 Bottles) ISO -68 Hydraulic (Fill to specified crankcase capacity prior to start-up)	1
	—	—	6119	—	—	—	Lubricant, Antiseize (1oz) (See Tech Bulletin 095)	1

Bold print part numbers are unique to a particular pump model. Italics are optional items. [] Date of latest production change.
 ◆ Silicone oil/grease required. † Production parts differ from service parts.* Review individual parts in each kit for material identification. R Components comply with RoHS Directive
C.A.T. highly recommended for pressurized inlet, R.O. and Industrial applications.
 View Tech Bulletins 03, 024, 035, 036, 040, 041, 043, 050, 052, 053, 069, 074, 077, 083, 095, 099, 105, 108 and 109 for additional information.
 MATERIAL CODES (Not Part of Part Number): ABS=ABS Plastic AL=Aluminum BB=Brass BCBP=Brass/Chrome Plated CC=Ceramic CM=Chrome-Moly D=Acetal
 EPDM=Ethylene Propylene Diene Monomer F=Cast Iron FBB=Forged Brass FBR=Forged Chrome-moly FCM=Forged Chrome-moly FPM=Fluorocarbon NAB=Nickel Aluminum Bronze
 NBR=Medium Nitrile (Buna-N) NBRSS=Buna, Silicone Free NY=Nylon POP=Polypropylene PTFE=Pure Polytetrafluoroethylene PVDF=Polyvinylidene Fluoride S=304SS SS=316SS
 SSD=Duplex Stainless Steel SSL=316/Low Carbon SSZZ=316SS/Zamak STCP=Steel/Chrome Plated SFG=Special Blend (FPM) STG=Special Blend (PTFE) White
 STL=Steel STZP=Steel/Zinc Plated TNM=Special High Strength ZP=Zinc Plated



Models 3535, 3535C, 3531, 3531C, 3537



- 1 Die cast aluminum **crankcase** means high strength, lightweight, and excellent tolerance control.
- 2 Oversized crankshaft **bearings** provide extended bearing life and pump performance.
- 3 Chrome-moly **crankshaft** provides unmatched strength and surface hardness for long life.
- 4 Matched oversized TNM **connecting rods** noted for superior tensile strength and bearing quality.
- 5 Special stainless steel **plunger rods** with high strength crossheads for longevity and corrosion resistance.
- 6 The stainless steel **slinger** provides backup protection for the crankcase seal, keeping pumped liquids out of the crankcase.
- 7 Special concentric, high-density, polished, solid ceramic **plungers** provide a true wear surface and extended seal life.
- 8 **Manifolds** are a high tensile strength forged brass, 316 stainless steel, duplex stainless or nickel aluminum bronze for long term, continuous duty.
- 9 100% **wet seal** design adds to service life by allowing pumped liquids to cool and lubricate on both sides.
- 10 Stainless steel **valves, seats and springs** provide corrosion-resistance, ultimate seating and extended life.
- 11 Specially formulated, Cat Pump exclusive, **V-Packings** offer unmatched performance and seal life.
- 12 **Crossheads** are 360° supported providing uncompromising alignment.
- 13 Special **Flushed Inlet Manifold** permits external flush for added cooling with high temperature liquids and lubrication with low lubricity liquids.

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WORLD CLASS MANUFACTURER IN CAR WASH EQUIPMENT

DSI PUMP STAND MANUAL

PARTS

LIMITED WARRANTY

The Manufacturer warrants any component or part of the Coleman Hanna Car Wash Systems. Equipment to be free from defects in material and workmanship for a period of one year from date of shipment, with the exception of such parts as are commonly recognized to be subject to wear in normal usage, such as high pressure hoses, swivels, nozzles, safety shut off guns, etc., which are warranted for ninety (90) days. All electrical parts not manufactured Coleman Hanna Car Wash Systems are warranted to be free from defects in material and workmanship for a period of 90 days. Electrical motors shall be covered under manufacturer's warranty for a period of one year, unless otherwise specified. Coleman Hanna Car Wash Systems electronic controls, such as timers, coin acceptors and computer monitoring equipment, carry a one-year warranty. Claims under this warranty must be asserted in writing within the one-year period covered by this warranty.

Any component or part alleged to be defective in material or workmanship shall, at option of Manufacturer, be returned with shipping cost prepaid. If, upon examination, such component or part is found to be defective in workmanship or materials, Manufacturer, at its option, will either repair or replace such component or part, and shall ship such repaired or replaced component or parts F.O.B. factory, Houston, Texas. Manufacturer reserves the right to use "Like New" or Remanufactured parts in repair of warranty items that exceed 6 months in service. The cost of such replacement or repair shall be the exclusive remedy for any breach of any warranty and Manufacturer shall not be liable to any person for consequential damages for injury or commercial loss resulting from any breach of any warranty. This warrant does not cover any labor installation cost, either with respect to the original equipment, the repaired or replaced component, or part defective in workmanship or materials. Coleman Hanna Car Wash Systems does not warrant loss of income should there be any during such time repairs are being made. Coleman Hanna Car Wash Systems shall not be responsible for vehicle damage or repairs as may arise during normal wash cycle operation. Operator acknowledges accepted risks involved with friction in-bay automatic washes.

This warranty does not apply to components or parts, which have been misused, altered, neglected, not installed, adjusted, maintained, or used in accordance with applicable codes and ordinances and in accordance with Manufacturer's recommendations as to such factors.

THIS WARRANTY IS IN LIEU OF ALL WARRANTIES, EXPRESS OR IMPLIED, OF EITHER MANUFACTURER OR SELLER, AND MANUFACTURER MAKES NO WARRANTY AGAINST INFRINGEMENT OF THE LIKE, MAKES NO WARRANTY OF MERCHANTABILITY, MAKES NO WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, AND MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING IMPLIED WARRANTY ARISING FROM COURSE OF DEALING OR USAGE OF TRADE.

This warranty does not apply to damage resulting from improper operation or abuse, exceeding the rated capacities of the unit, running foreign particles or non related solutions through pumps or valves, using acidic solutions, improper installation or maintenance, operational neglect, neglect of manufacturers recommended maintenance, use of water containing solids in excess of twenty microns in diameter or 2000 PPM, damage caused by customer, unjustifiable nuisance calls, or acts of God.

Compliance with any local governmental laws or regulations relating to the location, use or operation of the equipment, or its use in conjunction with other equipment, shall be the responsibility of the purchaser. The rights and obligations of the parties shall be governed by the State of Texas.



RETURNED MATERIAL AUTHORIZATION (RMA)

Customer Account No.: _____ Date: _____
 Customer: _____ Ref. Equip No.: _____
 _____ Ref. Sales No.: _____
 _____ Start Up Date: _____

PARTS TO BE RETURNED

Qty.	Parts #	Description	Reason For Return

Return parts, shipping PREPAID to:

**Coleman Hanna Car Wash Systems.
 5842 W. 34th Street
 Houston, TX 77092**

Important Note: If the parts listed above are not received within 45 days from the date of shipment of the replacement parts from HCW/JCC, then credit for the returned parts will be disallowed and the invoice becomes due and immediately payable. This form **MUST** accompany ALL returned parts.

No Form = No Credit

Do Not Write Below This Line. To Be Completed By Hanna Car Wash Systems Customer Service Department Only.

Date Parts Received: _____ Checked In By: _____

Disposition: Salvage/Discard Comments: _____
 Hanna Evaluation _____
 Engineering Review _____
 Vendor Evaluation _____

Approved: _____ By Whom: _____

Parts Complete: _____ Credit Memo No: _____



WORLD CLASS MANUFACTURER IN CAR WASH EQUIPMENT

DSI PUMP STAND MANUAL



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