24 - Ton Rear Discharge Trailer Tender

SERIAL # ______ WORK ORDER # _____

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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
Gene Dye Dan McCorvey	
·	Mid-South Regional Sales Manager Outside Sales
Dan McCorvey	Mid-South Regional Sales Manager Outside Sales Southeast Regional Sales Manager Outside Sales
Dan McCorvey Richard Wray	Mid-South Regional Sales Manager Outside Sales Southeast Regional Sales Manager Outside Sales Western Regional Sales Manager
Dan McCorvey Richard Wray Matt Farmer	Mid-South Regional Sales Manager Outside Sales Southeast Regional Sales Manager Outside Sales Western Regional Sales Manager Inside Sales Precision Ag Products

Warranty Policy

A) **<u>Standard Warranty:</u>**

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. <u>ANY WORK DONE WITHOUT PRIOR WRITTEN APPROVAL WILL NOT BE</u> COVERED UNDER WARRANTY AND THE CUSTOMER / DEALER WILL BE <u>RESPONSIBLE FOR ALL COST.</u>

C) <u>Warranty Claim Forms: (Dealer Only)</u>

- 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) <u>Replacement Parts Shipping:</u>

- 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 <u>UPS-Next Day Air</u> 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 **<u>INCOMPLETE</u>**. 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 <u>VOID ALL WARRANTIES.</u>
- 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.

Rear Discharge Tender Safety



WARNING!

- DO NOT PUT HANDS IN AUGER FOR ANY REASON
- BE CAREFUL WHEN RAISING OR LOWERING AUGER
- LOWER AUGER BEFORE OPERATING VEHICLE
- SHUT OFF ENGINE BEFORE REPAIRING AUGER

THINK SAFETY!



Caution:

When operating a Chandler Equipment Co. 24 ton rear discharge trailer tender (RDT-24), make sure that the auger has sufficient clearance. Watch for OVERHEAD POWER LINES and LOW UNDERPASSES.



CLEARANCE 11 FT. 10 IN.

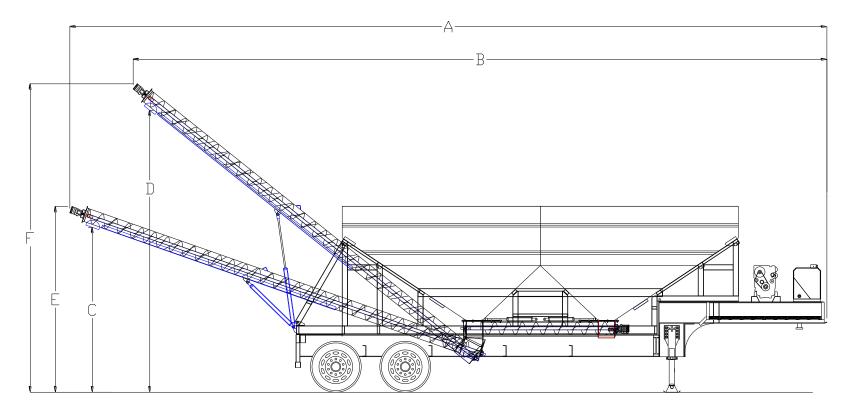
Safety Precautions

- Be sure all guards or other safety devices, and decals are in place and functioning properly.
- 2) Stay away from moving parts when tender is in operation.
- 3) Check tightness of tie-down bolts periodically.
- 4) Check lug nuts daily; refer to trailer chassis manufacturer's manual for torque specifications.
- 5) Maintain proper tire pressure, according to trailer chassis manufacturer specifications.
- 6) If tender becomes clogged, turn off engine before entering hopper or cleaning the auger.

Section 1

Basic Information

1) Dimensions



Ref.	Description	Measurement
Α	Overall Length Discharge Auger Lowered	45' 11"
В	Overall Length Discharge Auger Raised	42' 1"
С	Discharge Height Lowered	10'
D	Discharge Height Raised	17' 1"
Е	Overall Height Discharge Auger Lowered	11' 3"
F	Overall Height Discharge Auger Raised	18' 8"

2) Deutz D2011L03i Diesel Engine Specifications

Displacement	142 cu. in.
	2.33 liters
Number of Cylinders	3
Bore and Stroke	3.7 x 4.4 inches
	94 x 112 mm
Horsepower	
Net Intermittent	48.7 @ 2800 rpm
Net Continuous	46.2 @ 2800 rpm
Net Intermittent	36 kW @ 2800 rpm
Net Continuous	34.5 kW @ 2800 rpm
Firing Order	1/2/2003
Low Idle RPM	1500 rpm
Frequency	313 Hz
High Idle RPM	2500 Rpm
Frequency	521.7 Hz
Compression Ratio	19:01
Compression Pressure	362 - 435 psi
	25 - 30 bar
Governor	Centrifugal Mechanical
Valve Clearance, Cold	
Intake	0.012 in
	.3 mm
Exhaust	.020 in
	.5 mm
Lubrication System	
Oil Pressure, Hot @ 2000 rpm	40 - 60 psi
	2.8 - 4.1 bar
Oil Capacity	9.5 quarts
Including Filter	9 liters
Oil Viscosity Requirements	10-W40*
Oil Temperature Switch	
Toque	8 - 18 ft-lbs
	11 - 24 Nm

Deutz D2011L03i Engine

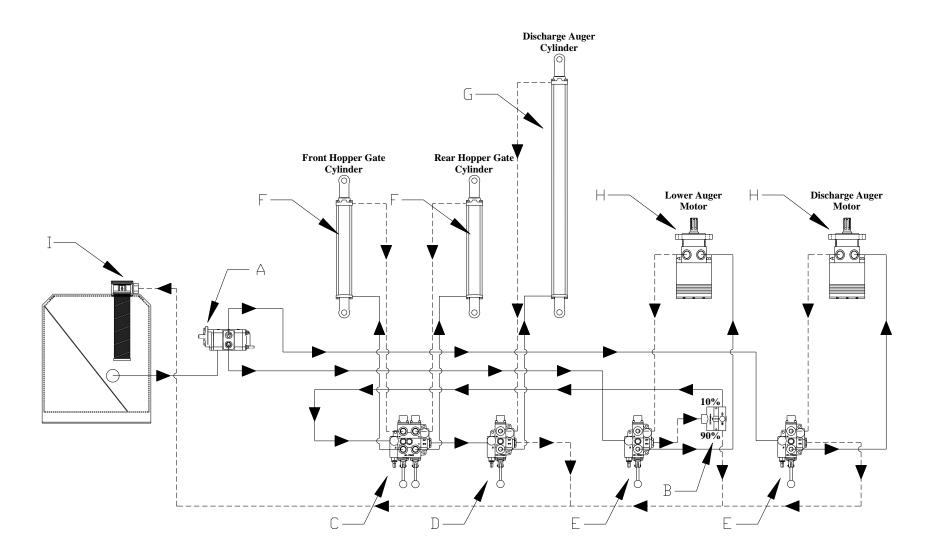
Temperature Switch Point	220° F
	104° C
Oil Pressure Switch	
Toque	8 - 18 ft-lbs
	11 - 24 Nm
Oil Pressure Switch Point	22 psi
	1.5 bar
Fuel Injection System	
Injection Pump Make	Bosch
Injection Pump Pressure, Max	15000 psi
	1034 bar
Injector Opening Pressure	3046 psi
	210 bar
Fuel Requirement, refer to the engine Operate	or's Manual on your machine
Starter Motor	
Current Draw, Normal Load	140 - 200 A
Brush Length, New	.72 in
	18.5 mm
Brush Length, Minimum	.27 in
	7 mm
Battery	
Туре	12V. Group 31
Quantity	1
Cold Cranking Amps	1000 A
Reserve Capacity @ 25A Rate	200 minutes
Alternator Output	60 A @ 14V DC
Fan Belt Deflection	3/8 - 1/2 in
	9 - 12 mm

* Extreme operating temperatures may require the use of alternative engine oil.

Section 2

Hydraulic System

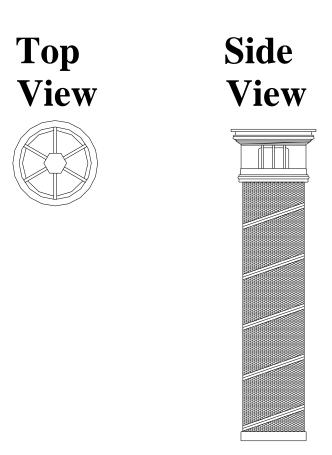
Hydraulic System RDT-24 Tender



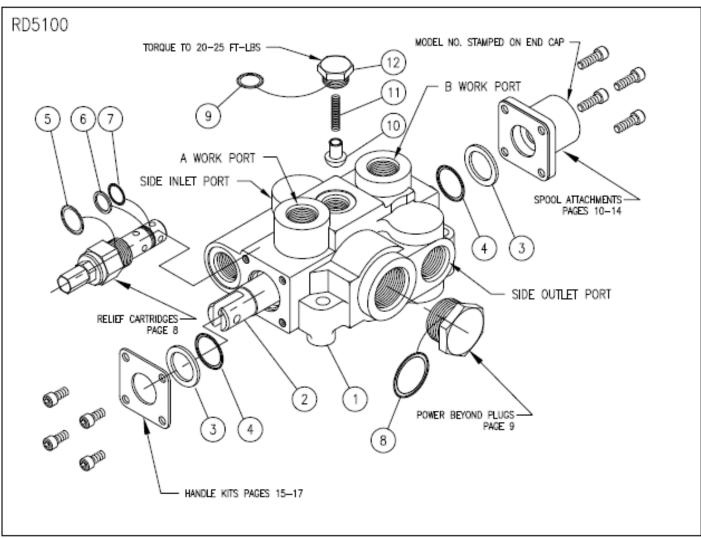
Hydraulic System Parts List

Ref.	Part Number	Description	Qty.
Α	400-C-248	P124 1-3/4" x 1-1/2" - Tandem Pump	1
В	400-1-353	B-50, 3/4 90:10 SPLITTER	1
С	400-1-336	RD526 PRINCE VALVE DOUBLE	1
		RD526CCAA5A4B1-DBL	
D	400-1-335	RD516 PRINCE VALVE SINGLE	1
		RD516CA5A4B1	
Е	400-1-337	RD516 PRINCE VALVE SINGLE - DETENT	2
		RD516CB5A4B1	
F	400-1-304	2.5" X 14" Cylinder	2
G	400-1-294	3" X 36" Cylinder	1
н	400-R-107A	MB22 Torque Motor	2
I	400-1-319B	Filter Element (In Tank Style)	1
*	400-1-352	0-5000 PSI Pressure Gauge	2
*	400-1-317	Breather Cap	1
*	400-1-322	Sight Gauge (Oil Tank)	1

HYDRAULIC FILTER



Part # 400-1-319B



Hydraulic Valve (Prince – RD5100 Series)

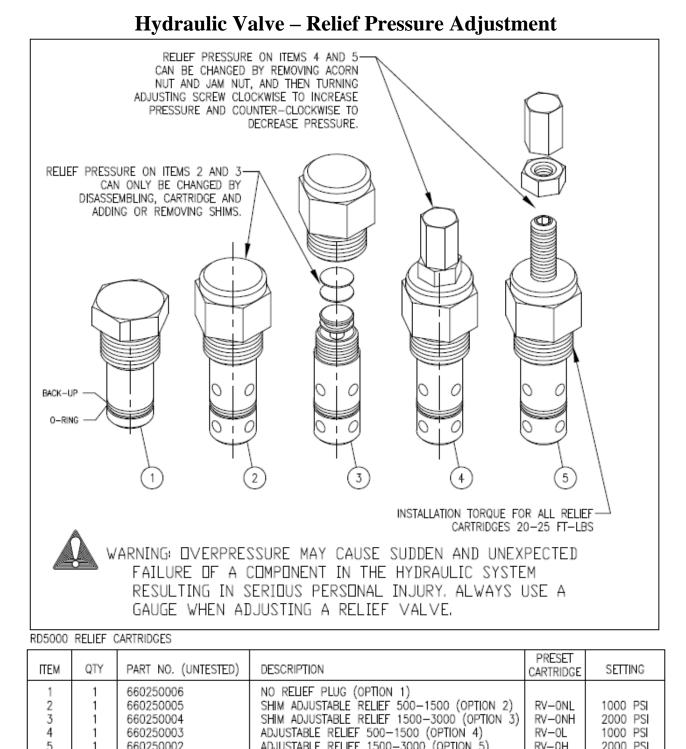
RD5100 1 SPOOL MONO-BLOCK VALVE

ITEM	QTY	PART NO.	DESCRIPTION
1 2 3 4 5 6 7 8 9 10 11 12	1 2 1 1 1 1 1	SEE NOTE 1 670500010 240000213 240000116 240019015 240000916 240000908 670100001 670300007 671600001	1 SPOOL VALVE BODY SPOOL SPOOL SPOOL SEAL BACK-UP 213 O-RING 015 BACK-UP 015 O-RING 916 O-RING 908 O-RING LOAD CHECK POPPET LOAD CHECK SPRING LOAD CHECK PLUG LOAD CHECK PLUG SEAL KIT 660551001 (PLUS OTHERS) 1000 CHECK POPPET LOAD CHECK SPRING 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 (Prince – RD5200 Series)				
6	R05200 TOROUE TO 20-25 FT-LBS 10 10 10 10 10 10 10 10 10 10				
RD5200	2 SP00	L MONO-BLOCK VALVE	1		
ITEM	QTY	PART NO.	DESCRIPTION		
1 2 3 4 5 6 7 8 9 10 11 2 3	1 1 4 1 1 2 2 2 2	SEE NOTE 1 SEE NOTE 1 670500010 240000213 240000116 240019015 240000015 240000916 240000908 670100001 670300007 671600001	2 SPOOL VALVE BODY FIRST SPOOL SECOND SPOOL SPOOL SEAL BACK-UP 213 O-RING 015 BACK-UP 015 O-RING 916 O-RING 908 O-RING 908 O-RING LOAD CHECK POPPET LOAD CHECK SPRING LOAD CHECK PLUG LOAD CHECK PLUG (2 REQUIRED PER VALVE)		

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.



	5		672000101 672000102 672000102 672000103	.015 SHIM .033 SHIM .060 SHIM	KV-UH	2000 PSI
N	DTE:	Refe	r to relief cartr	idges 4 and 5 for relief pressure a	djustm	ent.
N	DTE:	Char	ndler Equipmer	nt only stocks a limited selection	of repla	acement
na	rts foi	r this	style valve Ple	ease check with your local dealer	or our	Parts

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

-			-
(1		INSTALL INTO SPOO TORQUE TO 9-11 F INSTALL WITH LOCTIT	T-LBS 5 5 6 7 8 NSTALL WITH DRAIN GROOVE ON BOTTOM
ITEM	QTY	PART NO.	DESCRIPTION
1 2 3 4 5 6 7 8	1 1 1 1 1 1 4	670500003 671400001 670300001 671400011 670500004 170003007 670500005 170003008	RETAINER PLATE STOP CUP (INNER) CENTERING SPRING* STOP CUP (OUTER) WASHER SOCKET HD. CAP SCREW END CAP 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

- Remove all port obstructions and make sure all oil has been drained from the cylinder.
- Clamp rod end mount (6) in vise and fully extend cylinder. If there is no mount. Protect rod threads while clamping.
- Remove the 4 tie bolt nuts (7) on gland end and un-thread the bolts from the base end.
- 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.
- 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.
- Wash and check all parts for excessive wear or obvious defect which might interfere with operation.
- Lubricate all new seals with STP or heavy oil before assembling.
 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.
- Install piston seal & energizer (7) and internal o-ring (20) into piston.
- Install o-ring (18) and back-up (19) on the base. See Figure 2 for o-ring/back-up orientation.

8

PRESSURE

and the second



- 13. Torque piston nut (13) according to Table #1. Lube gland & piston seals.
- Slide tube over piston and onto gland. Replace base making sure parts are properly aligned to avoid cutting o-rings.

14)

000

15)

19)

19

18

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

4

(13)

17

16

- 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.

Rod Seal Position

3

PRESSURE

Figure 1

(20)

2

BAILEY

THE USE AND RECEIPT OF THIS INFORMATION BY ANY RECIPIENT IS SUBJECT TO ALL LIMITATIONS AND RESTRICTIONS SET FORTH ON THE REVERSE SIDE (PAGE 2) OF THIS INFORMATION SHEET. IN NO INSTANCE DOES BAILEY OR THE CYLINDER MANUFACTURER ASSUME ANY RESPONSIBILITY FOR MALFUNCTIONS AND/OR DAMAGE TO EQUIPMENT OF ANY TYPE BASED ON ANY USE OF THIS INFORMATION.

UNE NUMBER DESCRIPTION QUANTITY PISTON ROD 2 TUBE GLAND(HEAD) 3 PISTON 5 BASE CLEVIS ROD CLEVIS 67 TIE ROD CLEVIS PIN R-CLIP 8 PORT PLUG CLEVIS BOLT 10 11 12 3 CLEVIS NUT 13 14 PISTON NUT TIE ROD NUT 15 ROD SEAL ROD WIPER 16 17 PISTON SEAL/ENERGIZER 18 ORING ORING BACK-UP 19 20 PISTON INTERNAL ORING

9

6

8

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11

Page 1

9

Parts Available from Chandler Equipment

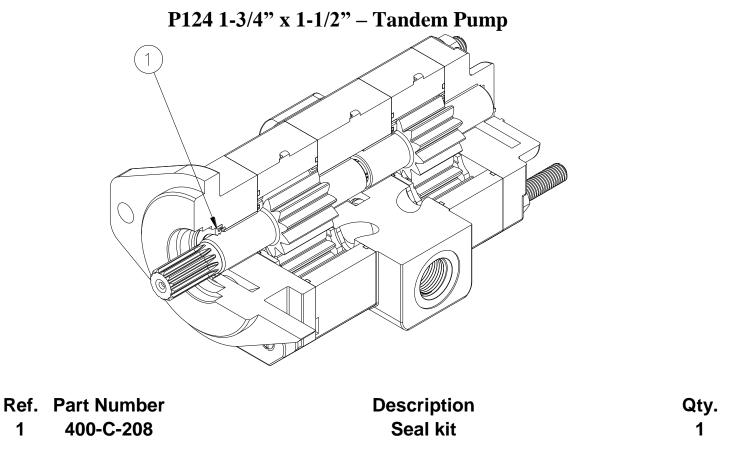
(18)

19

10

5

Part # 400-1-298	Description Seal Kit - 2.5'' Cylinder	QTY 1
400-1-295	Seal Kit - 3'' Cylinder	1
400-1-294	Clevis Pin Kit	2

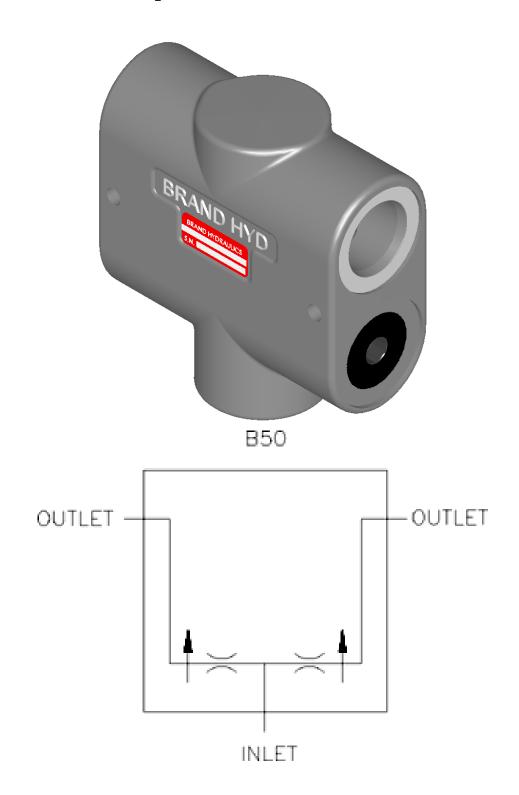


N/A	400-C-248	P124 1-3/4" x 1-1/2" – Tandem Pump

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.

1

Splitter Valve – B50 90:10

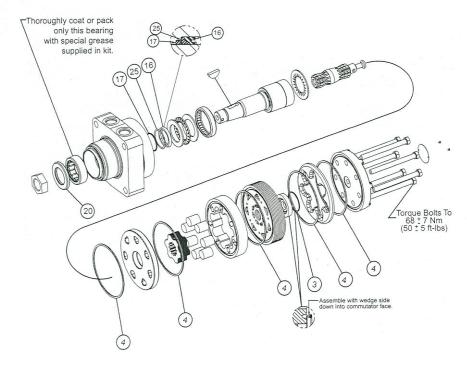


Auger Motor MB-22

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 Rinas	032819	032820	032819
1	20	D&W Seal	478035	478035	478035
1		Bearing Lubricant	406018	406018	406018
1		Service Bulletin	050016	050016	050016



Part #	Description	QTY
400-R-107A	MB-220101AAAA/TFO360MS0101AAAA Motor	1
400-R-109	Seal Kit	1
400 11 100		•
400 D 440	Matar Shaft	1
400-R-110	Motor Shaft	Ĩ

Tender 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) Locate pressure gauge mounted above valve for each auger.
- C) Increase engine speed (RPM's) to normal operating speed.
- D) Slowly engage auger control valve while watching pressure gauge.
- E) Pressure gauge should read 2200 psi. If not adjust pressure as outlined below.

2) Adjusting Hydraulic Valve Pressure: (Refer to page 2-6)

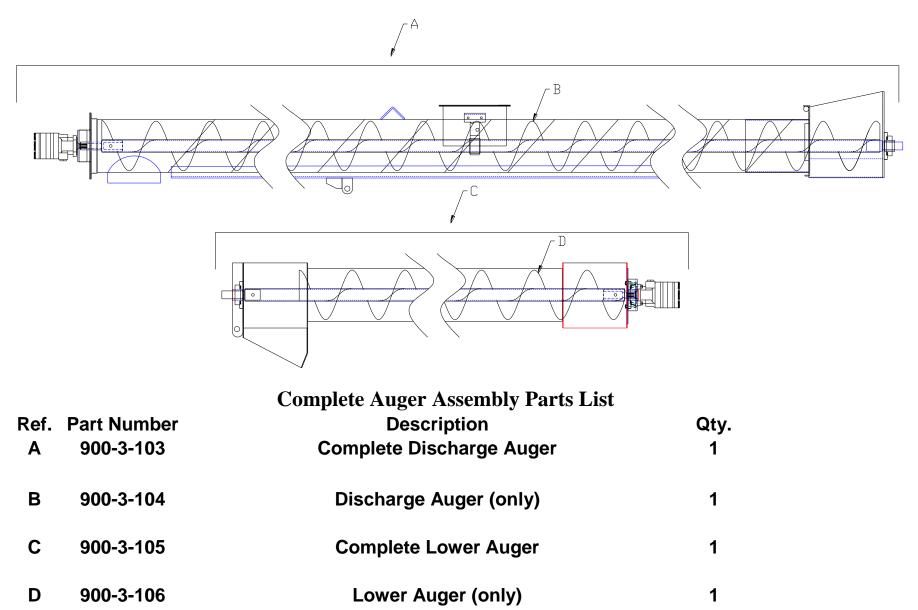
- A) Remove cap nut on valve (located on next to valve handle)
- B) Using a 5/16 Allen wrench turn adjustment screw "IN" to increase pressure or "OUT" to decrease pressure.
- C) Turn adjustment screw one half turn, then check pressure setting as outlined above.
- D) Continue this procedure until pressure gauge reads 2200 psi.

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

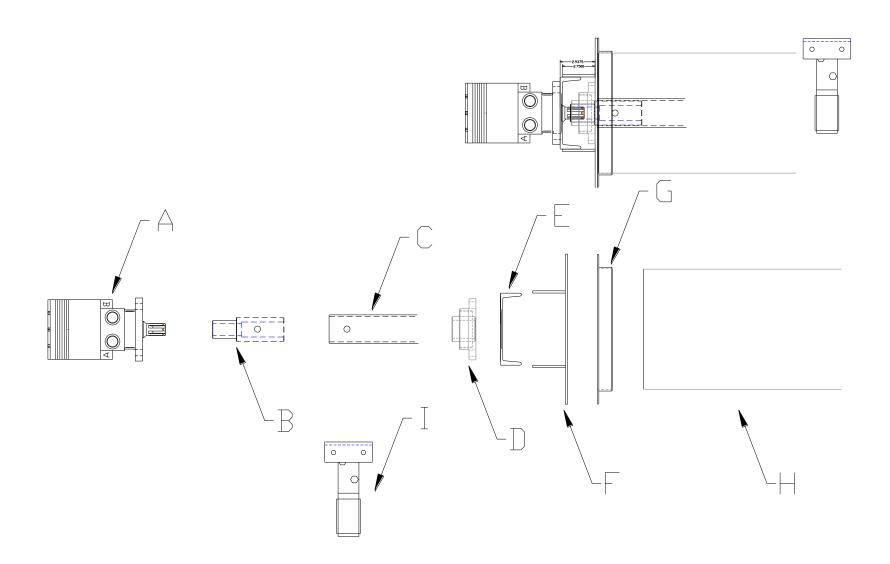
Section 3

Auger Assembly

Complete Auger Assembly



Auger Assembly Breakdown



Auger Parts List

Ref.	Part Number	Description	Qty.
Α	400-R-107A	MB220101AAAA / TFO-360MS010AAAA	2
В	900-1-111	Spline Sleeve - 2"	2
С	900-1-130	Auger Stub Shaft	1
D	UCF-208-24	UCF-208-24 1-1/2" Flange Bearing	4
*	900-1-128	1-1/2" Bearing Gasket	1
Е	900-1-127	Motor Mount Complete	1
F	900-1-116	10" End Cap	1
G	900-1-133	Angle Ring -10" 304 Stainless	3
н	900-1-109A	10" - 304 Stainless Auger Tube	29'
I	900-1-101	Hanger Bearing	1
*	900-1-102	NYCTON Bushing	1
*	900-1-119	9" Flights - 10 Ga 304 Stainless	28
*	900-1-119A	9" Flights - 7 Ga 304 Stainless	4
**	900-1-121	10" End Cap, Motor Mount Complete, 1-1/2" Bearing	1
* Not Shown ** Includes Ref: D, E, and F			

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Section 4

Operation & Maintenance

Basic Operation of Chandler Rear Discharge Multi-Hopper Trailer Tender

Basic Start Up:

1) Start Engine

A) Refer to engine manufactures manual for proper starting/operating procedures.

2) Adjusting Discharge Auger Height

A) Using the Raise and Lower valve adjust discharge auger to desired height.

3) Starting Discharge Auger

A) Start auger by moving the lever on the Discharge Auger Valve to the ON position.

4) Starting Lower Auger

A) Start auger by moving the lever on the Lower Auger Valve to the ON position.

5) Setting Engine Speed

A) Using Engine Throttle Control set engine to 2600 RPM

6) Starting Flow of Material

- A) After following steps 1 5 open the gate of the compartment you wish to unload half way using the proper gate valve.
- B) After opening gate, adjust auger/engine speed if necessary, and then fully open the gate.

7) Using Vibrators

- A) Start vibrator in desired hopper by depressing the proper vibrator button.
- B) Stop vibrator by releasing the button.

8) Using Hydraulic Clean-out Doors

- A) Open desired clean-out door using the appropriate valve.
- B) Start lower auger according to step 4).
- C) Open desired compartment gate.

9) Stopping Rear Discharge Auger Tender

(After unloading desired amount of material or compartment is empty)

- A) Close compartment gate.
- B) Turn off lower auger.
- C) Turn off discharge auger.
- D) Lower discharge auger to auger rest.
- E) Shut-off engine.

Caution: Never load unit with gates open

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) Gates:

The gates and gate slides are manufactured from type 304 stainless steel. The only maintenance required should be occasionally cleaning the slides.

2) Auger:

Frequent cleaning of auger and auger tube is advisable.

3) Bearings:

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

Do Not over grease bearings

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

4) Hydraulic System:

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

Chandler tenders 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 tenders 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

5) Deutz Diesel Engine:

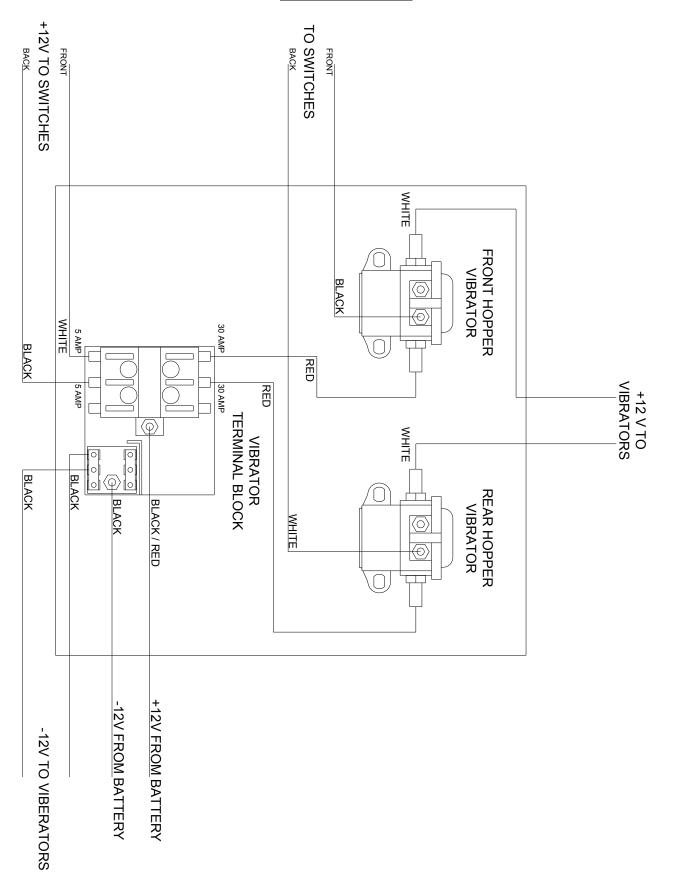
Check engine oil daily, service according to engine manual. Use only Low Sulfur Diesel, on-road diesel.

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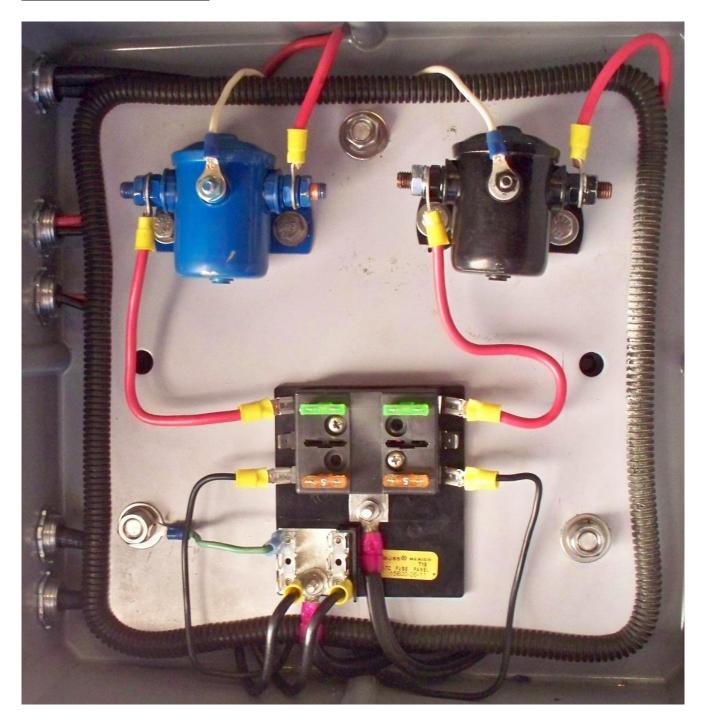
Section 5

Vibco Vibrators

Wiring Diagram



Vibrator Electrical Box



Troubleshooting

- 1) An unusual sound (banging) coming from the vibrator.
 - a. Check the mounting bolts for tightness.
 - b. Check the mounting plate for fatigue cracks.
 - i. New installations reinforce mount area immediately.
 - ii. Old installations repair and reinforce mount immediately.
- 2) Vibrator doesn't start
 - a. Check fuses and connections.
 - b. Remove end cover and check that shafts spins freely.
 - i. If not re-shim.
 - c. New installations should insure that the vibrator is properly grounded to the frame
 - d. Make sure push button and solenoid are in proper working order.
 - i. If not replace.
 - e. Be sure mounting plate is properly shimmed.
- **3**) Vibrator is running slow (loss of RPM)
 - a. Measure motor voltage.
 - i. If less than 12 volts DC, increase wire size.
 - b. Check that brushes move freely in the brush holders.
 - i. Change brushes if worn to less than 3/8"
 - ii. The life cycle of the brushes is approximately 1,000 hours, the brush life is dependent on the duty cycle.