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Combination Unit

“ComboUnit”

Model CNV400S4DGH

TECHNICAL MANUAL

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Spokane Industries, Inc.

Spokane, Washington

ComboUnit

ONE YEAR LIMITED WARRANTY

Seller warrants its CombUnit to be free from defects in material and workmanship under the normal use and service for which the unit is intended, but only if the unit has been properly operated, maintained, and stored in accordance with printed directions contained in the product manual. Our obligation under this Warranty shall be limited to the repair or exchange of Spokane Industries manufactured equipment and parts, which may prove defective within one year of the date the unit is put into service, but shall in no event extend beyond a date three years from the date the unit is shipped from our plant. All transportation charges on parts returned to us for replacement under this warranty must be returned prepaid.

Other manufacturers' components warranties apply as their warranty reads.

This warranty does not extend to damage caused by environmental factors varying from normal design conditions, whether natural or man-made, or to units subjected to misuse, negligence or accident. This warranty likewise does not extend to the unit or any parts which have been repaired or altered improperly or in any way so as to effect adversely its stability or reliability. This warranty does not cover parts or labor required to repair or replace parts whose usefulness is exhausted due to normal operation of the unit.

THIS WARRANTY IS EXPRESSED IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE NOT SET FORTH IN WRITING SIGNED BY AN AUTHORIZED REPRESENTATIVE OR SELLER. SELLER SHALL IN NO EVENT BE LIABLE FOR ANY CONSEQUENTIAL LOSS OR DAMAGE RESULTING FROM THE USE OR LOSS OF USE OF THE UNIT.

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Table 1.1

Unit Specifications

400 GAL Unit

Length	155" - Main Unit 214" with tow bar lowered
Width	77.5 " @ rear axle
Height	44" @ Manway cover 51.5" @ top of storage boxes
Double Wall SS Construction	
Weight Full	4700 lbs
Weight Empty	1650 lbs
Environmental Condition	
Operating temperatures	-2°F to +110°F
Brakes	20.5 x 10 x 8 "B", Drum style
Hitch	Ring style

Section 1.0 Introduction

- 1.1 The instructions in this manual cover the specifications, safety, operation, and recommended maintenance of the unit
- 1.2 Purpose
 - a. The ComboUnit is designed to provide a portable, clean, safe and efficient fluid containment unit for maintenance support operations.
- 1.3 Description
 - a. Refer to Figures 1.0 thru 8 for location and identification of major components. The ComboUnit consists of a tank assembly, a steerable undercarriage and pump platform assembly.

Section 2.0 Safety

2.1 Summary

- a. This manual contains suggested safety procedures, in addition the end user must comply with all International, Federal, state, local, and company safety and environmental regulation.
- b. **NOTE, CAUTION** and **WARNING** statements have been inserted throughout this publication and are essential for the protection of personnel, equipment and property. Prior to operating this equipment all **NOTE, CAUTION** and **WARNING** statements must be reviewed and understood.

2.2 Definitions

- A. **NOTE:** Actions which are intended to facilitate or enhance the procedure to which it is directed.
- B. **CAUTION:** An operation or maintenance procedure that if not observed could result in damage or destruction to equipment or property.
- C. **WARNING:** An operation or maintenance procedure that if not observed could result in injury or death top personnel.

2.3 General Safety Precautions

- a. This section covers general safety precautions that may or may not be related to any other specific procedures located elsewhere in this manual.

b. Cleaners/ Chemicals

- (1) Some cleaners, chemicals, solvents, fuels, paints, etc. may have adverse effects on eyes, skin and respiration. Observe all manufacturers warnings and read the material safety data sheets (MSDS) to ensure proper handling, storage, and disposal, and safety directives.

c. Confined Space

WARNING: Maintain proper ventilation at all times to ensure safe Lower Explosive Limits (LEL)

- (1) Personnel that work in a confined space (limited openings for entry and exit) or unfavorable ventilation or space not intended for humans or contains any recognized safety hazards shall comply with all International, Federal, state, local, and company safety and environmental regulations. (Confined space entry permit may be required). Never service or adjust equipment alone. Do not attempt internal service or adjustment of equipment unless another capable person is present to provide rescue in the event of injury.

d. Lifting and Handling

- (1) To ensure safety use the proper amount of personnel and/ or hoisting devices when lifting or handling equipment.

e. Lockout/Tagout

- (1) Personnel shall be aware of the hazards associated with equipment, Lockout/Tagout any energy source prior to performing any repairs, adjustments or any procedures that could bypass safety devices. Comply with all International, Federal, state, local, and company safety and environmental regulations.

f.. Finger rings/jewelry

- (1) Prior to operating, repairing, or maintaining equipment remove watches rings and jewelry, unless specifically allowed by local procedures.

g. Spring loaded mechanisms/cables

- (1) Spring loaded mechanisms and cables can cause injury if released or activated in an uncontrolled manner. Always be careful when adjusting or maintaining these devices.

h. Personal Protective Equipment (PPE)

- (1) Always ensure personnel are equipped and trained on the proper use of PPE prior to operating, adjusting or maintaining equipment.
- (2) Comply with all International, Federal, state, local and company safety and environmental regulations.

i. Weather Conditions

- (1) Use extreme caution operating the ComboUnit during adverse weather conditions (ie... ice, snow, rain, strong and gusting winds).

Section 3.0 Special Tools & Test Equipment

- 3.1 No special tools or test equipment are required to operate the ComboUnit. Refer to the owners manual, if available, for specific items if testing or repairs are to be accomplished. Not all items will have literature supplied by the manufacturer.

Section 4.0 Preparation for Use

- 4.1 To obtain optimum benefit from your equipment, all personnel operating the unit should receive proper training and understand the contents of the manual prior to operation. Pay special attention to the **NOTES, CAUTIONS, WARNINGS** in this manual.
- .2 Upon receipt of the unit, make a visual inspection to determine that it is complete and has not sustained any damage during transportation.

Section 5.0 Safety Check

The safety check must be performed before every use to ensure that the equipment is in serviceable condition and ready for operation.

- 5.1 Inspect tires, brakes, undercarriage, tow-bar, valves, hoses, pumps, diesel engine and main containment tank.

WARNING: Defects identified shall be corrected before attempting operation of the ComboUnit

5.2 Pre-Towing Safety Checks

- a) Tires properly inflated, as per tire manufacturers specifications on tire sidewall.
- b) Visual check of all tank mounting hardware.
- c) Visual check of the undercarriage.
- d) Visual check for any leaks from tank, pumps or plumbing.
- e) All hoses, nozzles and static ground wires are properly stowed.
- f) All valves and switches in the off position.
- g) Top manway on tank closed and latched.
- h) Equipment storage boxes are closed and latched.
- i) Tow hitch properly secured to steerable under carriage and towing vehicle.
- j) Parking brake released, chocks if used are removed and stowed.

CAUTION: Driving the unit backwards can damage the undercarriage if unit jack knives.

Section 6.0 Operation

6.1 Introduction

- a. The instructions contained in this manual provide step-by-step operational procedures. Personnel using this equipment should be trained and familiar with the unit and this manual prior to equipment operation. Improper operation presents extreme hazards to personnel and equipment.

6.2 General Precautions

- a. **WARNING**

- (1) Always apply parking brake prior to any operation, maintenance repairs or when the unit is left unattended.
- (2) Always connect static discharge ground cables to an approved ground prior to performing any action where fuel will be introduced into the ComoUnit main containment tank.
- (3) Never leave the unit unattended during defueling operations, if applicable.
- (4) Do not allow smoking, sparks, or flames within 50 feet of unit.
- (5) Exercise care when using the telescoping drain funnel or injury to hands fingers can occur between funnel clamps and sections.
- (6) Maximum towing speed is 15 MPH.

Table 6.1: **ComboUnit Controls and Indicators.**

Name	Figure - Item	Function
Tow Bar	(Fig. 1-item 10)	Located at front of unit, swings up for stowage, down for attaching to tow vehicle.
Brake Lever	(Fig. 1-item 9)	Located on front of unit, locks and unlocks the rear wheel drum style parking brake.
Manway	(Fig. 1.1 - item 5)	A 16" opening at the top center of the unit that allows access for internal tank inspections or maintenance.
Liquid Level Gauge	(Fig. 1.1 - item 7)	Located at top of tank, measures and displays amount of liquid in the main containment tank.
<u>Control Panel Area</u>		
Charge indicator lamp	(F5 - item 8)	Indicates battery charge condition.
Throttle Lever	(F5 - item 10)	Used to increase/decrease engine RPM.
Pump direction lever	(F5 - item 12)	Changes direction of hydraulic pump fluid which drives the main fluid pump.
<u>Engine</u>		
		<u>Thoroughly review engine manual before operating engine</u>
Ignition Key	(F5 - item 8)	Used for 12 volt electric starting
Start T-handle		Used for manual starting. (UPDATE)
Decompression lever	(F5 - item 11)	Used in conjunction with manual start.
<u>Pump Platform area</u>		
Hyd. pump reservoir sight/temperature guage	(F5 - item 1)	Quick look indicator for hyd. fluid temperature and quantity, located on outboard side of reservoir.
Hyd. filter sight guage	(F5 - item 2)	Quick look indicator for hydraulic filter condition, located on filter mount housing. Hydraulic fluid must be flowing for proper indication.
Low-Point Drain Valve	(Figure 2)	Located at the rear bottom of main tank, extending aft, a 2" locking ball type valve, aluminum camlock hose connection for tank draining.
Input/Output line valve	(Fig. 1 - 11)	Located aft side, bottom. Isolates main pump outlet/inlet 2" locking ball type valve.



6.3 Pre-Operational Checklist

NOTE: These are general instructions that are recommended for proper operation of the unit and in no way over-rides local policies or directives.

CAUTION: Before any operation of the unit ensure you are familiar with its features. Review the operators manual to familiarize yourself with all sections. Operate within applicable guidelines according to the manufacturers recommendations and local directives and policies.

CAUTION: Comply with all safety precautions and PPE requirement directed by local policies and procedures.

WARNING: Never leave the unit unattended during operation. You must stay vigilant for possible malfunctions, overfill conditions and other emergency situations.

a. Pre-operational Checklist:

- 1) Ensure unit is serviceable by performing daily safety inspection.
- 2) Properly ground unit if applicable to operational requirements.
- 3) Visually check for sufficient capacity in containment tank to prevent overfill condition.
- 4) Ensure manway cover is closed and latched.
- 5) Set parking brake, wheel chock if necessary.
- 6) Check that fire extinguisher is readily available and serviceable.
- 7) Check all pumps, hoses and connections for leaks, if detected perform corrective action before operating ComboUnit.
- 8) Ensure bottom drain valve is closed and locked.
- 9) Ensure pump inlet/ outlet valve is close and locked.
- 10) Ensure Hydraulic reservoir is full and reservoir fill cap is on and secure.
- 11) Check engine oil for required level, refer to engine owners manual.
- 12) Ensure pump direction lever is in the "Neutral" position.
- 13) Ensure throttle lever is in the "Stop" position.

6.4 Electric Start procedures:

- a) Set throttle position lever to "Run"
- b) Turn key to "Start" position, hold until engine is self sustaining.
- c) Engine runs, if not, refer to engine owners manual for troubleshooting.

6.4.1 Manual Start procedures, alternate method:

- a) See owners manual for starting engine using manual mode.

6.5 Operating procedures: Engine running

1) Filling Main Tank -

- a) Ensure hose is properly secured to inlet/ outlet valve and removed from it's stored position.

CAUTION: Monitor main tank level to prevent over filling.

- b) Move pump direction lever to the "Fill Tank" position.
- c) Upon completion of task, return pump direction lever to the "Neutral" position, return hose to it stored position.

2) Emptying Main Tank -

- a) Ensure hose is properly secured to inlet/ outlet valve and removed from it's stored position.

WARNING: Due to the high pressure supplied by the pump, ensure the free end of the hose is properly secured to prevent whipping before moving the pump direction lever. Ensure personnel are standing by to move handle to "NEAUTRAL" position and / or shut down engine in case of emergency during all servicing procedures.

- b) Move pump selection lever to the "EmptyTank" position. Discharge fluid into proper container.



6.6 Shut down Procdures:

- a) Move pump position lever to "Neutral" position.
- b) Close all valves.
- c) Turn off engine by moving throttle to "Stop" position, turn key to "Stop" position.
- d) Return hose to the stored position.

Section 7.0 Cleaning & Maintenance

7.1 Cleaning is accomplished as follows

- a. Clean metal surfaces with a clean rag and approved cleaning agents
- b. Wipe surface dry with clean absorbent rag. Do not allow solvent to dry on surface
- c. If required, repeat application of cleaning agent to produce a soil free surface

WARNING: Steam or vapor pressure cleaning creates hazardous noise levels and severe burn and eye injury potential. Use PPE

- d. Steam clean interior of unit to remove all residue

7.2 **Maintenance:**

7.2.1 Lubrication -

- a. See Maintenance interval chart, page 16, table 7.1

7.2.2 Repairs - The following procedures are for the disassembly, repair and reassembly of the various component groups. Perform only steps necessary to effect the desired repairs.

WARNING: Be certain the parking brake is applied and/or the wheels are chocked to prevent movement prior to performing repair procedures.

7.2.2.1 - Parking Brake (Figure 4.1)

- a. The unit is equipped with a parking brake assembly consisting of a 7" diameter brake drum with 1-3/4" wide brake shoes.
- b. The shoes are activated via a mechanical linkage, eccentric and lever
- c. Adjustment may be necessary as the shoes wear.
 - (1) Remove attaching pin holding brake cam lever and yoke together (Figure 4.1 - items 5 & 10). Loosen cable jam nuts (12) on either side of yoke. Turn yoke in towards cable, which shortens connecting rod. Adjust as necessary, retighten nuts and reinstall pin and cotter pin.
 - (2) Do not over tighten or brakes may drag when released.

- d. Replacement of brake shoes (Figure 4.1)
 - (1) Remove wheel
 - (2) Remove nut retaining hub and drum assembly
 - (3) Disconnect actuating rod at yoke
 - (4) Remove shoe retainers
 - (5) Install new shoes
 - (6) Replace shoe retainers
 - (7) Adjust actuator rod length
 - (8) Replace wheel

7.2.2.2 Under Carriage and Tow Bar: (Figure 3.1)

- a. The unit is equipped with steerable front wheels and rear wheels and a tow bar.
- b. Maintenance consists of the following:
 - (1) King pin bushing, turning bushings and tie rod ends are self lubricating and need no additional maintenance.
 - (2) Pack wheel bearing every 2 years
- c. Tow bar pivot pin and lunette eye hook ring should be inspected every 6 months for excessive wear or cracks.

7.2.3 Grounding Reels (Figure 1.7)

- a. Grounding reel cables should be pulled out, cleaned and inspected monthly.
- b. Cable clamps and ends should be inspected for loose connections monthly..

7.2.4 Fluid Level Indicator

- a. Inspect 4 small fasteners holding clear plastic guage protector for looseness and plastic cover for weathering.

7.2.5 Manway

- a. Inspect the manway gasket every 6 months for cuts, cracks and galling. Replace as needed.

Table 7.1 Recommended 6 month interval inspection and maintenance:

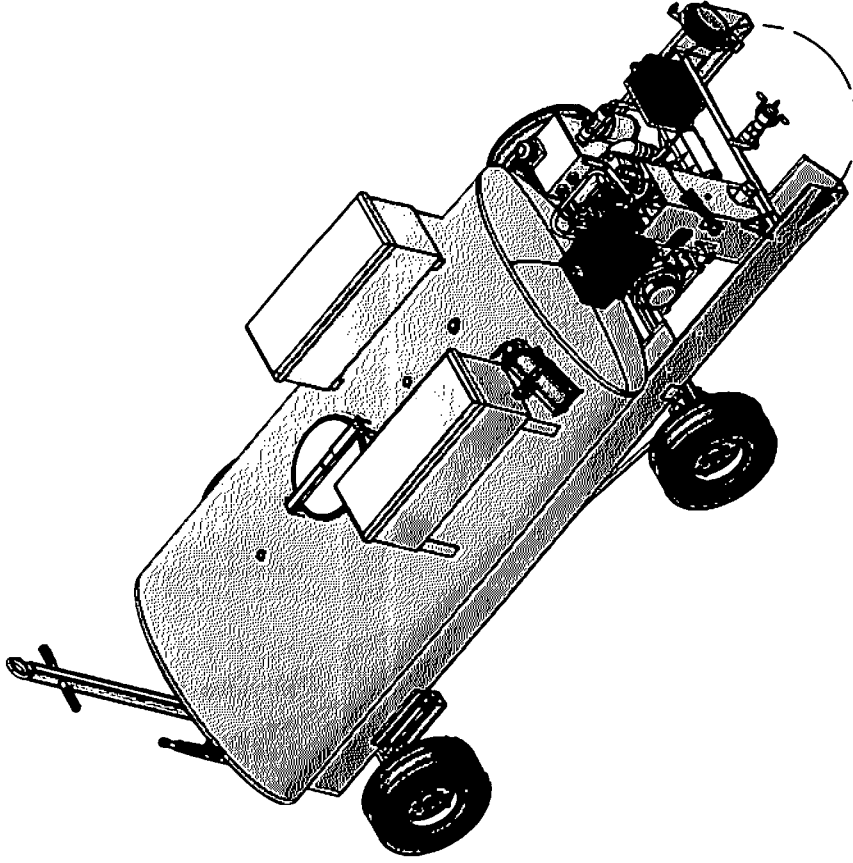
Clean entire inside and outside of unit using steam cleaning and approved cleaning products.

Under carriage and frame:	Check for cracks, loose or missing hardware.
Tow bar and steering components:	Check for cracks, loose or missing hardware, excessive wear and proper alignment and operation.
Tires:	Check for cuts, breaks, bumps, bulges and exposed tire cord, ensure they are properly inflated and no air leaks.
Brakes:	Check for loose or missing hardware security and proper operation and rigging.
Tank:	Check for cracked welds, leaks and loose or missing hardware. Open manway, clean out any debris inside tank.
Static grounding reels:	Check condition of reel and cable for loose or missing hardware, loose connections and check electrical resistance of cable between chassis and clip. Max resistance 10 Ohms
Pump system:	Check for proper operation, leaks, security, loose or missing hardware
Drain & pump valves:	Check for operation and security, loose or missing hardware
Hose Assemblies:	Check condition and evidence of leaks, loose or missing hardware
Seal, gaskets:	Check condition and replace as necessary
Y-strainers:	Clean with solvent and re-install (Figure 8 - item 1)
Brake linkage:	Check for loose or worn hardware
Every two years:	
Wheel bearings:	Clean, inspect and repack with grease. User is responsible to use only grease specified for wheel bearing application.

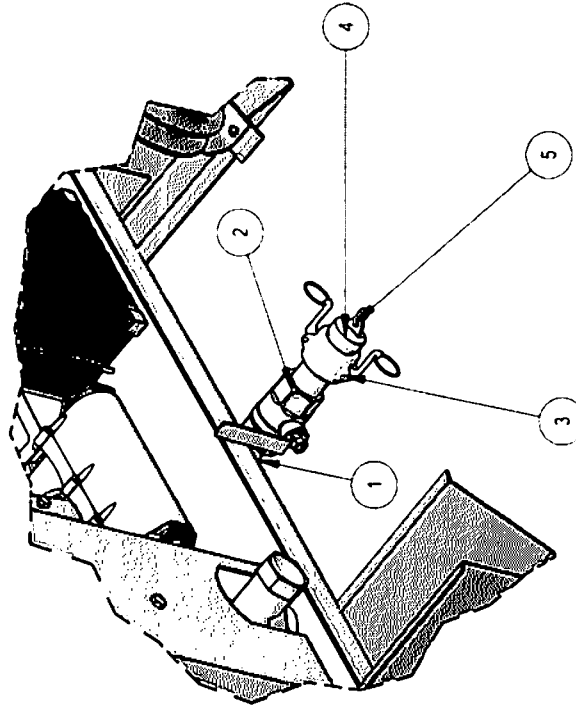


8.0 Troubleshooting

SYMPTOM	PROBABLE CAUSE	CORRECTIONS
Unit does not track or steer correctly or steers loosely	bent king pin housing	replace king pin housing
	defective tie rod end	replace tie rod end
	loose or worn out bushings	replace as needed
tow bar does not stay in the upright position	broken or stretched spring	replace as needed
parking brake does not work	needs adjustment	adjust as per instructions in sections UPDATE
Engine does not run properly	refer to owners manual	
Low pump output/suction	worn pump clogged Y-filters Main tank has debris	rebuild/ replace pump remove and clean screens Clean out main tank
Hydr. pump sounds like it's straining under load	clogged filter	Replace filter




NOTE: INPUT/OUTPUT LINE VALVE
OMITTED FOR CLARITY



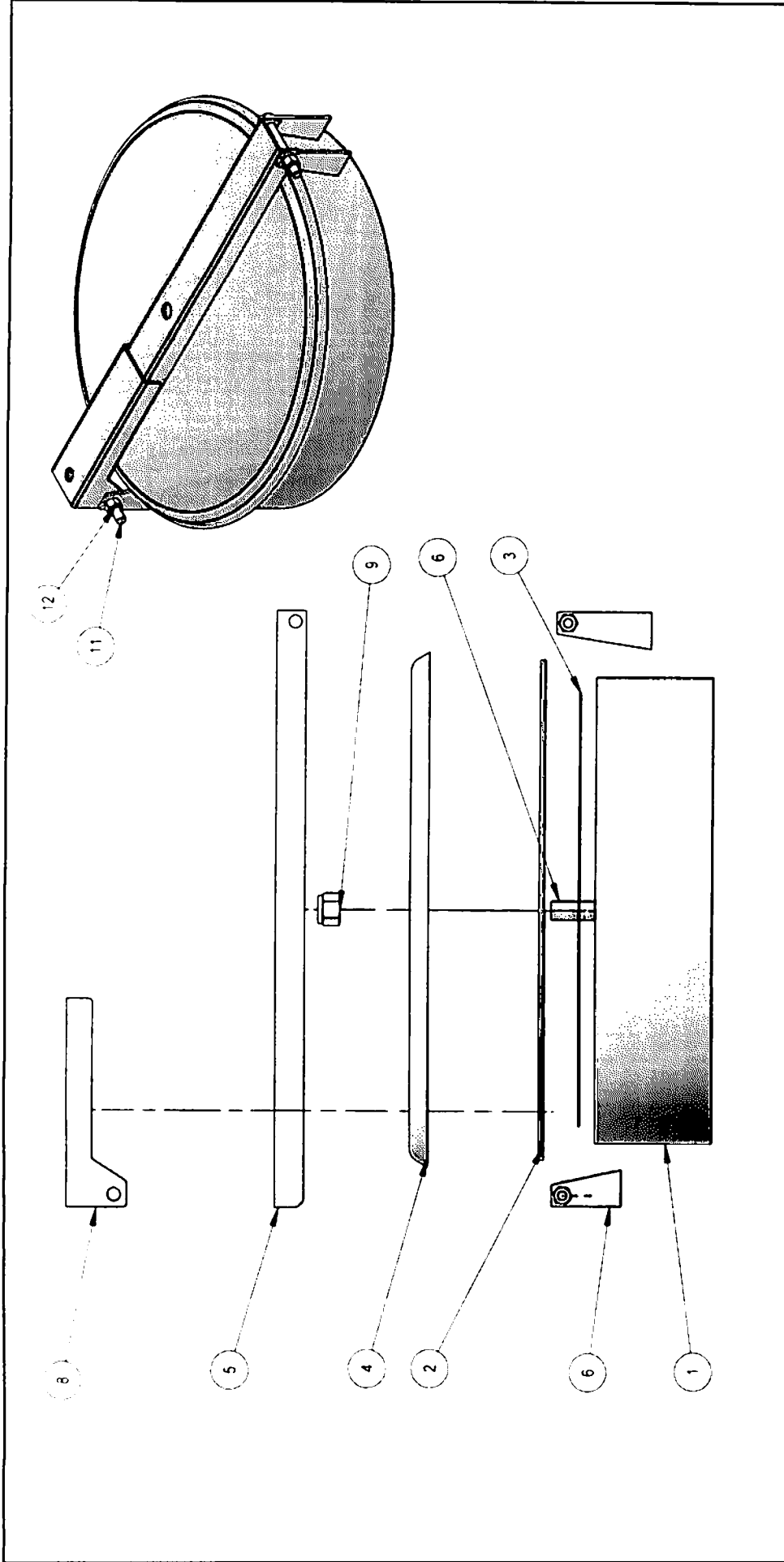
DETAIL A
LOW POINT DRAIN VALVE

ITEM		QTY	P N	DESCRIPTION	MATERIAL	WT
5	1	04-10351	S-HOOK		Steel Mild	02
4	1	04-10331	CAM-LOCK PLUG		Aluminum	35
3	1	04-1033	1 1/2" CAMLOCK		Aluminum	.72
2	1	04-10321	BALL VALVE, 1 1/2"		BRASS	3.59
1	1	P D	1" SCH-10 x 17" LG. GROOVE ONE END		Stainless Steel	4.02

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Tolerance: except as noted x/x = ± 1/8" .xx = ± .03" .xxx = ± .005" ANG = ± 1°		LOW POINT DRAIN
PN: CNV400SD	FIG #2	
Drawn: AL	Date: 10/3/2006	Size: A Scale: NTS Sheet 1 of 1

Parts List

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Parts List

ITEM	QTY	P N	DESCRIPTION	MATERIAL	WT
1	1	01-8574	MANWAY NECK	Stainless Steel	5.98
2	1	06-25025	MANWAY GASKET	Rubber	1.39
3	1	07-2303	GASKET RETAINER	Aluminum	97
4	1	01-86001		Iron	7.31
5	1	07-2102			2.35
6	2	01-8216S	FLIPLOCK MOUNT	Stainless Steel	09
7	2	01-8217S	CROSSARM MOUNT	Stainless Steel	12
8	1	01-8222S	FLIP LOCK	Stainless Steel	86
9	2	02-20611S	NUT NYLON INSERT 5/8" UNF	Stainless Steel	11
10	1	02-10013	HEX CAP SCREW 3/8" UNC 3" LG	Stainless Steel	12
11	1	02-10014	HEX CAP SCREW 3/8" UNC 3 1/2" LG	Stainless Steel	13
12	2	02-1202	NUT NYLON INSERT 3/8" UNC	Stainless Steel	03

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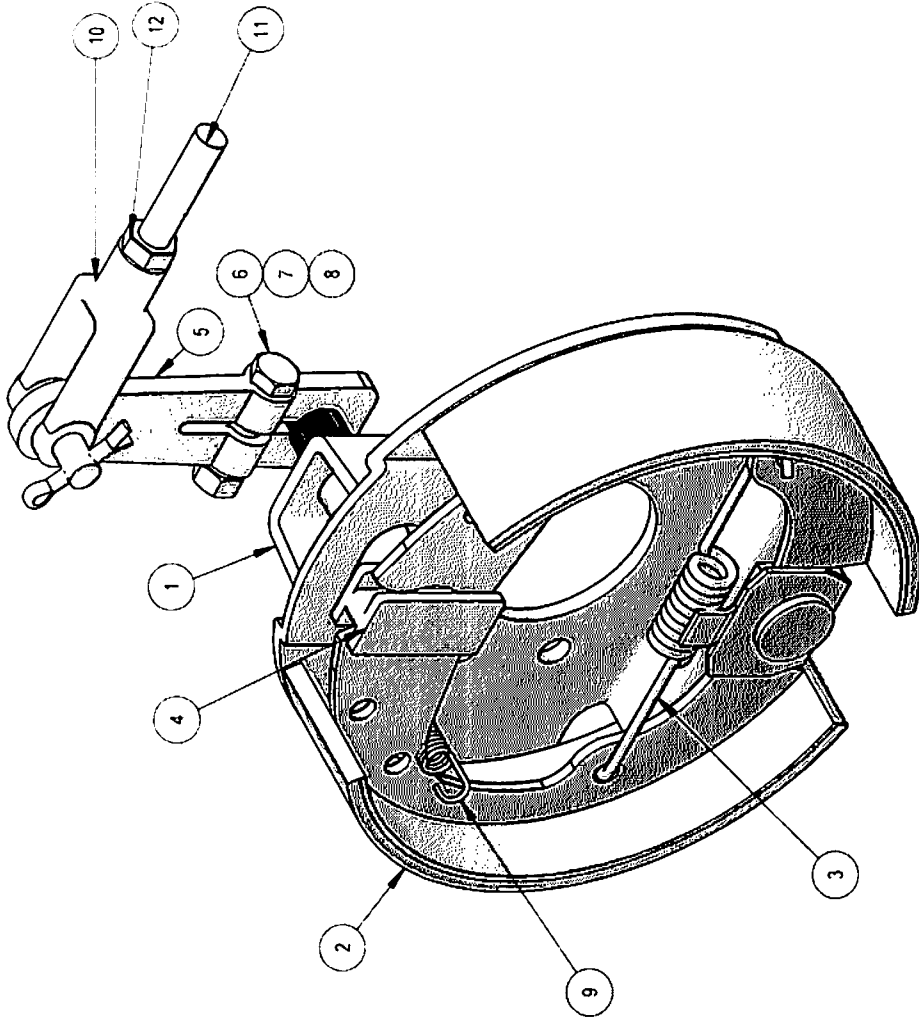
MANWAY ASSEMBLY

Tolerance: except as noted
 x/x=± 1/8"
 .xx=± .03"
 .xxx=± .005"
 ANG=± 1°

PN: 08-20017 Date: 10/14/2005 Size: A Scale: NTS Sheet 1 of 1 FIG #6

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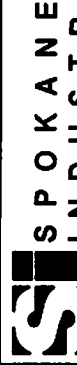
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SHOWN OUT OF POSITION
FOR CLARITY

Parts List

ITEM	QT	P N	DESCRIPTION	MATERIAL	WT.
1	1	04-1064R	BACK PLATE	Steel, Mild	2.11
2	2	04-1065R	BRAKE SHOE	Steel, Mild	1.12
3	1	04-10265R	RETURN SPRING	Steel, Mild	.06
4	1	04-1028R	CAM	Steel, Mild	.43
5	1	04-1030R	CAM LEVER	Steel, Mild	.32
6	1	02-10017R	HEX HEAD CAP SCREW, 5/16" UNF 1 1/2" LG.	Steel, Mild	.05
7	1	02-12011	NUT, 5/16" UNF GRADE 8	Steel, Mild	.01
8	1	02-11011	LOCK WASHER, 5/16"	Steel, Mild	.00
9	2	04-1026R	BRAKE SHOE HOLD DOWN SPRING	Steel, Mild	.01
10	1	04-2516	YOKE		26
11	1	05-1026	BRAKE ROD, 3/8" x 16 1/2" LG.	Steel, Mild	.06
12	1	P D	HEX JAM NUT, 3/8-UNF	Stainless Steel	.01



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BRAKE ASSEMBLY

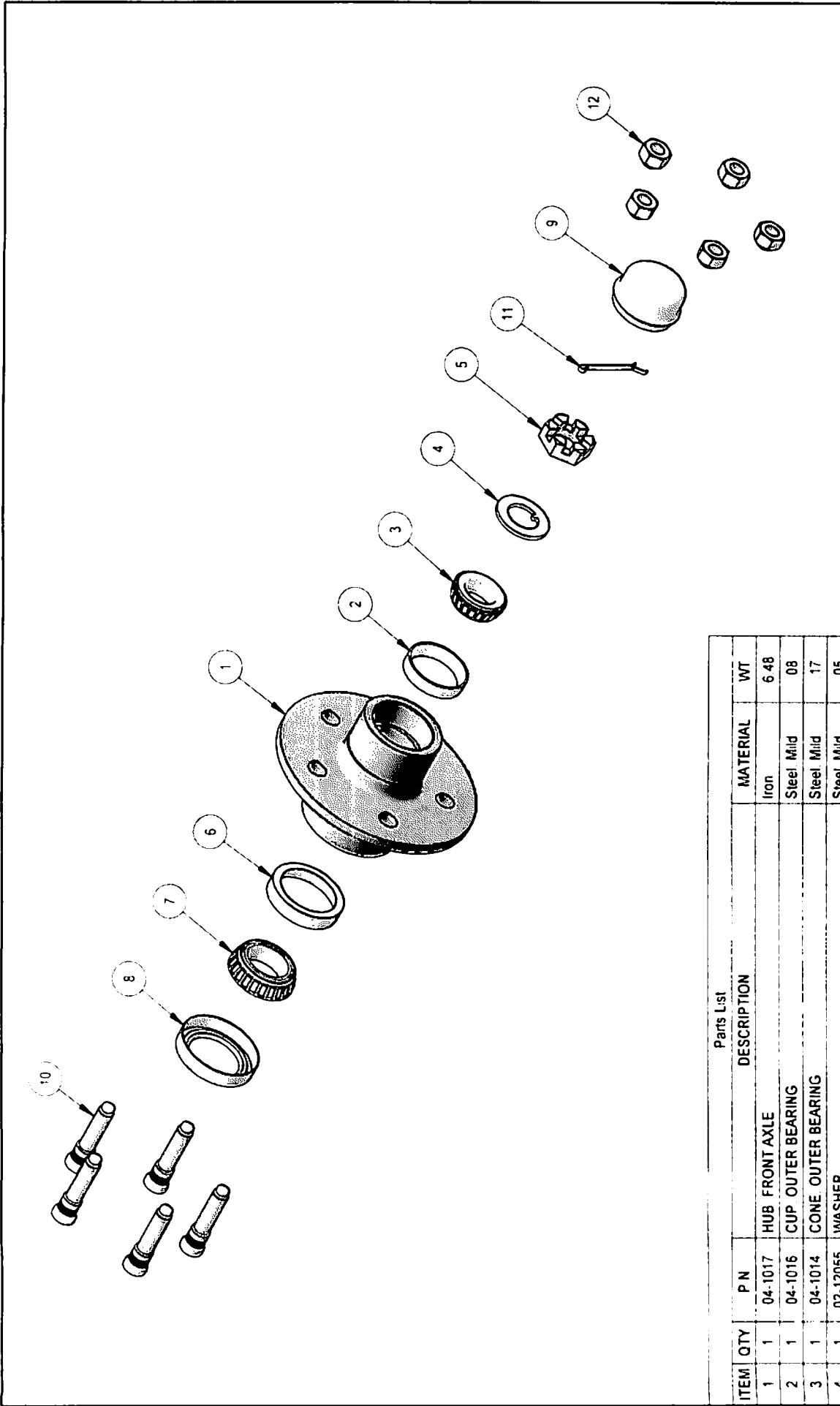
Tolerance: except
as noted
x/x=± 1/8"
.xx=± .03"
.xxx=± .005"
ANG=± 1°

PN: 08-1007R

FIG #4.1

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Parts List

ITEM	QTY	P N	DESCRIPTION	MATERIAL	WT
1	1	04-1017	HUB FRONT AXLE	Iron	6.48
2	1	04-1016	CUP OUTER BEARING	Steel, Mild	08
3	1	04-1014	CONE OUTER BEARING	Steel, Mild	17
4	1	02-12055	WASHER	Steel, Mild	05
5	1	02-1205	NUT CASTLE	Steel, Mild	16
6	1	04-1015	CUP INNER BEARING	Steel, Mild	18
7	1	04-1013	CONE INNER BEARING	Steel, Mild	24
8	1	04-1012	SEAL BEARING	Steel, Mild	04
9	1	04-1019	CAP HUB	Steel, Mild	10
10	5	02-1017	STUD	Steel, Mild	16
11	1	02-1303	PIN, COTTER	Steel, Mild	01
12	5	04-1021	NUT, LUG	Steel, Mild	06

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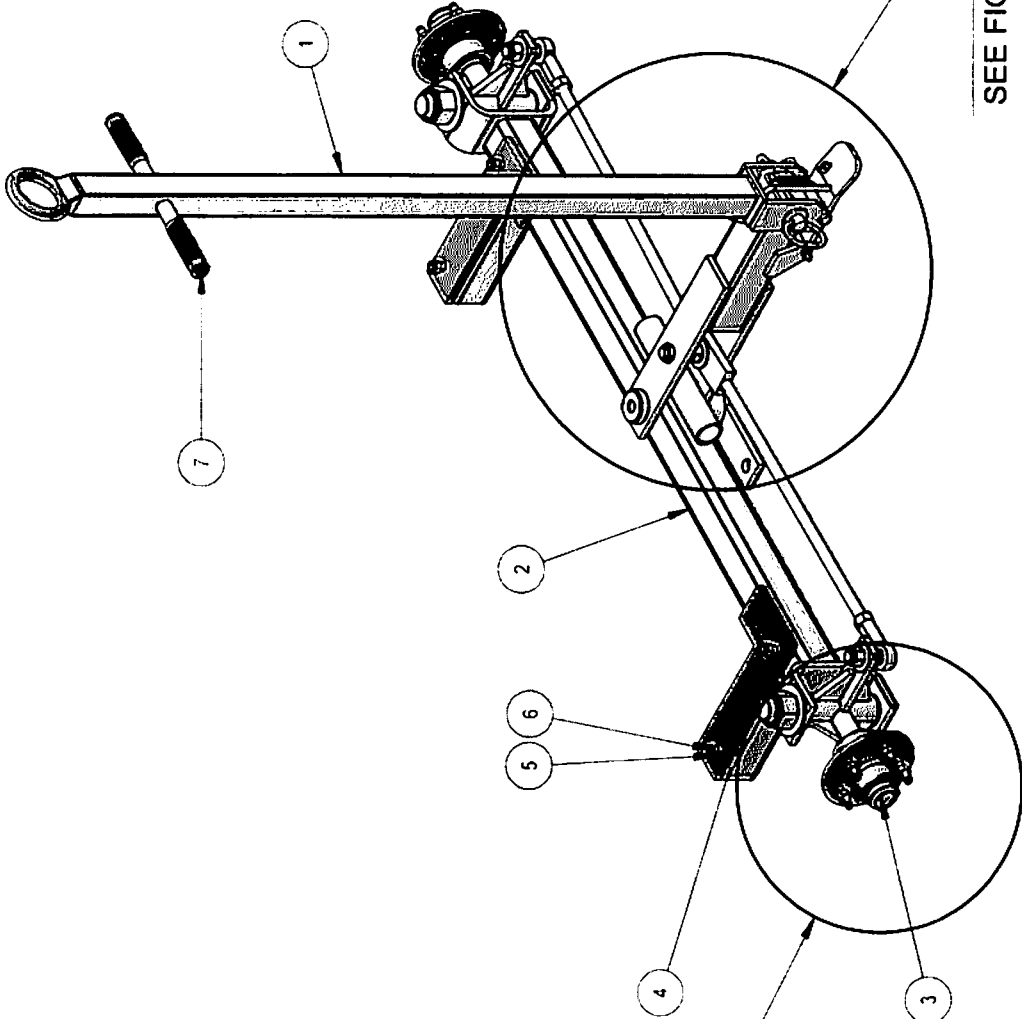
PO Box 3303 Spokane, WA 99220 800-541-3601

FRONT HUB ASSEMBLY

Tolerance: except as noted
 x/x = ± 1/8"
 .xx = ± .03"
 .xxx = ± .005"
 ANG = ± 1°

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 Date: 10/18/2005
 Size: A
 Scale: NTS
 Sheet 1 of 1
 FIG. #3.3

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SEE FIGURE # 3.1

SEE FIGURE # 3.2

Parts List

ITEM	QTY	P N	DESCRIPTION	MATERIAL	WT
1	1	07-1103	TOW BAR	VARIOUS	21.65
2	1	07-11071	FRONT AXLE	Steel, Mild	67.95
3	2	08-1011	FRONT HUB ASSEMBLY	VARIOUS	8.62
4	2	06-1023	PAD, MOUNTING	Rubber	.75
5	1	02-1501	HEX BOLT, 5/16-18 x 4 1/2" LG.	Steel, Mild	.11
6	6	02-12041	NUT, NYLON INSERT, 1/2" UNC	Steel, Mild	.05
7	2	04-1055	HAND GRIP	Rubber	.05

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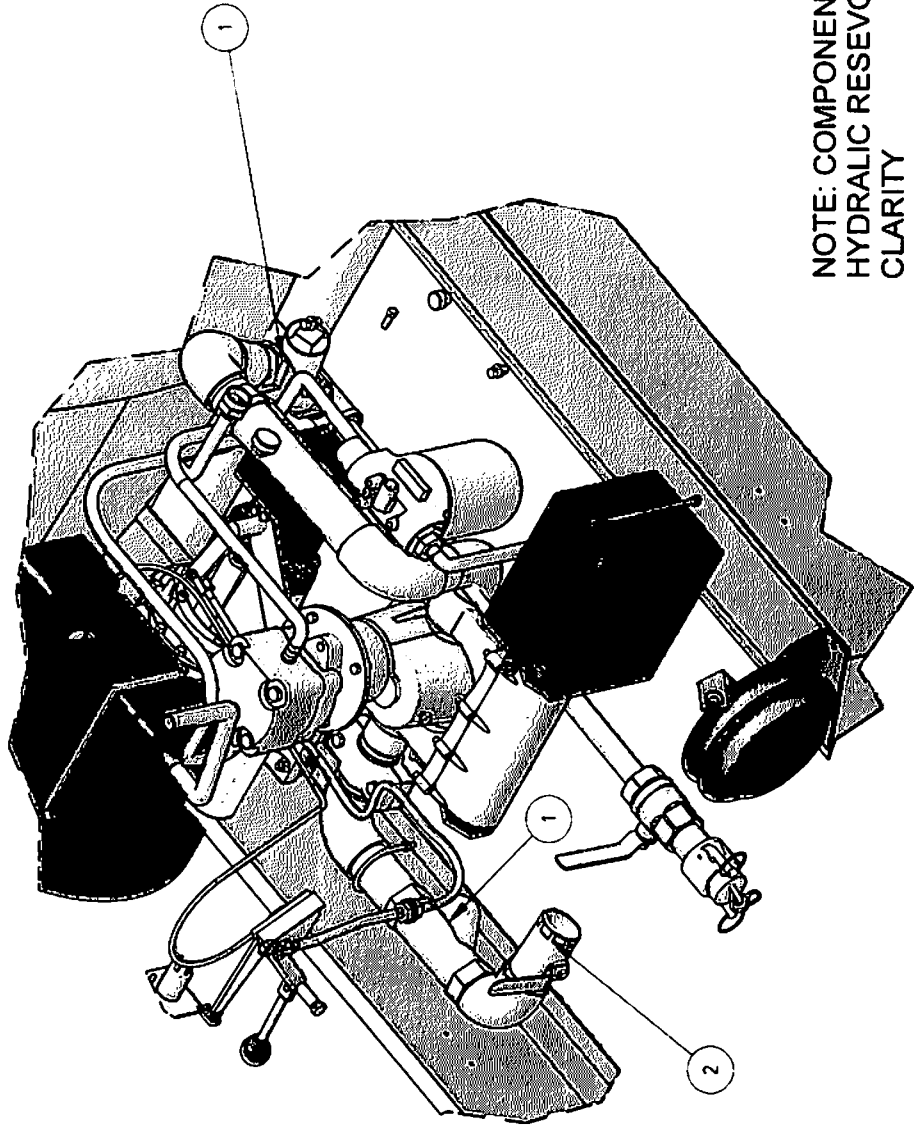
Tolerance: except as noted
 x/x = ± 1/8"
 .xx = ± .03"
 .xxx = ± .005"
 ANG = ± 1°

FRONT UNDERCARRIAGE

PN: 08-1018A

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NOTE: COMPONENT STAND AND
HYDRAIC RESEVOIR REMOVED FOR
CLARITY

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LOCATION OF Y-STRAINERS

Tolerance: except as noted
 .x/x=± 1/8"
 .xx=± .03"
 .xxx=± .005"
 ANG=± 1°

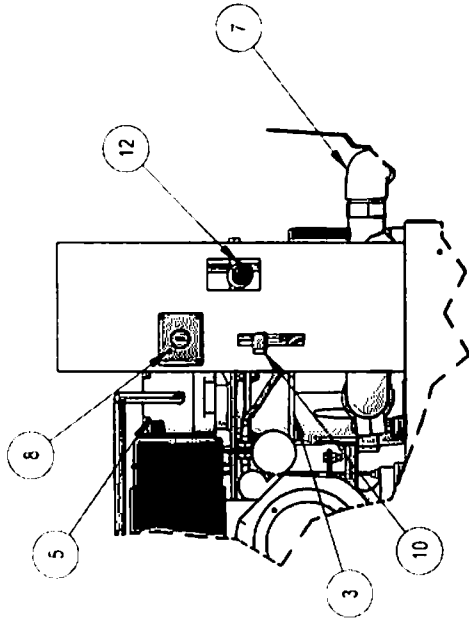
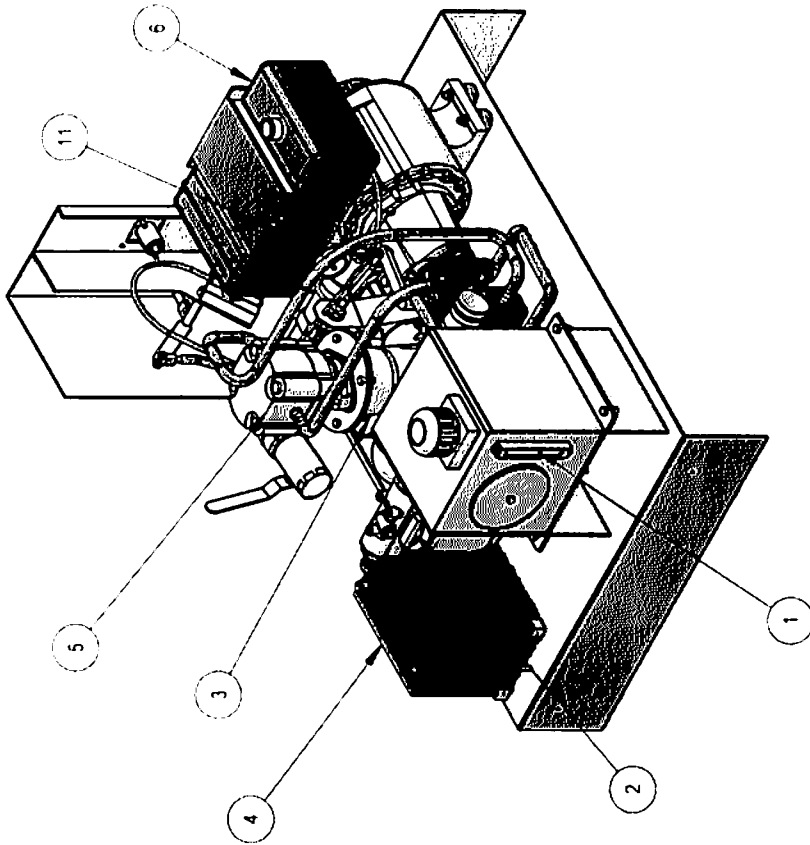
PN: CNV400SD

Date: 10/4/2006 Size: A Scale: NTS Sheet 1 of 1

Parts List

ITEM	QTY	P.N	DESCRIPTION	MATERIAL	WT
2	1	P.D	INPUT/OUTPUT LINE VALVE	VARIOUS	4.02
1	2	P.D	Y-STRAINER LOCATION	BRASS	1.72

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Parts List

ITEM	QTY	P N	DESCRIPTION	MATERIAL	WT
1	1	P D	HYDRALIC RESERVOIR W/ LEVEL & TEMPERATURE GAGE	Stainless Steel	19.00
2	1	P D	HYDRALIC FILTER CONDITION SIGHT GAGE	VARIOUS	72
3	1	P D	DIXON PUMP	VARIOUS	116.07
4	1	P D	BATTERY	VARIOUS	12
5	1	P D	HYDRALIC MOTOR	VARIOUS	28.99
6	1	P D	YANMAR DIESEL MODEL I70V6	VARIOUS	493.85
7	1	P D	BALL VALVE ASSEMBLY	VARIOUS	1.95
8	1	P D	STARTER PANEL/W BATTERY INDICATOR LIGHT	VARIOUS	1.16
9	1	P D	ACTUATOR LEVER	VARIOUS	1.23
10	1	P D	TROTTLER LEVER	Stainless Steel	3.19
11	1	P D	DECOMPRESSION LEVER	Stainless Steel	.04
12	1	P D	PUMP DIRECTIONAL LEVER	Stainless Steel	5.61

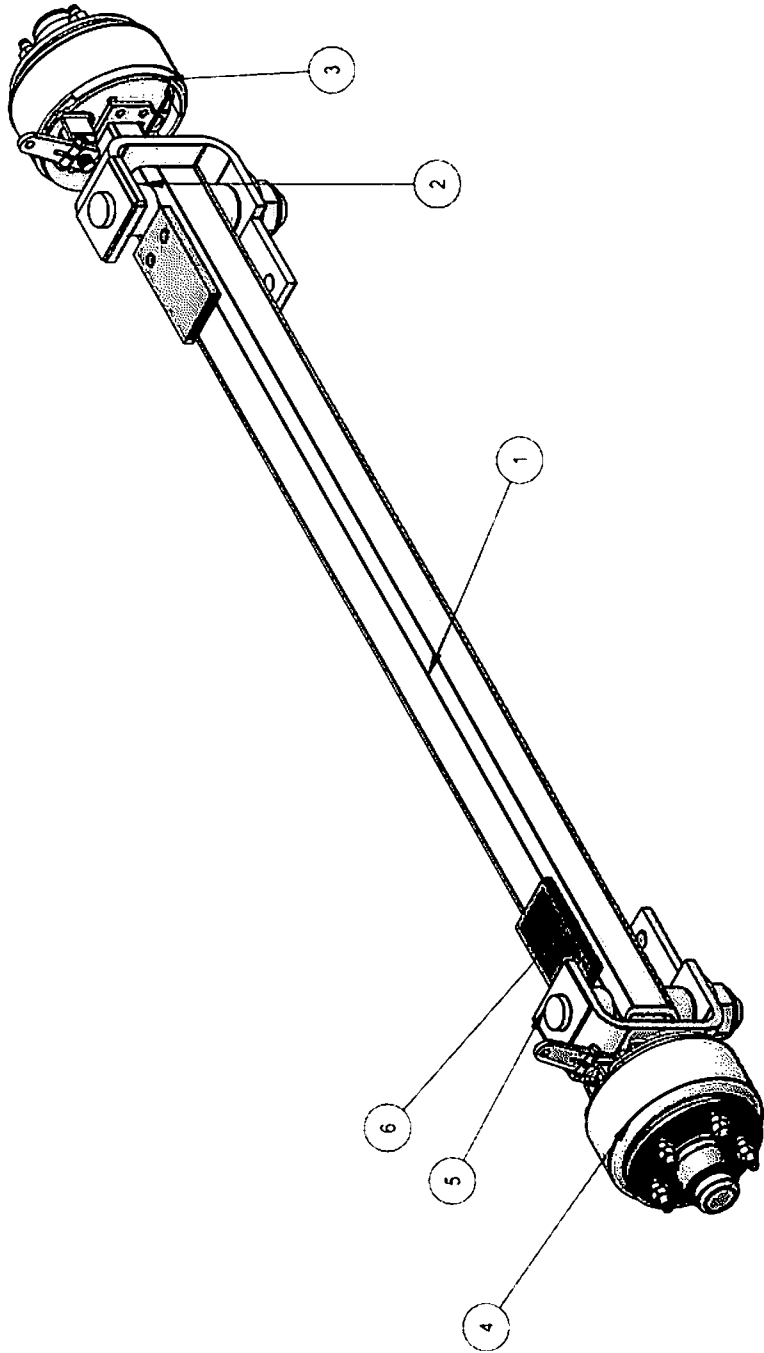


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Tolerance: except as noted
 x/x = ± 1/8"
 .xx = ± .03"
 .xxx = ± .005"
 ANG = ± 1°


PUMP PLATFORM
MOTOR PUMP AND HYDRALIC SYSTEM
 PN: CNV400SD
 Date: 10/3/2006 Size: A Scale: NTS Sheet 1 of 1
 FIG #5

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Parts List

ITEM	QTY	P.N.	DESCRIPTION	MATERIAL	WT.
6	2	06-1012	REAR MOUNT PAD	Rubber	.27
5	2	07-10105	KING PIN	STEEL, MILD	5.24
4	2	08-10111	REAR HUB & DRUM ASSEMBLY	VARIOUS	15.09
3	2	08-1007	BRAKE ASSEMBLY	VARIOUS	5.23
2	4	03-1013	BUSHING KING PIN	Bronze	.36
1	1	08-1030	REAR AXLE ASSEMBLY	STEEL MILD	42.40



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Tolerance: except as noted
x/x=± 1/8"
.xx=± .03"
.xxx=± .005"
ANG=± 1°

REAR UNDERCARRIAGE

PN: 08-10102

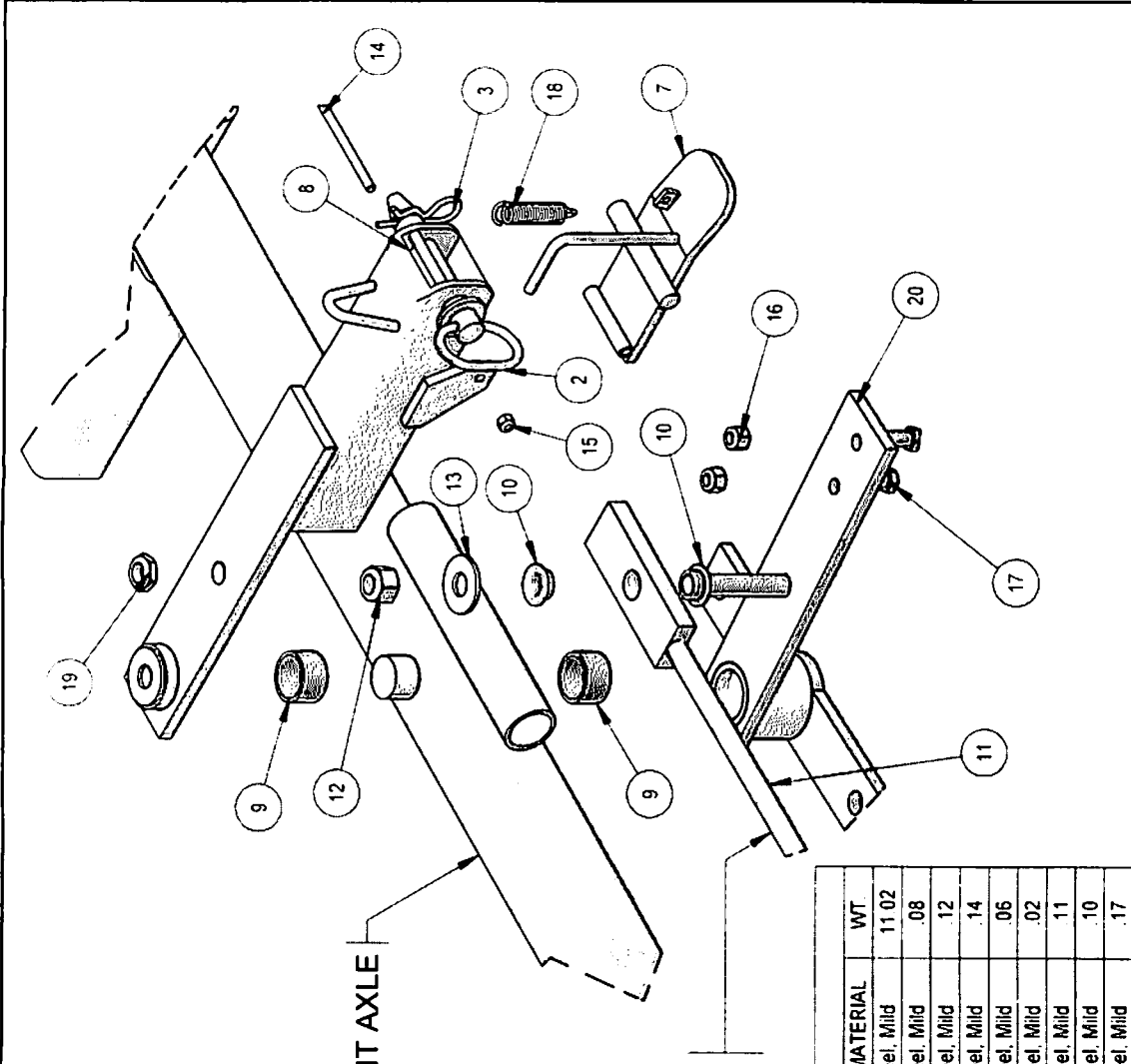
Date: 10/3/2006

Size: A

Scale: NTS

Sheet 1 of 1

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FRONT AXLE

OPPOSITE SIDE TIE ROD
NOT SHOWN FOR CLARITY

Parts List

ITEM	QTY	P N	DESCRIPTION	MATERIAL	WT.
20	1	07-1016A	STEERING ARM, LOWER PLATE	Steel, Mild	11.02
19	1	02-1207	JAM NUT, NYLON INSERT, 3/4-16 UNF	Steel, Mild	.08
18	1	04-1054	SPRING	Steel, Mild	12
17	2	02-1502	BOLT, 1/2-13 x 1 3/4" LG	Steel, Mild	14
16	2	02-12041	NUT, NYLON INSERT, 1/2" UNC	Steel, Mild	.06
15	1	02-1201	NUT, NYLON INSERT, 5/16-18	Steel, Mild	.02
14	1	02-1501	HEX BOLT, 5/16-18 x 1 1/2" LG	Steel, Mild	11
13	1	02-11072	FLATWASHER, 3/4"	Steel, Mild	.10
12	1	02-12071	NUT, NYLON INSERT, 3/4-16 UNF	Steel, Mild	.17
11	2	05-1018	TIE ROD	Steel, Mild	2.89
10	2	03-1015	BUSHING, TIE ROD	Bronze	.09
9	2	03-1014	BUSHING, STEERING ARM	Bronze	.21
8	1	07-1104	STEERING ARM		15.91
7	1	07-1020	TOE LATCH		3.46
5	1	07-11071	FRONT AXLE		67.95
4	1	05-1019	BAR PIVOT	Steel, Mild	2.39
3	1	02-1300	PIN, COTTER	Steel, Mild	.06
2	1	02-1304	HITCH PIN	Steel, Mild	1.59
1	1	07-1103	TOW BAR		21.65

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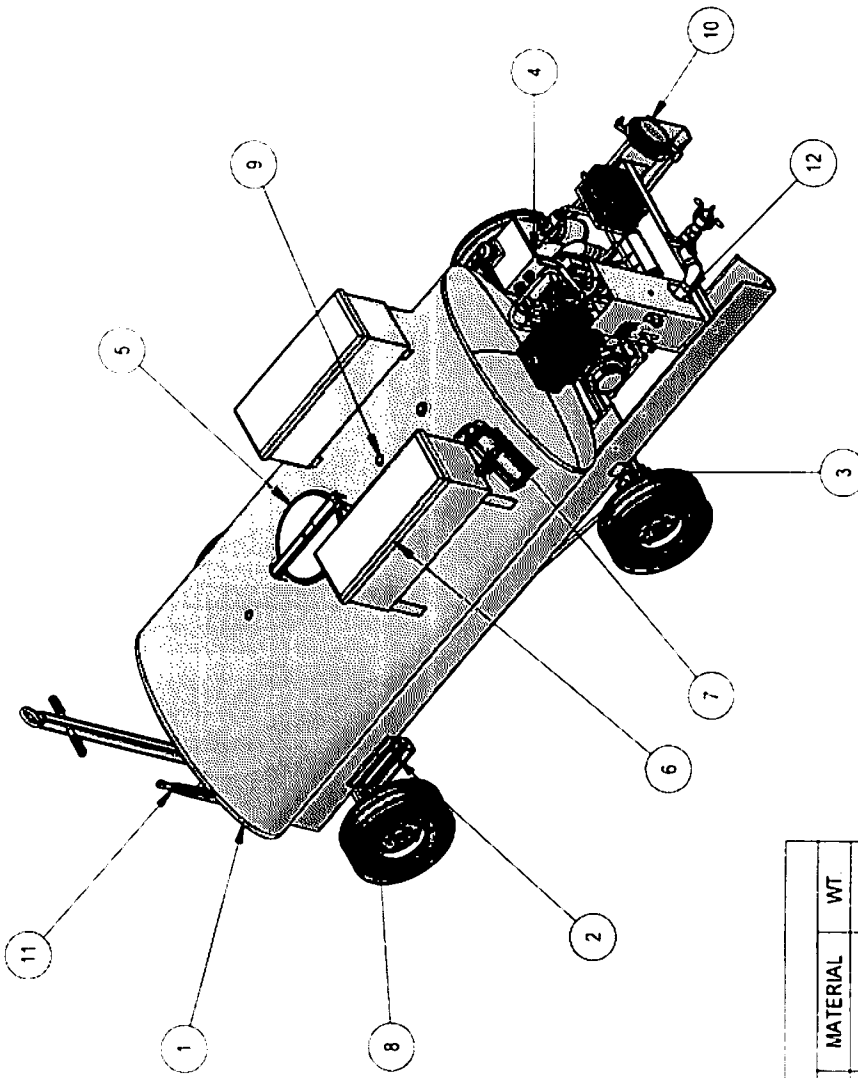
FRONT UNDERCARRIAGE
CENTER STEERING UNIT

PN: 08-1018A

FIG. #3.2

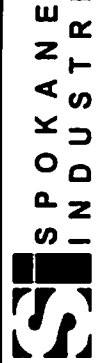
Date: 11/30/2004 | Size: A | Scale: NTS | Sheet 3 of 3

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NOTE: FRAME ASSEMBLY REMOVED FOR CLARITY

Parts List					
ITEM	QTY	P.N	DESCRIPTION	MATERIAL	WT
1	1	07-9792-10	400 GAL TANK WELDMENT	Stainless Steel	1147.41
2	1	08-1018 A	FRONT UNDERCARRIAGE SEE FIGURE #3	VARIOUS	246.61
3	1	08-1018 A	REAR UNDERCARRIAGE SEE FIGURE #4	VARIOUS	481.02
4	1	CMV400 SD	MOTOR PUMP AND HYDRAULIC SYSTEM SEE FIGURE #5	VARIOUS	976.56
5	1	08-2007	MANWAY SEE FIGURE #6	Stainless Steel	2.83
6	2	04-0030	STORAGE BOXES	Stainless Steel	214.64
7	1	04-0700	FIRE EXT 5# PURPLE-K 20 B C	VARIOUS	4.06
8	1	07-10201	WHEEL TIRES AND TUBE ASSEMBLY SEE FIGURE #7	Stainless Steel	2.09
9	1	04-01540	LEVEL GAUGE	Stainless Steel	0.04
10	1	04-1036	GROUNDING REEL	VARIOUS	9.39
11	1	P.D	HAND BRAKE	Stainless Steel	78
12	1	P.D	Y-STRAINER SEE FIGURE #8	Stainless Steel	3.59



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MAIN UNIT FRAME ASSEMBLY REMOVED

PN: CNV400SD

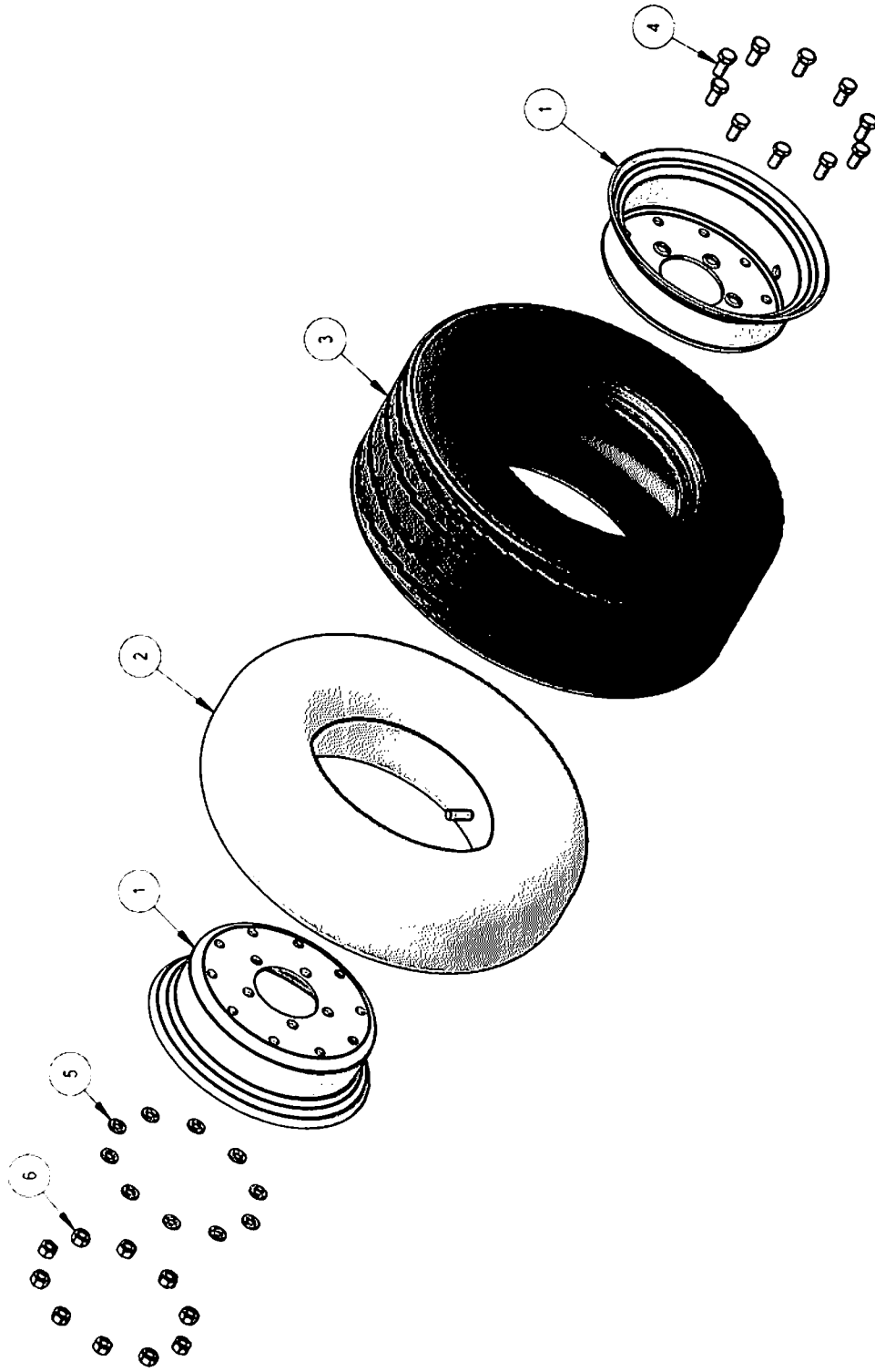
FIG #1.1

Date: 10/4/2006

Scale: NTS

Sheet 1 of 1

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Parts List

ITEM	QTY	P N	DESCRIPTION	MATERIAL	WT.
1	1	04-1020	WHEEL SPLIT RIM	Steel	17.89
2	1	04-1045	TUBE INNER	Rubber	2.79
3	1	04-10221	TIRE E-RANGE	Rubber	9.70
4	10	02-10043	SCREW HEX CAP. 1/2-20 1" LG	Steel, Mild	10
5	10	02-1104	LOCK WASHER. 1/2"	Steel, Mild	00
6	10	02-1208	HEX NUT. 1/2" UNF	Steel, Mild	04

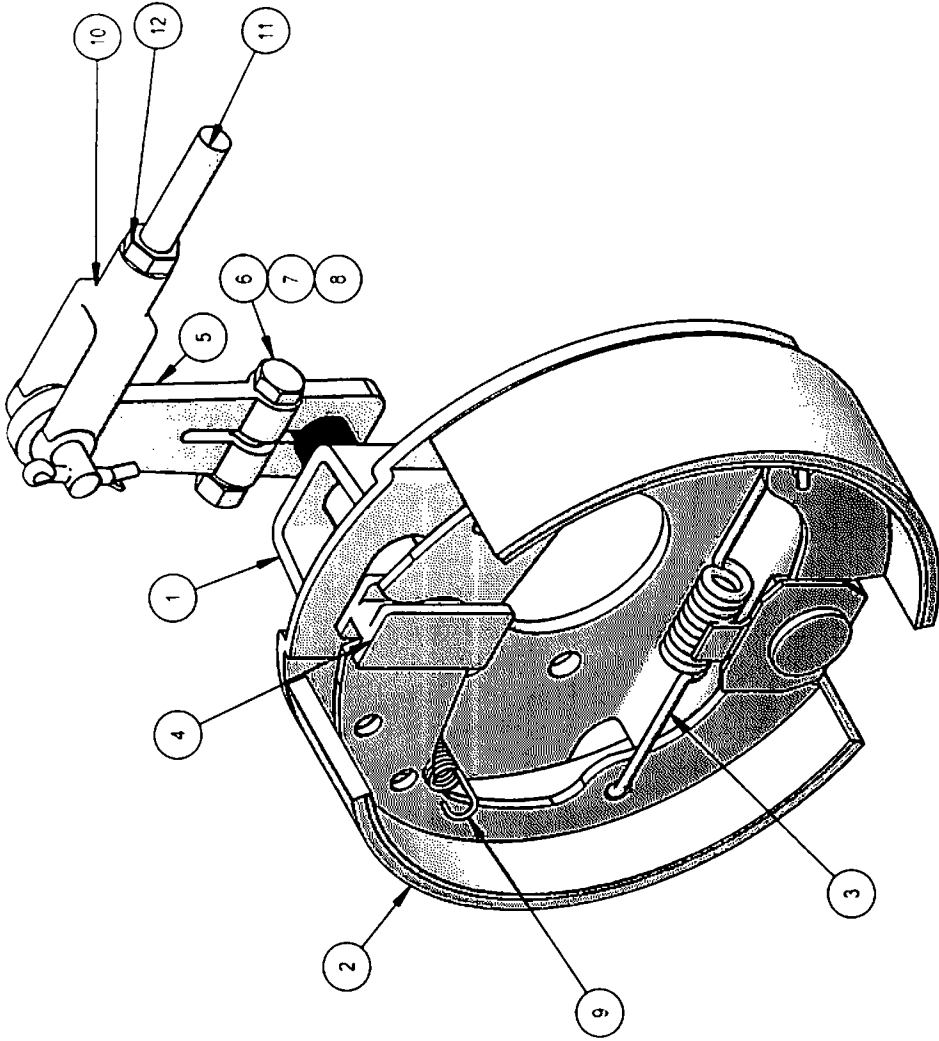
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Tolerance: except as noted
 .x/x = ± 1/8"
 .xx = ± .03"
 .xxx = ± .005"
 ANG = ± 1'

WHEEL & TIRE ASSEMBLY
E-RANGE FOR 400 & 600 GALLON MODELS
 PN: 07-10201 FIG. #7

Drawn: jay Date: 11/24/2004 Size: A Scale: NTS Sheet 1 of 1

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SHOWN OUT OF POSITION
FOR CLARITY

Parts List

ITEM	QT	P N	DESCRIPTION	MATERIAL	WT.
1	1	04-1064R	BACK PLATE	Steel, Mild	2.11
2	2	04-1065R	BRAKE SHOE	Steel, Mild	1.12
3	1	04-10265R	RETURN SPRING	Steel, Mild	.06
4	1	04-1028R	CAM	Steel, Mild	.43
5	1	04-1030R	CAM LEVER	Steel, Mild	.32
6	1	02-10017R	HEX HEAD CAP SCREW, 5/16" UNF 1 1/2" LG.	Steel, Mild	.05
7	1	02-12011	NUT, 5/16" UNF GRADE 8	Steel, Mild	.01
8	1	02-11011	LOCK WASHER, 5/16"	Steel, Mild	.00
9	2	04-1026R	BRAKE SHOE HOLD DOWN SPRING	Steel, Mild	.01
10	1	04-2516	YOKE		26
11	1	05-1026	BRAKE ROD, 3/8" x 16 1/2" LG	Steel, Mild	.06
12	1	P D	HEX JAM NUT 3/8-UNF	Stainless Steel	.01



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BRAKE ASSEMBLY

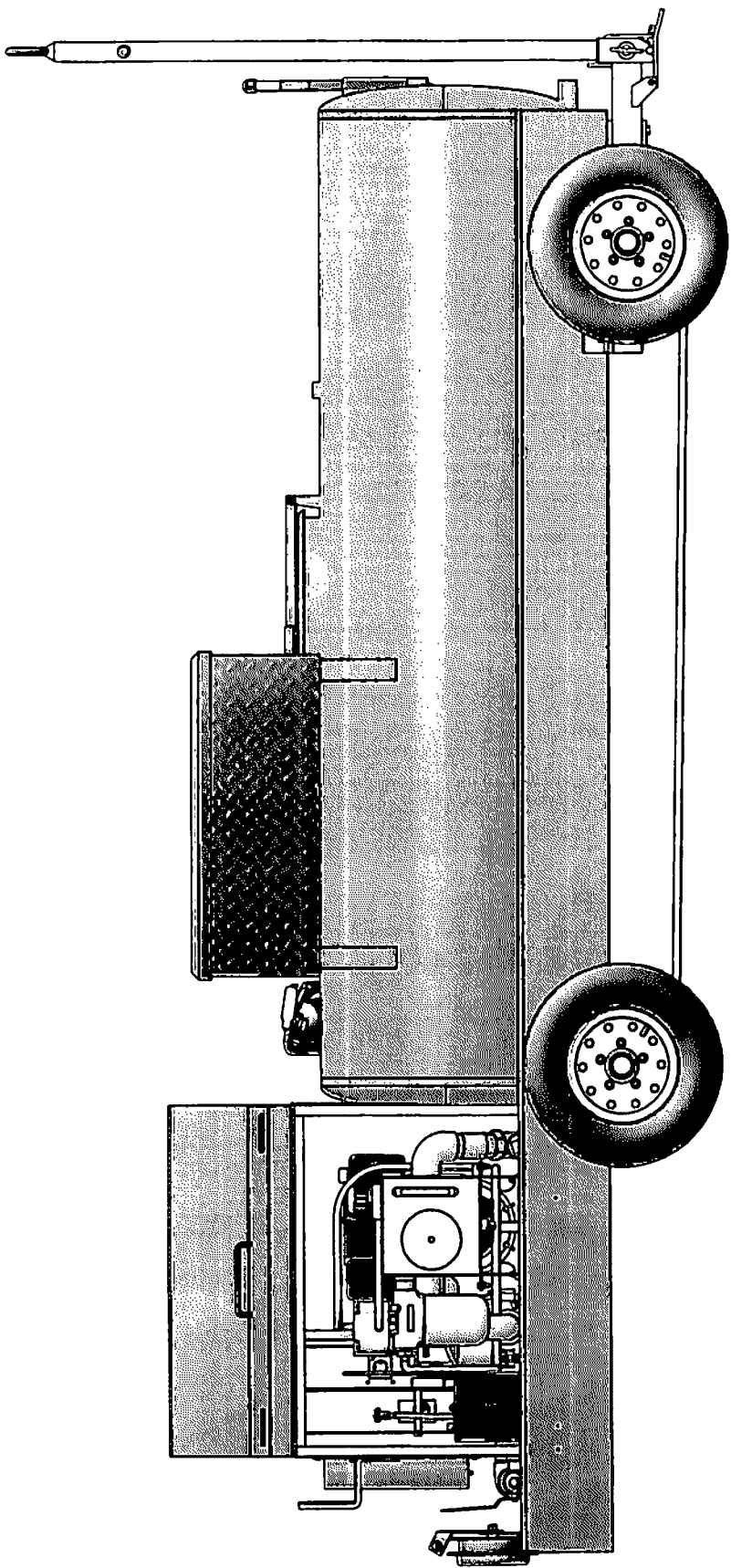
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as noted
X/X=± 1/8"
XX=± .03"
XXX=± .005"
ANG=± 1°

PN: 08-1007R

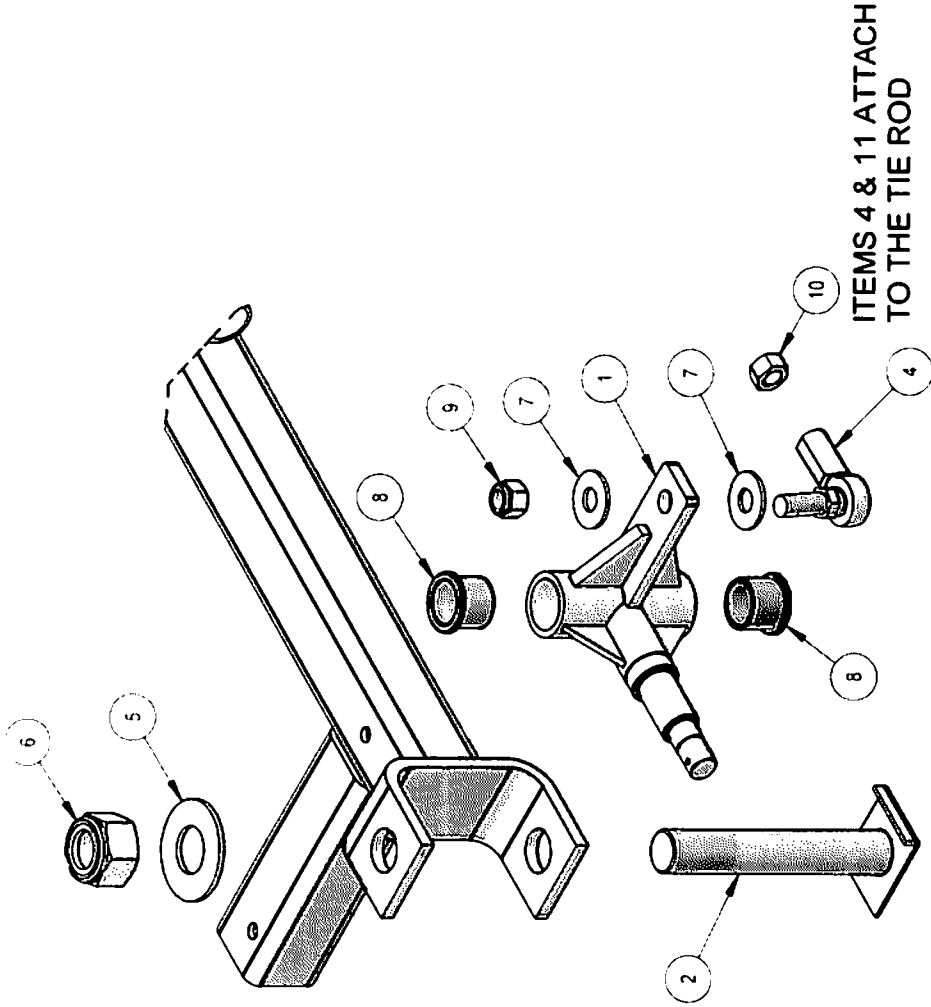
Date: 10/11/2005 Size: A Scale: NTS Sheet 1 of 1

FIG #4.1

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CNV400S4DGH TECHNICAL MANUAL



ITEMS 4 & 11 ATTACH TO THE TIE ROD

Parts List

ITEM	QTY	P N	DESCRIPTION	MATERIAL	WT
1	1	07-1009	HOUSING KING PIN	STEEL	8.17
2	1	07-10105	KING PIN	STEEL	5.24
4	1	03-1016	ROD END BALL JOINT	STEEL	1.32
5	1	02-11131	WASHER, FLAT	Steel, Mild	.43
6	1	02-12131	NUT, NYLON INSERT	Steel, Mild	1.21
7	2	02-11072	FLATWASHER, 3/4"	Steel, Mild	10
8	2	03-1013	BUSHING, KING PIN	Bronze	36
9	1	02-12071	NUT, NYLON INSERT, 3/4-16 UNF	Steel, Mild	.17
10	1	02-12141	NUT, 3/4-16 UNF	Steel, Mild	.13

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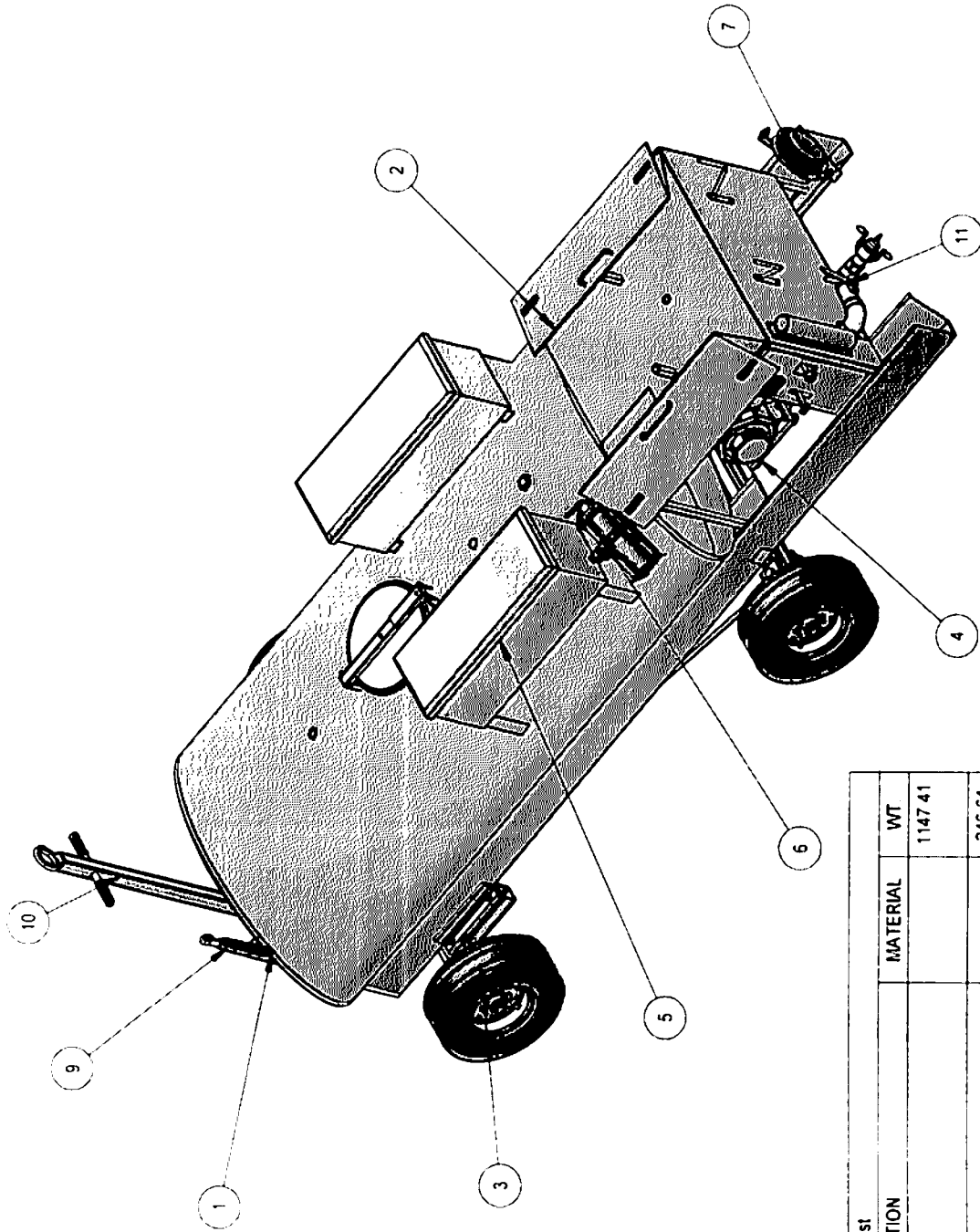
FRONT UNDERCARRIAGE
ALL MODELS

PN: 08-1018A

Date: 11/30/2004 Size: A Scale: NTS Sheet 2 of 3

Drawn: Jay

Tolerance: except as noted
 x/x = ± 1/8"
 .xx = ± .03"
 .xxx = ± .005"
 ANG = ± 1°



Parts List

ITEM	QTY	P N	DESCRIPTION	MATERIAL	WT
1	1	07-9792-10	400 GAL TANK WELDMENT		1147.41
2	1	N/A	FRAME ASSEMBLY		246.61
3	1	N/A	UNDERCARRIAGE WHEEL BRAKES TIE RODS		481.02
4	1	CNV400 SD	MOTOR PUMP AND HYDRAULIC SYSTEM		976.56
5	2	04-0030	STORAGE BOXES	Stainless Steel	214.64
6	1	04-0700	FIRE EXT 5# PURPLE-K 20 B C		4.06
7	1	04-1036	GROUNDING REEL		9.39
9	1	P D	HAND BRAKE	Stainless Steel	1.38
10	1	P D	TOWBAR	Stainless Steel	1.72
11	1	P D	INPUT/OUTPUT LINE VALVE	Stainless Steel	4.02

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MAIN UNIT FRAME ASSEMBLY INSTALLED

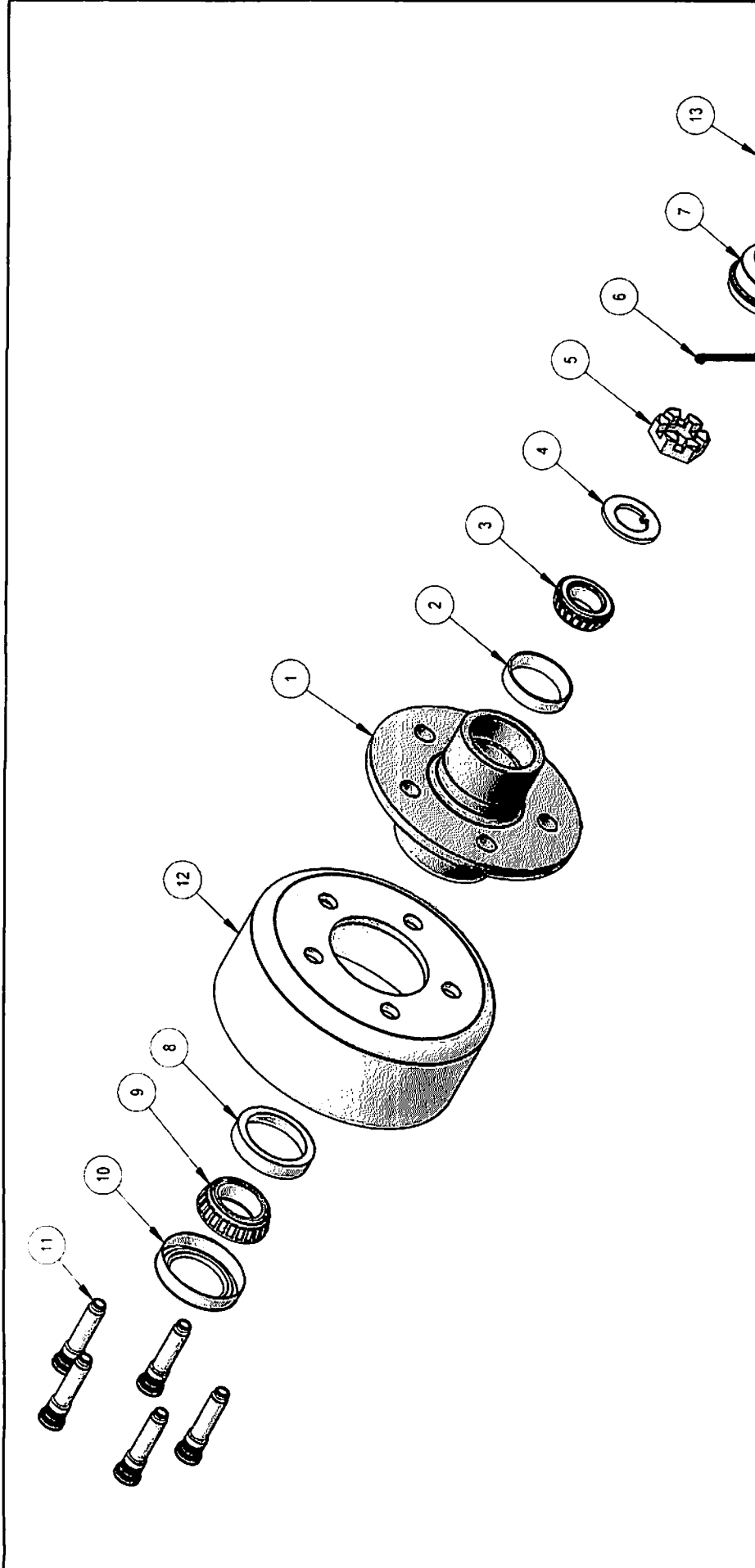
Tolerance: except as noted
 x/x = ± 1/8"
 .xx = ± .03"
 .xxx = ± .005"
 ANG = ± 1°

PN: CNV400SD

Date: 10/4/2006 Size: A Scale: NTS Sheet 1 of 1

FIG #1

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Parts List

ITEM	QTY	P N	DESCRIPTION	MATERIAL	WT.
1	1	05-1020	HUB, REAR AXLE	Steel, Mild	6.15
2	1	04-1016	CUP, OUTER BEARING	Steel, Mild	.08
3	1	04-1014	CONE, OUTER BEARING	Steel, Mild	.17
4	1	02-12055	WASHER	Steel, Mild	.05
5	1	02-1205	NUT, CASTLE	Steel, Mild	.16
6	1	02-1303	PIN, COTTER	Steel, Mild	.01
7	1	04-1019	CAP, HUB	Steel, Mild	.10
8	1	04-1015	CUP, INNER BEARING	Steel, Mild	.18
9	1	04-1013	CONE, INNER BEARING	Steel, Mild	.24
10	1	04-1012	SEAL, BEARING	Steel, Mild	.04
11	5	02-1017	STUD	Steel, Mild	.16
12	1	05-1021	DRUM BRAKE	Steel, Mild	6.80
13	5	04-1021	NUT, LUG	Steel, Mild	.06

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Tolerance: except as noted
 x/x = ± 1/8"
 .xx = ± .03"
 .xxx = ± .005"
 ANG = ± 1'

REAR HUB & DRUM ASSEMBLY

PN: 08-10111

FIG. #4.2

Drawn: AL Date: 11/30/2005 Size: A Scale: NTS Sheet 1 of 1

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