



MAINTENANCE WORK ORDER

EQPT NO: **0020**

DESCRIPTION: NEW FLYER 40' MAPLE GROVE 2006 (0018)

HOME SITE: **RUTER 3353**

STATUS: REL

Paycode: 5000

W/O NO: **0005454374**

REL / COMP DATE: 8/1/2019 7:35:09AM

WIP Acc #: 5322 7027610999 44401

PROCEDURE ID: qinsp

DESCRIPTION: MISCELLANEOUS - FROM INSPECTION - Post check over

ATTACHED EQUIPMENT

Equipment Name	Equipment Number	Serial Number	Item Number	Attachment Date	Miles Since DOB
ENGINE	EL280-629904	46629904	1434342	6/20/2007	269,973
TRANSMISSION	TD864-033608	5033608	2383926	6/20/2007	269,973

VEHICLE LIFE

Type	Life Since DOB
Miles	269,973
Days	4,705

W/O INSTRUCTIONS

Check general condition of this bus and record findings on attached sheets.
Maple Grove may retain two New Flyer 40' (SR1118) buses for reserve bus use.

Activity Detail - Total Estimated Hours To Complete: 0.00 Hours



Activity Number: Q - Defect Description: Miscellaneous - Estimated Hours: 0.00

Date	Clock#	Hours	Repair Comments
8-22-19	5414		Complete evaluation insp.
	7801		

NEW/REL WORKORDERS

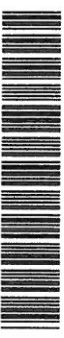
W/O No.	Status	Proc Id	Instruction Text	Enter Clock No.
0005448338	NEW	rrt	side destination sign bo. tcc ok: 07-31/	OK BO
0005453951	REL	prt	eng fan fault	

Last Reline: Jan 2016, 70,800 miles ago. Frnt + Rear

11-21-19



0005454374

**MAINTENANCE WORK ORDER****TXBASE HISTORY (31 Days)**

Workorder	Date	Status	Proc Id	Comments
0005453951	07/31/2019	REL	PRT	eng fan fault
0005442276	07/21/2019	COMP	EDR	drive button on shift selector hard to engage repaired trans. shift selector. dwh
0005442875	07/18/2019	COMP	JRT	body - side panel open - washers locked panel, adjusted washers.
0005351229	07/10/2019	COMP	CLEAN	general cleaned. md
0005434128	07/10/2019	COMP	PRT	fan fault light found fan fault light on intermittently. found hyd. fluid low; refilled. checked for leaks, found hyd. pump top fitting 1/4 turn loose; tightened fitting. checked fluid level, rechecked for leaks. test drove bus, no light on. ok. dwh
0005433791	07/08/2019	COMP	JRT	loose panel/ taped panel.

Work Request

Create Date	Priority	Activity No	Defect Description
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Maple Grove New Flyer Buses

40ft EVALUATION SHEET

Bus # 20
 Date 8-22-19
 W/O # 5454374

Mechanic # 5414

Mechanic Sign Off AK

Inspection Process Time Expectation: N/A

Supervisor Sign Off WJ

OK	BO	ID

Driver area

- ☒ From the driver's seat, check all controls, do drivers pedals adjust, windshield wipers & sprayers, dash lights, driver's fans, mirrors, driver's seat operation, seat belt, horn, p.a. system, drivers light & gauges. Check remote mirror operation. Check windshields for cracks, chips, and interior sealing gaskets. Inspect operation of the adjustable brake & throttle pedal assembly. Lube the brake application pedal hinge pin, roller and roller pin using Teflon spray lube. Inspect throttle hinge pin for tightness. Push on the pin from left to right to see if it is secure in base & lube the throttle pedal pivot points using Teflon spray lube. Using compressed air, clean the area around the adjustable pedals and mounting plate. Lube the mounting plate slides with Teflon spray lube. Lube the telescoping steering column, and the driver's seat slides using Teflon spray lube. J
- ☒ Actuate the treadle valve by pressing the pedal by hand. The action should be smooth without binding when the pedal is released, it should return immediately without sticky or sluggish action. B
- ☒ Check air pressure. Governor cut-in pressure is 100 +/- 5 psi. cut-out pressure is 120 +/- 5 psi. It should not take more than 3 minutes to build air pressure at idle. A
- ☒ Use dash switches to cycle wheel chair ramp and check the following: Kneeling, Parking brake, Brake interlock, Fast idle, Warning alarm and light, Transmission selector/ Throttle interlock, Front door hold open solenoid. L
- ☒ Check entrance and exit door opening & closing speeds. The entrance and exit door should open at 1.5 seconds + or - .5 seconds. The closing speed for is the same as the opening speed. The total time to cycle the entrance and exit doors open and closed is 3 seconds + or - 1 second. J
- ☒ Check the fire extinguisher. If the punched date on the tag is more than one year old it has expired, replace the fire extinguisher. Replace if the seal is broken, or if it is low on charge. Check the reflector kit for damaged or missing reflectors. Replace as needed. Q

Ramp area

- ☒ Check non-slip surfaces on ramp and bus to ensure they are clean and not worn. Vacuum debris from under ramp and floor channels. L
- ☒ Inspect bearings, bushings and cam plate assembly. Lube pivot points and cam plate with Teflon spray. L
- ☒ Ensure stow limit switch is functioning and is positioned to activate at 8 - 12 inches from **STOWED** position. L
- ☒ Check ramp interior and drains below floor plate and remove accumulated debris. L
- ☒ Check for looseness in the ramp hinge area, and mounting rivets. Lube ramp hinge with Teflon Spray L
- ☒ Check hydraulic fluid level, and hoses for leaks or chaffing. Top off fluid as needed. P/N 1014966. Check wiring in the compartment for loose connections. **Note: The wheelchair ramp pump and reservoir is located behind the dash panel access door at the right side of the dash.** L
- ☒ Check ramp pull up strap. L

Interior area

- ☒ Check all interior lights. Check interior light lenses for cleanliness. (report if not working or dirty lenses). E

Bus# _____ W/O# _____

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- ☐ Ensure wheel chair restraints and lap / shoulder belts are clean and operational. Check wheel chair chime operation. Lube fold up wheelchair seat and latches with Teflon Spray. L
- ☒ Check bus interior for graffiti, worn or damaged seats, etched glass and cleanliness. J
- ☒ Check all stanchions and seat mountings for proper attachment. Check seat cushions to be sure they are fastened in place. J
- ☒ Check operation of all opening windows. Check operation of emergency exit roof hatches. Check condition of floor coverings & wheel well moldings. There should be no sharp edges or protruding fasteners. J
- ☒ Check exit door motion sensors, and brake interlock (should apply brakes when rear door is energized). Check condition of bushings, shafts, pins, arms, brushes, grab handles, glass and seals. J
- ☒ Check, chime cord/switch operation at the following locations: rear door, rear and front of bus. Note if stop request signs are not lit up or the audible chime does not sound. E
- ☒ Check entrance door condition of bushings, shafts, pins, arms, brushes, grab handles, glass and seals. Lube pivot points on front and rear doors. J
- ☒ **Turn on all exterior lights.** E

Exterior area

- ☒ Check all exterior lights and reflectors. Including high beam & low beam headlights, destination sign lights, marker lights, backup lights and beeper, turn signal lights, rear run taillights, curb & step lights. E
- ☒ Check condition of wipers blades and wiper motor mounting tightness. Check exterior sealing gaskets. J
- ☒ Check grips for wear & operation of bike rack, report any damage. J
- ☒ Check for and report any body damage on body shop worksheet. J
- ☒ Torque all lug nuts on all wheels to 440 ft. lbs. Check for damaged, rusted or cracked wheels. Record below the number of lugs at each wheel that required **any** tightening in order to reach 440 ft. lbs. Report any lugs that required tightening below to your Supervisor. TR
- ☒ **LF** 04 **RF** 04 TR
- ☒ **LR** 04 **RR** 04

Example: **LF** 4 indicates that 4 lugs needed tightening to reach the proper torque. **LF** OK indicates that no lugs required tightening to reach proper torque.

- ☒ Thump tires to check for low air pressure. Check for uneven wear and damage. **Record tire wear below.** TR

Left Front 12 /32"

L. R. Inner 12 /32"

L. R. Outer 11 /32"

Right Front 13 /32"

R. R. Inner 11 /32"

R. R. Outer 11 /32"

- ☒ Check batteries and fill if needed with distilled water. Check connections in battery & fuse compartment for corrosion and looseness. Lubricate battery tray rollers with a (Teflon spray lubricant). Also check jump start connector for corrosion. E

Underside area

- ☒ Check all steering components. (tie rod ends, drag link, steering shaft and steering gear for leaks or wear. S
- ☒ Check front end suspension (sway bar, radius rods, shock absorbers, leveling valves, bellows and bellow bases). Check front ride height. (3.00 ± 0.25 ") between axle beam and frame mounted rubber stop. H
- ☒ Drain air tanks; report if oil or excess water is present. A
- ☒ Check air pressure system & report leaking valves or lines. A
- ☒ Check all hoses, plumbing, wire harnesses and support clamps. Report if loose, leaking, frayed, rubbing, missing or broken. C
- E**
S
P

- ☐ Inspect drive shaft for looseness at U-joints and slip joint: this must be done prior to greasing. Check for missing or loose bolts. ☐ T
- ☒ Check electrical cables, battery cables, and starter cable and report if loose or corroded. Report any oil leaking on starter. ☐ E
- ☐ Check rear suspension. (Radius rods, leveling valves, shock absorbers, bellows and bellow bases). ☐ H
- ☐ Check rear ride height. (3.00 ± 0.25 ") between axle beam and frame mounted rubber stop. ☐ B
- ☒ **Brake Inspection**

Check brake linings or pads for the following defective brake conditions:

- Lining cracks or voids of 1/16" in width observable on the edge of the lining
- Portions of a lining segment missing such that a fastening device (rivet or bolt) is exposed when viewing the lining from the edge
- Cracks that exceed 1 1/2" in length
- Loose lining segments. (Approximately 1/16" or more movement."
- Complete lining segments missing.
- Evidence of oil seepage into or out of the brake lining/drum interface area. This must include wet contamination of that lining edge accompanied by evidence that further contamination will occur – such as oil running from the drum or bearing seal.

NOTE: Grease on the lining edge, back of shoe, or drum edge and oil stains with no evidence of fresh oil leakage are not considered for out-of-service

Record and report brake lining thickness. Measured at the shoe center for drum brakes. When 1/8th or less to the wear line notify supervisor

LF 3/8 RF 3/8 LR 3/16 RR 3/16

Check brake pushrod adjustment limits (with help). Bring reservoir air pressure between 90 and 100psi, turn engine off and fully apply brakes. Air gauge pressure should not drop more than 3psi per minute with a 90psi application. Listen for audible air leaks at brake chambers while brakes are applied. Measure brake chamber pushrod travel, it must be less than the following. Front chambers = 1 3/4" (type 24). Rear chambers = 2 1/4" (type 36). Record the pushrod measurements below.

LF 1 1/2 RF 1 1/2 LR 1 3/4 RR 1 3/4

Record defects on Safety/Out of service and report to Supervisor

Engine area

- ☒ In the Engine Compartment. Check all wiring harnesses for chafing & proper support clamping. ☒ P
- ☐ Check cooling hoses & connections for chafing, damage, leaks and proper support clamping.
- ☐ Check hydraulic fan motor mounting and bracket for cracks, correct attachment, also check fluid for engine oil contamination using hydraulic reservoir dipstick, also check hydraulic components, hoses and fittings for chafing, damage, leaks and proper clamping.
- ☒ Check engine compartment lights. ☐ E
- ☒ Check all belts, pulleys and tensioners for wear. ☐ P
- ☒ Check exhaust system for loose clamps, cracks, leaks or broken mounting brackets, etc. ☐ P
- ☒ Check air intake system for leaks, loose clamps, rust and interference with other components. (Use shop made mirror). Check air intake restriction gauge. If in yellow or red area replace air filter element. ☐ P
- ☒ Check surge tank cap, cycle the pressure relief valve to ensure correct operation. Check clarity of the sight glass. Use test strip to check, Anti-freeze protection, Penray concentration and Nitrate levels, if below proper level change coolant filter. ☐ C

☐ Connect laptop and perform engine diagnostics (note any active or inactive codes with an ECM trip time within the last 8 hours). ☐ P

Climate Control (engine off)

- ☒ Inspect the a/c unit and Webasto compartments for evidence of coolant leaks and condition of all hoses. Hoses that appear to be bulging or soft should be written up for replacement. ☐ D
- ☒ Run Webasto / Spheros heater. Check for excessive exhaust smoke. ☐ D
- ☒ Visually inspect the entire A/C unit for loose, broken or damaged parts and evidence of refrigerant and oil leaks. ☐ D
- ☒ Check moisture indicator (if equipped) Green = Pass. ☐ D
- ☒ Visually check clutch for wear or overheating. Check clutch air gap (should be .045). ☐ D
- ☒ Inspect compressor drive belt condition. Check belt adjustment (Belt tension should be at 170 – 180 ft lbs.) ☐ D

☒ Make sure the A/C evaporator drain kazoo's are in place and in good condition. ☐ D

Running evaluation

☒ Start the bus. Fast idle on, Acc's off. Use the Autometer load tester to check charging voltage, alternator output, starter draw, and battery condition, Load test each individual battery. (Battery voltage should be 27.6V - 28V no load) ☐ E

☒ **Battery Voltage** 28 **Amps at Battery** 235 **(Min approx 225 amps)**
Turn on fast idle. Turn on A/C & Webasto systems. Operate for 15 min. in cool, heat mode. Check air duct temperature. Is there a 10 to 20 degree difference between ambient and air duct temperature? If so system is ok. ☐ D

☒ Check Thermostat by raising and lowering bus interior temperature to cycle unit in all modes of operation. (Heat & cool). ☐ D

☒ Check compressor oil level ($\frac{1}{4}$ to $\frac{1}{2}$ in sight glass). If compressor oil is black or gray or acidic, write-up. ☐ D

☒ Check transmission oil level. ☐ P

☒ Visually & audibly inspect the operation of the evaporator and condenser motors and the compressor and clutch for abnormal noise or vibration. ☐ D

☒ Drain muffler tank with air compressor loaded. ☐ P

☒ Ensure all access panels and doors are closed and secured prior to the completing the Evaluation / Service. ☐ Q

☒ Test drive bus, also check for proper retarder operation. (Test drive not to exceed 15 min). ☐ Q

Test Drive Check List

- ☒ Does the engine have sufficient power and run smoothly?
- ☒ Does the transmission shift smoothly?
- ☒ Are there any abnormal drive train noises?
- ☒ Are there any suspension noises?
- ☒ Does the bus sway or handle poorly?
- ☒ Is the steering tight; does the steering pull to one side?
- ☒ Are there squeaks or rattles in the interior of the bus?
- ☒ Does the retarder and brake system work as designed?

- ☐
☐
- ☐
☐
- ☐
☐

The fire suppression 6000 mile inspection must be performed on the buses equipped with fire suppression systems. The proper inspection form can be found on the council intranet site.

Report any safety defects or defects that need immediate attention to your supervisor before parking the bus.

SAFETY or OUT OF SERVICE DEFECTS:

Prioritize defects: 01 – Safety/Out of Service, 02 - Imminent road call, 03 – Medium Priority, 04 Graffiti

Defects: A – Air System

Defects: B - Brakes

Defects: C - Cooling System

Defects: E - Electrical

Prioritize defects: 01 - Safety/Out of Service, 02 - Imminent road call, 03 - Medium Priority, 04 Graffiti

Defects: H - Suspension

Rear Radius Rod Mount & Bolts R&L side Rusted Still sound

Noted

Defects: J - Body (garage shop to repair)

Frame Rust Center Steel side / Moderate

Frame Rust RR/LR Behind Rear wheels / Moderate

Defects: P - Power Plant Engine

Oil line from Spinner Filter & ESAC, Air line off Air Cond. & hyd hose rubbing, Charge Air Tube & hydraulic line by cooler

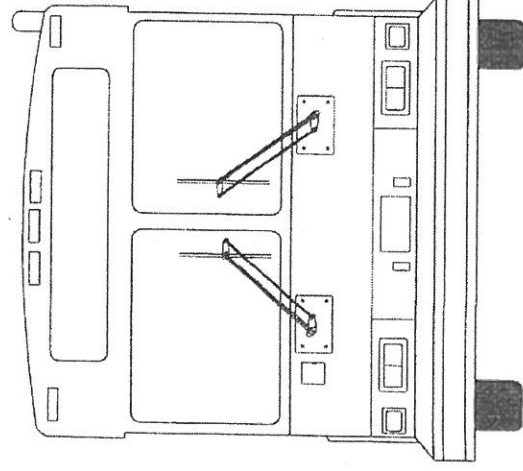
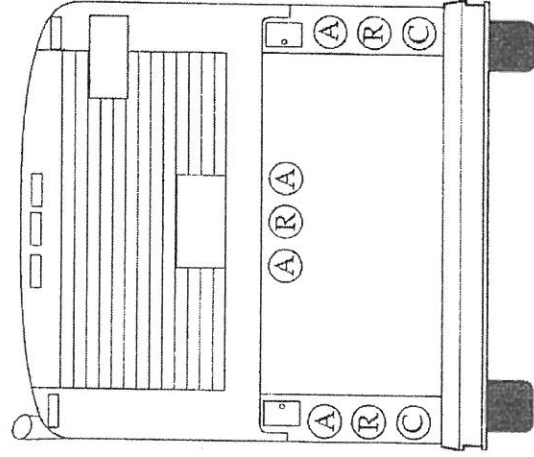
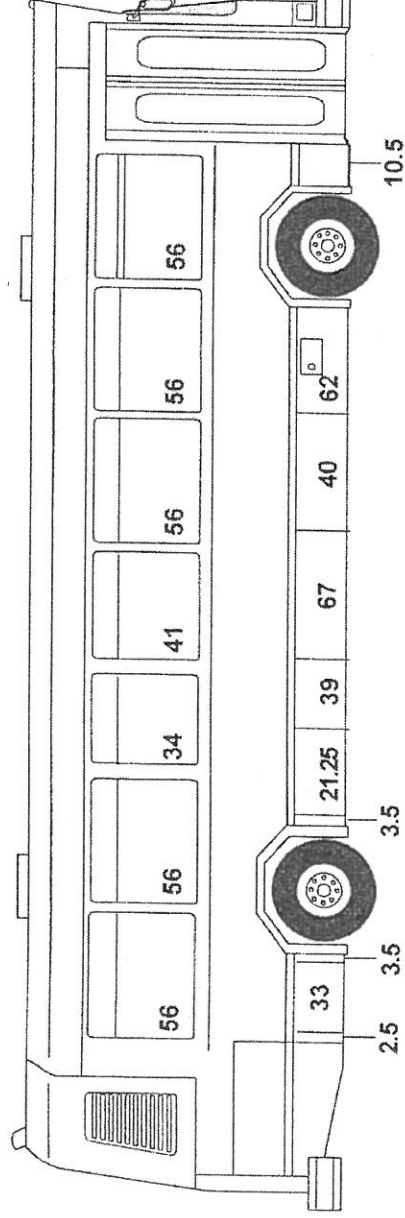
Defects: S- Steering

Defects: T- Transmission & Drive

Defects: L - Ramp

Defects: Q/D-Misc/HVAC.

Technical drawing of a truck chassis showing dimensions in centimeters. The drawing includes a side view of the chassis with various components labeled with numbers. The dimensions are: 3.5, 10.5, 42, 62, 62, 26, 2.5, 54.75, 21, 3, 3.5, 2.5, 33, 56, 56, 30, 45, 56, 56, 42, 3.5.



Prioritize defects: 01 – Safety/Out of Service, 02 - Imminent road call, 03 – Medium Priority, 04 Graffiti

Defects: J – Body (OHB Body Shop to repair)

Voit Gauge on dash beauty ring broken

New Flyer Low Floor Buses

40ft 6000 MILE SERVICING SHEET

Bus # _____
Date _____
W/O # _____

Mechanic # _____

Mechanic Sign Off _____

Inspection Process Time Expectation: N/A

Supervisor Sign Off _____

INTERIOR SERVICING

OK	BO	ID
☐	☐	☐
Clean the defroster filter and A/C Filter located in the rear interior grill assembly with low pressure water hose. (Remove from bus prior to cleaning)		
☐	☐	☐
Replace or install A/C filter blue side towards evaporator – white side facing out. Clean access grill and frame.		
☐	☐	☐
Remove and clean the floor heater filter with low pressure water hose. Remove from bus prior to cleaning.		

UNDERSIDE SERVICING

☐	☐	☐	P
Punch a hole in the bottom of the engine oil filter and allow the oil to drain.			
☐	☐	☐	T
Check differential & hub gear oil. Top off differential with SHC 75W90 Synthetic oil if needed.			
☐	☐	☐	Q
Check breather on top of differential housing to ensure it is free of debris. Clean as needed.			
☐	☐	☐	Q
Grease all fittings wiping fittings clean before greasing and wipe off excess grease. (See lubrication point reference table).			
☐	☐	☐	P
Clean the area around the engine oil drain plug and remove plug. Take oil sample midstream of draining oil.			
☐	☐	☐	P
Remove oil filter. Pre-charge the new filter with fresh 15W40 oil and coat the gasket. Clean filter head mating surface. Install new filter and tighten filter 2/3 turn past gasket contact. Date Filter.			
☐	☐	☐	P
Re-install and torque oil drain plug. (See torque reference table).			

ENGINE COMPARTMENT SERVICING

☐	☐	☐	P
Re-fill engine with 15W40 oil. (See fluid capacity reference table).			
☐	☐	☐	S
Check hydraulic system for leaks, engine oil contamination, chafing or loose connections.			
☐	☐	☐	P
Run engine and check for leaks.			
☐	☐	☐	P
Recheck all fluid levels and correct if necessary.			
• Engine Oil level • Transmission Oil level • Radiator antifreeze level • Power Steering level			
☐	☐	☐	E
On air cooled alternators, use compressed air to blow debris out of fan guard and fan at both ends of the alternator.			
☐	☐	☐	E
Check jumpstart connector housing for cracks and secure mounting. Clean contacts, interior housing and cover with LPS2, remove debris with compressed air. Apply a thin layer of dielectric grease over contacts. Install protective cover over exposed end of jump start connector (replace cover if missing).			
☐	☐	☐	P
Pressure wash the radiator, batteries, and tray slides done at the end of the servicing. Clean all wheels and back of bus with soapy water and a brush. Clean alternator with compressed air, do not spray water directly on the alternator, ECM, or battery equalizers. (Engine compartment should not be pressure washed at this time. (Note if pressure washing is required on defect list).			
☐	☐	☐	Q
Ensure all access panels and doors are closed and secured prior to the completing the Evaluation / Service.			

Bus# _____ W/O# _____

Metro Transit | 40ft Low Floor 6K Servicing Ver2.0 11/2010

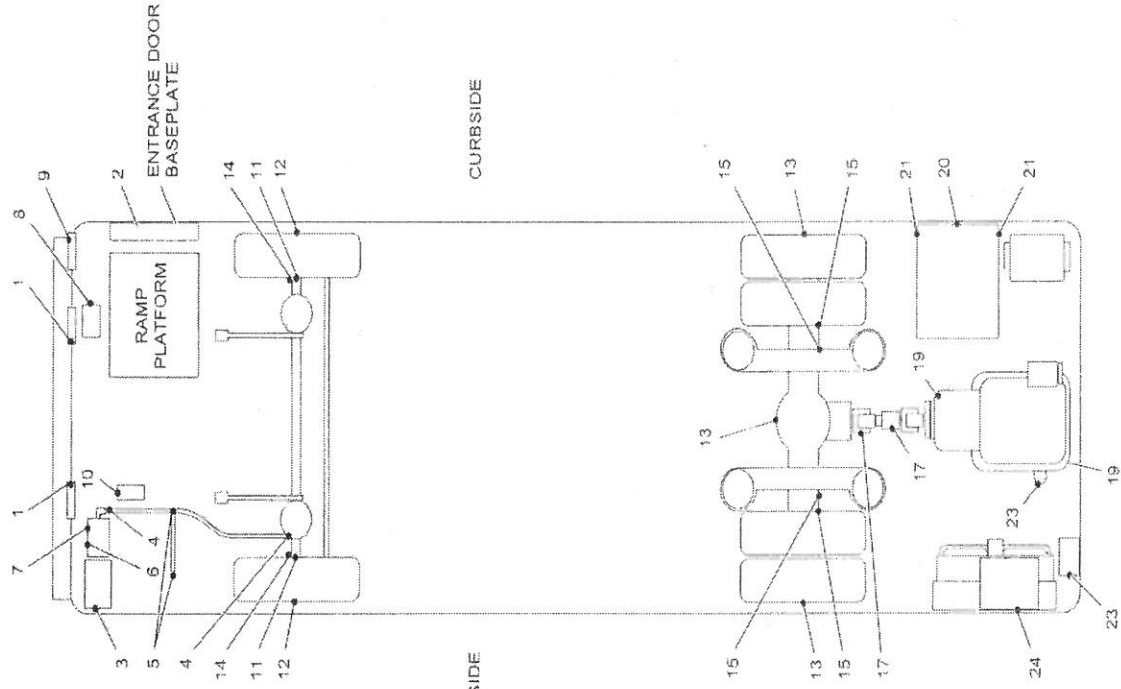
Fluid Capacity Reference

Component	Capacity	Component	Capacity
Cummins ISL Engine	22 quarts	Voith Transmission	22 quarts

Drain Plug/Filter Torque Reference

Component	Torque	Component	Torque
Cummins ISL Engine	45 ft/lbs	Voith Trans filter and cover.	18 ft/lbs
		Voith Trans torque converter drain plug.	37 ft/lbs
		Voith Trans oil pan plug.	73 ft/lbs
		Crank case breather	62 in/lbs

Fluid & Lubrication Points



1. Wiper Motor
2. Door Baseplate
3. Windshield washer bottle
4. Drag Link
5. Idler Arm Link
6. Power Steering Gear Box
7. Steer. Shaft U-Joint
8. Wheelchair Ramp pump
9. Wheelchair Ramp Mechanism
10. Brake Treadle Assembly
11. King Pins
12. Front Wheel Bearings
13. Rear axle Carrier & Wheel Ends
14. Front Slack Adjusters
15. Rear Brake Camshaft
16. Driveshaft Slip Joint
17. Driveshaft U-Joints
18. Transmission
19. Engine
20. Battery Terminals
21. Battery Slides
22. Engine Oil Filters
23. Hydraulic Filter & Reservoir
24. Surge Tank