

LUBRICATION AND SERVICING SCHEDULE NYCT X3-45 Commuter DOB 2490-2789		Proceed to maintenance operation every (miles)										Lubricant / Spec.tool [★]	
		Figure item	6 000	12 000	18 000	24 000	30 000	50 000	100 000	150 000	200 000		250 000
#	SECTION												
GENERAL													
1	Flexible hoses – thoroughly inspect all hoses						●						
01 ENGINE													
1	Engine oil & filter – heavy operation condition, change	24	●										A
2	Drive belts and idlers – visually inspect for signs of deterioration, cracks or frayed material		●										★
3	Drive belts – change						●						
4	Air cleaner – replace filter element when indicated by differential pressure sensor or according to this interval whichever comes first	29 30						●					
5	Valves & injectors – initial adjust							●					★
6	Valves & injectors – check & adjust									●			★
7	Automatic belt tensioners & idler pulleys inspection – remove belts, check for noisy bearings, play, bushing play. Perform “AUTOMATIC BELT TENSIONER AND IDLER PULLEYS INSPECTION” procedure						●						
8	Coolant pump bearing inspection – release coolant pump drive belt tension, check pump unit drive pulley/shaft for any appreciable axial or radial play in the shaft bearing. Rotate the pulley and check for noise or binding in the bearing						●						
03 FUEL													
1	Primary & secondary fuel filters – change at every engine oil change	21	●										★
2	Fuel tank – perform yearly inspection	35					●						
04 EXHAUST AND AFTERTREATMENT SYSTEM													
1	DEF tank – clean filler neck strainer	32					●						
2	DEF tank – drain & clean with water	32						●					
3	DEF pump filter element – replace	42						●					
4	DPF filter – either clean or replace every 66 000 miles²	33											★
5	Diffuser assembly, rain cap & drain tube – check proper functioning, clean	43			●								
05 COOLING													
1	Coolant surge tank – test coolant solution	27	●										★
2	Coolant filter – change (Fleet Charge Fully Formulated Coolant)	28	●										
3	Radiator fan gearbox – check oil level	25	●										G
4	Radiator – inspect exterior core & clean with low pressure water jet if necessary	44					●						
5	Radiator fan gearbox – change oil	25						●					G
6	Cooling system – drain, flush & refill (Fleet Charge 50/50 Fully Formulated Coolant)	45						●					C / ★
06 ELECTRICAL													
1	HD10 Bosch alternators drive belt – replace	38					●						
2	Alternators – perform “ALTERNATOR PERIODIC INSPECTION” procedure	38	●										
3	Battery terminals – clean & coat terminals						●						
07 TRANSMISSION³													

¹ ★ = Specialty tool required. You will find the SPECIALTY TOOLS REQUIRED FOR REGULAR MAINTENANCE table and the LUBRICANTS SPECIFICATIONS table following this Lubrication and Servicing Schedule.

² Based on 71347 mi on average before 4500 hrs at Yukon depot and 55782 mi on average before 4500 hrs at Ulmer depot. Median value=63565 mi, increased to 66000 mi to fit with 6000 mi interval based schedule.

SECTION 24A : LUBRICATION & SERVICING SCHEDULE

LUBRICATION AND SERVICING SCHEDULE NYCT X3-45 Commuter DOB 2490-2789		Proceed to maintenance operation every (miles)										Lubricant / Spec.tool★ ¹	
		Figure item	6 000	12 000	18 000	24 000	30 000	50 000	100 000	150 000	200 000		250 000
#	SECTION												
1	Filled with TES389 approved fluid – change transmission fluid, Main & Lube filters	19	●										I
2	Severe vocation, filled with TranSynd or TES295 synthetic fluid only, no mixture ⁴ & using High-Capacity filters ⁵ . Transmission fluid – change every 84 000 miles	19											H
3	Severe vocation, filled with TranSynd or TES295 synthetic fluid only, no mixture & using High-Capacity filters. Transmission Main & Lube filters – change every 42 000 miles	19											
09 PROPELLER SHAFT													
1	Perform Spicer's Driveshaft "Inspection Procedures"	17	●										
2	Grease one fitting on each universal joint	17			●								K
10 FRONT AXLE													
1	Steering knuckle (king) pins – grease two fittings per knuckle	8	●										K
2	Steering knuckle (king) pins – inspect	8				●							K
11 REAR AXLES													
1	Tag axle lever pivot – grease one fitting on each pivot	18	●										K
2	Drive axle – check differential oil level, add if necessary	16					●						F
3	Drive axle – change differential oil & breather	16						●					F
4	Drive axle – check compact bearing axial play	16						●					★
5	Drive axle – change grease in compact bearing (hub unit)	16									●		E / ★
12 BRAKE & AIR SYSTEM													
1	Brakes – check caliper running clearance at brake pad replacements	46											
2	Brakes – check pad wear indicator. Visually check condition of the slack adjuster cap & guide pin covers	46	●										
3	Air tanks – drain water from all tanks not equipped with manual drain valve			●									
4	Haldex Consep Condenser/Separator – inspect	41		●									
5	Brakes – check caliper movement along guide pins, check sealing elements (boots). Check proper functioning of the adjuster	46		●									
6	ABS & Electronic Stability Control systems – check proper functioning						●						★
7	Accessories air filter – change filter element	2						●					
8	Air dryer – change cartridge	12						●					
13 WHEELS, HUBS & TIRES													
1	Hub bearing, front and tag axle – inspect					●							★
14 STEERING													
1	Steering tie rod ends – clean & grease one fitting at each end	5	●										K

³ Allison Transmission recommends that customers use fluid analysis as the primary method for determining fluid change intervals. In the absence of a fluid analysis program, the fluid change interval listed in the chart above should be used. Change filters according to chart above even if a fluid analysis shows that the fluid doesn't need to be changed.

⁴ When the transmission contains a mixture of fluids (defined as the quantity of non-TranSynd or non-TES 295 fluid remaining in the transmission after a fluid change combined with the quantity of TranSynd or TES295 required to fill the transmission to the proper level), perform the fluid & filter change according to the TES389 intervals.

⁵ Extended TranSynd or TES 295 fluid & filter change intervals are only allowed with Allison High-Capacity filters.

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		Figure item	6 000	12 000	18 000	24 000	30 000	50 000	100 000	150 000	200 000		250 000	300 000
#	SECTION													
2	Steering damper cylinder – grease one fitting at rod end	9	●											K
3	Drag link end ball joints – inspect for corrosion	3	●											
4	Power steering reservoir filter cartridge – replace	23					●							
5	Power steering fluid – replace	23							●					B
6	Steering system – check play	47						●						
16 SUSPENSION														
1	Air bellows – inspect		●											
18 BODY														
1	Front bumper, front service compartment & evaporator compartment door latch, grease fitting						●							K
22 HEATING & AIR CONDITIONING														
1	Passengers HVAC unit disposable return air filters (2) – replace		●											
2	Evaporator compartment door fresh air intake filter – clean		●											
3	Parcel rack fans air filter – clean		●											
4	Driver HVAC unit return & fresh air filters – clean		●											
5	A/C compressor – check oil level, add if necessary. Change the oil if it has darkened. Refer to Oil Color And Level Check in Maintenance Information MI18-21		●											D
6	A/C receiver tank – check refrigerant level, add if necessary			●										
7	A/C compressor – empty shaft seal oil collection tube		●											
8	Refrigerant moisture indicator – check, replace filter dryer unit according to moisture indicator						●							
9	Driver’s HVAC units – clean heater & evaporator cores with low-pressure air jet							●						
10	Passengers’ HVAC unit – clean evaporator & heater cores with a stream of low-pressure water or low-pressure air jet							●						
11	Passengers’ HVAC unit – clean condenser core with a stream of low-pressure water or low pressure air jet							●						
12	A/C compressor – change oil, clean oil filter ⁶								●					★

⁶ (approximately every 4 years, 10000-12000 operating hours)

SECTION 24A : LUBRICATION & SERVICING SCHEDULE

LUBRICANT AND COOLANT SPECIFICATIONS

REF	DESCRIPTION	SPECIFICATIONS
A	Engine Oil	Total Rubia TIR 10W-30 FE for best fuel economy. SAE Viscosity Grade 5W-30 & 15W-40 oils, meeting Volvo specification VDS-4 and CJ4, are also approved
B	Power Steering Oil	Mobil DEXRON-VI ATF (Automatic Transmission Fluid)
C	Engine Coolant	Fleet Charge Fully Formulated Antifreeze 50% antifreeze/water solution is normally used
D	A/C Compressor Oil	Central HVAC system: Polyolester oil, HFC 134a compatible; Castrol SW-68 (POE) or equivalent
E	ZF Drive axle compact bearing (hub unit)	Fuchs Europe Schmierstoffe GMBS/Renolit LXPEP-2 Lithium saponified, multipurpose grease, NLGI No. 2,
F	Differential Oil	Mobil Delvac Synthetic Gear Oil 80W-140
G	Radiator Fan Gearbox Synthetic Oil (Approved by Linnig)	Agip Rota HY DB Synth 75W90 - BP Energear MTB 75W90 Castrol Syntrans-AT 75W90 - Deagear Synth 75W90 Fuchs Titan Cytrac MB Synth 75W90 - Mobiltrans MTB 75W90 OMV gear oil MPX 75W90 - Panolin Super Duty Synth MB 75W90 Shell Transmission MA 75W90 - Total Transmission XI 75W90
H	Allison Automatic Transmission Oil	Castrol TranSynd™ Synthetic Transmission Fluid for Allison or TES 295 approved equivalent
I	Allison Automatic Transmission Oil	Approved equivalent 1 Schedule 1 TES-389 fluids
K	Multi Purpose Grease	Good quality lithium-base grease: NLGI No.2 Grade is suitable for most temperatures NLGI No.1 Grade is suitable for extremely low temperatures

SPECIALTY TOOLS REQUIRED FOR REGULAR MAINTENANCE OF THE VEHICLES

Use this list of specialty tools in conjunction with the LUBRICATION AND SERVICING SCHEDULE

#	MAINTENANCE DESCRIPTION	TOOL #	SPECIALITY TOOL DESCRIPTION	PART #
01 ENGINE				
2	drive belts and idlers	1	belt tensioner wrench	010032
5, 6	valves & injectors	2	engine cranking adapter	88840317
		3	feeler gauge 2.45-2.55	88880052
		4	feeler gauge set	85111377
		5	setting tool 3.20, 3.85	88800232
03 FUEL				
1	Davco Fuel Pro 382 system	6	collar spanner wrench	530224
04 EXHAUST AND AFTERTREATMENT SYSTEM				
4	DPF filter – either clean or replace	7	DPF removal tool	680790
05 COOLING				
1	test coolant solution	8	refractometer coolant/DEF	88890105
6	cooling system drain, flush & refill	9	coolant extractor (optional)	85112740
		10	tube with connector (optional)	9996049
06 ELECTRICAL				
		11	none	
07 TRANSMISSION				
		12	none	
09 PROPELLER SHAFT				
		13	none	
10 FRONT AXLE				
		14	none	
11 REAR AXLE				
4	check compact bearing axial play	15	14 mm hex socket driver (Allen)	*
		16	E20 Torx socket	*
		17	dial indicator with magnetic base	*
5	change grease in compact bearing	15	14 mm hex socket driver (Allen)	*
		16	E20 Torx socket	*
		18	slotted nut wrench 5870 401 146	N67817-21
		19	lifting bracket 5870 281 043	19400451
		20	driver 5870 050 007	19400449

SECTION 24A : LUBRICATION & SERVICING SCHEDULE

#	MAINTENANCE DESCRIPTION	TOOL #	SPECIALITY TOOL DESCRIPTION	PART #
		21	handle 5870 260 004	N67817-19
		22	driver 5870 051 053	N67817-16
		23	seal installer 5870 651 085	19400265
		24	pry bar 5870 345 071	N78017-20
12 BRAKE & AIR SYSTEM				
6	ABS & Electronic Stability Control systems – check proper functioning	25	ACOM diagnostic software available free of charge	Bendix website
13 WHEEL, HUBS & TIRES				
1	Hub bearing, front & tag axle – inspect	26	dial indicator with magnetic base	*
14 STEERING				
		27	none	
16 SUSPENSION				
		29	none	
18 BODY				
		29	none	
22 HEATING & AIR CONDITIONING				
12	A/C compressor – change oil, clean oil filter	30	Refrigerant recovery unit	

*: Common tool. Contact your local tool supplier

CHANGE LOG - LUBRICATION AND SERVICING SCHEDULE		DATE m/d/y
1	ADDED: 04 EXHAUST & AFTERTREATMENT SYSTEM - Diffuser assembly, rain cap & drain tube – check proper functioning, clean	04/16/2014
2	UPDATED: 11 REAR AXLES – Differential oil level check, breather & oil replacement, bearing axial play & grease change for new ZF A-132 drive axle	08/28/2014
3	In table heading, “ODOMETER READING IN MILE” removed	09/12/2014
4	UPDATED: 01 ENGINE – Drive belts & idlers visual inspection was 12 000 mi, changed to 6 000 mi. Automatic belt tensioners & idlers bearing play etc. was 12 000 mi, changed to 50 000 mi	
5	UPDATED: 01 ENGINE – Automatic belt tensioners & idlers bearing play etc. was 50 000 mi, changed to 30 000 mi	10/02/2014
6	UPDATED: 12 BRAKE & AIR SYSTEM – Brake calipers visual and functional checks moved. Visual check was 12 000 mi, changed to 6 000 mi	10/10/2014
7	UPDATED: 01 ENGINE – Automatic belt tensioners & idlers bearing play etc. was 30 000 mi, changed to 50 000 mi	12/08/2014
8	ADDED: 22 HEATING & AIR CONDITIONING - Recommended maintenance: A/C compressor – change oil, clean oil filter	02/17/2015
9	UPDATED: 12 BRAKE & AIR SYSTEM – Caliper running clearance check was 6 000 mi, changed to “at brake pad replacements”	03/25/2015
10	UPDATED: 07 TRANSMISSION – Filled with TES389 approved fluid – change transmission fluid, Main & Lube filters was 12 000 mi, changed to 6 000 mi	11/11/2015
11	UPDATED: 07 TRANSMISSION – Severe vocation, filled with TranSynd or TES295 synthetic fluid only, no mixture & using High Capacity filters – change transmission fluid was 150 000 mi, changed to 84 000 mi.	
12	ADDED: 07 TRANSMISSION – Severe vocation, filled with TranSynd or TES295 synthetic fluid only, no mixture & using High Capacity filters – change Main & Lube filters every 42 000 mi	
13	CHANGED: 04 EXHAUST AND AFTERTREATMENT SYSTEM – DEF tank cleaning, was 50 000 mi, changed to 100 000 mi	07/12/2016
14	CHANGED: 04 EXHAUST AND AFTERTREATMENT SYSTEM – DEF pump filter element replacement, was 150 000 mi, changed to 100 000 mi	
15	ADDED: 14 STEERING – Steering system play inspection	08/16/2016
16	ADDED: 06 ELECTRICAL – Alternators – perform “Alternator Periodic Inspection” procedure	06/12/2017
17	REMOVED: 06 ELECTRICAL – HD10 Bosch alternators brushes – check & replace brushes if necessary	06/12/2017
18	CHANGED: 22 HEATING & AIR CONDITIONING – Empty shaft seal oil collection tube, was 50 000 mi, changed to 6 000 mi	06/13/2017
19	CHANGED: 22 HEATING & AIR CONDITIONING – change oil, clean oil filter – recommended servicing changed for a formal servicing	06/13/2017
20	ADDED: 07 FUEL - Fuel tank – perform yearly inspection	05/28/2018
21	ADDED: 01 ENGINE – Coolant pump inspection	03/20/2019
22	ADDED: 22 HEATING & AIR CONDITIONING – A/C compressor check oil level “change the oil if it has darkened”	04/08/2019
23	CHANGED: 22 HEATING & AIR CONDITIONING – A/C compressor oil change: was every 3 years, changed to 4 years	04/08/2019

CHANGE LOG - LUBRICANT AND COOLANT SPECIFICATIONS TABLE		DATE m/d/y
1	Dexron-VI removed from Ref I. Dexron-VI is no longer recommended for use in commercial on-highway transmission. Allison Service Tip #1099revS	06/02/2014
2	Ref. E, removed, was regular differential oil, not used on NYCTA X3-45 Commuter bus	06/27/2014
3	Ref. F, updated to reflect differential oil used on NYCTA Prevost X3-45 Commuter bus	06/27/2014
4	Ref. E, added for ZF A132 compact bearing (hub unit)	08/28/2014
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