

TUBE•LINE™

Tubeline Manufacturing Limited
6455 Reid Woods Drive RR #4
Elmira, Ontario, Canada N3B 2Z3

Email: sales@tubeline.ca

Fax: 519.669.5808

Tel: 519.669.9488

Toll-free (North America): 1.888.856.6613

www.tubeline.ca

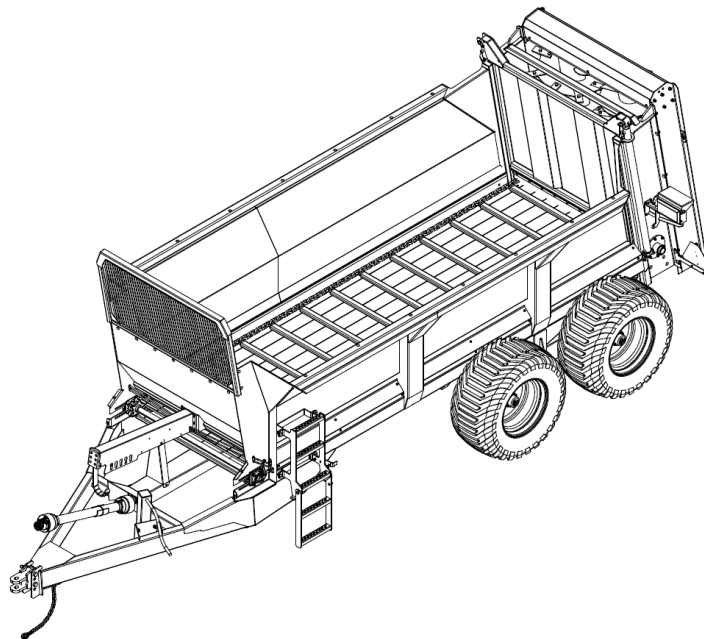
Operator's Manual

Keep this manual with the machine at all times.

NITRO

Manure Spreader

Nitro



Do not attempt to operate this machine without thoroughly reviewing this manual for safe and proper operation.

Operator's Manual

Thank you for choosing a Tubeline Manure Spreader. Our hope is that it will give you many years of productive service. This machine is designed to spread various types of manure evenly over a wide area.

Please read and understand this manual and the machine before operation.

Warranty and Limitation of Liability

All equipment is sold subject to mutual agreement that it is warranted by the company to be free from defects of materials and workmanship. But the company shall not be liable for special, indirect or consequential, damages of any kind under this contract or otherwise. The company's liability shall be limited exclusively to replacing or repairing without charge, at its factory or elsewhere, at its discretion.

Any material, or workmanship defects which become apparent within one year from the date on which the equipment was purchased, and the company shall have no liability for damages of any kind. The buyer by the acceptance of the equipment will assume all liability for any damages, which may result from the use or misuse by his employees or others.

Nitro Apron Chain Warranty



Tubeline Manufacturing Ltd offers a limited lifetime non-transferable warranty to the original purchaser of a Nitro manure spreader. This warranty applies to chain link breakage and covers parts only. Should a connecting link fail, only it will be replaced. However, if a standard link breaks the complete chain will be provided. Freight and labor to install is the responsibility of the purchaser and is not covered under the terms of the limited warranty.

Warranty coverage is null and void unless Warranty Registration form has been completely filled in and is on file at Tubeline Manufacturing Ltd.

Manuals

Manuals are printed and shipped with machines as they leave the manufacturer. Your machine may include parts or features not yet included in the initially shipped manual. The latest manual version can be found at www.tubeline.ca/support.php. Tubeline reserves the right to update and change manuals as seen fit. Dealers are informed of any pressing changes/ modifications. They can help you with any questions regarding replacement parts.

Serial Number

The implement serial number is located on the front of the frame. This number helps us to track changes and improvements and must be mentioned when ordering parts or requesting service. For your convenience, a space has been provided inside the front cover of this manual to record the serial number, model number, purchase date, and dealer name.

Model No: _____

Serial No: _____

Date Purchased: _____

Dealer Name: _____

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Principals of Operation

The Nitro Manure Spreader is designed to be hitched behind a tractor. The Manure Spreader consists of a poly board floor trailer with an apron chain drag system, that pulls material to the rear of the trailer, through a set of vertical, spinning beaters and is then spread in an even pattern on the field. The rear beaters are connected to the tractor's PTO via gearboxes and PTO drivelines. The variable speed apron chain is operated from the tractor cab, and controls the speed of materials being fed through the beaters.

The apron chain and rear lift gate are operated using the tractor's hydraulic power outputs. The rear lift gate prevents material from jamming the beaters while loading, as well as preventing material from falling onto a roadway during transport.

We recommend that you carefully read this entire manual before operating the Manure Spreader. Please do not assume you know how to operate and maintain your machine before reading this manual carefully. Keep this manual available for reference.

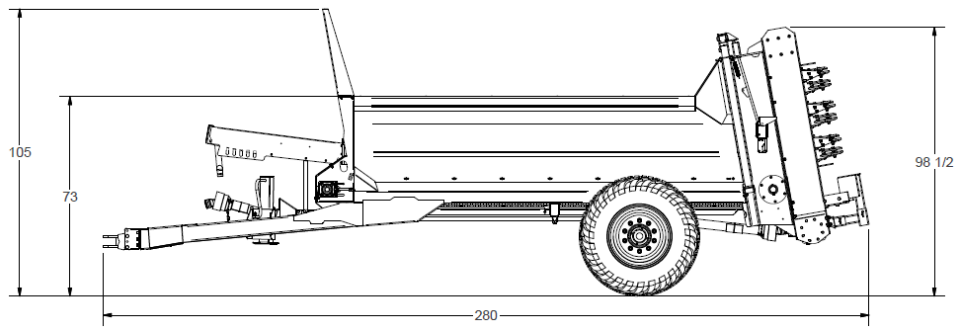
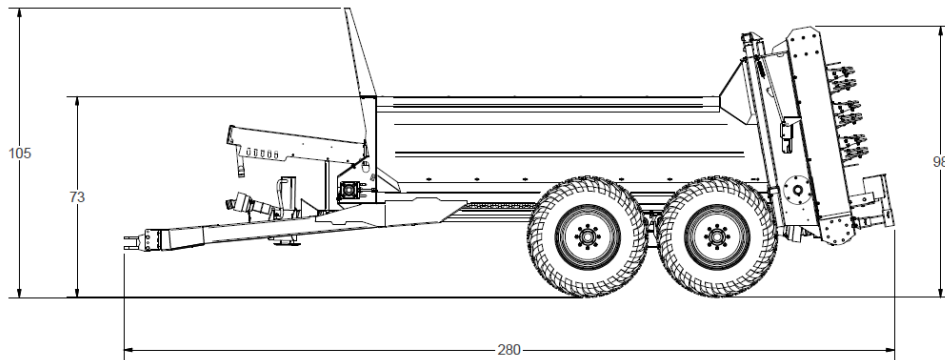
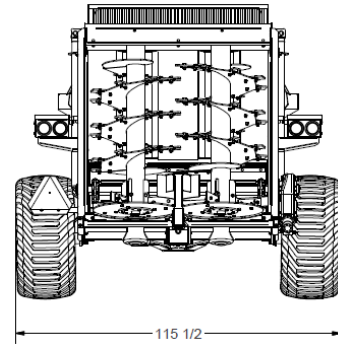
Call your authorized dealer if you need any assistance or more information.

Intended Use

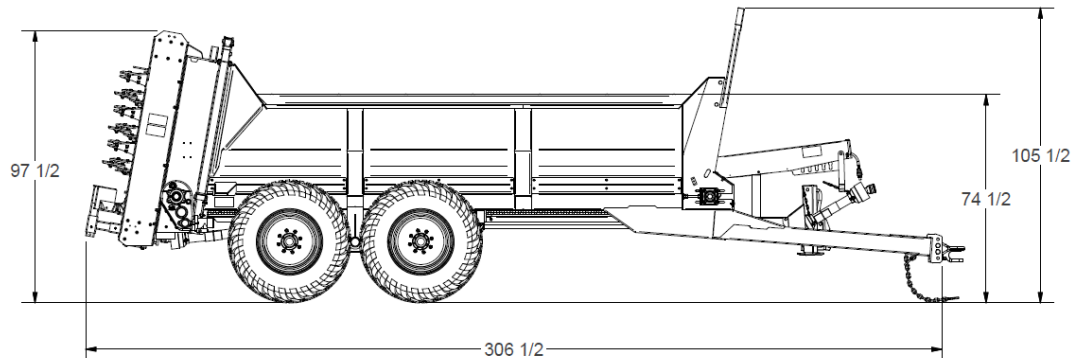
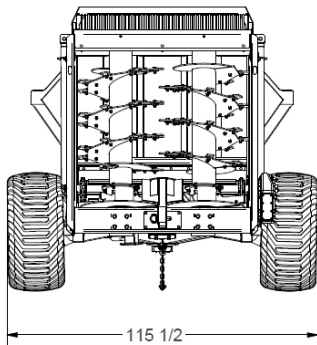
The Nitro manure spreader is well suited to apply most forms of manure to fields as a fertilizing method. It is less commonly used to spread compost, lime, wood ash and seaweed fertilizer. The removal of the rear vertical beaters also allows the Nitro spreader to be used as a pit trailer for forage materials. An optional two stage beater kit is recommended for chicken litter and other similar materials.

Section 1 - Spreader Specifications

NITRO 275RS			
Cu.ft. Struck	220'	Overall Length	23.5'
Heaped Cu.ft	290'	Beater Diameter	34"
Inside Width	62"	Beater Speed	420 RPM
Inside Depth	32"	Axle Type	Single/Tandem
Inside Length	160"	Hub Capacity	16,000/12,000 lbs
Loading Height	69"	PTO Speed	1000 RPM



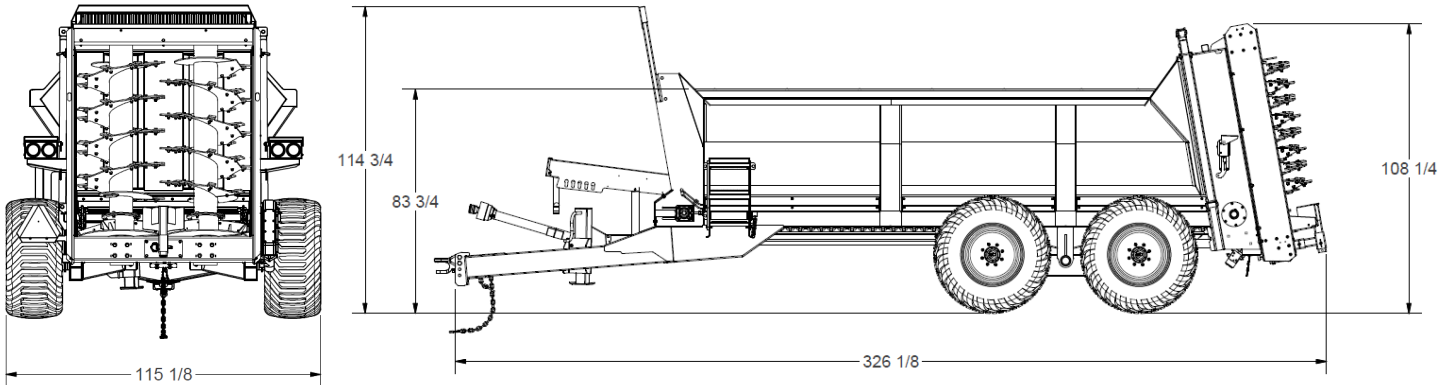
NITRO 375RS			
Cu.ft. Struck	281'	Overall Length	25'
Heaped Cu.ft	410'	Beater Diameter	34"
Inside Width	62.5"	Beater Speed	420 RPM
Inside Depth	34.5"	Axle Type	Tandem
Inside Length	175"	Hub Capacity	12,000 lbs
Loading Height	74"	PTO Speed	1000 RPM



* Weight on tires will affect spreader height *

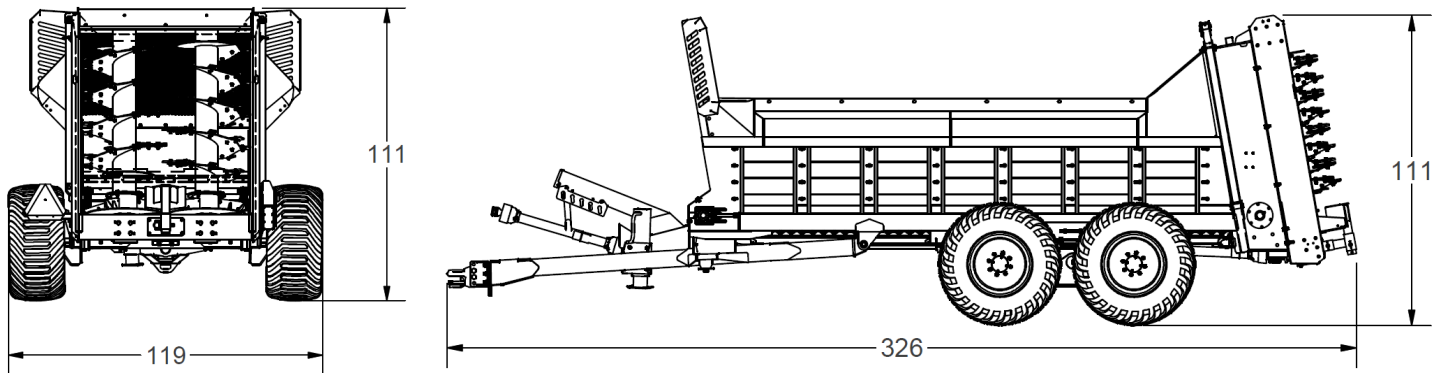
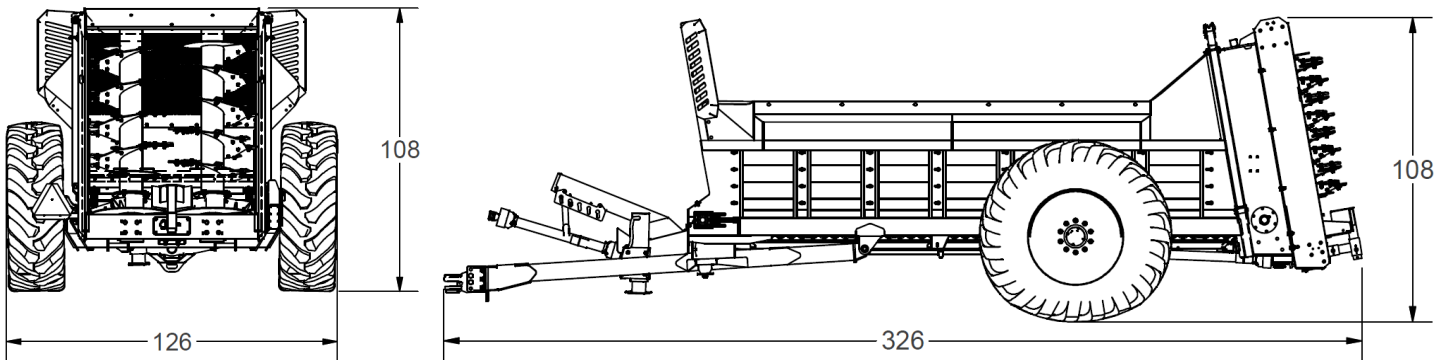
NITRO 525RS

Cu.ft. Struck	407'	Inside Depth	45.5"	Overall Length	27.5'	Axle Type	Tandem
Heaped Cu.ft	555'	Inside Length	218"	Beater Diameter	34"	Hub Capacity	12,000 lbs
Inside Width	62.5"	Loading Height	80"	Beater Speed	420 RPM	PTO Speed	1000 RPM



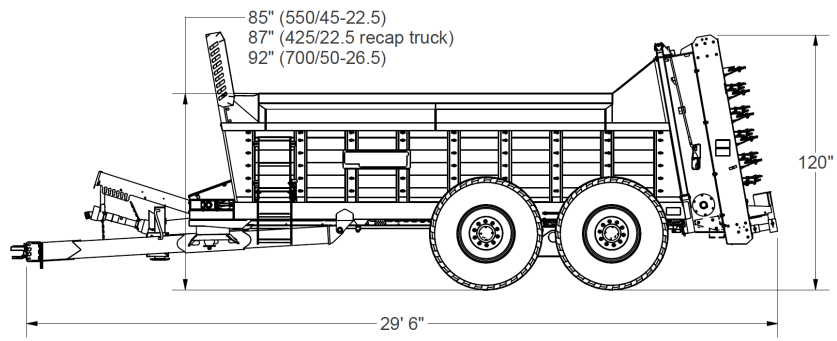
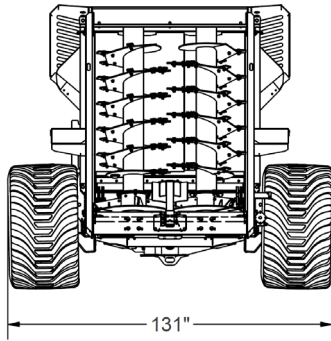
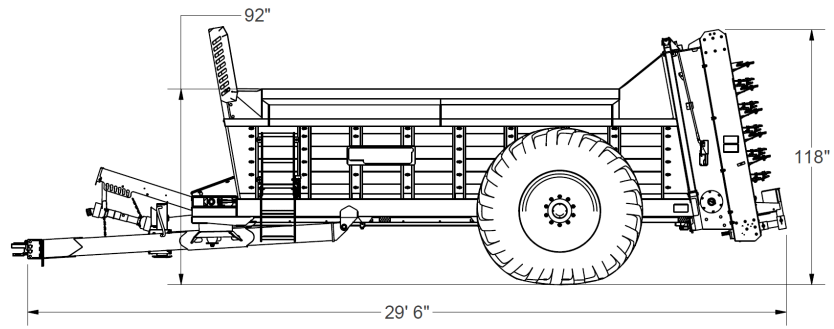
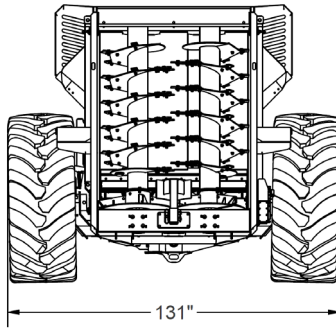
NITRO 450

Cu.ft. Struck	316'	Inside Depth	40"	Overall Length	27'	Axle Type	Single/Tandem
Heaped Cu.ft	453'	Inside Length	201"	Beater Diameter	34"	Hub Capacity	12,000 lbs
Inside Width	62"	Loading Height	77"	Beater Speed	420 RPM	PTO Speed	1000 RPM

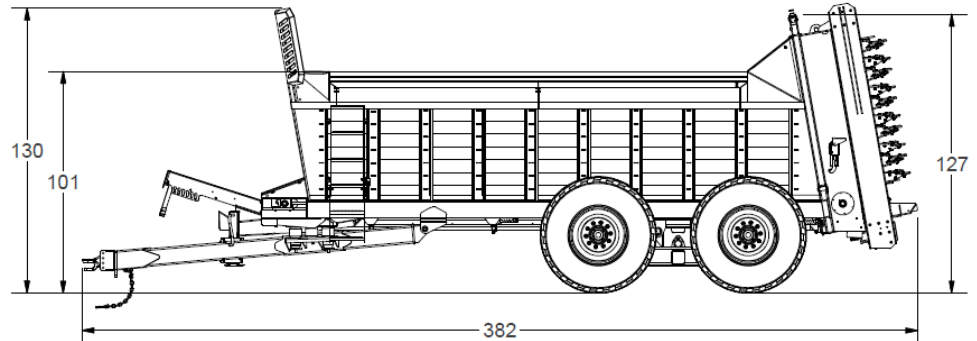
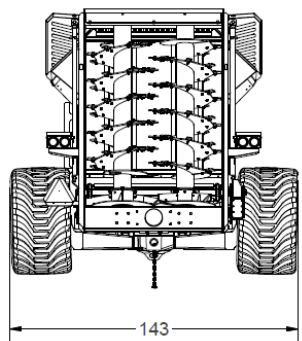
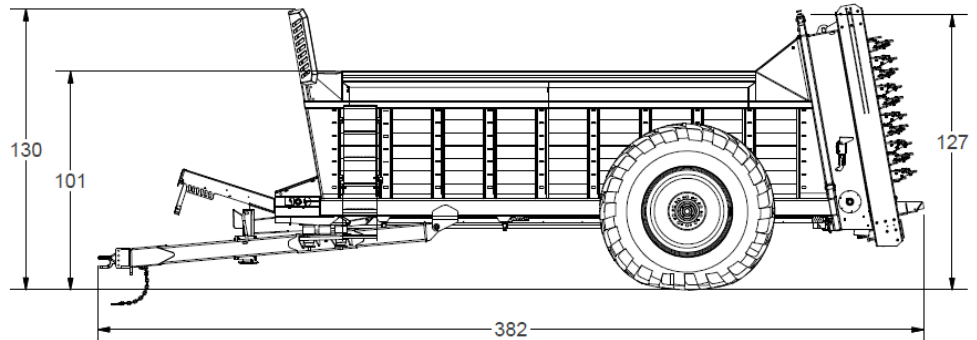
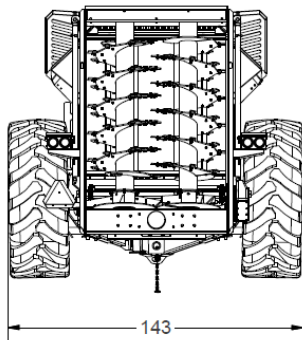


* Weight on tires will affect spreader height *

NITRO 600							
Cu.ft. Struck	436'	Inside Depth	50"	Overall Length	29.5'	Axle Type	Single/Tandem
Heaped Cu.ft	593'	Inside Length	227"	Beater Diameter	34"	Hub Capacity	16/20,000 lbs
Inside Width	62"	Loading Height	90"	Beater Speed	420 RPM	PTO Speed	1000 RPM

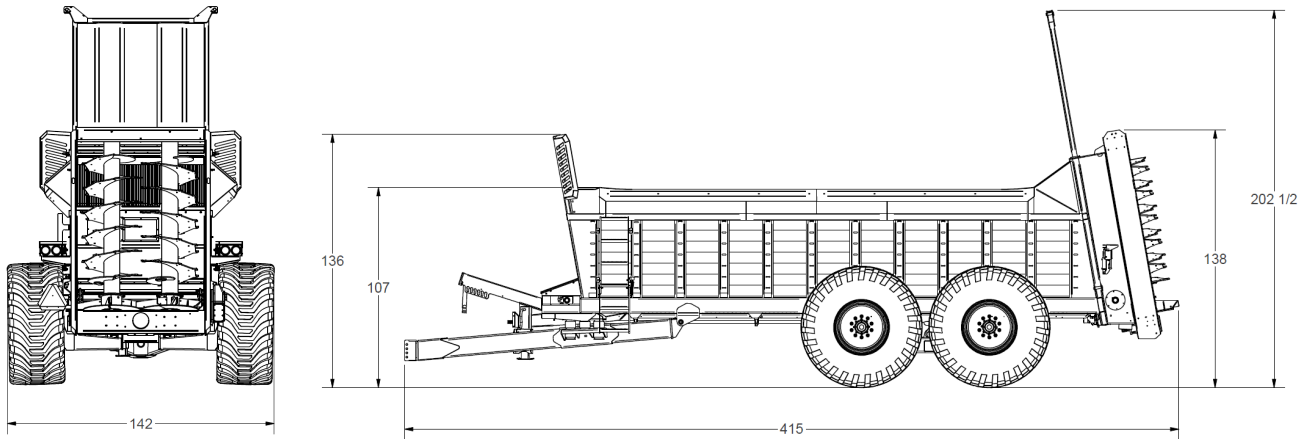


NITRO 750							
Cu.ft. Struck	602'	Inside Depth	58"	Overall Length	32.5'	Axle Type	Single/Tandem
Heaped Cu.ft	791'	Inside Length	252"	Beater Diameter	36"	Hub Capacity	16/20,000 lbs
Inside Width	67"	Loading Height	100"	Beater Speed	420 RPM	PTO Speed	1000 RPM



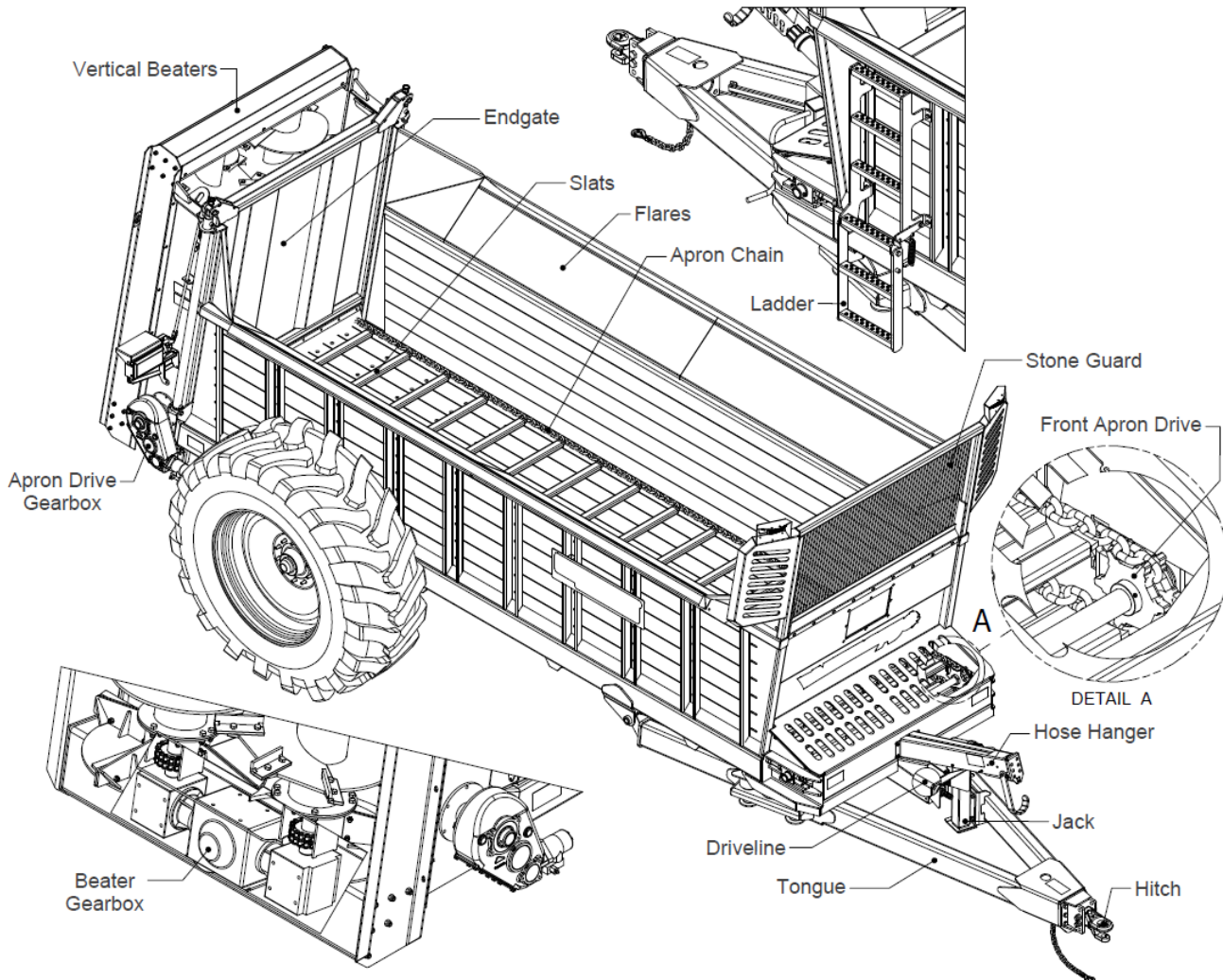
* Weight on tires will affect spreader height *

NITRO 950			
Cu.ft. Struck	740'	Overall Length	35.25'
Heaped Cu.ft	950'	Beater Diameter	36"
Inside Width	67"	Beater Speed	420 RPM
Inside Depth	58"	Axle Type	Tandem
Inside Length	297"	Hub Capacity	20,000 lbs
Loading Height	102"	PTO Speed	1000 RPM



* Weight on tires will affect spreader height *

Terminology



Section 2 - Power Unit Specifications

Hydraulic Requirements



NOTICE: All Nitro manure spreaders have a maximum hydraulic flow rating of 16 GPM. Exceeding this rating can cause damage to gearboxes.

Tractor Horsepower Requirements



NOTICE: Exceeding the maximum power input can cause damage to the driveshaft, gearbox, PTO and other drive systems components.

NITRO HORSEPOWER REQUIREMENTS		
Model	Tractor HP Requirement	Max. Power Input
275RS	80hp	100hp
375RS	90hp	100hp
575RS	125hp	100hp
725RS	150hp	100hp
450	125hp	100hp
600	150hp	100hp
750	150hp	100hp
950	200hp	150hp

Section 3 - Tire Load Index Charts

Replacement tires must match or exceed the specifications in that size tire's chart.

425/65 R22.5 Recap Truck

Tire Size	Load Range	Weight	Rim	Unloaded		Loaded	Static Loaded Radius	Revs per mile/km	Max Pressure	Max Load	Max Speed
				OD	SW	Width					
425/65 R22.5	L	192 lbs/ 87 kg	12.25in	59.7 in/ 1140 mm	16.1 in/ 409 mm	17.8in/ 452 mm	20.8 in/ 528 mm	463 mile/ 288 km	120 psi/ 830 kPa	11400 lbs/ 5170 kg	65mph/ 104 kmh

480/70 R30 R-1W

Tire Size	TT/TL	Rim	Unloaded		Static Load Radius	Rolling Circumf	Load / Speed Index	Max Pressure	Max Load
			OD	SW					
480/70 R30	TL	15in	59.7 in	19 in	27 in	177 in	152B	46 psi	7850 lbs

550/45-22.5 I-3

Tire Size	TT/TL	Rim	Unloaded		Loaded Static Radius	Rolling Circumf	Load / Speed Index (16 PR)		Pressure psi (bar)	Recommended Load lbs (kg)							
			SW	OD			DW	FR		Drive Wheel				Free Rolling			
										6 mph (10 km/h)	16mph (25 km/h)	25 mph (40 km/h)	31mph (50 km/h)	6 mph (10 km/h)	16mph (25 km/h)	25 mph (40 km/h)	31mph (50 km/h)
550/45-22.5	TL	16DC 18DC	27.6in/ 550 mm	52.5in/ 1070 mm	22.8in/ 470 mm	155.4in/ 3175 mm	147A8	159A8	12 (.8)	4560 (2070)	3880 (1760)	3260 (1480)	2940 (1332)	6500 (2950)	5530 (2510)	4650 (2110)	4190 (1900)
									17 (1.2)	5800 (2630)	4940 (2240)	4150 (1880)	3730 (1692)	8250 (3740)	7010 (3180)	5890 (2670)	5290 (2400)
									29 (2)	7800 (3540)	6640 (3010)	5580 (2530)	5020 (2277)	11110 (5040)	9440 (4280)	7940 (3600)	7140 (3240)
									35 (2.4)	8660 (3930)	7360 (3340)	6200 (2810)	5580 (2529)	12350 (5600)	10490 (4760)	8820 (4000)	7940 (3600)
									41 (2.8)	9500 (4310)	8070 (3660)	6780 (3075)	6100 (2768)	13510 (6130)	11490 (5210)	9650 (4375)	8690 (3940)

600/65R34 R-1W

Tire Size	TT/TL	Rim	Unloaded		Static Load Radius	Rolling Circumf	Load / Speed Index	Pressure (kpa)	Load Capacity (kg)						Tread Depth	
			OD	SW					Static	10 km/h	25 km/h	30 km/h	40 km/h	50 km/h		60 km/h
600/65 R34	TL	18"	1665 mm	607 mm	750 mm	4992 mm	151D/154A8	140	7935	5175	3830	3690	3450	3450	3140	49 mm
								160	8625	5625	4160	4010	3750	3750	3450	
							157D/160A8	200	9210	6010	4445	4285	4005	4005	3645	
								240	10350	6750	4995	4815	4500	4500	4125	

700/50-26.5 I-3

Tire Size	TT/TL	Rim	Unloaded		Loaded Static Radius	Rolling Circumf	Load / Speed Index (16 PR)		Pressure psi (bar)	Recommended Load lbs (kg)							
			SW	OD			DW	FR		Drive Wheel				Free Rolling			
										6 mph (10 km/h)	16mph (25 km/h)	25 mph (40 km/h)	31mph (50 km/h)	6 mph (10 km/h)	16mph (25 km/h)	25 mph (40 km/h)	31mph (50 km/h)
700/50-26.5	TL	24DC	27.6in/700 mm	52.5in/1333 mm	22.8in/580 mm	155.4in/3948 mm	162A8/158B	174A8/170B	29 (2)	13180 (5980)	11200 (5080)	9410 (4270)	8470 (3840)	18590 (8430)	15790 (7160)	13270 (6020)	11950 (5420)
									32 (2.2)	13910 (6310)	11840 (5370)	9940 (4510)	8950 (4060)	19670 (8920)	16710 (7580)	14040 (6370)	12630 (5730)
									35 (2.4)	14660 (6650)	12460 (5650)	10470 (4750)	9440 (4280)	20680 (9380)	17570 (7970)	14770 (6700)	13290 (6030)
									48 (3.3)	20970 (9510)	17810 (8080)	14970 (6790)	13490 (6120)	24820 (11260)	21080 (9560)	17730 (8040)	15960 (7240)

Highlighted row indicates cyclic high load variations. 1) When tire equip vehicles subject to haulage cyclic high load variations excluding transport applications on long distances, i.e. vehicles used on round trips (e.g. from field to farm) where on one way the vehicle is empty and on the other way the gross vehicle mass exceeds two times the mass of empty vehicle (last two rows in the table). 2) When fitted on tractor steering wheels load capacities are 80% of free rolling and inflation pressure 20% higher. 3) For 10km/h and stationary use inflation pressure raised 20% and 25%. 4) Load for intermediate speed should be taken as an average between two close speeds. 5) Load at lower speed than 10km/h may be similar to the load for 10km/h.

710/50R26.5 CargoXBIB 170D TL HF

MSPN: 29880			CAI: 892516		
Load Per Tire (single) - lbs (kg)					
Pressure psi/ bar	6mph/ 10 kmh	15mph/ 25 kmh	25mph/ 40 kmh	30mph/ 50 kmh	40mph/ 65 kmh
12/ .8	7740 (3510)	6790 (3080)	5840 (2650)	5200 (2360)	4300 (1950)
17/ 1.2	12020 (5450)	10240 (4645)	8910 (4040)	7900 (3585)	6590 (2990)
23/ 1.5	14440 (6550)	12470 (5655)	10790 (4895)	9590 (4350)	7970 (3615)
29/ 2	16870 (7650)	14680 (6660)	12690 (5755)	11280 (5115)	9340 (4235)
35/ 2.4	19290 (8750)	16910 (7670)	14570 (6610)	12960 (5880)	10710 (4860)
41/ 2.8	20410 (9260)	17900 (8120)	15430 (7000)	13720 (6225)	11340 (5145)
46/ 3.2	21550 (9775)	18900 (8575)	16280 (7385)	14480 (6915)	11970 (5430)
52/ 3.6	22690(10290)	19910 (9030)	17130 (7770)	15240 (6915)	12600 (5715)
55/ 3.8	23250 (10545)	20400 (9255)	17560 (7965)	15630 (7090)	12920 (5860)
58/ 4	23810 (10800)	20900 (9480)	17990 (8160)	16010 (7260)	13230 (6000)
*All load values are for maximum indicated speeds at low torque.					
*20 mph (30km/h): High torque field work or max road speed.					
*All Load values for ground slopes up to 20% (above 20% consult Michelin).					
Tire Technical Data					
Unloaded Dimensions		Loaded Dimensions		Rims (preferred in bold)	
Overall Width	Overall Diameter	Loaded Radius	Rolling Circum	AG24.00(H2) AG20.00 (H2)	
28.6in/ 726 mm	54.3in/ 1380 mm	23.4in/ 594 mm	159.9in/ 4061 mm		
Gross Flate Plate	Tire Weight	100% Tire Volume	Centerline Tread Depth	Min Dual/ Triple Spacing	
406 sq in/ 2619 sq cm	375lbs/ 170 kg	143.4 gals/ 543 lt	23/32nds/ 922 mm	36.6in/ 922 mm	
Rolling Circum Index	Number of Lugs				
0	0 x 2				

710/70R38 R-1W

Free rolling application: Load capacity to be increased by 20%, after increasing the inflation by 20%.

Tire Size	TT/TL	Rim	Unloaded		Static Load Radius	Rolling Circumf	Load / Speed Index	Pressure psi (bar)	Load Capacity lbs (kg)					
			SW	OD					Static	6 mph (10 km/h)	16mph (25 km/h)	19mph (30 km/h)	25 mph (40 km/h)	31mph (50 km/h)
710/70 R38	TL	DW23B	29.2/	76.8	34.0/	229.8in/	166A8/166B	19 (1.3)	23700 (10790)	15510 (7040)	11480 (5210)	11060 (4690)	10330 (4690)	9410 (4270)
								22 (1.5)	25840 (11730)	16850 (7650)	12470 (5660)	12030 (5460)	11230 (5100)	10220 (4640)
								23 (1.6)	26850 (12190)	17510 (7950)	12950 (5880)	12490 (5670)	11670 (5300)	10620 (4820)
			28.2in/1958 mm	77.1in/716 mm	34.6in/880 mm	227.1in/5768 mm	172A8/172B	17 (1.2)	21300 (9660)	13890 (6300)	10270 (4660)	9900 (4490)	9260 (4200)	9260 (4200)
								23 (1.6)	25200 (11430)	16450 (7460)	12170 (5520)	11730 (5320)	10960 (4970)	10960 (4970)
								29 (2)	28700 (13020)	18720 (8490)	13850 (6280)	13360 (6060)	12480 (5660)	12480 (5660)
								35 (2.4)	31950 (14490)	20830 (9450)	15410 (6990)	14860 (6740)	13890 (6300)	13890 (6300)
			28.2in/1958 mm	77.1in/716 mm	35.5in/902 mm	222.2in/5645 mm	178A8/178B	15 (1)	18560 (8420)	12100 (5490)	8950 (4060)	8640 (3920)	8070 (3660)	
								17 (1.2)	20640 (9360)	13470 (6110)	9970 (4520)	9590 (4350)	8970 (4070)	
								22 (1.5)	23520 (10670)	15340 (6960)	11350 (5150)	10940 (4960)	10230 (4640)	
								29 (2)	27840 (12630)	18170 (8240)	13430 (6090)	12940 (5870)	12100 (5490)	
								36 (2.5)	31750 (14400)	20700 (9390)	15320 (6950)	14770 (6700)	13800 (6260)	
								44 (3)	35340 (16030)	23060 (10460)	17060 (7740)	16450 (7460)	15370 (6970)	
								49 (3.4)	38030 (17250)	24800 (11250)	18360 (8330)	17700 (8030)	16540 (7500)	

710/70R38 R-1W VF

Highlighted column indicates speed limit 25km/h to 65 km/h.

Tire Size	TT/TL	Rim	Unloaded		Static Load Radius	Rolling Circumf	Load / Speed Index	Pressure psi (bar)	Recommended Load lbs (kg)						
			SW	OD					CFO		No high and sustained torque, road transport				
									9 mph (15 km/h)	19mph (30 km/h)	6 mph (10 km/h)	9 mph (15 km/h)	12 mph (20 km/h)	40 mph (65 km/h)	43 mph (70 km/h)
VF 710/70 R38 CFO	TL	DW23B DW24B DW25B	28.3in/1959 mm	77.1in/720 mm	33.2in/843 mm	225.1in/5717 mm	178D	12 (.8)	13870 (6291)	11570 (5250)	11180 (5070)	10430 (4730)	10430 (4730)	10430 (4730)	9480 (4300)
								15 (1)	15860 (7195)	13240 (6005)	12790 (5800)	12790 (5410)	12790 (5410)	12790 (5410)	10850 (4920)
								20 (1.4)	19820 (8991)	16540 (7504)	15960 (7240)	15960 (6760)	15960 (6760)	15960 (6760)	13560 (6150)
								23 (1.6)	21990 (9975)	18350 (8325)	17730 (8040)	16540 (7500)	16540 (7500)	16540 (7500)	15060 (6830)

710/70R42 R-1W

Free rolling application: Load capacity to be increased by 20%, after increasing the inflation by 20%.

Tire Size	TT/TL	Rim	Unloaded		Static Load Radius	Rolling Circumf	Load / Speed Index	Pressure psi (bar)	Load Capacity lbs (kg) Mixed Application					
			SW	OD					Static	6 mph (10 km/h)	16mph (25 km/h)	19mph (30 km/h)	25 mph (40 km/h)	31mph (50 km/h)
710/70 R42	TL	DW23B	28.2in/ 716 mm	81.1in/ 2061 mm	36.9in/ 938 mm	239.4in/ 6080 mm	173A8/ 173B	15 (1)	20790 (9430)	13560 (6150)	10030 (4550)	9680 (4390)	9040 (4100)	9040 (4100)
								20 (1.4)	25310 (11480)	16510 (7490)	12210 (5540)	11770 (5340)	11000 (4990)	11000 (4990)
								26 (1.8)	29300 (13290)	19110 (8670)	14150 (6420)	14150 (6180)	12740 (5780)	12740 (5780)
								32 (2.2)	32960 (14950)	21500 (9750)	15920 (7220)	15920 (6960)	14330 (6500)	14330 (6500)

750/60R30.5 I-2

Tire Size	TT/TL	Rim	Unloaded		Loaded Static Radius	Rolling Circumf	Load / Speed Index	Pressure psi (bar)	Recommended Load lbs (kg)						Mixed Application	
			SW	OD					Static	6 mph (10 km/h)	16mph (25 km/h)	19mph (30 km/h)	25 mph (40 km/h)	31mph (50 km/h)	31mph (60 km/h)	31mph (65 km/h)
750/60 R30.5	TL	24DC	30.7in/ 780 mm	65.9in/ 1675 mm	29.8in/ 756 mm	202.2in/ 5136 mm	181D	12 (.8)	16340 (7410)	12790 (5800)	11220 (5090)	10710 (4860)	9660 (4380)	8600 (3900)	7610 (3450)	7100 (3220)
								22 (1.5)	23590 (10700)	18450 (8730)	16200 (7350)	15480 (7020)	13930 (6320)	12410 (5630)	10980 (4980)	10250 (4650)
								25 (1.7)	25350 (11500)	19840 (9000)	17420 (7900)	16650 (7550)	14990 (6800)	13340 (6050)	11800 (5350)	11020 (5000)
								29 (2)	27890 (12650)	21830 (9900)	19160 (8690)	18320 (8310)	16490 (7480)	14680 (6660)	12990 (5890)	12130 (5500)
								36 (2.5)	31790 (14420)	24890 (11290)	21850 (9910)	20880 (9470)	18810 (8530)	16730 (7590)	14790 (6710)	13820 (6270)
								51 (3.5)	38690 (17550)	30270 (13730)	26590 (12060)	25400 (11520)	22880 (10380)	20350 (9230)	17990 (8160)	16820 (7630)
								58 (4)	41840 (18980)	32740 (14850)	28750 (13040)	27470 (12460)	24740 (11220)	22000 (9980)	19470 (8830)	18190 (8250)

750/60-30.5 I-3

Tire Size	TT/TL	Rim	Unloaded		Loaded Static Radius	Rolling Circumf	Load / Speed Index (16 PR)		Pressure psi (bar)	Recommended Load lbs (kg)							
			SW	OD			DW	FR		Drive Wheel				Free Rolling			
										6 mph (10 km/h)	16mph (25 km/h)	25 mph (40 km/h)	31mph (50 km/h)	6 mph (10 km/h)	16mph (25 km/h)	25 mph (40 km/h)	31mph (50 km/h)
750/60 -30.5	TL	24DC	29.5in/ 780 mm	65.7in/ 1675 mm	28.3in/ 756 mm	198.4in/ 5136 mm	170A8/ 167B	182A8/ 179B	28 (1.9)	17000 (7710)	14460 (6560)	12150 (5510)	10940 (4960)	24070 (10920)	20460 (9280)	17200 (7780)	15840 (7020)
									29 (2)	17510 (7940)	14880 (6750)	12500 (5670)	11240 (5100)	24820 (11260)	21100 (9570)	17730 (8040)	15960 (7240)
									32 (2.2)	18520 (8400)	15740 (7140)	13230 (6000)	11910 (5400)	26240 (11900)	22310 (10120)	18740 (8500)	16870 (7650)
									44 (3)	26480 (12010)	22510 (10210)	18920 (8580)	17020 (7720)	31480 (14280)	26760 (12140)	22490 (10200)	20240 (9180)

Highlighted row indicates cyclic high load variations. 1) When tire equip vehicles subject to haulage cyclic high load variations excluding transport applications on long distances, i.e. vehicles used on round trips (e.g. from field to farm) where on one way the vehicle is empty and on the other way the gross vehicle mass exceeds two times the mass of empty vehicle (last two rows in the table). 2) When fitted on tractor steering wheels load capacities are 80% of free rolling and inflation pressure 20% higher. 3) For 10km/h and stationary use inflation pressure raised 20% and 25%. 4) Load for intermediate speed should be taken as an average between two close speeds. 5) Load at lower speed than 10km/h may be similar to the load for 10km/h.

Section 4 - Safety

Safety Symbol



This safety alert symbol is found throughout this manual to call your attention to instructions involving yourself and others working around the machine. Failure to follow these instructions can result in injury or death. This symbol means: **Attention! Become Alert! Your Safety is involved!**

Safety Signal Words

CAUTION: Indicates a potentially hazardous situation that may result in injury.

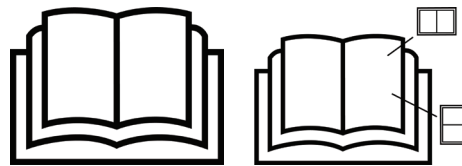
WARNING: Indicates a potentially hazardous situation that could result in serious injury or death.

DANGER: Indicates a hazardous situation that needs to be avoided. It is you the operator that needs to be aware of these dangers.

NOTE: Informative only, not hazard or safety related.

General Safety

Safety of the operator is a main concern. To avoid personal injury study the following precautions and insist those working with you or for you, follow them.



Study the features in this manual and make them a working part of your safety program. Keep in mind that this safety section is written only for the Nitro Manure Spreader.

Nitro Manure Spreader owners must give operating instructions to operators or employees before allowing them to operate the machine, and at least annually thereafter per OSHA (Occupational Safety and Health Administration) regulation 1928.57.

This equipment must not be operated by children, or those unfamiliar with operation of the machine.

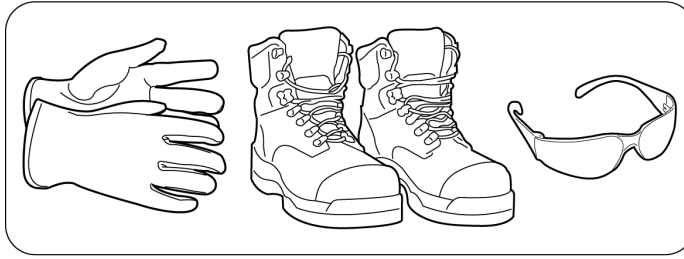
Review safety related items annually with all personnel who will operate or maintain the Nitro Manure Spreader.



WARNING: Pictures in this manual showing safety guards removed are for clarification only. Keep all shields and safety devices in place. If safety features become faulty, replace immediately. Do not operate equipment with them removed.

DANGER: Do not operate this machine while under the influence of drugs or alcohol. Consult your doctor about using this machine while taking prescription medications.

Personal Protection Equipment (PPE)



Wear appropriate protective gear. This list includes but is not limited to:

- Protective gloves.
- Protective shoes with slip-resistant soles.
- Protective glasses.
- Hearing protection.
- Respirator or filter mask.

Secure long hair, loose fitting clothing or jewelry.

Have a first-aid kit available for use should the need arise and know how to use it.

Have a fire extinguisher available for use should the need arise and know how to use it.

Operation Safety

This safety section is intended to point out some of the basic safety situations that can be encountered during the normal operation and maintenance of the Nitro Manure Spreader, and to suggest possible ways of dealing with these situations. This section is **NOT** a replacement for other safety practices featured in other sections of this book.



WARNING: Only use a tractor with a ROPS cab and seat belt. Secure your seat belt before operating machine.

DANGER: Never allow riders on manure spreader. There is no safe place for any riders even for troubleshooting issues. Keep others away from your work area.

All equipment has a limit. Make sure you understand the speed, brakes (additional option), stability and load characteristics of the Nitro Manure Spreader.

Make sure the tractor is in proper operating condition as stated in the tractor Operator's Manual. The tractor must have enough weight and braking capacity, especially when operating on uneven terrain.

Know your tractor controls and how to stop the engine and machine quickly in an emergency.

Where possible avoid operating the Nitro Manure Spreader near roads, ditches, embankments or holes. Reduce speed when operating on rough, slippery, or muddy surfaces and when turning or crossing slopes, Stay off slopes too steep for proper operation.

Clear area of people, machines and obstacles before using this unit.

Close and secure all guards, deflectors and shields before starting and operating.

Never place any part of your body where it could be in danger if movement should occur during assembly, installation, operation, maintenance, repairing, unplugging or moving.

Turn machine off, stop and disable engine, remove ignition key and place in your pocket and wait for all moving parts to stop before servicing, adjusting, repairing, or unplugging.

Beware of the machine size and have enough space to allow for operation.

Do NOT use attachments unless attachments are approved optional equipment.

Do not exceed a safe traveling speed when transporting.

Always use extra caution when turning around corners or in tight areas.

If elderly people assist with work, their physical limitations need to be recognized and accommodated.

Use only in daylight or good artificial light.



DANGER: The upright beaters on the Nitro can maim or kill. Always check for bystanders before engaging the PTO.

Tire Safety



DANGER: Failure to follow proper mounting procedures when mounting a tire on a wheel or rim can produce an explosion which may result in serious injury or death.

- Do not attempt to mount a tire unless you have the proper equipment and experience to do the job.
- Have a qualified tire dealer or repair service perform required tire maintenance.
- When replacing worn tires, make sure they meet the original tire specifications.

NOTE: Proper tire pressure and maximum load details can be found in [Section 3 - Tire Load Index Charts](#).

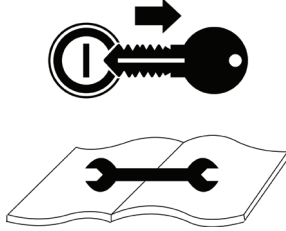
Hydraulic Safety



1. Make sure that all components in the hydraulic system are kept in good condition and are clean.
2. Before applying pressure to the system, make sure that all components are tight, and that lines, hoses and couplings are not damaged.
3. Do not attempt any makeshift repairs to the hydraulic lines, fittings, or hoses by using tapes, clamps or cements. The hydraulic system operates under extremely high pressure. Such repairs will fail suddenly and create a hazardous and unsafe condition.

4. Wear proper hand and eye protection when searching for a high pressure hydraulic leak. Use a piece of wood or cardboard as a backstop instead of hands to isolate and identify a leak.
5. If injured by a concentrated high pressure stream of hydraulic fluid, seek medical attention immediately. Serious infection or toxic reaction can develop from hydraulic fluid piercing the skin surface.
6. Relieve pressure on the hydraulic system before maintaining or working on the system.

Maintenance Safety

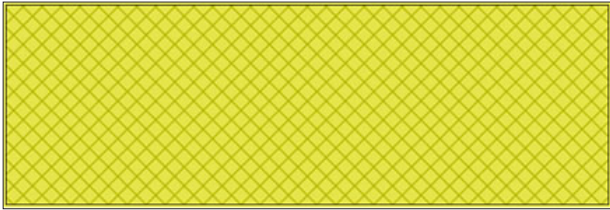


1. Good maintenance is your responsibility. Poor maintenance is an invitation for trouble.
2. Follow good shop practices.
 - Keep service area clean and dry.
 - Be sure electrical outlets and tools are properly grounded.
 - Use adequate light for the job at hand.
3. Never attempt to service hydraulic applications while pressurized or with engine running.
4. Never work under equipment unless it is blocked securely.
5. Always use personal protection devices such as hand, eye and hearing protectors, when performing any service or maintenance work.
6. Where replacement parts are necessary for periodic maintenance and servicing, genuine factory replacement parts must be used to restore your equipment to original specifications. The manufacturer will not be responsible for injuries or damages caused by the use of unapproved parts and/or accessories.
7. A fire extinguisher and first aid kit should be kept readily accessible while performing maintenance on this equipment.
8. Periodically tighten all bolts, nuts, and screws and check that all electrical connections are properly secured to ensure unit is in a safe condition.
9. When completing maintenance or service function, make sure all safety shields and devices are installed before placing unit in service.

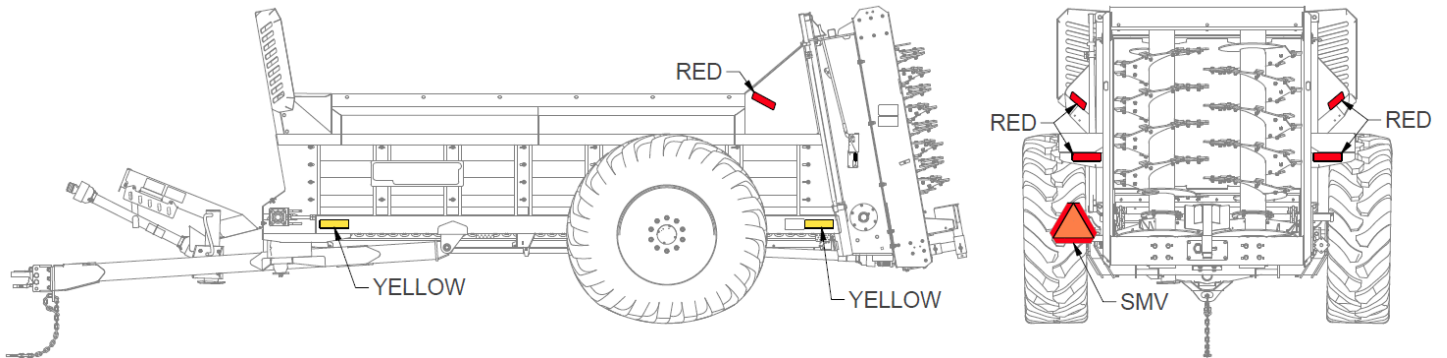
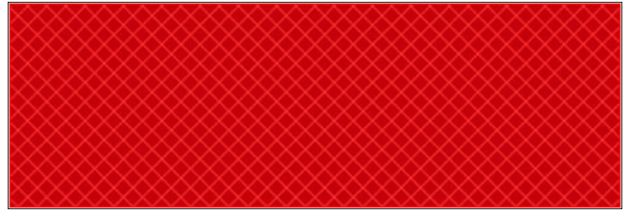
Lighting & Clearance Marking

This machine is equipped with lights and reflectors as required by the most stringent government and ASAE specifications. They should work with the tractor 7-pin connector.

Part No: DEAMBER



Part No: DEREED



Safety Signs

1. Keep safety signs clean and legible at all times.
2. Replace safety signs that are missing or have become illegible.
3. Replaced parts that displayed a safety sign should also display the current sign.
4. Safety signs displayed in Safety Sign Locations each have a significant purpose and need to be cleaned or replaced when necessary.
5. Safety signs are available from your authorized distributor or dealer parts department or from the manufacturer.

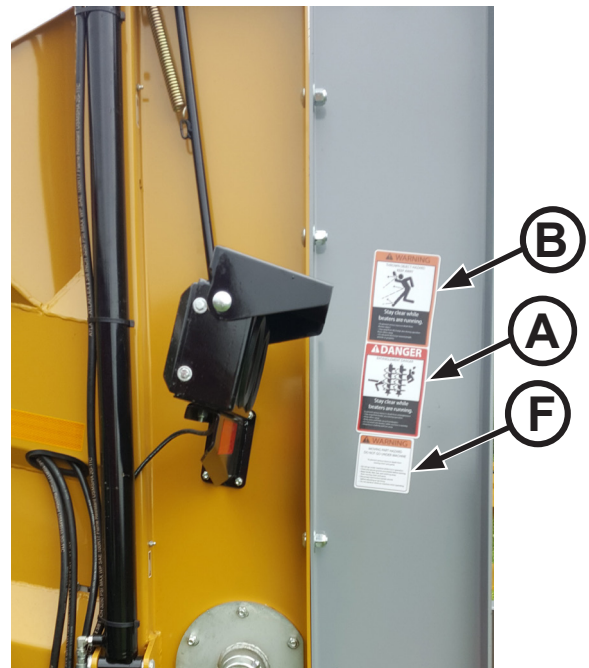
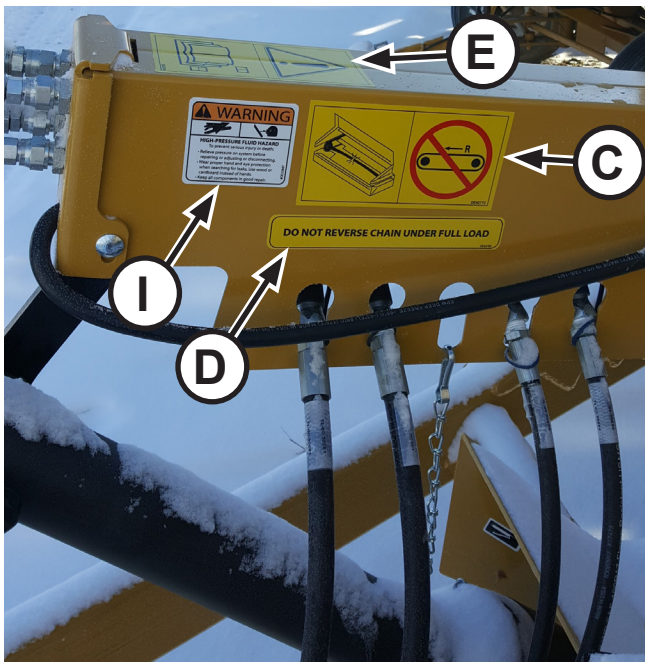
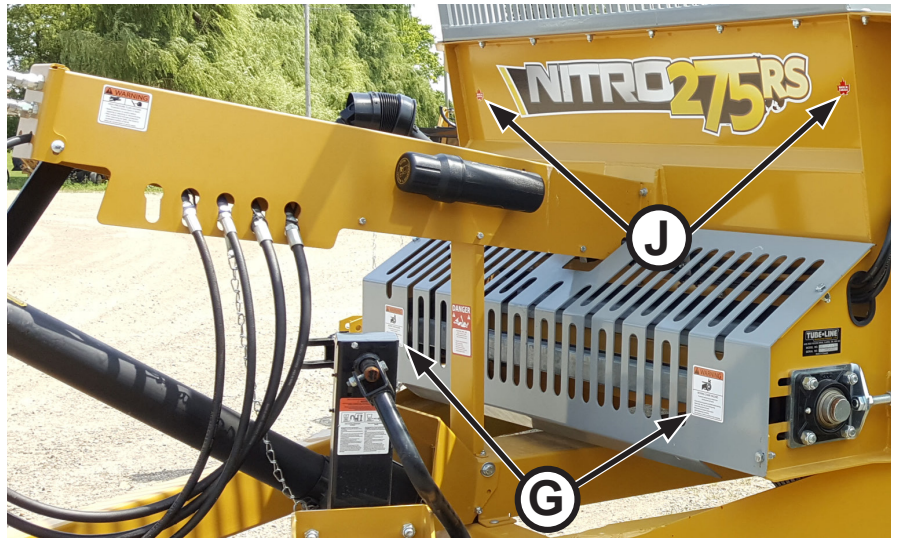
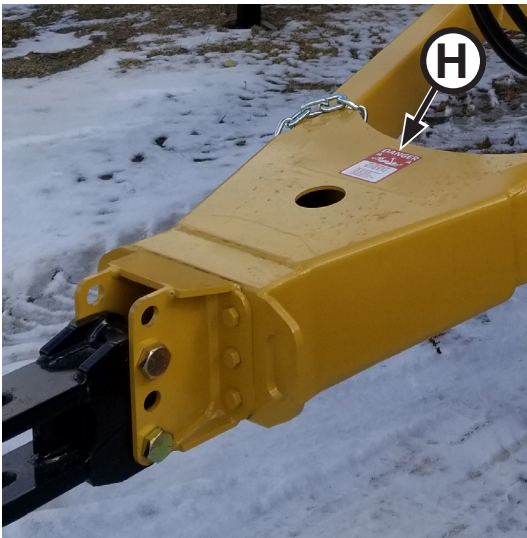
Installing Safety Signs

1. Ensure installation area is clean and dry.
2. Only apply in temperature is above 10C (50F).
3. Determine the exact position of the new safety sign before removing the paper backing.
4. Align the sign over the specific area, carefully press the sign on, slowly peeling away the backing paper while smoothing sign in place.
5. Small air pockets can be pierced with a pin and smoothed out using a piece of sign backing paper.

Safety Sign Locations

The types of safety signs and locations on the equipment are shown in the illustrations that follow. Good safety requires that you familiarize yourself with the various safety signs, the types of warning, and the area, or proper function related to that area, that requires your safety awareness.

NOTE: Examples only - Actual decals may differ in text and graphic representation.



Safety Decals

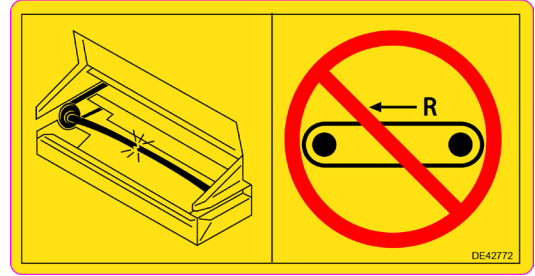
Item - A
Part No: DE39395



Item - B
Part No: DE39396



Item - C
Part No: DE42772
Reversing apron chain while spreader is fully loaded will cause front apron shaft breakage.



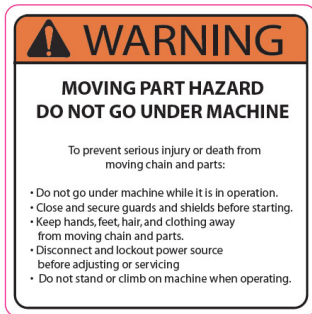
Item - E Part No: DE42784
See Operators Manual for decal explanation.



Item - D
Part No: DE42782 - Reversing apron chain while spreader is fully loaded will cause front apron shaft breakage.



Item - F
Part No: DE23845



Item - G
Part No: DE23836



Item - H
Part No: DE39397



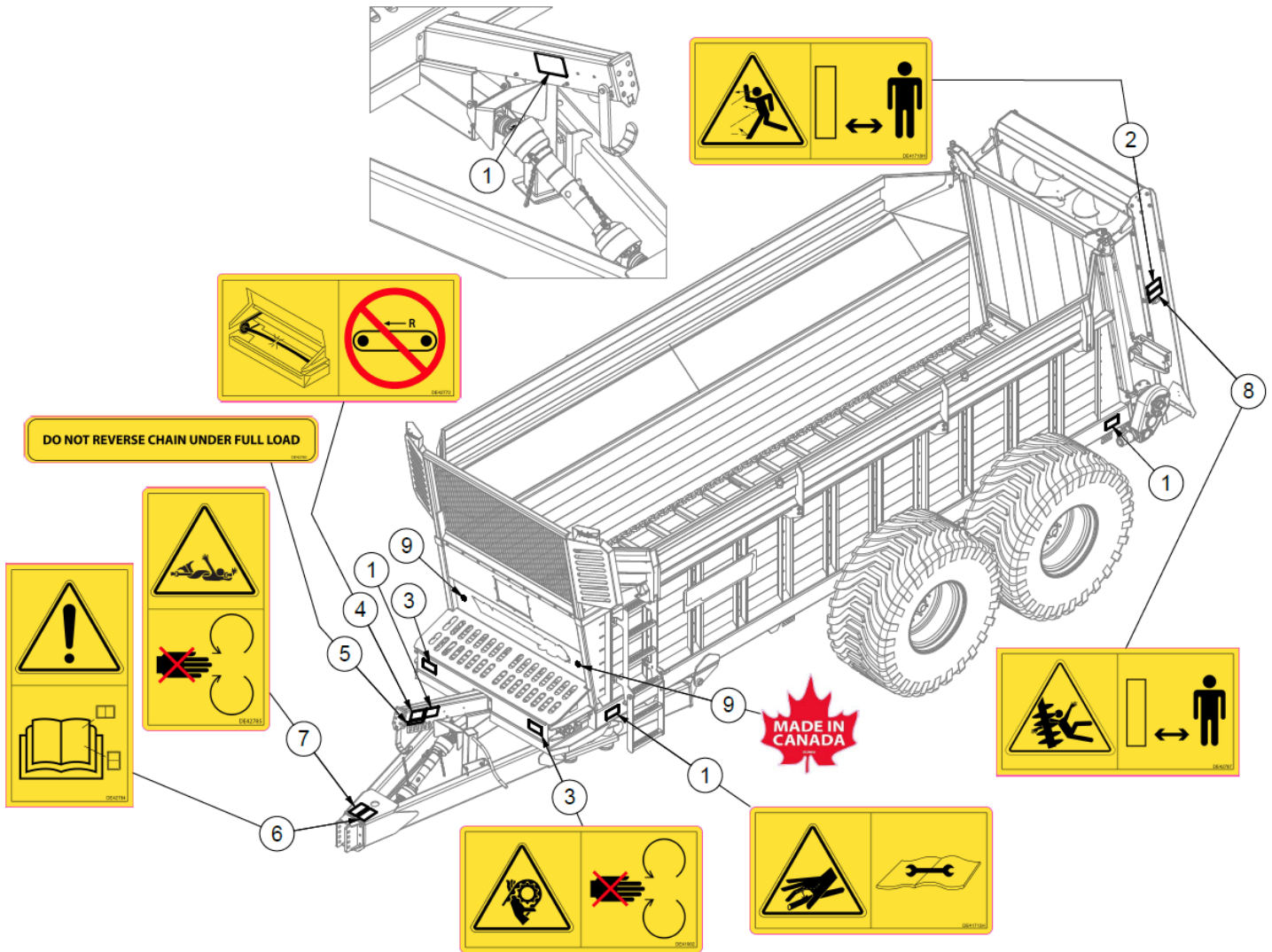
Item - I
Part No: DE23838



Item - J
Part No: DECANADA

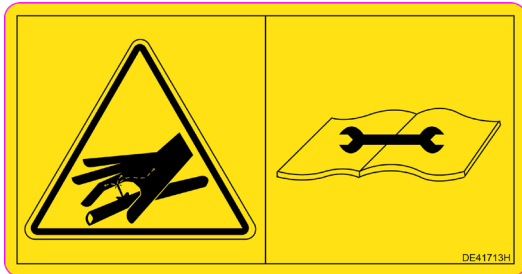


ISO Safety Decal Locations



ITEM	QTY	PART NUMBER	DESCRIPTION
1	6	DE41713H	ISO Decal - High Pressure Fluid Horizontal
2	2	DE41718H	ISO Decal - Thrown Object Horizontal
3	2	DE41902	ISO Decal - Chain Entanglement
4	1	DE42772	ISO Decal - Nitro Reverse Chain
5	1	DE42783	Nitro Reverse Chain Text Decal
6	1	DE42784	ISO Decal - Read OM Decals Section
7	1	DE42785	ISO Decal - PTO Entanglement
8	2	DE42787	ISO Decal - Nitro Beater Entanglement
9	2	DECANADA	Decal Made In Canada

ISO Safety Decals



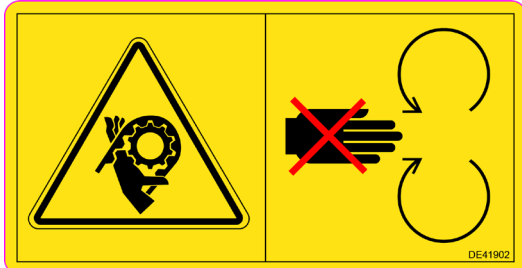
Item 1: DE41713H

Do not use hand to check for hydraulic leaks, alternatively use a piece of cardboard.



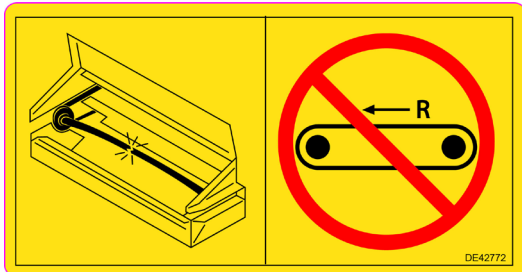
Item 2: DE41718H

Keep clear of machine while operating. Serious injury may occur.



Item 3: DE41902

Keep hands clear of rotating parts while machine running. Do not operate without shielding in place. Do not wear loose clothing while operating.

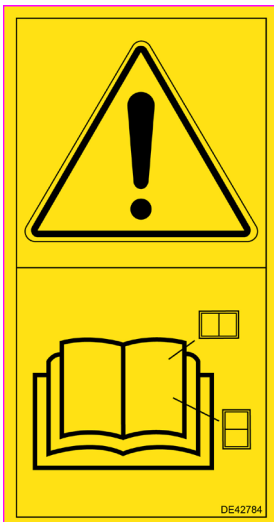


Item 4: DE42772

Reversing apron chain while spreader is fully loaded will cause front apron shaft breakage.



Item 5: DE42783



Item 4: DE42784

Read Operator's manual decal section to understand safety decals.

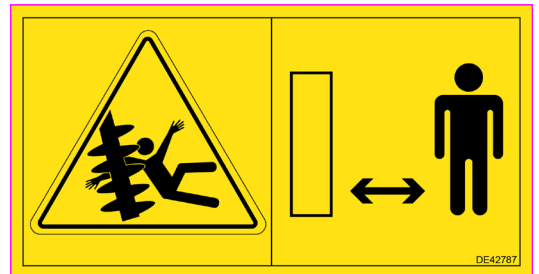


Item 7: DE42785

Do not use hand to check for hydraulic leaks, alternatively use a piece of cardboard.

Item 8: DE42787

Stand clear of rotating beaters to avoid entanglement. Serious injury or death hazard.



Item 9: DECANADA

Manufacturer's country of origin.



Section 5 - Operation

Tractor Preparation

Follow this procedure when selecting and preparing a tractor for use with the machine:

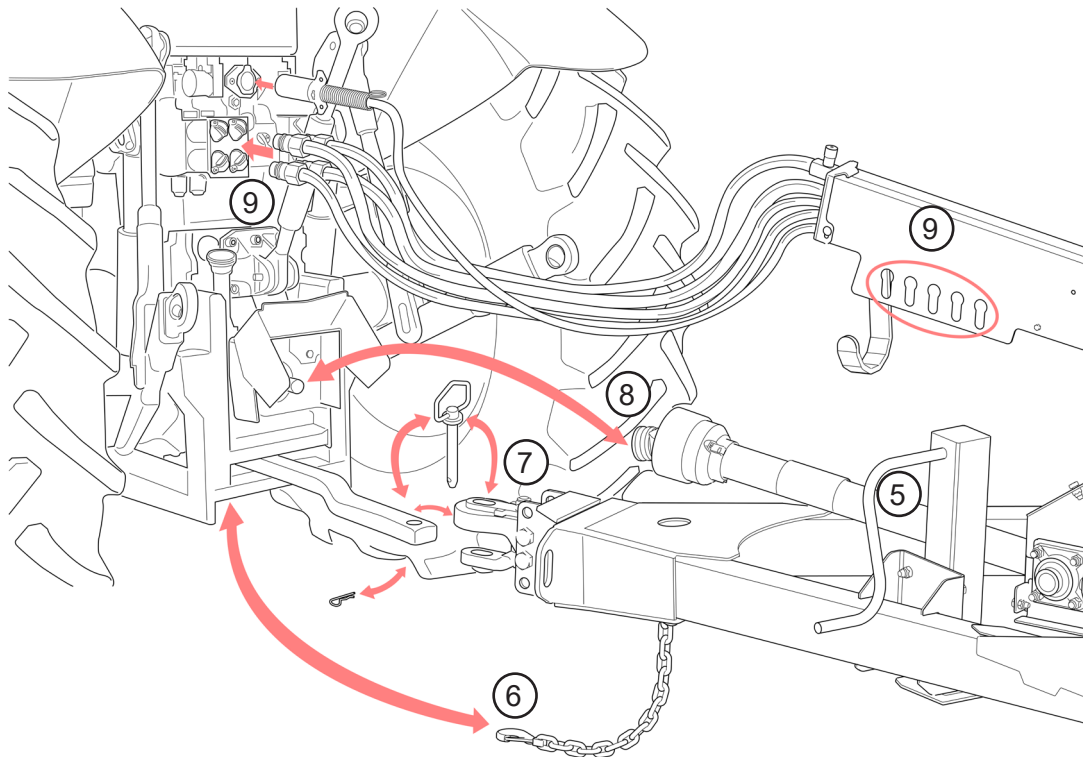
1. Use only a tractor of sufficient power and weight to adequately handle the machine. It is recommended that the tractor have at least 125 PTO horsepower for normal operating conditions. See [PTO / Horsepower Needed, pg.2-1](#).
2. Check oil level in the tractor hydraulic reservoir. Top up as required.
3. It is recommended to pin the drawbar in its centre draft position.
4. Use only a drawbar pin with provisions for a mechanical retainer. Always install the retainer.
5. Always attach a safety chain between the tractor and the machine to prevent unexpected separation.

Spreader Preparation

Your new Nitro spreader has a brief breaking-in period that you should follow for optimal operation, and for maximum lifetime of your product. When using the machine for the first time, it is extremely important to follow all of the procedures especially those listed below to avoid damage:

1. Read the Nitro Operator's Manual. Do not operate the spreader until the safety precautions in this manual and the decals on the spreader have been read and understood by the operator.
2. Check for proper assembly and tighten all bolts. All bolts were checked at the factory when assembled but may need to be re-torqued as vibrations in shipment may loosen them slightly.
3. Check tires and ensure that they are inflated to the pressure specified for the spreader's tires.
4. Lubricate the machine. Proper maintenance and lubrication is the user's responsibility and must begin before the first use. Refer to [Service & Maintenance, pg.7-1](#).
5. Operate the machine slowly for a period of time to run the chains in and confirm that all parts work freely.
6. Inspect all hydraulic lines, hoses, fittings and couplers for tightness. Tighten if there are leaks. Use a clean cloth to wipe any accumulated dirt from the couplers before connecting to the tractor's hydraulic system. See [Hydraulic Safety, pg.4-3](#).
7. Check the oil level in the gearboxes. Top up as required. See [Grease Points, pg.7-4](#).
8. Ensure that the PTO driveline is securely attached on both ends and can telescope easily. Check that the PTO driveline shield rotates freely. Remove any debris that has become entangled in the rear beaters or the PTO drive line.
9. Inspect all moving and rotating parts. Make sure that all guards and shields are installed and secured in position.

Hook-up / Unhooking



The Nitro Manure Spreader should always be parked on a level, dry area that is free of debris and foreign objects. Follow this procedure when attaching:

1. Clear area of bystanders and remove foreign objects from machine and working area.
2. Make sure there is enough room to back the tractor up to spreader hitch.
3. Start tractor and slowly back up to the hitch point.
4. Stop tractor engine, place controls in neutral, set park brake and remove ignition key before dismounting.
5. Use jack to raise or lower the hitch to align with the drawbar.
6. Install safety chain between the tractor drawbar and hitch pin.
7. Install drawbar pin with provisions for a mechanical retainer. Install the retainer.
8. Connect PTO driveline to tractor. Pull back locking collar, slide yoke over tractor stub shaft until collar locks.
9. Connect the hydraulics. To connect, proceed as follows:
 - Remove hoses from storage position. Uncap plastic plugs and clean couplers, also clean area around tractor ports.
 - Insert the male ends into rear tractor hydraulic ports.

NOTICE: If the direction of motion is wrong, reverse the couplers.

10. Raise the jack.
11. When unhooking from the tractor, reverse the above procedure.

NOTICE: Occasionally air may become trapped in the hydraulic circuit, making it necessary to “bleed” the circuit. To perform this operation cycle the hydraulic several times or especially on older tractors, temporarily loosen an easily accessible hose fitting enough to allow any trapped air to escape while cycling the hydraulics. Retighten fitting.



CAUTION: When parking the spreader for loading, put the tractor in PARK or NEUTRAL and apply the parking brake.

NOTICE: It is recommended to make sure the apron chain is operating properly before loading the spreader. Check the apron chain and slats to make sure they are not frozen or stuck to the bottom of the bed. Operating the spreader when the slats or chain are stuck to the bed may cause damage. Also make sure there are no lumps of manure dried to the floor boards.

1. Fully Close Rear Hydraulic Gate
2. Load the Spreader, starting at the front and continuing to load evenly to balance load.

The manure consistency will determine how full your spreader can be loaded. Solid manure can usually be loaded level to slightly heaped. Wet materials are heavier and may limit loading.

NOTICE: It is unlawful to allow any manure spillage to occur on public roadways. Do not heap load such that manure is allowed to fall off spreader during transporting on roadways.

Spreading

Read [Operation Safety, pg.4-2](#) before operating spreader.

1. Engage the Rear Beaters with tractor PTO control.
2. Fully Open Rear Gate. Fully extend the cylinders so the gate is fully open.

NOTICE: Before starting apron chain get beaters up to full speed.

Turn on the tractor hydraulics used to start the apron chain. The hydraulics adjust the speed at which material is being pulled towards the rear beaters. The slower the speed - the finer the spread as the rear beaters have more time to “process” the material.

See [Section 8 - Optional Flow Control](#), if applicable to your Nitro Manure Spreader.

Unplugging

The following is a recommended procedure if the manure spreader becomes plugged or the PTO disengages:

1. Disengage the hydraulics that run the apron chain.
2. Reverse the apron chain by flipping your tractor hydraulic lever.
3. Engage the hydraulics to reverse the apron chain in order to back material away from beaters. Stop apron chain after material is backed away from beaters or if pile doesn't move.



WARNING: Reversing chain under full load will cause front apron shaft to bend and/or break.

4. Engage the beaters. Bring beaters back up to regular speed.
5. Follow the instructions in the above [Spreading](#) section to start the apron chain in the standard operation direction.

If this procedure does not solve the situation, closer inspection and possible manual unplugging may be required. Make sure to stop tractor and wait for all moving parts to stop before servicing or unplugging:



WARNING: Stop tractor engine, place all controls in neutral, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.

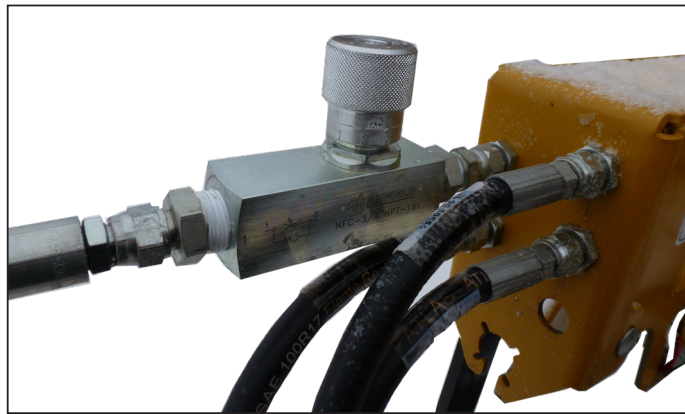
Reversing Apron Chain



CAUTION: Do NOT reverse apron chain if spreader is fully loaded, front apron shaft WILL bend and/or break.

To prevent accidental reversal of the apron chain and ensuing spreader damage, the apron chain safety valve must be opened manually to reverse the apron chain. The apron chain safety valve is located on the variable speed control valve at the front of the spreader. When this valve is opened (turned counter-clockwise), the direction of the apron chain can be reversed.

To return the apron chain direction to normal rearwards travel, close (turn clockwise rotation) the apron chain safety valve.



Apron chain reverse safety valve.

After operating for 2 hours:

1. Check wheel bolts torque.
2. Check all shields and guards. Tighten as required.
3. Visually inspect all hydraulic hoses and couplers. See [Hydraulic Safety, pg.4-3](#).
4. Check chain tightness. See [Adjust Chain Tension, pg.7-1](#).

After operating for 10 hours:

Repeat the 2 hour service list.

Optional Hydraulic Brake Operation

Requires tractor with rear ported brake hookup. After brake hoses are connected to tractor they will engage whenever tractor brake pedal is pressed.

Optional Flow Control Operation

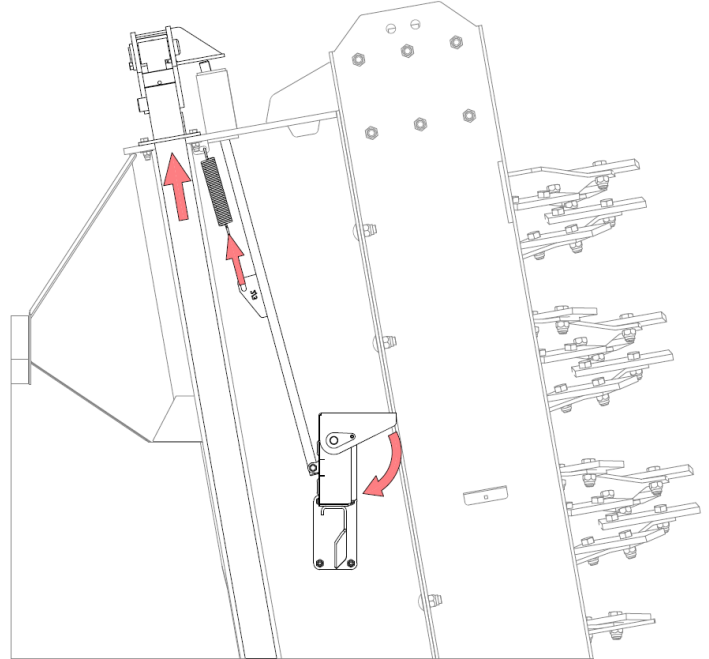
See [pg.8-3](#).

Optional Night Light Kit Operation

Spreaders equipped with a Mechanical Light Kit do not require any user input to operate. Light covers raise and lower in conjunction with the endgate.

Spreaders equipped with manual light kits require users to manually lower and raise light covers.

Speaders with hydraulic light kits require a tractor hookup to operate.



Optional Two Stage Beater Operation

Spreaders equipped with two stage beater options are used to process poultry litter and materials of like consistency. Two stage beater use horizontal beaters to push material down to spinners, which in turn discharge material to field. Operation sequence is the same as standard vertical beaters.

NOTE: Lower gate can be pushed towards endgate if material is dropping directly onto spinners.

NOTE: Spinner paddles can be adjusted to change the spread width. See [pg.7-2](#).



CAUTION: Lower endgate as load level clears horizontal beaters. This will ensure material is not thrown back towards tractor cab.

Optional Scale System

The optional scale system comes in several variations.

The entry level system allows for static weight measuring only.

The intermediate system allows for weight measuring, GPS speed tracking, manual spread width, automatic apron chain speed control, and data collection via memory card.

The advanced system allows for weight measuring, GPS speed tracking, manual spread width, automatic apron chain speed control, data collection via memory card, and apron chain pausing via monitor button for end of row control.

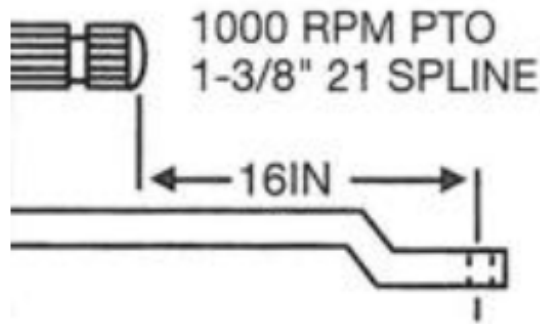
Stop apron chain, lower endgate and shutdown PTO after finishing spreading application.

See provided scale system manufacturing literature for more advanced features and detailed instructions.

Section 6 - Transportation / Storage

Transport Safety

1. Comply with state and local laws governing safety and transporting of machinery on public roads.
2. Do not exceed a safe travel speed. Slow down on rough terrain and while cornering.
3. Never allow riders on the machine.



4. Keep tractor drawbar and Nitro hitch parallel. An uneven PTO may shear off a spline shaft.
Above diagram shows standard tractor dimensions matching the front PTO on the Nitro spreaders.

Storage Safety

1. Store the Nitro Manure Spreader in an area away from human activity.
2. Do not allow children to play on or around the Nitro Manure Spreader.
3. Store the Nitro Manure Spreader in a dry, level area.

Travel Speed

A suggested starting speed is between 4-5 mph. This can be adjusted to operator preference. Maximum speed under load can be found in [Section 3 - Tire Load Index Charts](#).



WARNING: Normally, the load itself blocks manure and loose materials from being thrown towards the front. As the load/pile gets reduced, the rotation of the rear beaters can throw some material forward, therefore it is strongly recommended to lower the rear gate about 1/3 of the way down to prevent debris from being projected towards the front.

Storage and Cleaning

Disconnect PTO drive shaft and hydraulic hoses before cleaning, adjusting, lubricating, or servicing this machine.

1. The spreader must be thoroughly cleaned for extended storage. Manure is acidic and will damage paint and cause rusting of metal components.
2. Allow the spreader to completely unload.
3. To clean the spreader, raise the rear gate.



WARNING: Turn off all power during cleaning and inspection. Do not use power to move any components or to discharge material while cleaning or inspecting.

4. Hose off manure from the outside and inside of the spreader. Completely clean manure from moving mechanisms such as the beaters and rear gate. Remove accumulation in confined areas or pockets that trap manure.
5. Avoid directing high pressure spray directly on bearings, seals, flow control valve, and electrical devices.
6. Keep high pressure spray moving on painted surfaces. Sustained spray on cracks or scratches in paint can result in paint peeling.
7. Allow machine to dry.
8. Lower rear gate completely down before storing spreader.
9. Inspect the spreader for loose connections, damaged hydraulic hoses or connections and for other damaged components. Repair if necessary so the spreader is ready for future operation. See [Hydraulic Safety, pg. 4-3](#).

Section 7 - Service & Maintenance

Apron Chain Tension Adjustment

1. Occasionally check the apron chain for any bent or damaged slats. It is important to straighten or replace any damaged slats immediately.
2. The apron chain tension should be checked and adjusted on occasion. If apron chain has slack, tightening is required:
 - To tighten apron chain, loosen the four bolts on bearing and turn nut until proper tightness is achieved (both sides) then tighten 4 bolts on the bearing.

When adjusting the apron chain tension use the following procedure.

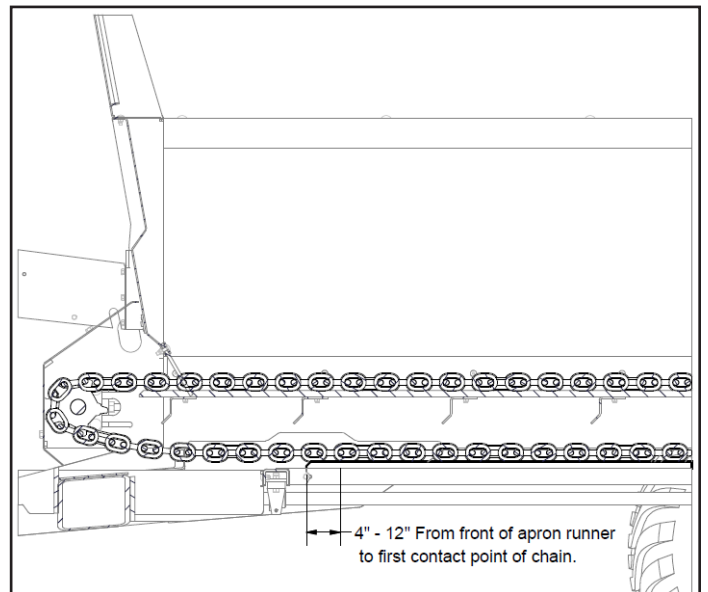
1. Start on one side and tighten the nut a few turns.
2. Repeat on opposite side of machine to evenly tighten chain tension.
3. Repeat this procedure 2-3 times until moderate chain tension is achieved.



CAUTION: It is important to ensure nuts on 4 bolts on bearing are tightened after adjusting apron chain. In the event of the nuts not being tightened, and the apron chain is reversed, equipment damage may occur.



Apron Chain Tension Adjustment



Correct Apron Chain Adjustment

Wheel Torque Specifications

NITRO MANURE SPREADER TORQUE SPECS				
HUB SIZE	BOLT PATTERN	WHEEL STUD PN	TUBELINE WHEEL STUD PN	TORQUE REQ. (LB-FT)
12,000lb	8 x 5/8-18 PIB	F58-225	31531	240 dry/ 180 lubed
16,000lb	10 x 3/4-16 PIB	F750-35WS	31529	280-300 dry/ 220 lubed
20,000lb	10 x 3/4-16 PIB	F750-35WS	31529	280-300 dry/ 220 lubed

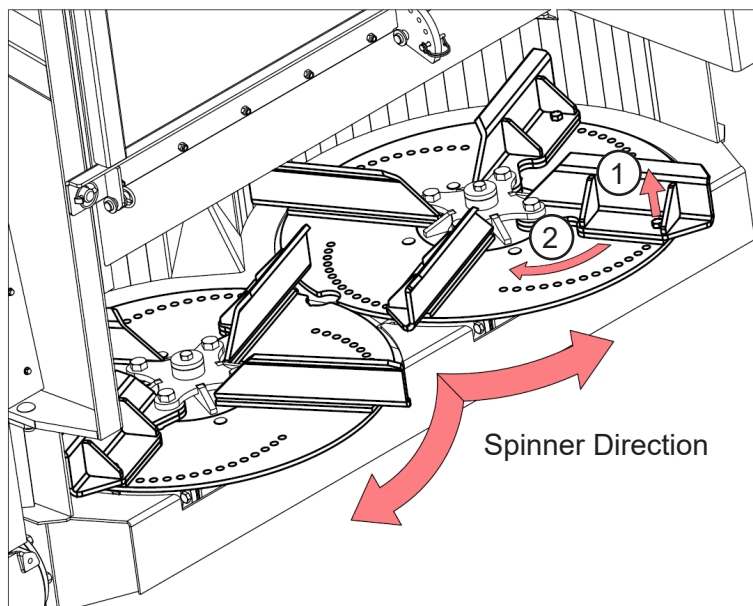
Optional Two Stage Beater Paddle Adjustment

The spread width can be adjusted by moving the two stage beater paddles. With spread pattern at maximum setting spread width can reach 50ft.

NOTE: Hole pattern on spinner plate gradually tapers to change the angle material is released at. Tighter angle equals wider spread width.

To adjust angle of release to tighten or widen spread width:

1. Remove bolt and nut from each paddle's outer edge.
2. Move paddle to desired angle.
3. Refasten nut and bolt through spinner plate hole.



Optional Two Stage Beater Endgate Adjustment

There are two endgates on the two stage beater option. The upper gate (**U**) is normally closed and should only be opened for cleaning, unplugging and repair purposes. To open,

1. Remove lock pins shown in Detail A and Detail C (1 each per side).
2. Raise gate.
3. Set Detail A pins through side holes.
4. Refasten Detail A lock pins through frame pins to avoid losing them.

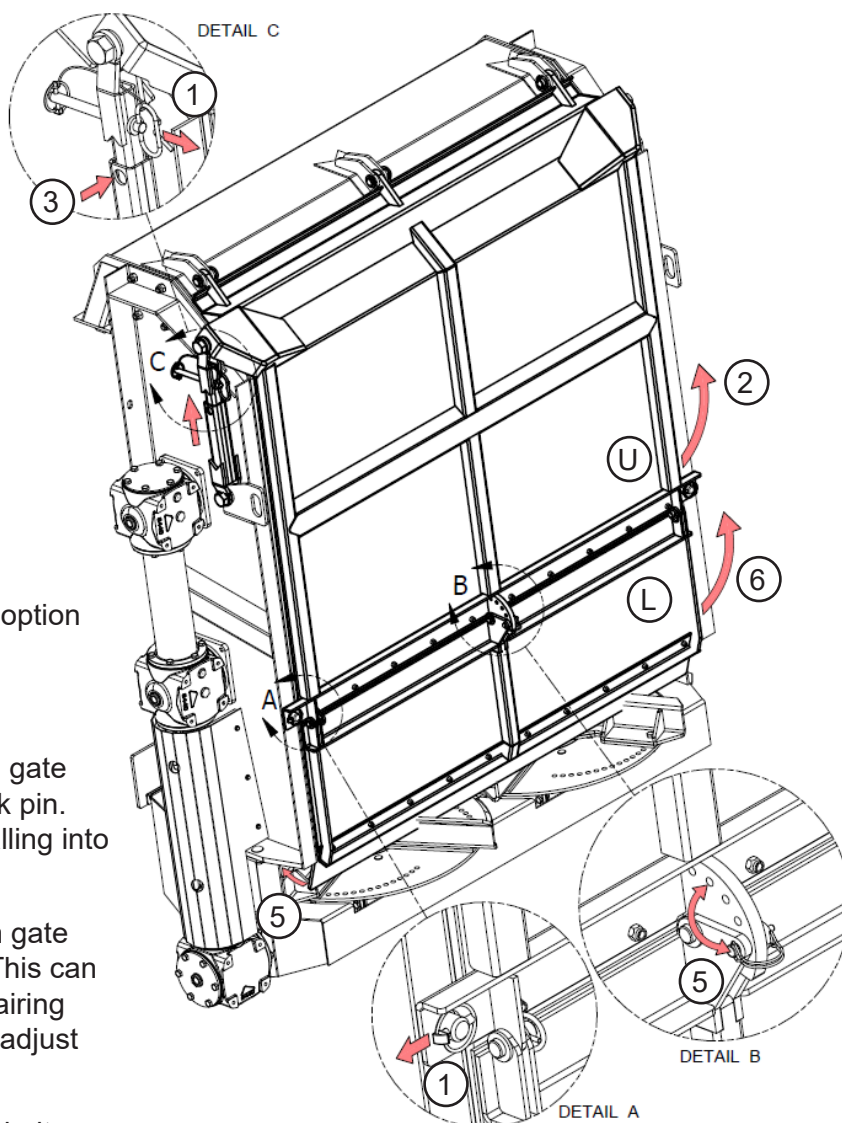


CAUTION: Do not operate two stage beater option with upper gate open.

The lower gate (**L**) has several uses.

5. Remove lock pin shown in Detail B, push gate toward spinners and set position with lock pin. This will hold runny material back from falling into discharge area.
6. Remove lock pin shown in Detail B, open gate outwards and set position with lock pin. This can be useful for cleaning, unplugging or repairing spinners. It may also need to be done to adjust spinner paddles.

NOTE: Nitro model 750 and 950 have shear bolts on lower gate to avoid plugging issues.



Fluids & Lubricants

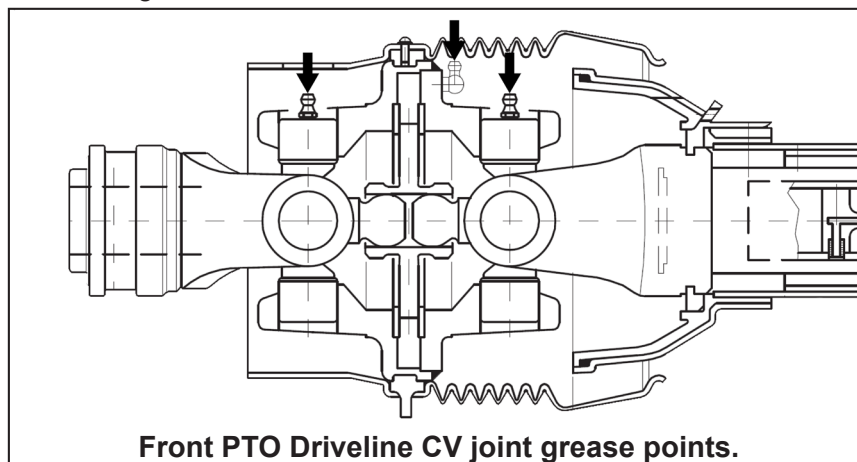
1. Grease: Use an SAE multi-purpose grease with extreme pressure (EP) performance. Also acceptable is an SAE multi-purpose lithium base grease.
2. Gearbox Oil: Use an SAE 80W90 gear oil for all operating conditions.
3. Storing Lubricants: Your machine can operate at top efficiency only if clean lubricants are used. Use clean containers to handle all lubricants. Store them in an area protected from dust, moisture and other contaminants.

Greasing your Machine

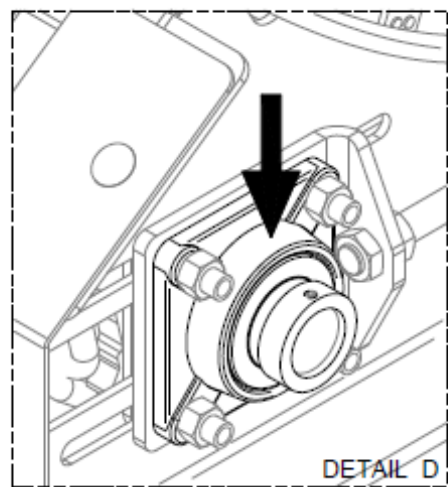
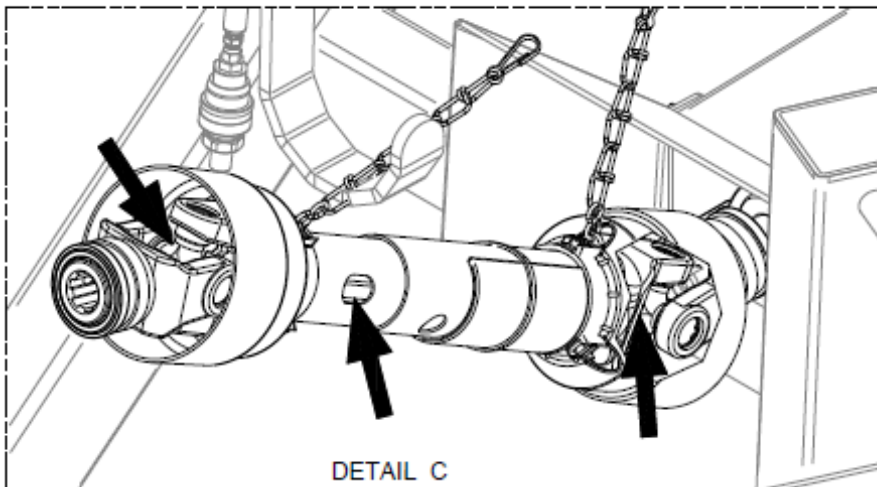
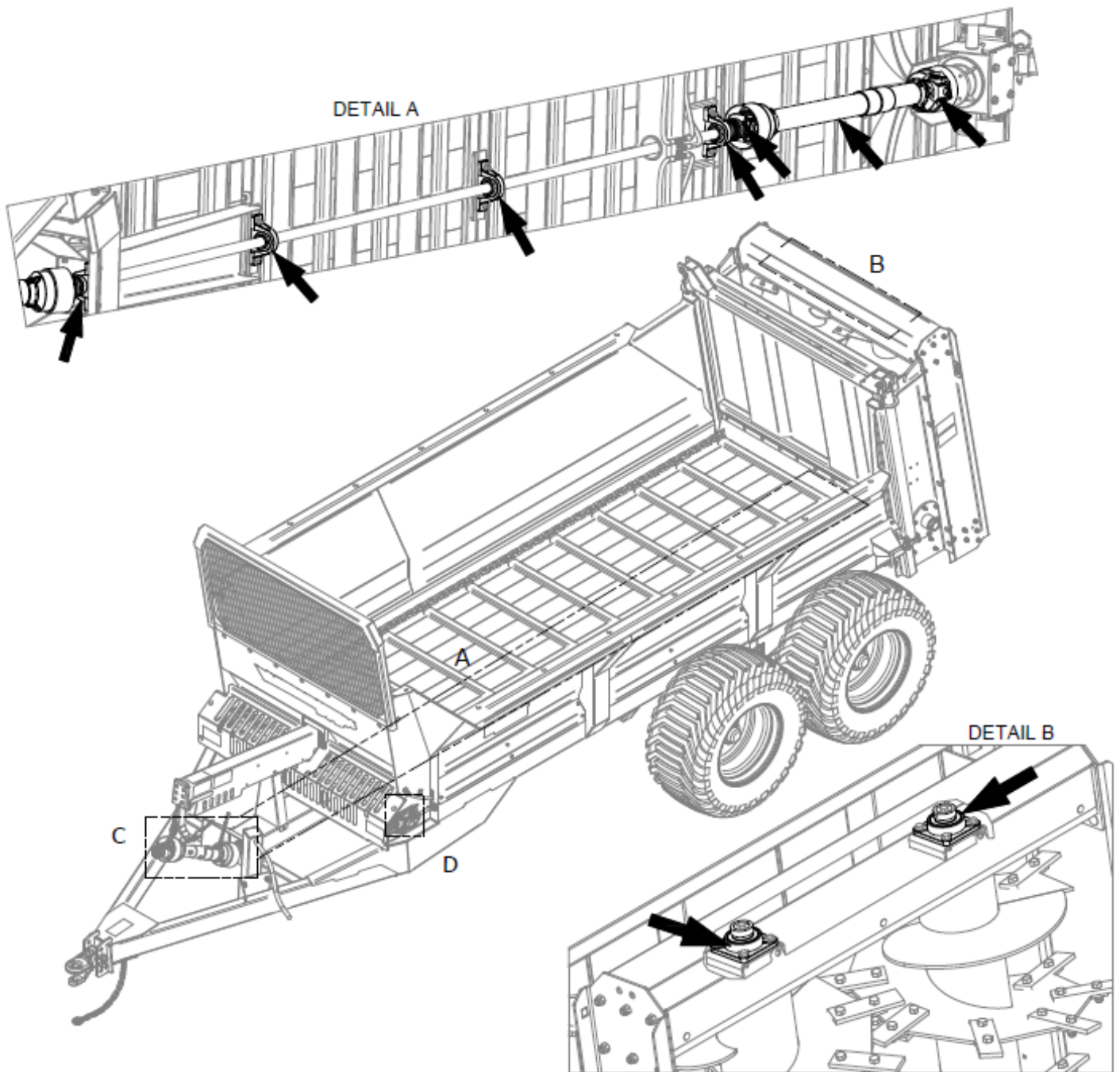
- Use only a hand-held grease gun for all greasing.
- Wipe grease fitting with a clean cloth before greasing, to avoid injecting dirt.
- Replace and repair broken fittings immediately.
- If fittings will not take grease, remove and clean thoroughly. Also clean lubricant passageway.
- Replace fitting if necessary.

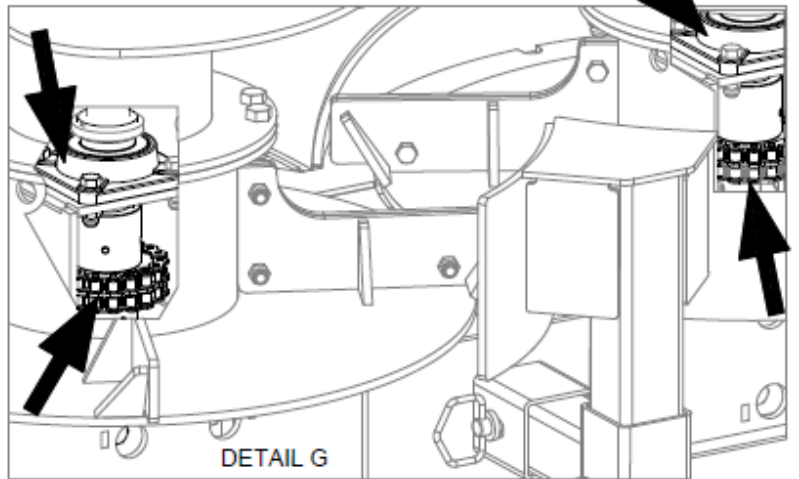
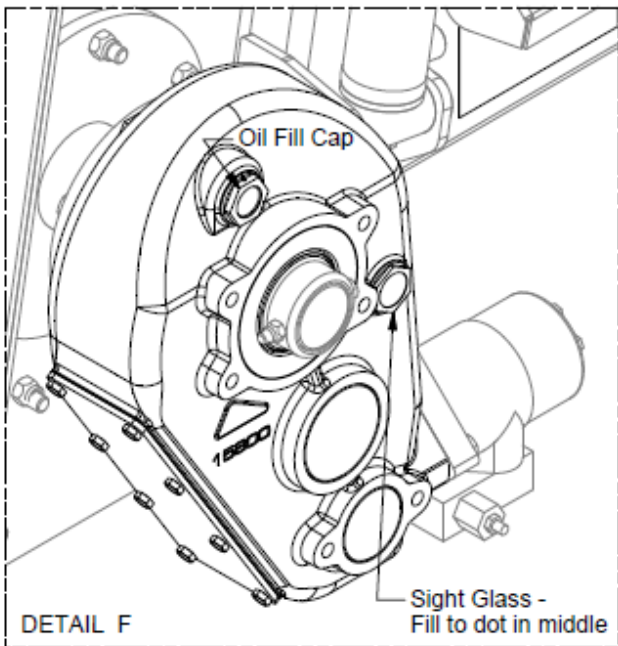
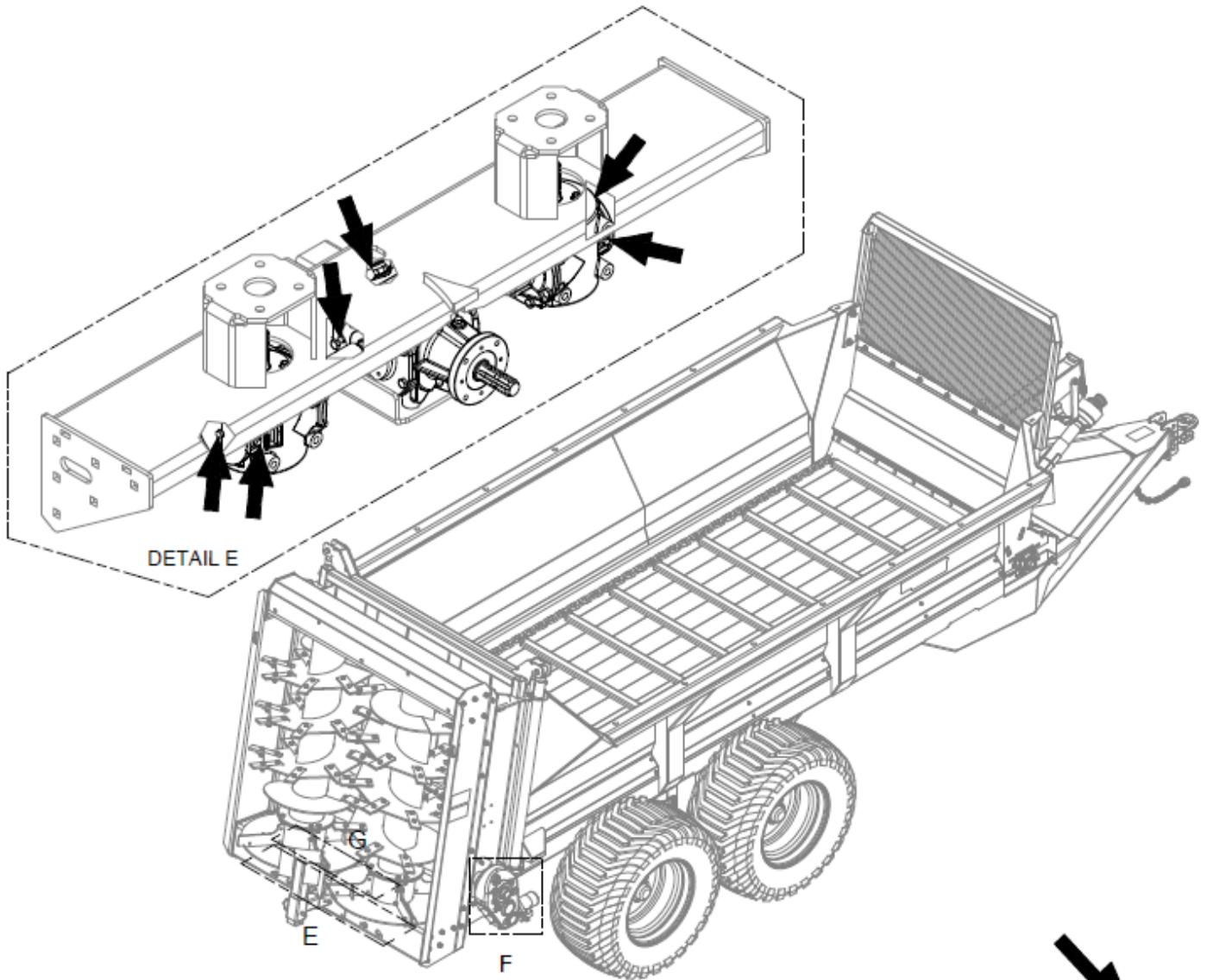
NITRO GREASE POINTS	SERVICE RECOMMENDATION
Detail A - Three Driveline Pillow Block Bearings	Every 10 hours of operation, 2-3 pumps w/ grease gun
Detail A - One Rear PTO Driveline - 2 crosses w/ zerks, zerk in inner sleeve	Every 25 hours of operation, 2-3 pumps w/ grease gun
Detail B - Two Top Beater Flange Bearings	Every 10 hours of operation, 2-3 pumps w/ grease gun
Detail C - Two Front Apron Shaft Flange Bearings	Every 10 hours of operation, 2-3 pumps w/ grease gun
Detail D - One Front PTO Driveline - 2 crosses w/ zerks, zerk in inner sleeve	Every 16 hours of operation, 2-3 pumps w/ grease gun
Detail E - One Apron Chain Gearbox	Change oil every 200 hours / Semi-Annually w/ SAE 80W90 gear oil - Check level with sight glass, top up as needed
Detail F - Two Beater Spinner Chain Couplers	Every 10 hours of operation, use aerosol chain lubricant
Detail G - Beater Gearboxes - Two double shaft (outer), One triple shaft (center)	Change oil every 200 hours / Semi-Annually w/ SAE 80W90 gear oil - Remove a cap to check level, top up as needed
Jack	Follow manufacturer recommendation

NOTE: Nitro spreaders equipped with grease lines still require separate greasing and/or oil changes on gearboxes, front driveline bearing, and PTOs.

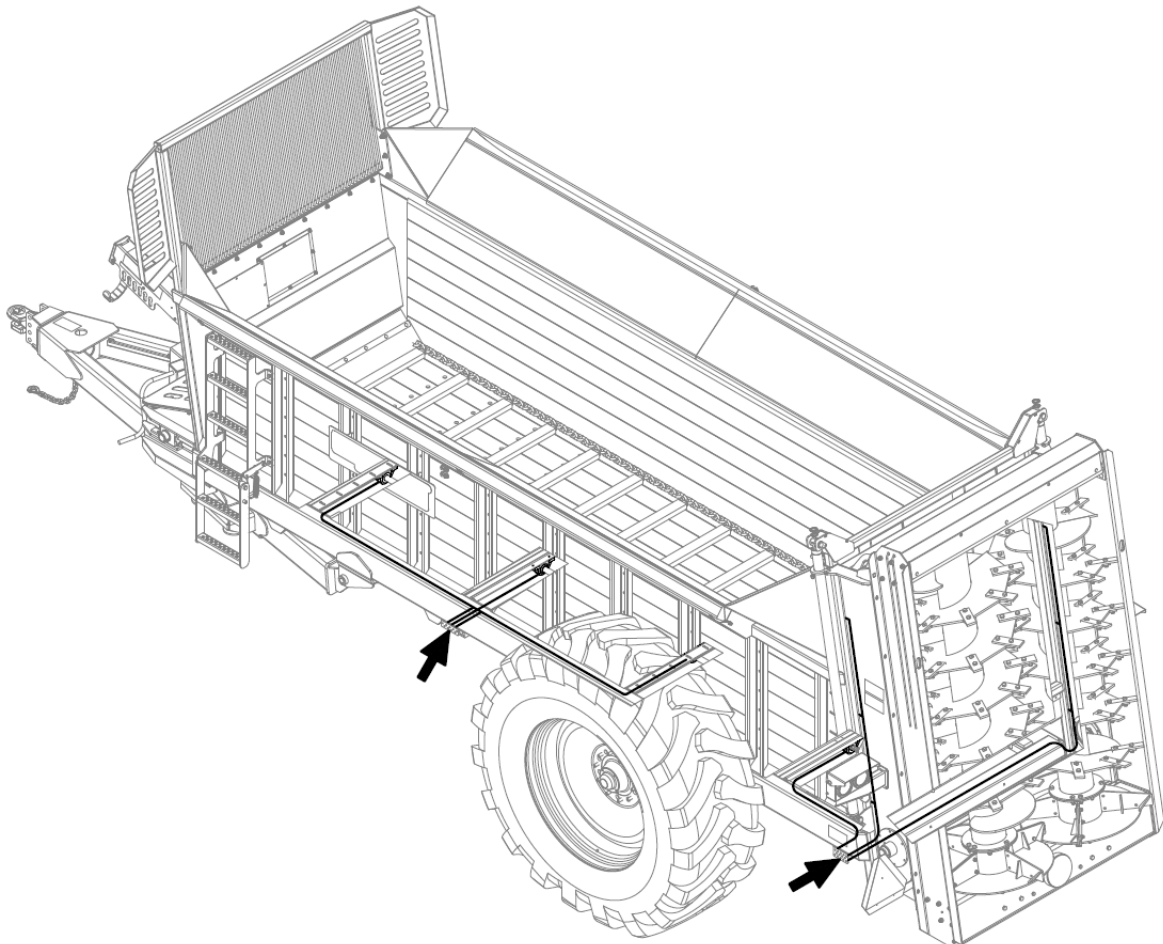
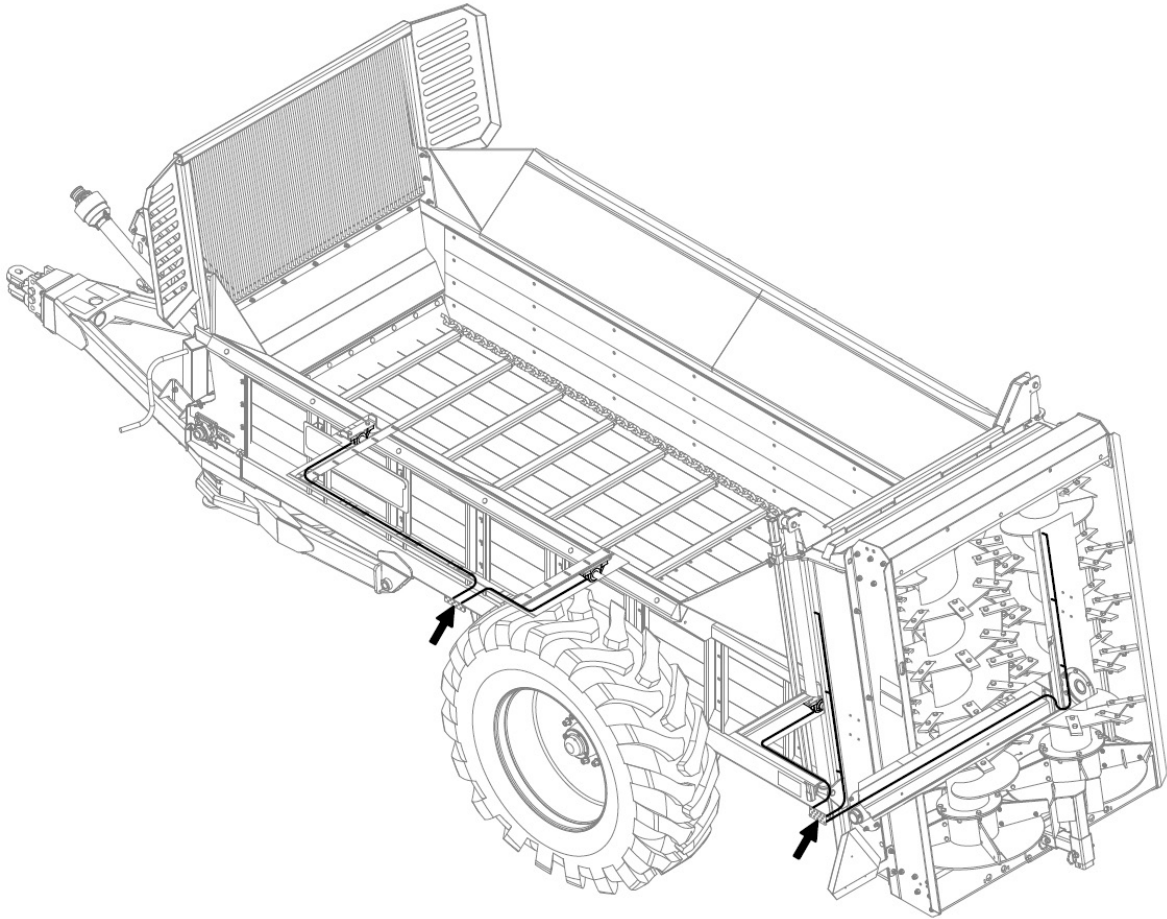


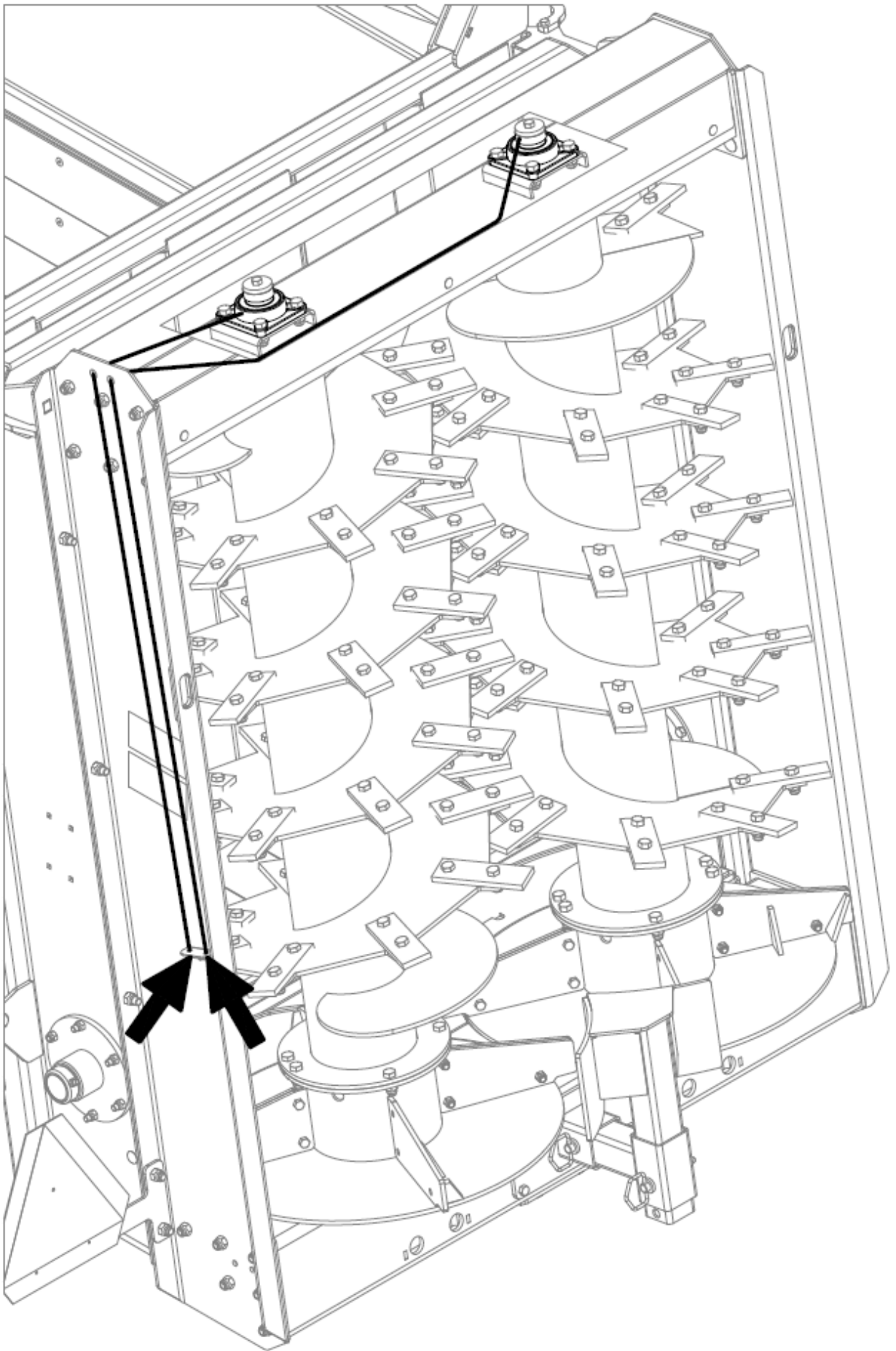
Grease Points



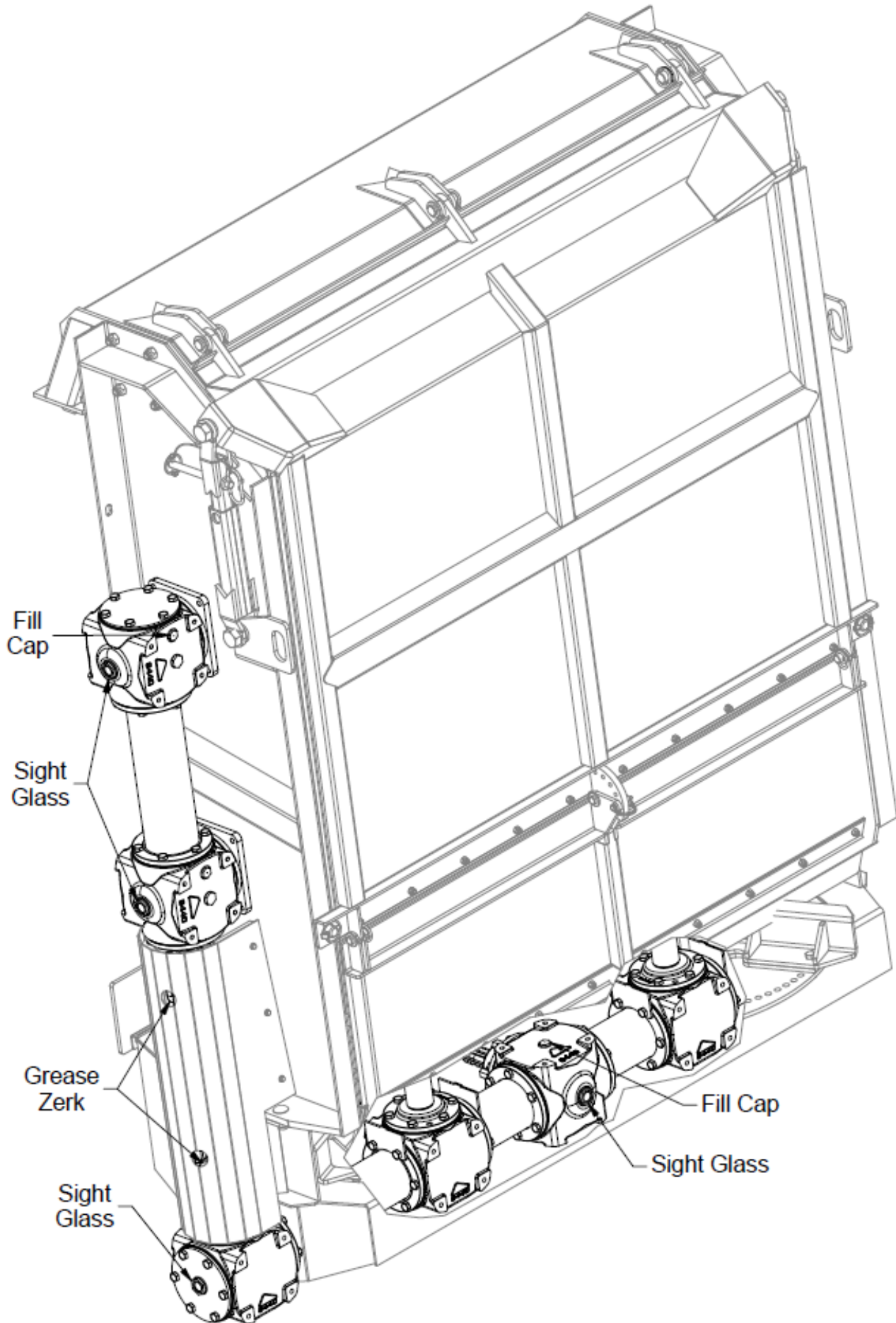


Optional Grease Line Ports

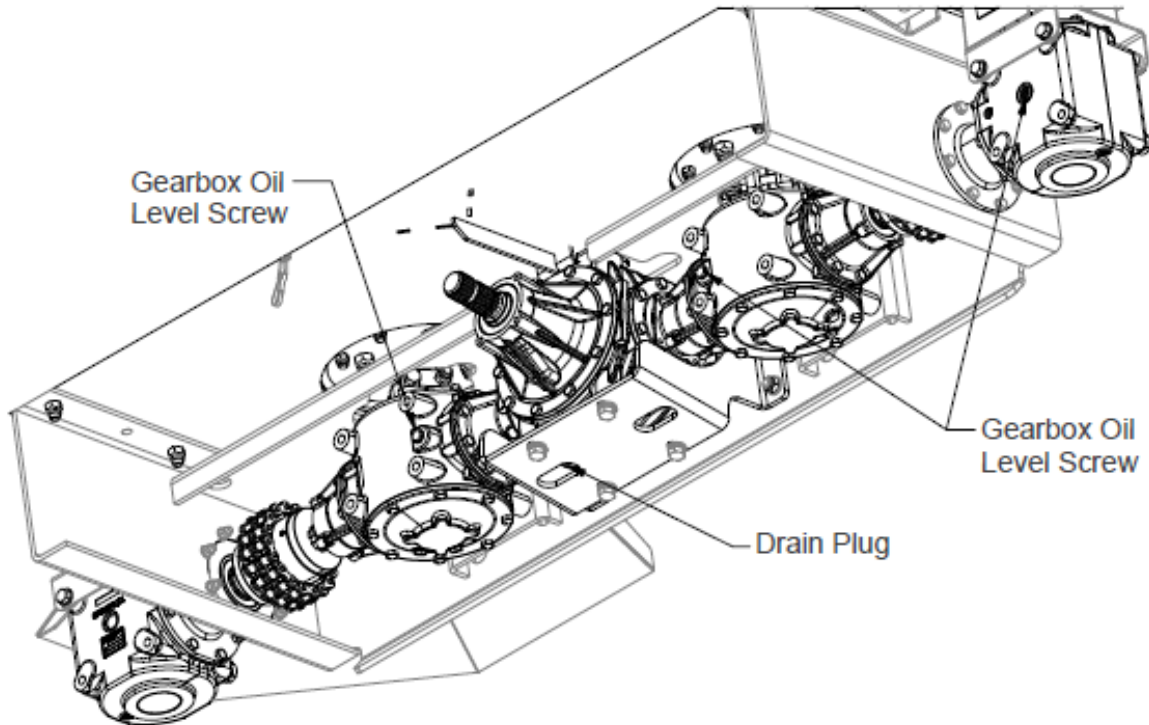
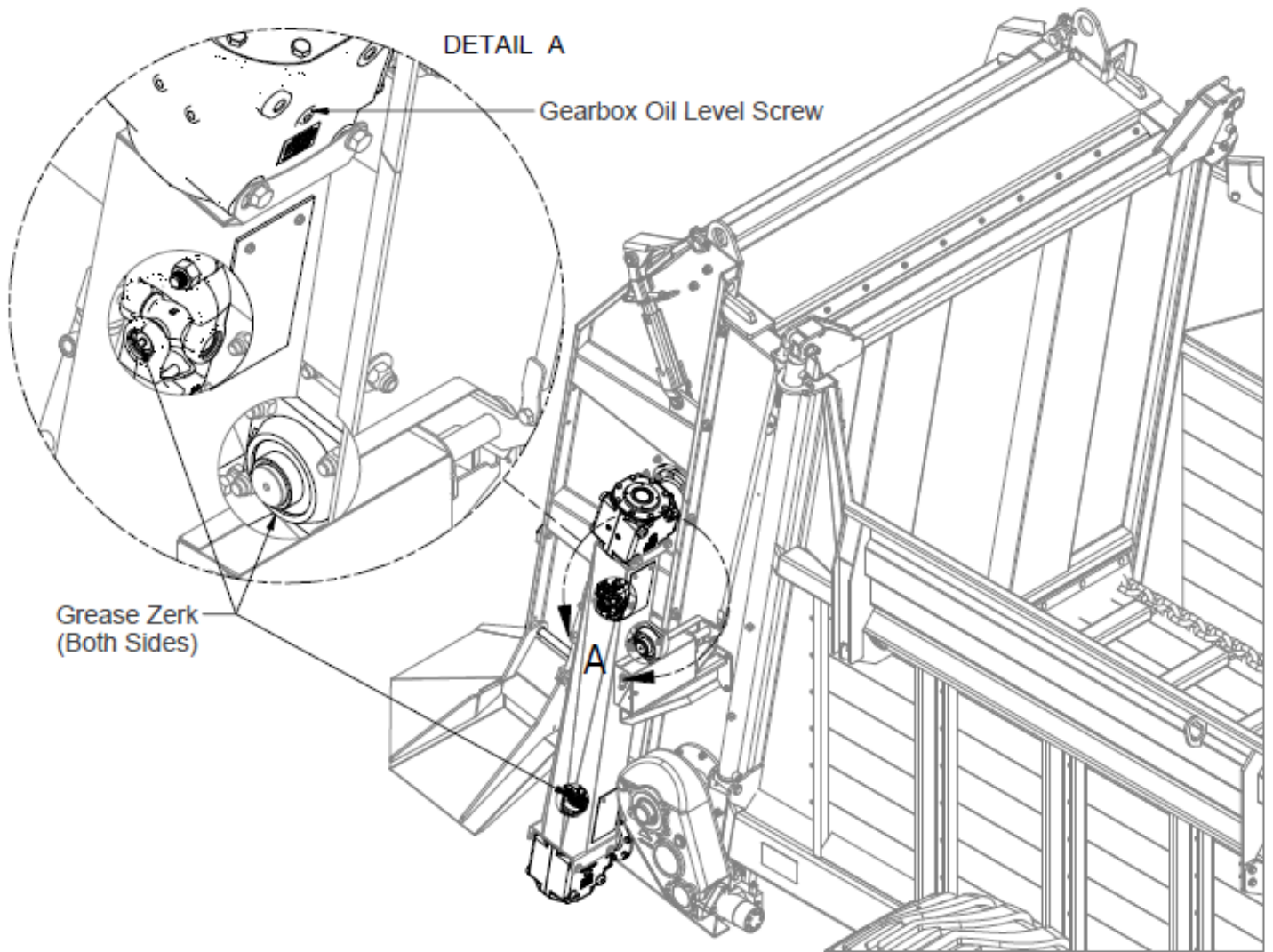




Optional Two Stage Beater Lubrication Points



Optional Two Stage Beater Lubrication Points (750 - 950)



Section 8 - Optional Flow Control

Flow Control Installation

To install a flow control option follow these instructions:

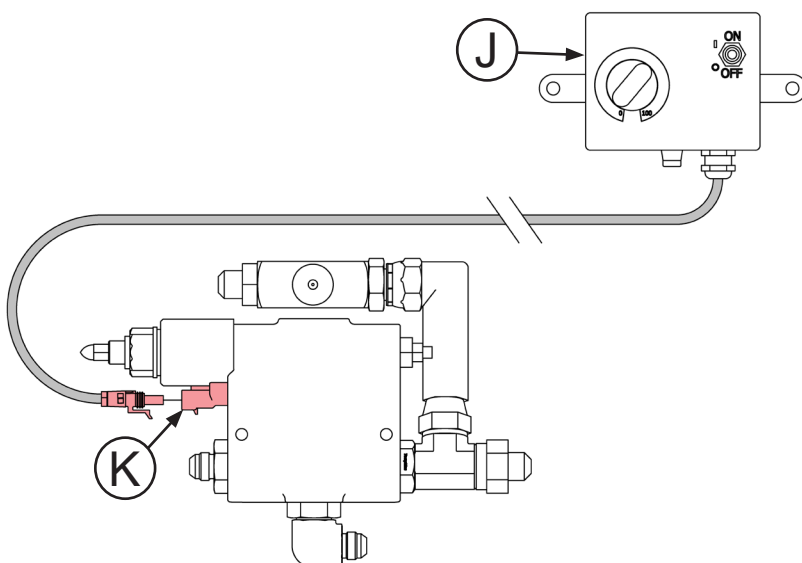
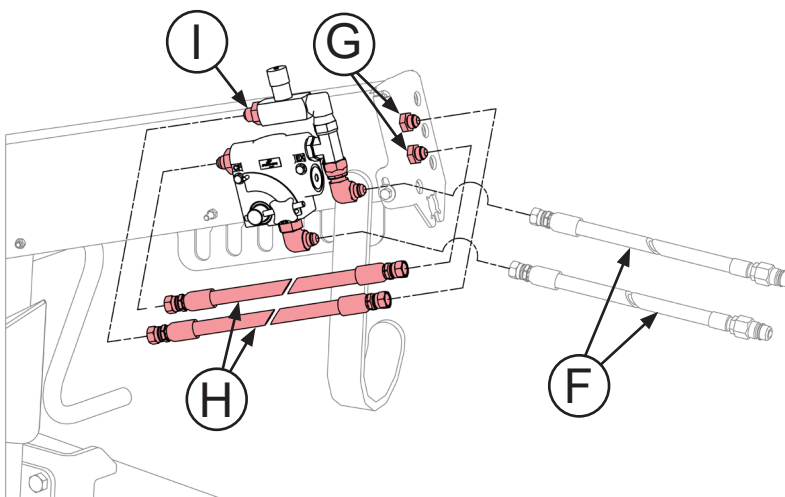
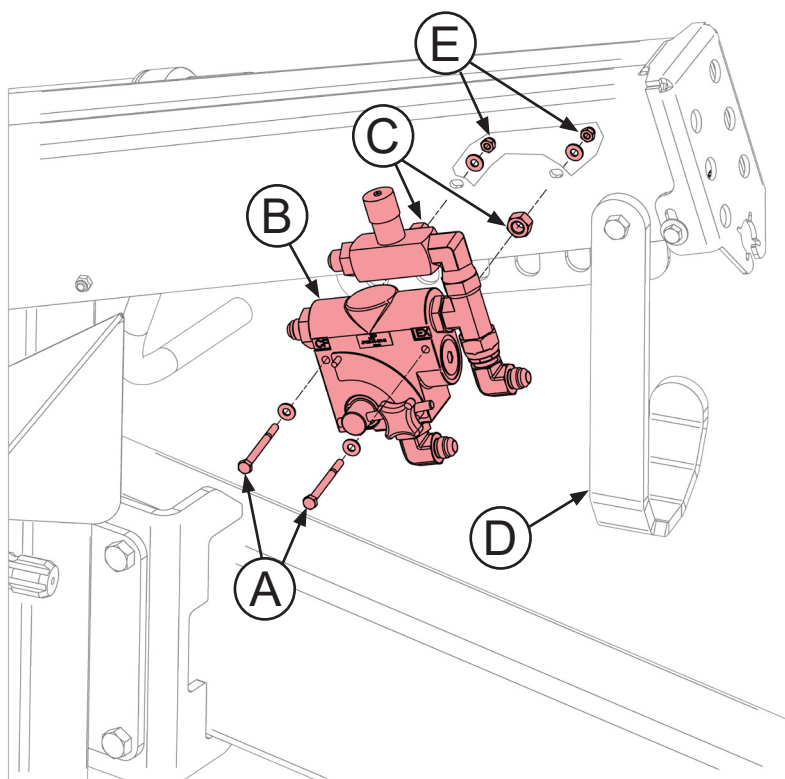
NOTICE: Some older machines may require mounting holes to be drilled out. Place flow control in desired location on right side of hose hanger and center punch holes before drilling.

- Slide the 2 provided 1/4-20 x 3 hex bolts (A) through 1/4" washers and holes in flow control body (B).
- Place the 2 provided 1/2" hex nuts (C) over the bolt ends to act as spacers between the flow control and hose hanger.

NOTICE: Disregarding the spacer nuts may cause interference between the flow control assembly and the PTO holder (D).

- Secure flow control with provided 1/4" flat washers and lock nuts (E).
- Remove 2 existing 30661 hoses (F) from upper right and middle right bulkhead fittings (G) on front of hose hanger.
- Connect 2 existing 30661 hoses to "EX" and "IN" port fittings of flow control.
- Connect 2 provided 37987 hoses (H) to flow control "CF" port fitting and bi-directional flow control hydraulic fitting (I).

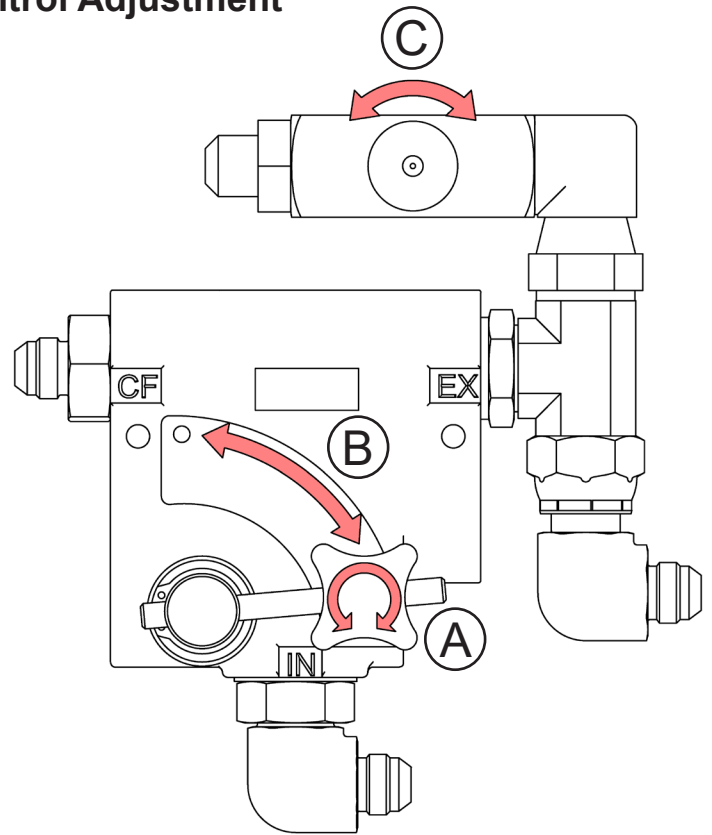
NOTICE: The electric flow control option requires an electric controller (J) installed in power unit cab. Harness must be routed and connected into flow control solenoid plug (K). *Not applicable for manure spreaders with scale systems.*



Manual Flow Control Adjustment

The manual flow control option controls the hydraulic flow to the apron chain gearbox. To change the apron chain speed unscrew flow control lever (A), moving it down to increase speed or up to decrease speed (B).

The bi-directional flow control needle valve (C) stops the apron chain from traveling in reverse if the power unit hydraulic function is switched to reverse while under full load. See [Reversing the Apron Chain, pg.5-4](#) for further instructions.

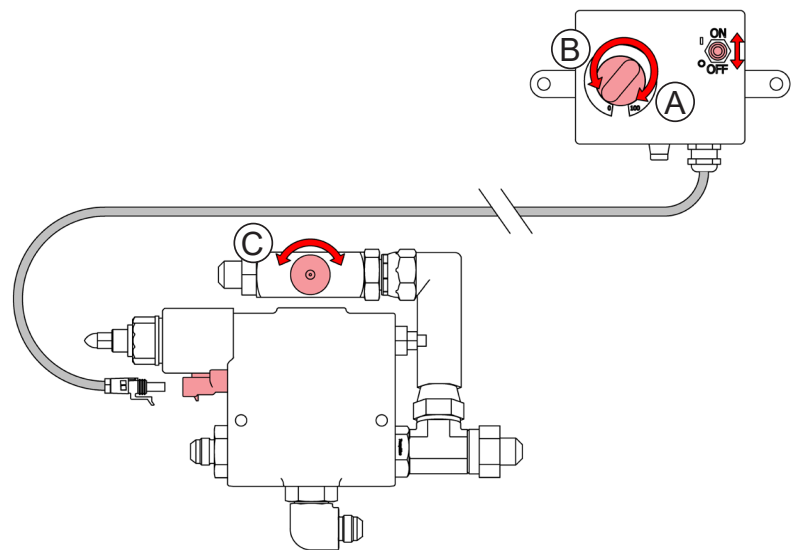


Electric Flow Control Adjustment

The electric flow control option controls the hydraulic flow to the apron chain gearbox. To change the apron chain speed simply use the dial on the flow controller (A), turn it to the right to increase speed or to the left to decrease speed (B).

The bi-directional flow control needle valve (C) has the same function as the manual flow control option.

NOTICE: Nitro manure spreaders equipped with scale options do not require the electronic controller in the power unit cab. The electric flow control harness is instead wired into the scale monitor, which automatically controls the hydraulic flow and apron chain speed.



Optional Flow Control Operation

Tractors without variable hydraulic controls may have a Nitro manure spreader with a manual flow control or electric flow control. These options allow the operator to control the apron chain speed separate from the tractor. The manual flow control can only be controlled from the spreader, while the electric flow control can be controlled from the tractor cab if it's electric flow controller is mounted in the cab.

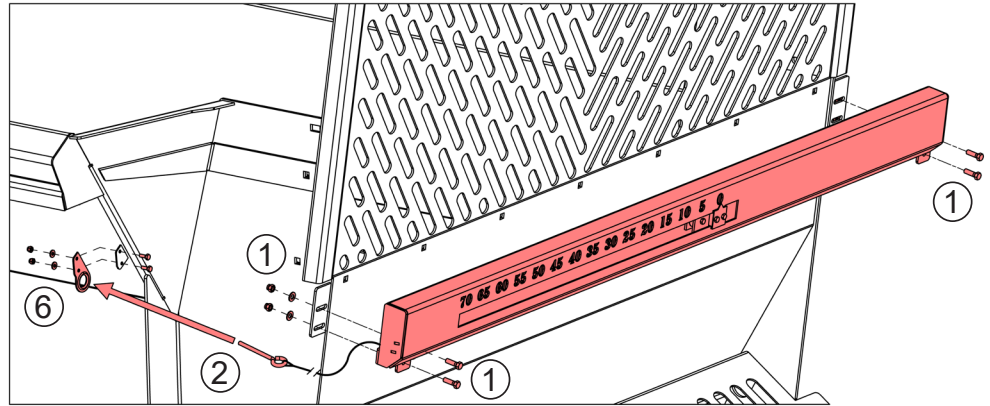
Section 9 - Optional Endgate Indicator

With the optional endgate indicator the operator can see the height at which the endgate is raised. This can be used to apply material at a precise rate.

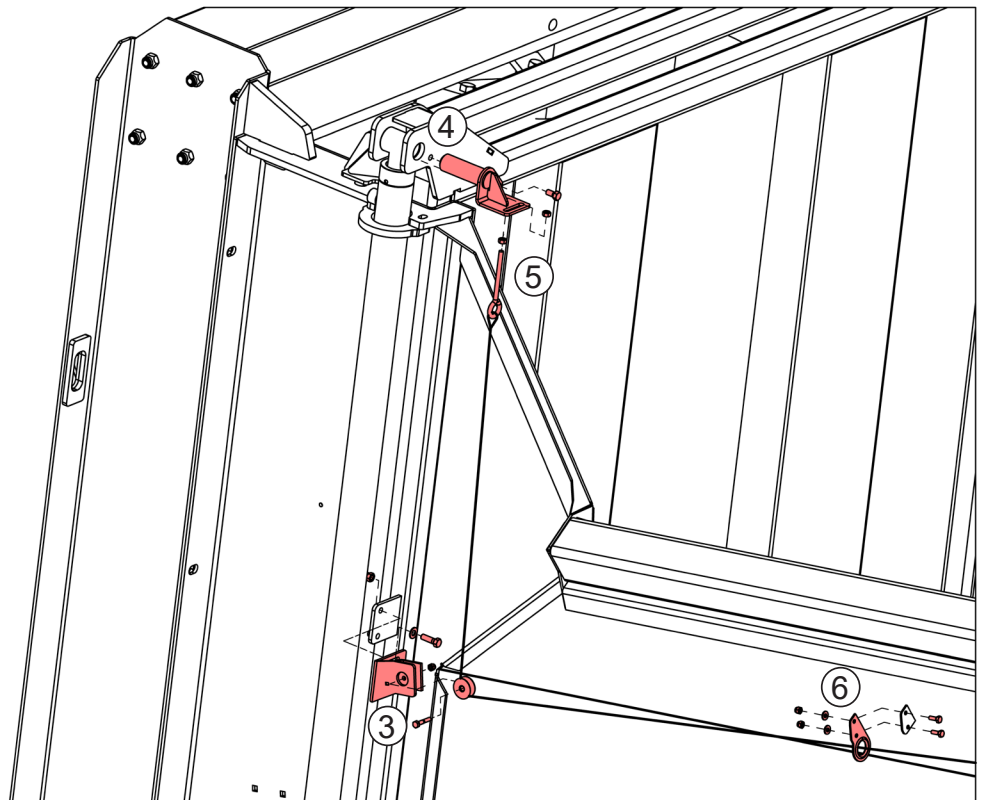
Endgate Indicator Installation

There are several components in this kit requiring installation. Refer to the corresponding section in your parts manual to ensure all parts have been included in the kit.

1. Fasten indicator assembly to front frame tabs with 4 bolts and nuts.
2. Run eyebolt cable end to right rear side of manure spreader.



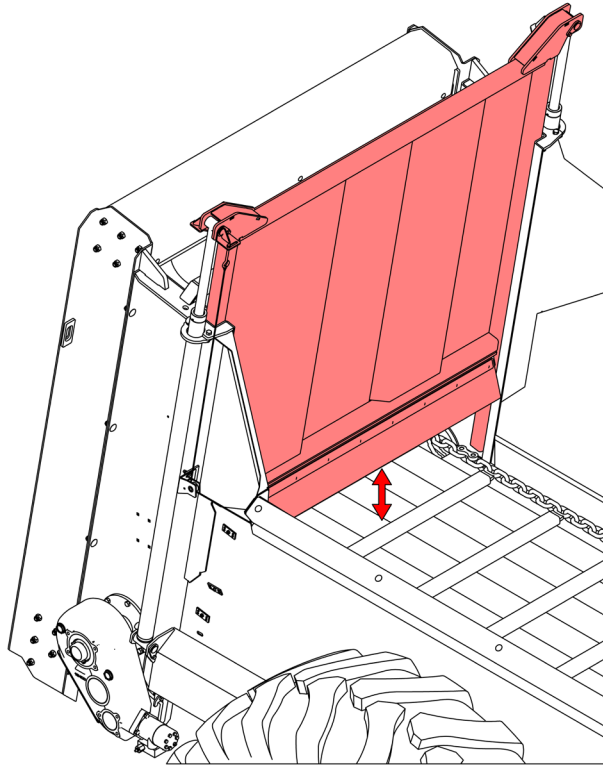
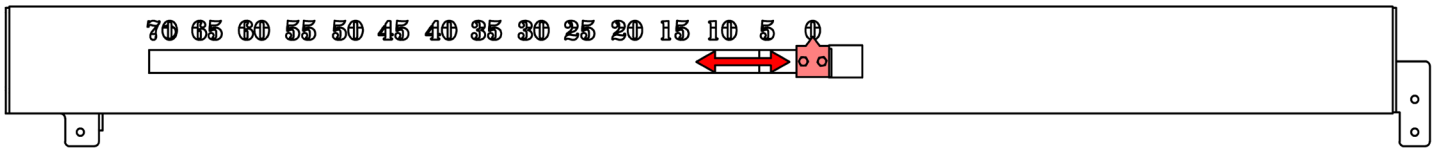
3. Use supplied bolts and nuts to fasten rear pulley assembly to frame tab nearest the endgate cylinder. Pulley needs to be pointed towards front of manure spreader.
4. Replace existing top right endgate cylinder pin with supplied endgate indicator cylinder pin and hex bolt.
5. Fasten eyebolt with supplied hex nuts to endgate cylinder pin. Adjust length of eyebolt to apply tension to cable.
6. Mount cable guides to right side frame tabs using supplied hex bolts and lock nuts.
NOTICE: Number of guides may vary for different manure spreader models.



7. Use tractor hydraulic controls to raise and lower the manure spreader endgate test the function and accuracy of the endgate indicator.
NOTICE: See next page for Operation sequence.












Endgate Indicator Operation

When the rear endgate is raised or lowered, the indicator arrow will move to the number in inches that the endgate is currently opened to.



Torque Values - Imperial

UNIFIED INCH BOLT AND CAP SCREW TORQUE VALUES

SAE Grade and Head Markings	1 or 2 ^b	5	5.1	5.2	8	8.2
	NO MARK 					
SAE Grade and Nut Markings	2	5		8		
	NO MARK 					

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Size	Grade 1				Grade 2 ^b				Grade 5, 5.1, or 5.2				Grade 8 or 8.2			
	Lubricated ^a		Dry ^a		Lubricated ^a		Dry ^a		Lubricated ^a		Dry ^a		Lubricated ^a		Dry ^a	
	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft
1/4	3.7	2.8	4.7	3.5	6	4.5	7.5	5.5	9.5	7	12	9	13.5	10	17	12.5
5/16	7.7	5.5	10	7	12	9	15	11	20	15	25	18	28	21	35	26
3/8	14	10	17	13	22	16	27	20	35	26	44	33	50	36	63	46
7/16	22	16	28	20	35	26	44	32	55	41	70	52	80	58	100	75
1/2	33	25	42	31	53	39	67	50	85	63	110	80	120	90	150	115
9/16	48	36	60	45	75	56	95	70	125	90	155	115	175	130	225	160
5/8	67	50	85	62	105	78	135	100	170	125	215	160	240	175	300	225
3/4	120	87	150	110	190	140	240	175	300	225	375	280	425	310	550	400
7/8	190	140	240	175	190	140	240	175	490	360	625	450	700	500	875	650
1	290	210	360	270	290	210	360	270	725	540	925	675	1050	750	1300	975
1-1/8	400	300	510	375	400	300	510	375	900	675	1150	850	1450	1075	1850	1350
1-1/4	570	425	725	530	570	425	725	530	1300	950	1650	1200	2050	1500	2600	1950
1-3/8	750	550	950	700	750	550	950	700	1700	1250	2150	1550	2700	2000	3400	2550
1-1/2	1000	725	1250	925	990	725	1250	930	2250	1650	2850	2100	3600	2650	4550	3350

DO NOT use these values if a different torque value or tightening procedure is given for a specific application. Torque values listed are for general use only. Check tightness of fasteners periodically.

Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical grade.

Fasteners should be replaced with the same or higher grade. If higher grade fasteners are used, these should only be tightened to the strength of the original.

Make sure fasteners threads are clean and that you properly start thread engagement. This will prevent them from failing when tightening.

Tighten plastic insert or crimped steel-type lock nuts to approximately 50 percent of the dry torque shown in the chart, applied to the nut, not to the bolt head. Tighten toothed or serrated-type lock nuts to the full torque value.

^a "Lubricated" means coated with a lubricant such as engine oil, or fasteners with phosphate and oil coatings. "Dry" means plain or zinc plated without any lubrication.

^b Grade 2 applies for hex cap screws (not hex bolts) up to 152 mm (6-in.) long. Grade 1 applies for hex cap screws over 152 mm (6-in.) long, and for all other types of bolts and screws of any length.

Torque Values - Metric

METRIC BOLT AND CAP SCREW TORQUE VALUES

Property Class and Head Markings	4.8		8.8		9.8		10.9		12.9	
Property Class and Nut Markings	5		10		10		10		12	

Size	Class 4.8				Class 8.8 or 9.8				Class 10.9				Class 12.9			
	Lubricated ^a		Dry ^a		Lubricated ^a		Dry ^a		Lubricated ^a		Dry ^a		Lubricated ^a		Dry ^a	
	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft
M6	4.8	3.5	6	4.5	9	6.5	11	8.5	13	9.5	17	12	15	11.5	19	14.5
M8	12	8.5	15	11	22	16	28	20	32	24	40	30	37	28	47	35
M10	23	17	29	21	43	32	55	40	63	47	80	60	75	55	95	70
M12	40	29	50	37	75	55	95	70	110	80	140	105	130	95	165	120
M14	63	47	80	60	120	88	150	110	175	130	225	165	205	150	260	190
M16	100	73	125	92	190	140	240	175	275	200	350	255	320	240	400	300
M18	135	100	175	125	260	195	330	250	375	275	475	350	440	325	560	410
M20	190	140	240	180	375	275	475	350	530	400	675	500	625	460	800	580
M22	260	190	330	250	510	375	650	475	725	540	925	675	850	625	1075	800
M24	330	250	425	310	650	475	825	600	925	675	1150	850	1075	800	1350	1000
M27	490	360	625	450	950	700	1200	875	1350	1000	1700	1250	1600	1150	2000	1500
M30	675	490	850	625	1300	950	1650	1200	1850	1350	2300	1700	2150	1600	2700	2000
M33	900	675	1150	850	1750	1300	2200	1650	2500	1850	3150	2350	2900	2150	3700	2750
M36	1150	850	1450	1075	2250	1650	2850	2100	3200	2350	4050	3000	3750	2750	4750	3500

DO NOT use these values if a different torque value or tightening procedure is given for a specific application. Torque values listed are for general use only. Check tightness of fasteners periodically.

Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical property class.

Fasteners should be replaced with the same or higher property class. If higher property class fasteners are used, these should only be tightened to the strength of the original.

^a "Lubricated" means coated with a lubricant such as engine oil, or fasteners with phosphate and oil coatings. "Dry" means plain or zinc plated without any lubrication.

Make sure fasteners threads are clean and that you properly start thread engagement. This will prevent them from failing when tightening.

Tighten plastic insert or crimped steel-type lock nuts to approximately 50 percent of the dry torque shown in the chart, applied to the nut, not to the bolt head. Tighten toothed or serrated-type lock nuts to the full torque value.

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