

# 8820 and 8830 Windrower Tractor

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# DIVISION 1

## INDEX

1

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# Section 1001

## INTRODUCTION

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## GENERAL INFORMATION

### To Our Customer

We appreciate your confidence in our farm equipment and thank you for your patronage. In preparing this manual, we hope we have furnished you with a valuable tool for operating and maintaining this fine machine. Use this manual as your guide. Practicing the instructions given here will result in many years of dependable service from your machine.

Your Dealer can give you assistance with parts and specially trained personnel to assist you in repair and maintenance. Call your Dealer if you need any assistance or information.

### Introduction

This service manual has been prepared with the latest service information available at the time of publication. Read the service manual carefully before doing any service on this machine. This manual is one of the most important tools available to the service technician.

"Right" and "Left" as used throughout this manual is determined by facing in the direction the machine will travel when in use.

The photos, illustrations, and data used in this manual were current at the time of printing, but due to possible production changes, your machine can vary slightly. The Manufacturer reserves the right to redesign and change the machine as necessary without notification.



### WARNING:

**Some pictures in this manual show the machine with safety shields removed to allow for a better view of the subject of the picture. The machine should never be operated with any of the safety shields removed.**

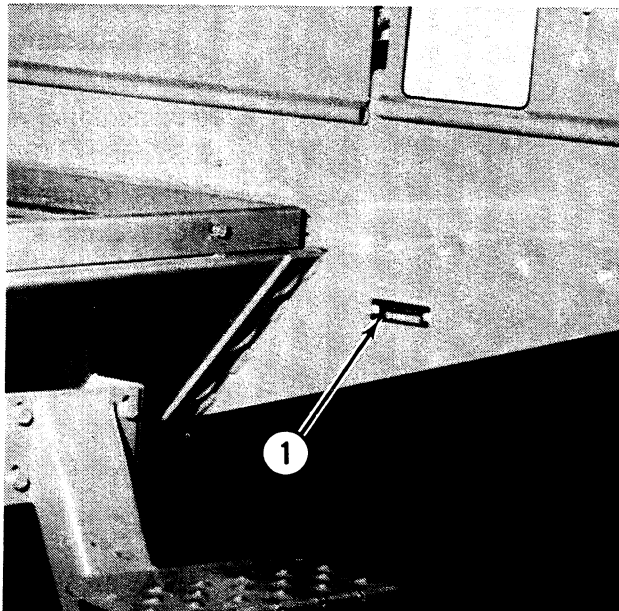
### Tractor Description

In this service manual the 8820 Windrower Tractor is referred to as the Grain Tractor. The 8830 Windrower Tractor is referred to as the Hay Tractor.

### Serial Number Location

The serial number is important information about the machine. You will need the serial number when ordering some replacement parts.

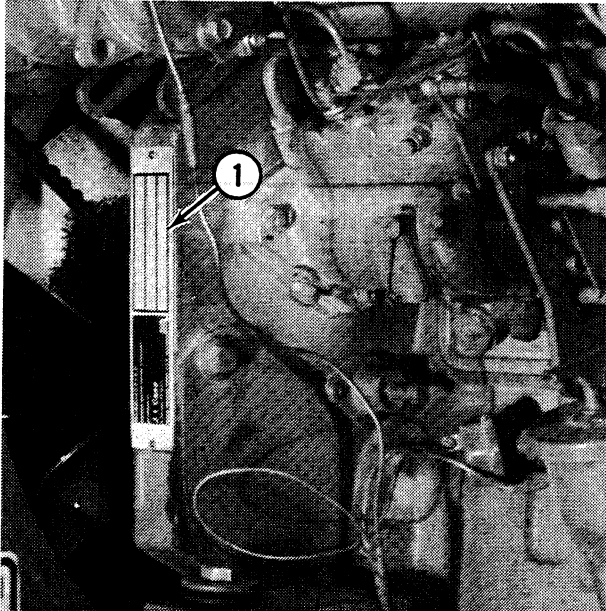
The tractor serial number plate is located on the left side of the tractor mainframe below the operator's platform.



82TR-86143-6

1. Serial Number Location on Tractor

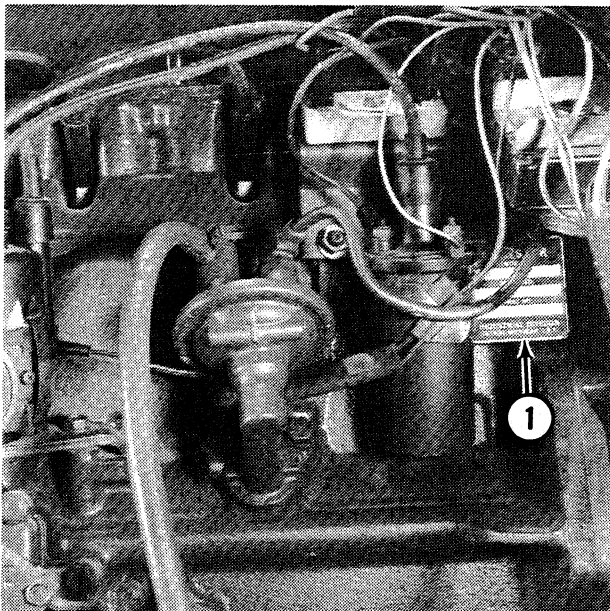
The engine serial number plate for the diesel engine is located on the left side of the engine.



8200-88080-12

1. Serial Number Location on Diesel Engine

The engine serial number plate for gasoline engine is located behind the ignition coil at the front of the engine.



81TR-91045-6

1. Serial Number Location on Gasoline Engine

## Replacement Parts

To obtain prompt, efficient service, always remember to give the dealer the following information:

1. Correct part number description.
2. Model number of the machine.
3. Serial number of the machine.

## U.S. and Metric Units

Measurements are given in U.S. units followed by their equivalent in metric units. Hardware sizes are given in inches for U.S. hardware and millimeters for metric hardware.

## Table of Contents

A Table of Contents is in the front of this manual. The Table of Contents shows the divisions and the sections that are in each division. The individual divisions and sections also have a Table of Contents.

## Page Numbers

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# Section 1002

## SAFETY RULES, GENERAL MACHINE SPECIFICATIONS, AND STANDARD TORQUE SPECIFICATIONS

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## SAFETY RULES

The manufacturer of this product is concerned about your safety and is committed to the prevention of accidents. A major factor in prevention of accidents is safe and proper use of the equipment. Be sure you or anyone who does any maintenance or service work on this machine reads and understands this manual prior to doing any maintenance or service work on this machine.



**This Safety Alert Symbol indicates important safety messages in this manual. When you see this symbol, carefully read the message that follows and be alert to the possibility of personal injury or death.**

**Read and understand all operating instructions and precautions before attempting to operate or service the machine.**

**Caution others, especially children, about climbing on the machine or being too close while machine is operating.**

**Emphasize the importance of safety when working around and operating the machine.**

**Always remain seated and have seat belt fastened while operating machine.**

**Make sure all safety shields are in place before operating the machine.**

**Any time the engine is running and the parking brake is disengaged, the machine will turn if the steering wheel is moved, even though the travel control lever is in neutral.**

**Place all control levers in neutral. Engage parking brake control lever, center and lock steering wheel, and shut off engine before:**

- 1. Leaving the operator's seat**
- 2. Refueling**
- 3. Lubricating**
- 4. Cleaning the reel or hay conditioner**
- 5. Adjusting the machine**

**Never stand behind tractor while the header is running.**

**Do not ride on the machine at any time.**

**Never carry riders.**

**Never operate machine at high speeds in crowded places.**

**Never suddenly reverse wheels to stop or backup.**

**Always lower header to ground when parking.**

**Always apply parking brake when parking.**

**Always travel with header as low as possible.**



**Always remove ignition key when parking machine.**

**Always keep hands, feet and clothing away from moving parts. Never wear loose clothing while operating or servicing the machine.**

**Before doing any maintenance or service work on the tractor or the header you must:**

- Put all controls in NEUTRAL.**
- Apply the parking brake.**
- Lower the header to the floor.**
- Center and lock the steering wheel.**
- Stop the engine.**
- Make sure all moving parts have stopped.**

**Always apply the parking brake and block the wheels before working on or under the machine.**

**Never check or lubricate chains while machine is running.**

**After lubricating, servicing, or adjusting the machine, make sure all tools and equipment have been removed before operating the machine.**

**Always use a piece of cardboard or wood to search for suspected pressurized hydraulic leaks. NEVER use hands; escaping fluid under pressure can penetrate skin.**

**Never adjust, lubricate, or repair machine with engine running.**

**Remove fuel cap slowly. Fuel can be under pressure. Spray can cause injury.**

**Never remove the cap from a hot radiator; escaping steam and hot fluids can cause personal injury.**

**Always jack on solid support and block tires when raising tractor.**

**Do not tow or drive machine with header up and safety stops in safety position.**

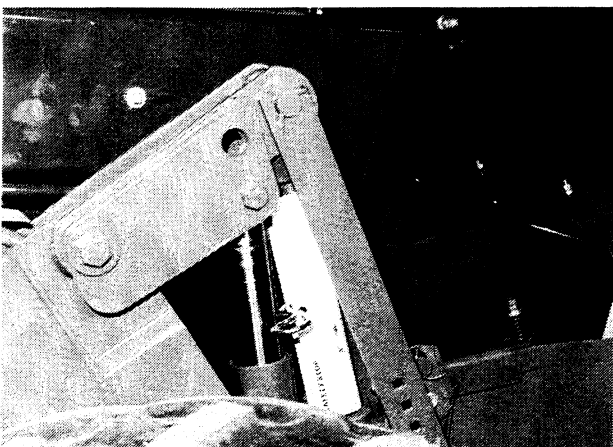
**Always install header safety stops at both ends of the header before working on or under the header. See the following photos.**

### **HAY TRACTOR HEADER SAFETY STOPS - EARLY PRODUCTION**



82TR-87001-4

**HEADER SAFETY STOP IN STORAGE POSITION**



82TR-86138-9

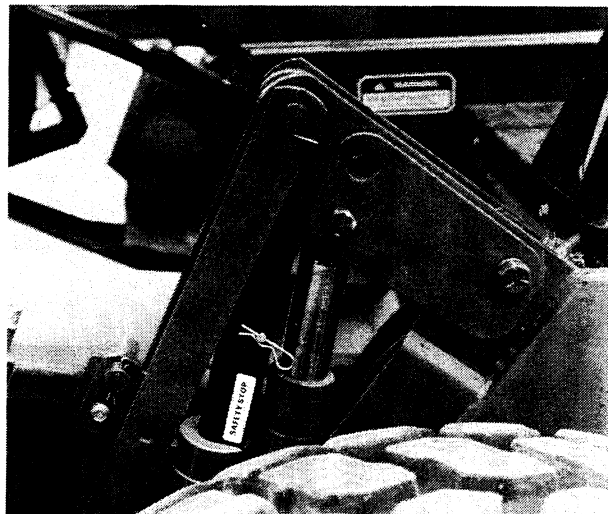
**HEADER SAFETY STOP IN SAFETY POSITION**

### **HAY TRACTOR HEADER SAFETY STOPS - LATE PRODUCTION**



82TR-88073-3

**HEADER SAFETY STOP IN STORAGE POSITION**



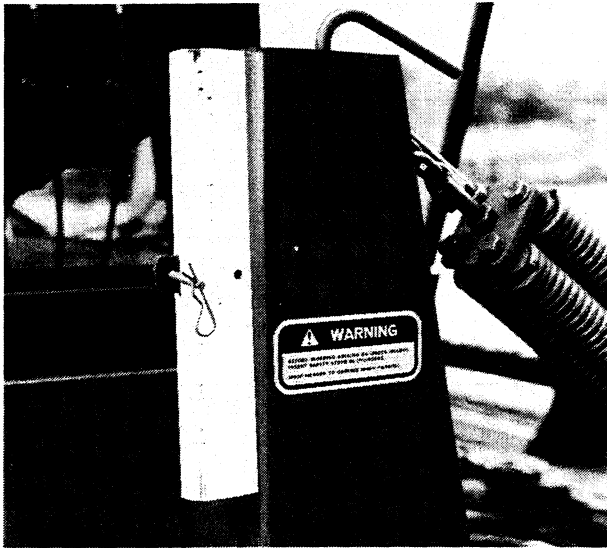
82TR-88073-1

**HEADER SAFETY STOP IN SAFETY POSITION**

**Do not tow or drive machine with header up and safety stops in safety position.**

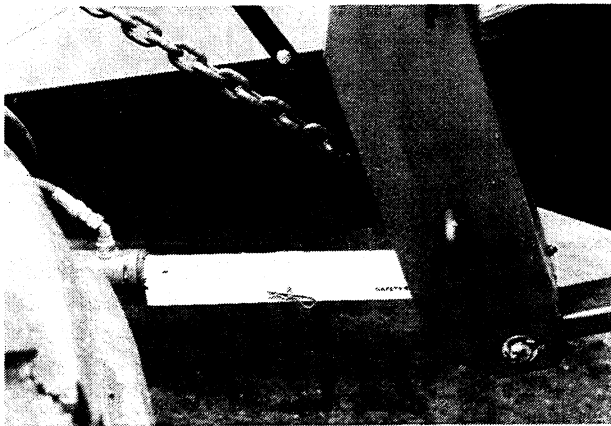
**Always install header safety stops at both ends of the header before working on or under the header. See the following photos.**

## **GRAIN TRACTOR HEADER SAFETY STOPS**



81AH-88063-12

**HEADER SAFETY STOP IN STORAGE POSITION**



81AH-88060-2

**HEADER SAFETY STOP IN SAFETY POSITION**

**BE AWARE** of the transport width and be careful when transporting the machine on narrow roads and across narrow bridges. See General Machine Specifications in this section for overall dimensions.

**Always use ample safety warnings and adequate lights** when transporting the machine on public roads. Be sure the SMV emblem is visible. Check with your local law enforcement agencies for specific requirements.

Decals with “DANGER”, “CAUTION”, “WARNING”, and other information, appear on the machine for your safety. Read the information carefully.

Replace any safety decals that are badly worn or can no longer be read. See Section 1004 for the location of the safety decals.

## GENERAL MACHINE SPECIFICATIONS

### Grain Tractor

#### MACHINE DIMENSIONS

Overall length with auger header .....	242 IN (6146.8 mm)
Height, top of steering wheel .....	98 IN (2489.2 mm)
Height, top of cab .....	121 IN (3073.4 mm)
Overall width (outside of hub to outside of hub) .....	119.6 IN (3037.8 mm)
Overall width	
21.5L x 16.1 flotation tire .....	148.5 IN (3695.7 mm)
Wheel base .....	124 IN (3149.6 mm)
Tread width .....	127.0 IN (3225.8 mm)
Clearance under walking beam .....	36.5 IN (927.1 mm)
Clearance under frame .....	35.4 IN (889.2 mm)
Weight - Diesel with Cab and Air (approximate) .....	5950 LBS (2710 kg)

#### TIRES

Drive wheels	
Standard .....	16.5L- 16.1 bar tread
Optional Flotation .....	21.5L - 16.1
Wheel nuts .....	5/8-18 threads
Torque .....	200 LB-FT (271 N·m)
Rear caster wheels .....	7.60-15 4-ply implement type rib
Wheel bolts .....	9/16-18 threads
Torque .....	110 to 130 LB-FT (149 to 176 N·m)
Tire pressure, all tires .....	20 psi (138 kPa)

#### ENGINE

##### Case IH, 4-390 Diesel Engine

Horsepower .....	75 at 2300 rpm (r/min)
High Idle .....	2500 rpm (r/min)
Displacement .....	238 CU IN (3.9 L)
Oil Type .....	Case IH No. 1 Engine Oil, SAE 15W 40, API CE, CDII/CF-4
Oil Capacity .....	12 U.S. quarts (10.4 L)
Cooling system capacity .....	22 U.S. quarts (20.8 L)
Cooling fan diameter .....	17.7 IN (450 mm)

##### Chrysler, Model H225 Gasoline Engine

Horsepower .....	70 at 2500 rpm (r/min)
High Idle .....	2500 rpm (r/min)
Spark plug .....	Champion RBL-11-Y Mopar 556PR
Displacement .....	225 CU IN (3.7 L)
Oil Type .....	Case IH Low Ash, SAE 30
Oil Capacity .....	6 U.S. quarts (5.2 L)
Cooling system capacity .....	22 U.S. quarts (20.8 L)
Cooling fan diameter .....	19 IN (482.6 mm)

Fuel tank capacity .....	42 U.S. gallons (159 L)
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**ELECTRICAL SYSTEM**

System voltage .....	12 volts
Grounding .....	Negative
Battery Arrangement	
Diesel Engine .....	Two 12 volt batteries
Gasoline Engine .....	One 12 volt battery
Battery minimum cranking capacity at 0°F	
Diesel Engine .....	300 amperes
Gasoline Engine .....	450 amperes
Alternator - diesel engine	
Manufacturer .....	Robert Bosch
Output .....	65 amperes
Alternator - early production gasoline engine	
Manufacturer .....	Motorola
Output .....	72 amperes
Alternator - late production gasoline engine	
Manufacturer .....	Robert Bosch
Output .....	65 amperes

**DRIVE SYSTEM**

Final drive .....	Roller chain
Primary reduction .....	No. 50
Final reduction .....	No. 80
Tandem pump .....	Vickers Model 19
Ground drive motors .....	Vickers fixed displacement motors

**HYDRAULIC SYSTEM**

System capacity .....	12 U.S. gallons (45 L)
Reservoir capacity .....	8.5 U.S. gallons (32 L)
Type of fluid .....	Engine Oil, SAE 15W 40
<i>NOTE: The oil specified for either the diesel or the gasoline engine can be used in hydraulic system. See Engine, Oil Type in this chart for the engine oil specification.</i>	
Type of fluid, alternate .....	Case IH Hy-Tran Plus
<i>NOTE: Hy-Tran Plus can be added to factory installed fluid, but to get the full benefit of the qualities of Hy-Tran Plus a complete oil replacement is required.</i>	
Header and reel lift relief pressure .....	2250 psi (15 514 kPa)

**CAB**

Cab glass .....	Tinted, 63 sq ft (5.9 m <sup>2</sup> )
Steering column .....	5 position tilt
Instrument panel gauges .....	hourmeter, fuel gauge, engine coolant temperature gauge, three function gauge cluster with audible warning

**AIR CONDITIONING**

System size .....	22,000 BTU/hr
Fluid .....	Freon F-12
Capacity .....	4 LBS (2 kg)
Compressor .....	Sankyo SD-508
Displacement .....	8.4 CU IN (138 cm <sup>2</sup> )

**ACCESSORIES**

Lights .....	4 lights front, square halogen 2 working lights, one each side, square halogen 1 light rear, square halogen flashers on header and tractor tail light, turn signals
Rear view mirrors (left hand standard) .....	deluxe
Controls .....	Shape-coded handles

## Hay Tractor

### MACHINE DIMENSIONS

Overall length with auger header .....	242 IN (6146.8 mm)
Height, top of steering wheel .....	94 IN (2837.6 mm)
Height, top of cab .....	117 IN (2971.8 mm)
Overall width (outside of hub to outside of hub) .....	119.6 IN (3037.8 mm)
Overall width	
16.5L x 16.1 standard tire .....	139 IN (3530.6 mm)
21.5L x 16.1 flotation tire .....	148.5 IN (3695.7 mm)
Wheel base .....	124 IN (3149.6 mm)
Tread width	
16.5L x 16.1 standard tire .....	122.6 IN (3530.6 mm)
21.5L x 16.1 flotation tire .....	127.0 IN (3225.8 mm)
Clearance under walking beam .....	30.5 IN (774.7 mm)
Clearance under frame .....	34.4 IN (873.8 mm)
Weight - Diesel with Cab and Air (approximate) .....	5950 LBS (2710 kg)
with 12 FT auger header .....	8740 LBS (4654 kg)
with 14 FT auger header .....	8840 LBS (4767 kg)

### TIRES

Drive wheels	
Standard .....	16.5L - 16.1bar tread
Optional Flotation .....	21.5L - 16.1
Wheel nuts .....	5/8-18 threads
Torque .....	200 LB·FT (271 N·m)
Rear caster wheels .....	7.60-15 4-ply implement type rib
Wheel bolts .....	9/16-18 threads
Torque .....	110 to 130 LB·FT (149 to 176 N·m)
Tire pressure, all tires .....	20 psi (138 kPa)

### ENGINE

#### Case IH, 4-390 Diesel Engine

Horsepower .....	75 at 2300 rpm (r/min)
High Idle .....	2500 rpm (r/min)
Displacement .....	238 CU IN (3.9 L)
Oil Type .....	Case IH No. 1 Engine Oil, SAE 15W 40, API CE, CDII/CF-4
Oil Capacity .....	12 U.S. quarts (10.4 L)
Cooling system capacity .....	22 U.S. quarts (20.8 L)
Cooling fan diameter .....	17.7 IN (450 mm)

#### Chrysler, Model H225 Gasoline Engine

Horsepower .....	70 at 2500 rpm (r/min)
High Idle .....	2500 rpm (r/min)
Displacement .....	225 CU IN (3.7 L)
Spark plug .....	Champion RBL-11-Y Mopar 556PR
Oil Type .....	Case IH Low Ash, SAE 30
Oil Capacity .....	6 U.S. quarts (5.2 L)
Cooling system capacity .....	22 U.S. quarts (20.8 L)
Cooling fan diameter .....	19 IN (482.6 mm)
Fuel tank capacity .....	42 U.S. gallons (159 L)

**ELECTRICAL SYSTEM**

System voltage .....	12 volts
Grounding .....	Negative
<b>Battery Arrangement</b>	
Diesel Engine .....	Two 12 volt batteries
Gasoline Engine .....	One 12 volt battery
<b>Battery minimum cranking capacity at 0°F</b>	
Diesel Engine .....	300 amperes
Gasoline Engine .....	450 amperes
<b>Alternator - diesel engine</b>	
Manufacturer .....	Robert Bosch
Output .....	65 amperes
<b>Alternator - early production gasoline engine</b>	
Manufacturer .....	Motorola
Output .....	72 amperes
<b>Alternator - late production gasoline engine</b>	
Manufacturer .....	Robert Bosch
Output .....	65 amperes

**DRIVE SYSTEM**

Final drive .....	Roller chain
Primary reduction .....	No. 50
Final reduction .....	No. 80
Tandem pump .....	Vickers Model 19
Ground drive motors .....	Vickers fixed displacement motors

**HYDRAULIC SYSTEM**

System capacity .....	12 U.S. gallons (45 L)
Reservoir capacity .....	8.5 U.S. gallons (32 L)
Type of fluid .....	Engine Oil, SAE 15W 40
<i>NOTE: The oil specified for either the diesel or the gasoline engine can be used in hydraulic system. See Engine, Oil Type in this chart for the engine oil specification.</i>	
Type of fluid, alternate .....	Case IH Hy-Tran Plus
<i>NOTE: Hy-Tran Plus can be added to factory installed fluid, but to get the full benefit of the qualities of Hy-Tran Plus a complete oil replacement is required.</i>	
Header lift relief pressure .....	2000 psi (13 790 kPa)

**CAB**

Cab glass .....	Tinted, 63 sq ft (5.9 m <sup>2</sup> )
Steering column .....	5 position tilt
Instrument panel gauges .....	flotation pressure gauge, hourmeter, fuel gauge, engine coolant temperature gauge, three function gauge cluster with audible warning

**AIR CONDITIONING**

System size .....	22,000 BTU/hr
Fluid .....	Freon F-12
Capacity .....	4 LBS (2 kg)
Compressor .....	Sankyo SD-508
Displacement .....	8.4 CU IN (138 cm <sup>3</sup> )


**ACCESSORIES**


Lights .....	4 lights front, square halogen 1 light rear, square halogen flashers on header and tractor tail light, turn signals
Rear view mirrors (left hand standard) .....	deluxe
Controls .....	Shape-coded handles

## STANDARD TORQUE SPECIFICATIONS

### U.S. Standard Hardware

Use the torques in this chart when special torques are not given. These torques apply to fasteners with both UNC and UNF threads as received from suppliers, dry, or when lubricated with engine oil. Not applicable if special graphites, molydisulfide greases, or other extreme pressure lubricants are used.

<b>Grade 5 Bolts, Nuts, and Studs</b>		
		
Size	Pound-Feet (LB·FT)	Newton metres (N·m)
1/4-20	8.4	11
1/4-28	9.7	13
5/16-18	19	24
5/16-24	19	26
3/8-16	31	42
3/8-24	35	47
7/16-14	49	67
7/16-20	55	75
1/2-13	76	105
1/2-20	85	115
9/16-12	110	150
9/16-18	120	165
5/8-11	150	205
5/8-18	170	230
3/4-10	265	360
3/4-16	295	405
7/8-9	430	585
7/8-14	475	640
1-8	645	875
1-12	705	955
1-1/8-7	795	1080
1-1/8-12	890	1210
1-1/4-7	1120	1520
1-1/4-12	1240	1680
1-3/8-6	1470	1990
1-3/8-12	1670	2270
1-1/2-6	1950	2640
1-1/2-12	2190	2970

<b>Grade 8 Bolts, Nuts, and Studs</b>		
		
Size	Pound-Feet (LB·FT)	Newton metres (N·m)
1/4-20	12	16
1/4-28	14	18
5/16-18	25	33
5/16-24	27	37
3/8-16	44	59
3/8-24	49	67
7/16-14	70	95
7/16-20	78	105
1/2-13	105	145
1/2-20	120	165
9/16-12	155	210
9/16-18	170	235
5/8-11	210	285
5/8-18	240	325
3/4-10	375	510
3/4-16	420	570
7/8-9	605	820
7/8-14	670	905
1-8	910	1230
1-12	995	1350
1-1/8-7	1290	1750
1-1/8-12	1440	1960
1-1/4-7	1820	2460
1-1/4-12	2010	2730
1-3/8-6	2380	3230
1-3/8-12	2710	3680
1-1/2-6	3160	4290
1-1/2-12	3560	4820



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