

FP230, FP240 FORAGE HARVESTERS REPAIR MANUAL COMPLETE CONTENTS

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The following pages are the collation of the contents pages from each section and chapter of the FP230, FP240 Repair manual.

The sections used through out all New Holland product Repair manuals may not be used for each product. Each Repair manual will be made up of one or several books. Each book will be labeled as to which sections are in the overall Repair manual and which sections are in each book.

The sections listed above are the sections utilized for the FP230, FP240 Forage Harvesters.

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BOOK 1 - 86900643

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INTRODUCTION

This repair manual provides the technical information needed to properly service New Holland FP230 and FP240 pull type forage harvesters. Use this manual in conjunction with the operator's manual for complete operation, adjustment, and maintenance information.

On New Holland equipment, left and right are determined by standing behind the unit, looking in the direction of travel.

NOTE: *Some photographs in this manual were taken of prototype or previous production models. Current production models may vary in some detail.*

PRECAUTIONARY STATEMENTS

PERSONAL SAFETY

Throughout this manual and on machine decals, you will find precautionary statements (“**DANGER**”, “**WARNING**”, and “**CAUTION**”) followed by specific instructions. These precautions are intended for the personal safety of you and those working with you. Please take the time to read them.

 **DANGER** 

This word “**DANGER**” indicates an immediate hazardous situation that, if not avoided, will result in death or serious injury. The color associated with Danger is RED.

 **WARNING** 

This word “**WARNING**” indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury. The color associated with Warning is ORANGE.

 **CAUTION** 

This word “**CAUTION**” indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices. The color associated with Caution is YELLOW.

FAILURE TO FOLLOW THE “DANGER”, “WARNING”, AND “CAUTION” INSTRUCTIONS MAY RESULT IN SERIOUS BODILY INJURY OR DEATH.

MACHINE SAFETY

The precautionary statement (“**IMPORTANT**”) is followed by specific instructions. This statement is intended for machine safety.

IMPORTANT: *The word “IMPORTANT” is used to inform the reader of something he needs to know to prevent minor machine damage if a certain procedure is not followed.*

INFORMATION

NOTE: *Instructions used to identify and present supplementary information.*

FLUID SAFETY

HANDLE FLUIDS SAFELY

When you work around fuel or other flammable material, do not smoke, work near heaters or other fire hazards.

Do not store flammable material in open containers.

Store flammable fluids away from fire hazards.

Do not incinerate or puncture pressurized containers.

Make sure machine is clean of trash, grease, oil, and debris.

Do not store oily rags; they can ignite and burn spontaneously.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.

AVOID HEATING NEAR PRESSURIZED FLUID LINES

Flammable spray can be generated by heating near pressurized fluid lines, resulting in severe burns to yourself and bystanders.

Do not heat by welding, soldering, or using a torch near pressurized fluid lines.

Pressurized lines can be accidentally cut or damaged when heat goes beyond the immediate flame area.

USE CARE AROUND HIGH-PRESSURE FLUID LINES

Escaping fluid under pressure can penetrate the skin causing serious injury.

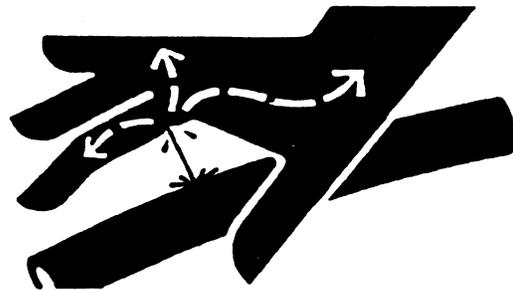
Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines.

Tighten all line connections before applying pressure.

Check for leaks with a piece of cardboard.

Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source.



SAFE SERVICE PROCEDURES

Wear protective clothing.

Do not wear loose clothing.

Wear close fitting clothing.

Wear safety glasses or face shield as required.

Wear other safety equipment appropriate to the job.

Wear earplugs or earmuffs as required.

Use caution when working around moving parts.

Use tools appropriate for the job.

Replace missing or damaged safety decals.

Reinstall all shielding removed for servicing.

Replace any damaged or missing shielding.

⚠ WARNING ⚠

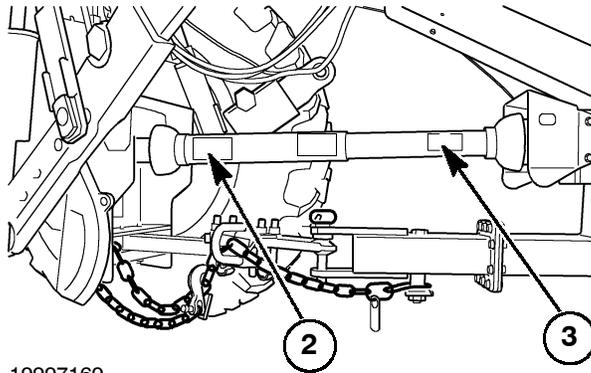
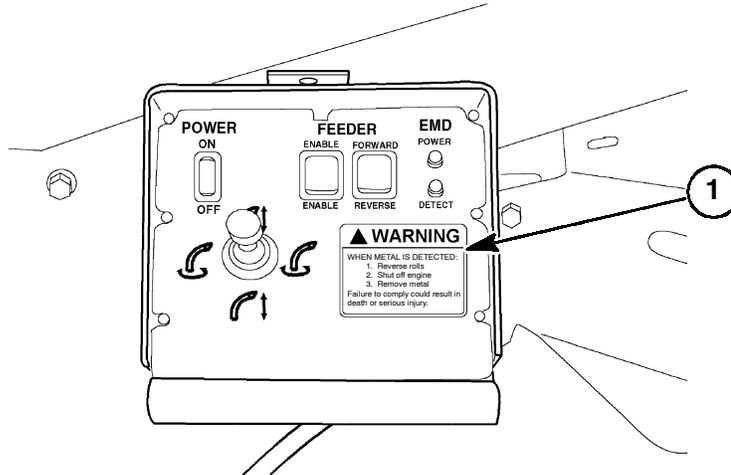
You can help avoid accidents by following these precautions:

1. Do not attempt to lubricate or make any adjustments on the Harvester while it is in motion or if the tractor is running.
2. Allow only one operator on the tractor. Do not permit anyone to ride on the Harvester.
3. Keep all shields in place while the Harvester is in operation. Never operate a PTO machine without the PTO shaft shields in place.
4. If the feeding or cutting areas of the Harvester become plugged, do not attempt to manually unplug or remove any material while the Harvester is in operation or the tractor engine is running.
5. Do not attempt to force material into the Harvester with your feet or hands while it is in operation.
6. After making adjustments, be sure all tools are removed from the Harvester and check the Harvester thoroughly for loose parts or bolts.
7. Be sure the cutterhead has stopped rotating and the tractor engine is shut off before opening the auger, crop processor, cutterhead, and sharpener covers. There are rotating parts under these covers. The parts may continue to rotate after the power is shut off. Look and listen for evidence of rotation. Do not open any covers until all parts have stopped turning.
8. Make all knife adjustments with extreme care. Wear safety goggles when sharpening knives. Be sure the cutterhead cover is closed when sharpening knives.
9. Do not work under the attachment when it is in the raised position unless it is safely blocked.
10. Be sure the brakes are locked before leaving the tractor, and do not disconnect a wagon on an incline without first blocking the wheels.
11. Use the flashing lights and reflectorized signs provided and keep them in good maintenance to help prevent highway accidents.

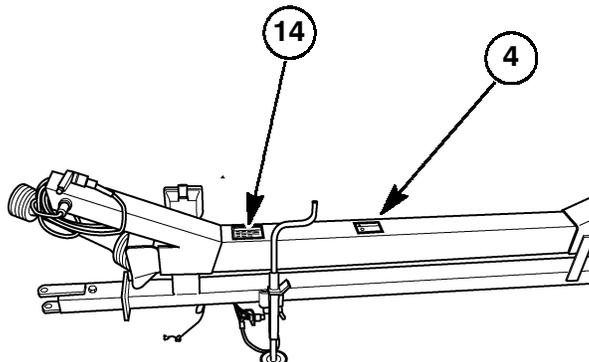
SAFETY DECALS

The following safety decals have been placed on your machine in the areas indicated. They are intended for your personal safety and for those working with you. Please take this manual and walk

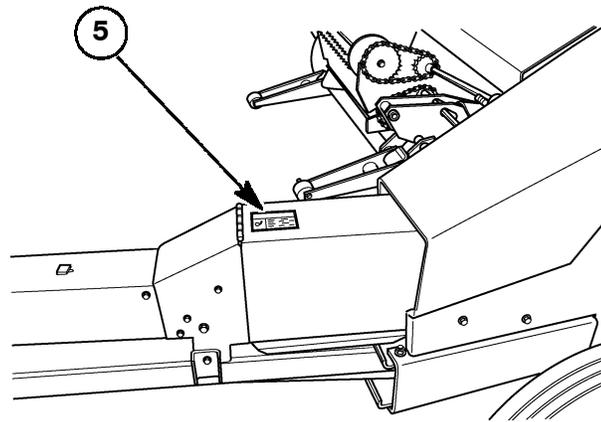
around your machine to note the content and location of these warning signs. Review these warning signs and the operating instructions detailed in this manual with your machine operators.



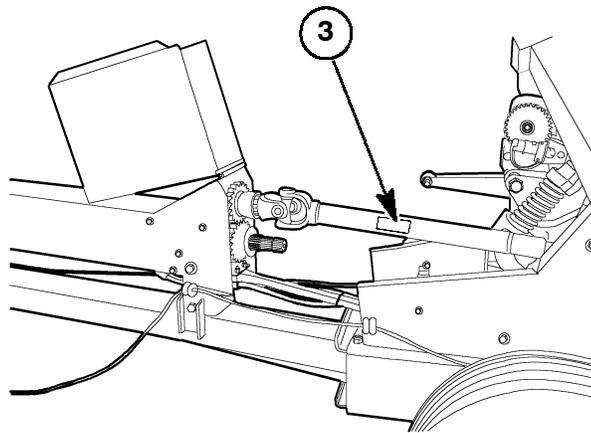
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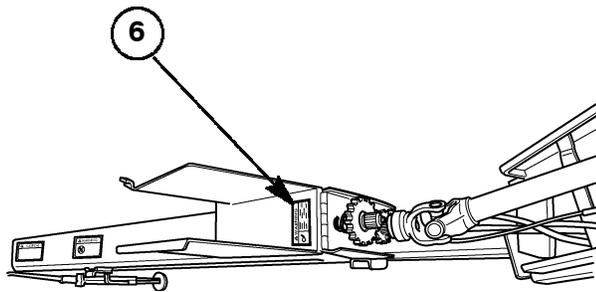
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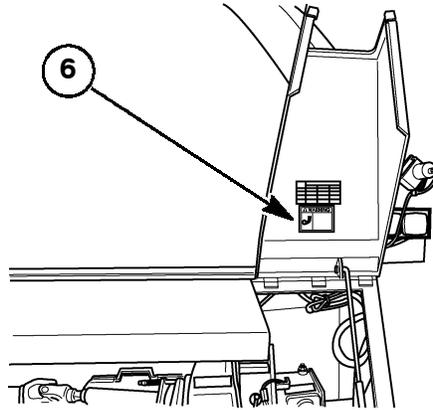
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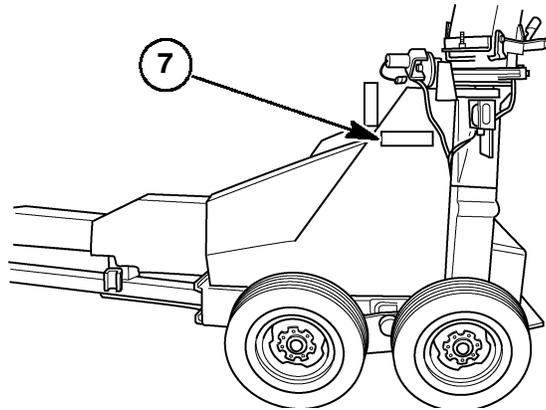
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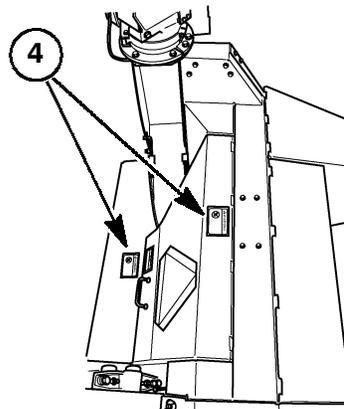
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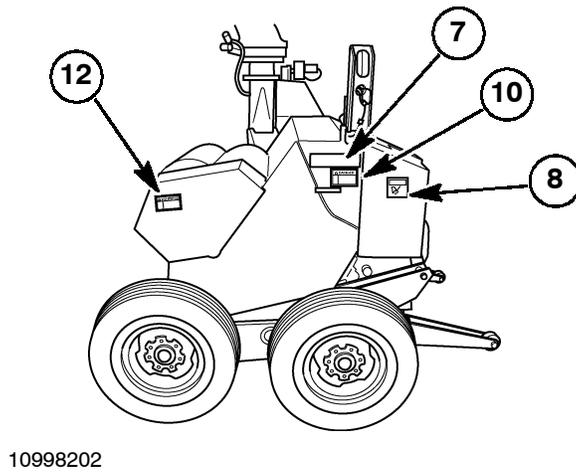
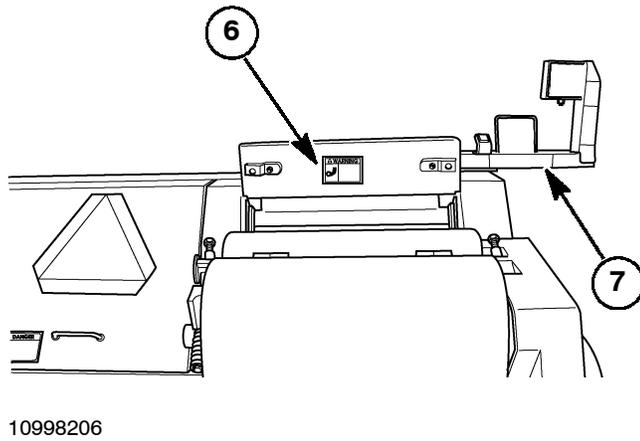
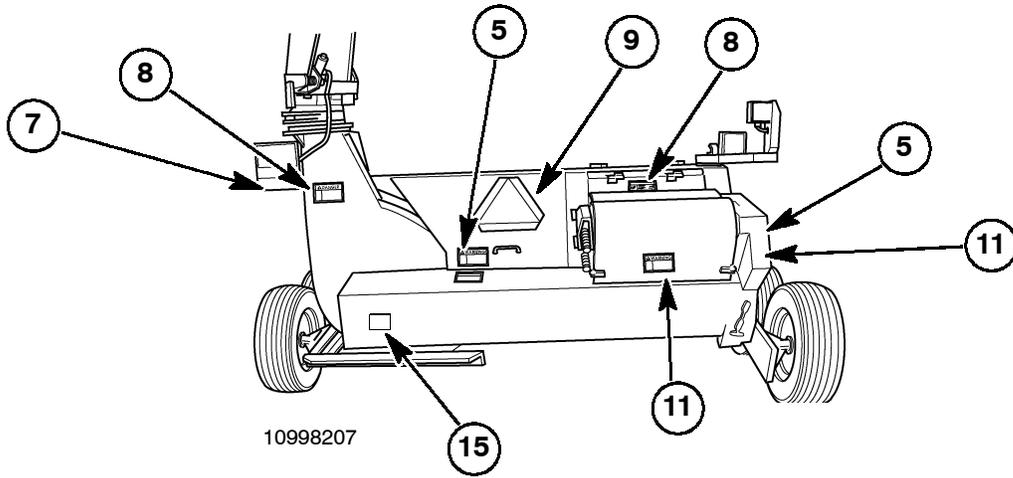
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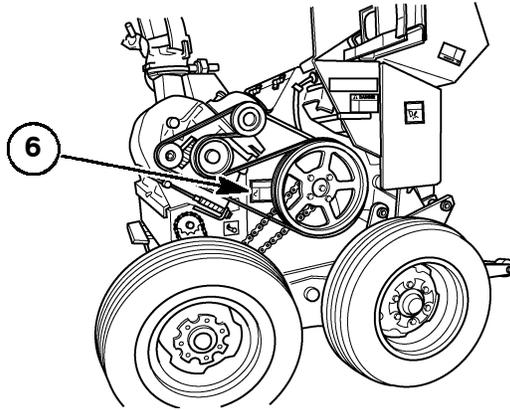


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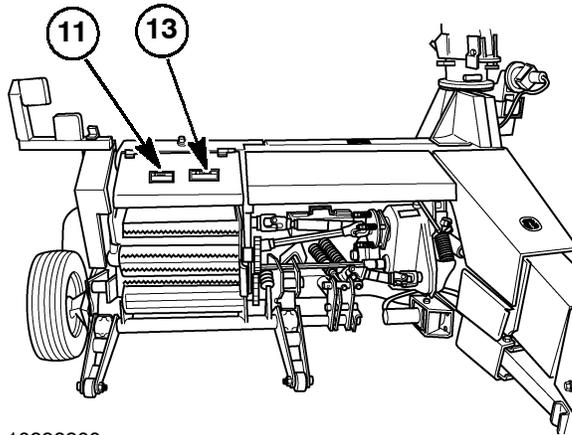


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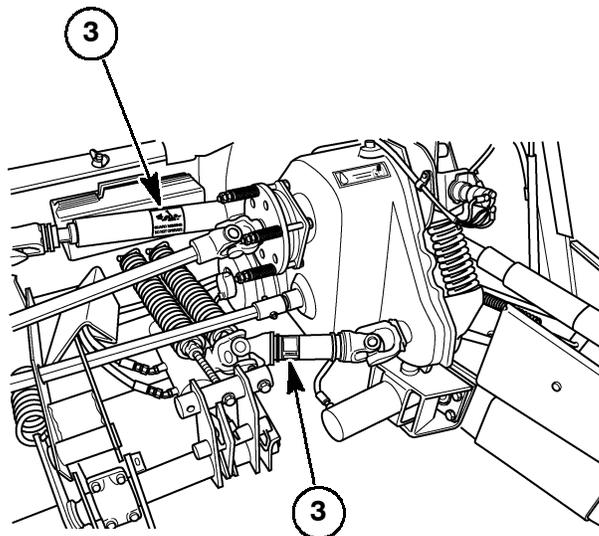




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10998200



10998201

1



WARNING: When metal is detected; reverse the rolls, shut off the engine and remove the metal. Failure to follow the proper procedure could result in death or serious injury.

86629099

2



DANGER: Make sure PTO and shields are properly installed.

849471

3



Alternate

Do not operate until the shield is installed.

3



849472

4



86611825

WARNING: The surface is not intended as a personnel platform. Individuals may slip and fall causing serious injury or machine damage.

5



9826789

WARNING: To prevent serious injury, DO NOT operate with the driveline shield open.

6



86626959

WARNING: Do not operate with the shield open or serious injury could result.

7



Yellow Reflective Tape

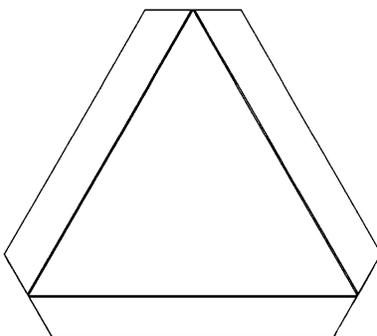
8



86630943

WARNING: Rotating parts under cover continue rotating. Serious injury could result.

9



Slow-moving vehicle sign

10



86574289

DANGER: Shields must be closed before sharpening or serious injury could result.

11



9806448

DANGER: Do not feed material into the machine by hand. Serious injury will result.

12



86531884

WARNING: Do not open cover while operating. Serious injury could result.

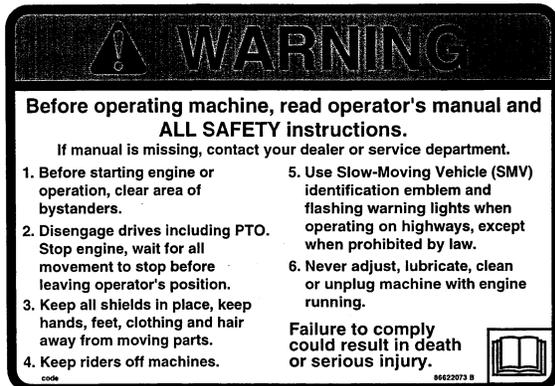
13



86631200

DANGER: Wait for all moving parts to stop before locating detected metal.

14



86622073

WARNING: Read the operators manual and all safety instructions before operating the machine.

15



86630717

WARNING: Do not tow equipment behind harvester on road.

TECHNICAL INFORMATION

HARDWARE

GENERAL

The Model FP230 and FP240 forage harvesters have been built using inch hardware.

NOTE: *Be sure to use the hardware specified when using tapped holes, as trying to install a metric bolt in an inch thread, or an inch bolt in a metric thread, will damage the thread.*

Certain hardware must be tightened to specific torque specifications. If specific torque specifications are not noted, tighten the hardware to the standard torque chart specification listed in this manual.

PLATING

Hardware used on New Holland brand equipment is plated with zinc chromate (gold color). Gold colored hardware has different torquing requirements from unplated or zinc plated (silver color) hardware because of the difference in the coefficient of friction of the plating material. The torque charts in this manual list the correct specifications for gold, silver, and unplated bolts.

NUT TIGHTENING

Whenever possible, the nut should be tightened, not the head of the bolt. When tightening using the bolt head, the clamp load can be lost because some of the torque applied twists the bolt instead of tensioning (stretching) it. The tension on the bolt is what holds the joint together.

Approximately 90% of the torque applied during assembly goes to overcoming friction between the parts. The other 10% is used to tension (stretch) the bolt. After assembly, the frictional forces disappear, which is the basis for the saying "If it does not fail during assembly, it will not fail in service." The bolt may later fail due to other factors, but not from being over tightened.

LOCKNUTS

Most locknuts are coated with a special lubricant that is dry to the touch. Anytime a locknut is used, a lower than normal torque is required. Refer to the torque charts in this manual for specific values.

JAM NUTS

When using a jam nut to lock a regular nut, the jam nut should be installed first and tightened to one half the recommended torque, then held in place while installing a regular nut to the recommended torque.

THREAD LUBRICATION

The addition of antiseize compound, Molykote, oil, graphite, or any other lubricant to a bolt decreases the friction between it and a nut. This makes it necessary to reduce the recommended torque to prevent over tensioning of the bolt. When using the torque charts in this manual, decrease the value by 20% whenever a lubricant is used.

MINIMUM HARDWARE TIGHTENING TORQUES

IN FOOT POUNDS (NEWTON-METERS) FOR NORMAL ASSEMBLY APPLICATIONS

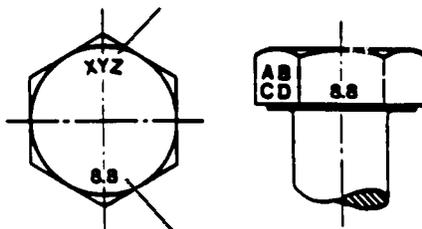
METRIC HARDWARE AND LOCKNUTS

NOMINAL SIZE	CLASS 5.8		CLASS 8.8		CLASS 10.9		LOCKNUT CL.8 W/CL8.8 BOLT
	UNPLATED	PLATED W/ZnCr	UNPLATED	PLATED W/ZnCr	UNPLATED	PLATED W/ZnCr	
M4	15* (1.7)	19* (2.2)	23* (2.6)	30* (3.4)	33* (3.7)	42* (4.8)	16* (1.8)
M6	51* (5.8)	67* (7.6)	79* (8.9)	102* (12)	115* (13)	150* (17)	56* (6.3)
M8	124* (14)	159* (18)	195* (22)	248* (28)	274* (31)	354* (40)	133* (15)
M10	21 (28)	27 (36)	32 (43)	41 (56)	45 (61)	58 (79)	22 (30)
M12	36 (49)	46 (63)	55 (75)	72 (97)	79 (107)	102 (138)	39 (53)
M16	89 (121)	117 (158)	137 (186)	177 (240)	196 (266)	254 (344)	97 (131)
M20	175 (237)	226 (307)	277 (375)	358 (485)	383 (519)	495 (671)	195 (265)
M24	303 (411)	392 (531)	478 (648)	619 (839)	662 (897)	855 (1160)	338 (458)

NOTE: Torque values shown with * are inch pounds.

IDENTIFICATION HEX CAP SCREW AND CARRIAGE BOLTS CLASSES 5.6 AND UP

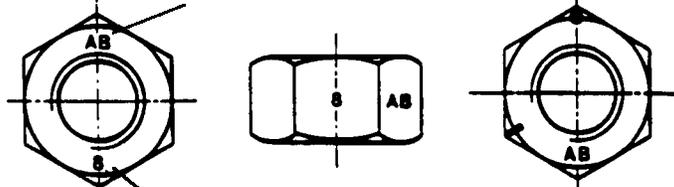
MANUFACTURER'S IDENTIFICATION



PROPERTY CLASS

HEX NUTS AND LOCKNUTS CLASSES 05 AND UP

MANUFACTURER'S IDENTIFICATION



PROPERTY CLASS

CLOCK MARKING

MINIMUM HARDWARE TIGHTENING TORQUES

IN FOOT POUNDS (NEWTON-METERS) FOR NORMAL ASSEMBLY APPLICATIONS

INCH HARDWARE AND LOCKNUTS

NOMINAL SIZE	SAE GRADE 2		SAE GRADE 5		SAE GRADE 8		LOCKNUTS		NOMINAL SIZE
	UNPLATED or PLATED SILVER	PLATED W/ZnCr GOLD	UNPLATED or PLATED SILVER	PLATED W/ZnCr GOLD	UNPLATED or PLATED SILVER	PLATED W/ZnCr GOLD	GR.B w/GR5 BOLT	GR.C w/GR8 BOLT	
1/4	55* (6.2)	72* (8.1)	86* (9.7)	112* (13)	121* (14)	157* (18)	61* (6.9)	86* (9.8)	1/4
5/16	115* (13)	149* (17)	178* (20)	229* (26)	250* (28)	324* (37)	125* (14)	176* (20)	5/16
3/8	17 (23)	22 (30)	26 (35)	34 (46)	37 (50)	48 (65)	19 (26)	26 (35)	3/8
7/16	27 (37)	35 (47)	42 (57)	54 (73)	59 (80)	77 (104)	30 (41)	42 (57)	7/16
1/2	42 (57)	54 (73)	64 (87)	83 (113)	91 (123)	117 (159)	45 (61)	64 (88)	1/2
9/16	60 (81)	77 (104)	92 (125)	120 (163)	130 (176)	169 (229)	65 (88)	92 (125)	9/16
5/8	83 (112)	107 (145)	128 (174)	165 (224)	180 (244)	233 (316)	90 (122)	127 (172)	5/8
3/4	146 (198)	189 (256)	226 (306)	293 (397)	319 (432)	413 (560)	160 (217)	226 (306)	3/4
7/8	142 (193)	183 (248)	365 (495)	473 (641)	515 (698)	667 (904)	258 (350)	364 (494)	7/8
1	213 (289)	275 (373)	547 (742)	708 (960)	773 (1048)	1000 (1356)	386 (523)	545 (739)	1

NOTE: Torque values shown with * are inch pounds.

IDENTIFICATION CAP SCREWS AND CARRIAGE BOLTS



LOCKNUTS

