

SRI30 / SRI60 / SRI75 / SVI85
SR220 / SR250 / SV250 / SV300
Tier 4
Alpha Series Skid Steer Loader

TR320 / TV380
Tier 4
Alpha Series Compact Track Loader

SERVICE MANUAL

Part number 47465734

English

June 2013

Replaces part number 84581792

CASE
CONSTRUCTION

Link Product / Engine

| Product | Market Product | Engine |
|----------------------|-----------------------|----------------|
| TR320 [NCM440597 -] | North America | F5HFL413L*A001 |
| TV380 [NCM450857 -] | North America | F5HFL413L*A001 |
| SR130 [NDM442151 -] | North America | N844L-F-36SL |
| SR160 | North America | N844LT-F-45SL |
| SR175 [NDM465633 -] | North America | N4LDI-TA-50SL |
| SR220 [NDM457559 -] | North America | F5HFL413H*A001 |
| SR250 [NCM442784 -] | North America | F5HFL413L*A001 |
| SV185 [NDM466611 -] | North America | N4LDI-TA-45SL |
| SV250 [NDM460776 -] | North America | F5HFL413H*A001 |
| SV300 [NCM445399 -] | North America | F5HFL413L*A001 |

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**Have any questions please write to me:
admin@servicemanualperfect.com**

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INTRODUCTION

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Foreword - Ecology and the environment

SR130, SR175, SV185, SR220, SR250, SV250, SV300, SR160 NA, TR320, TV380

Soil, air, and water are vital factors of agriculture and life in general. When legislation does not yet rule the treatment of some of the substances required by advanced technology, sound judgment should govern the use and disposal of products of a chemical and petrochemical nature.

NOTE: *The following are recommendations that may be of assistance:*

- Become acquainted with and ensure that you understand the relative legislation applicable to your country.
- Where no legislation exists, obtain information from suppliers of oils, filters, batteries, fuels, antifreeze, cleaning agents, etc., with regard to their effect on man and nature and how to safely store, use, and dispose of these substances.
- Agricultural consultants will, in many cases, be able to help you as well.

Helpful hints

- Avoid filling tanks using cans or inappropriate pressurized fuel delivery systems that may cause considerable spillage.
- In general, avoid skin contact with all fuels, oils, acids, solvents, etc. Most of them contain substances that may be harmful to your health.
- Modern oils contain additives. Do not burn contaminated fuels and or waste oils in ordinary heating systems.
- Avoid spillage when draining off used engine coolant mixtures, engine, gearbox and hydraulic oils, brake fluids, etc. Do not mix drained brake fluids or fuels with lubricants. Store them safely until they can be disposed of in a proper way to comply with local legislation and available resources.
- Modern coolant mixtures, i.e. antifreeze and other additives, should be replaced every two years. They should not be allowed to get into the soil, but should be collected and disposed of properly.
- Do not open the air-conditioning system yourself. It contains gases that should not be released into the atmosphere. Your CASE CONSTRUCTION dealer or air conditioning specialist has a special extractor for this purpose and will have to recharge the system properly.
- Repair any leaks or defects in the engine cooling or hydraulic system immediately.
- Do not increase the pressure in a pressurized circuit as this may lead to a component failure.
- Protect hoses during welding as penetrating weld splatter may burn a hole or weaken them, allowing the loss of oils, coolant, etc.

Safety rules

SR130, SR175, SV185, SR220, SR250, SV250, SV300, SR160, TR320, TV380


Personal safety





This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible death or injury.

Throughout this manual and on machine decals, you will find the signal words DANGER, WARNING, and CAUTION followed by special instructions. These precautions are intended for the personal safety of you and those working with you.

Read and understand all the safety messages in this manual before you operate or service the machine.

 **DANGER** indicates a hazardous situation which, if not avoided, will result in death or serious injury. The color associated with DANGER is RED.

 **WARNING** indicates a hazardous situation which, if not avoided, could result in death or serious injury. The color associated with WARNING is ORANGE.

 **CAUTION**, used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury. The color associated with CAUTION is YELLOW.

FAILURE TO FOLLOW DANGER, WARNING, AND CAUTION MESSAGES COULD RESULT IN DEATH OR SERIOUS INJURY.

Machine safety

NOTICE: Notice indicates a situation which, if not avoided, could result in machine or property damage. The color associated with Notice is BLUE.

Throughout this manual you will find the signal word Notice followed by special instructions to prevent machine or property damage. The word Notice is used to address practices not related to personal safety.

Information

NOTE: Note indicates additional information which clarifies steps, procedures, or other information in this manual.

Throughout this manual you will find the word Note followed by additional information about a step, procedure, or other information in the manual. The word Note is not intended to address personal safety or property damage.

Safety rules - Personal safety

SR130, SR175, SV185, SR220, SR250, SV250, SV300, SR160, TR320, TV380

Carefully study these precautions, and those included in the external attachment operators manual, and insist that they be followed by those working with and for you.

1. Thoroughly read and understand this manual and the attachment Operator's Manual before operating this or any other equipment.
2. Be sure all people and pets are clear of the machine before starting. Sound the horn, if equipped, three times before starting engine.
3. Only the operator should be on the machine when in operation. Never allow anyone to climb on to the machine while it is in motion. If the machine is equipped with an Instructors Seat, this must only be used for training purposes. Passengers must not be allowed to use the Instructors Seat.
4. Keep all shields in place. Never work around the machine or any of the attachments while wearing loose clothing that might catch on moving parts.
5. Observe the following precautions whenever lubricating the machine or making adjustments.
 - Disengage all clutching levers or switches.
 - Lower the attachment, if equipped, to the ground or raise the attachment completely and engage the cylinder safety locks. Completing these actions will prevent the attachment from lowering unexpectedly.
 - Engage the parking brake.
 - Shut off the engine and remove the key.
 - Wait for all machine movement to stop before leaving the operators platform.
6. Always keep the machine in gear while travelling downhill.
7. The machine should always be equipped with sufficient front or rear axle weight for safe operation.
8. Under some field conditions, more weight may be required at the front or rear axle for adequate stability. This is especially important when operating in hilly conditions or/when using heavy attachments.
9. Always lower the attachment, shut off the engine, set the parking brake, engage the transmission gears, remove the key and wait for all machine movement to stop before leaving the operators platform.
10. If the attachment or machine should become obstructed or plugged; set the parking brake, shut off the engine and remove the key, engage the transmission gears, wait for all machine or attachment motion to come to a stop, before leaving the operators platform to removing the obstruction or plug.
11. Never disconnect or make any adjustments to the hydraulic system unless the machine and/or the attachment is lowered to the ground or the safety lock(s) is in the engaged position.
12. Use of the flashing lights is highly recommended when operating on a public road.
13. When transporting on a road or highway, use accessory lights and devices for adequate warning to the operators of other vehicles. In this regard, check local government regulations. Various safety lights and devices are available from your CASE CONSTRUCTION dealer.
14. Practice safety 365 days a year.
15. Keep all your equipment in safe operating condition.
16. Keep all guards and safety devices in place.
17. Always set the parking brake, shut off the engine and remove the key, engage the transmission gears, wait for all machine or attachment motion to come to a stop, before leaving the operators platform to service the machine and attachment.
18. Remember: A careful operator is the best insurance against an accident.
19. Extreme care should be taken in keeping hands and clothing away from moving parts.

Safety rules

SR130, SR175, SV185, SR220, SR250, SV250, SV300, SR160, TR320, TV380

⚠ WARNING

Maintenance hazard!
Before you start servicing the machine, attach a DO NOT OPERATE warning tag to the machine in a visible area.
Failure to comply could result in death or serious injury.

W0004A

Attach a DO NOT OPERATE (TAG) to the machine in an area that is clearly visible whenever the machine is not operating properly and/or requires service.
 Complete the tag information for the "REASON" the tag is attached by describing the malfunction or service required. Validate the reason for attaching the tag by signing your name in the designated area on the tag.
 The tag should only be removed by the person who signed and attached the tag, after validating the repairs or services have been completed.



Tag Components

- A. DO NOT REMOVE THIS TAG! - (Warning) The tag should only be removed by the person who signed and attached the tag, after validating the repairs or services have been completed.
- B. See Other Side - (Reference to additional information on opposite side of the tag.)
- C. CNH Part Number - (Request this part number from you Service Parts Dealer to obtain this DO NOT OPERATE tag.)
- D. DO NOT OPERATE - (Warning!)
- E. REASON - (Area for describing malfunction or service required before operation.)
- F. Signed by - (Signature area - to be signed by the person validating the reason for installation of the tag.)

Safety rules

SR130, SR175, SV185, SR220, SR250, SV250, SV300, SR160, TR320, TV380

**CALIFORNIA
PROPOSITION 65 WARNING**

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

Battery post, terminals and related accessories contain lead and lead compounds.

Wash hands after handling

BT09A213 1

Basic instructions - Important notice regarding equipment servicing

SR130, SR175, SV185, SR220, SR250, SV250, SV300, SR160 NA, TR320, TV380

All repair and maintenance work listed in this manual must be carried out only by qualified dealership personnel, strictly complying with the instructions given, and using, whenever possible, the special tools.

Anyone who performs repair and maintenance operations without complying with the procedures provided herein shall be responsible for any subsequent damages.

The manufacturer and all the organizations of its distribution chain, including - without limitation - national, regional, or local dealers, reject any responsibility for damages caused by parts and/or components not approved by the manufacturer, including those used for the servicing or repair of the product manufactured or marketed by the manufacturer. In any case, no warranty is given or attributed on the product manufactured or marketed by the manufacturer in case of damages caused by parts and/or components not approved by the manufacturer.

The information in this manual is up-to-date at the date of the publication. It is the policy of the manufacturer for continuous improvement. Some information could not be updated due to modifications of a technical or commercial type, or changes to the laws and regulations of different countries.

In case of questions, refer to your CASE CONSTRUCTION Sales and Service Networks.

Torque - Minimum tightening torques for normal assembly

SR130, SR175, SV185, SR220, SR250, SV250, SV300, SR160, TR320, TV380

METRIC NON-FLANGED HARDWARE

| NOM. SIZE | CLASS 8.8 BOLT and CLASS 8 NUT | | CLASS 10.9 BOLT and CLASS 10 NUT | | LOCKNUT CL.8 W/CL8.8 BOLT | LOCKNUT CL.10 W/CL10.9 BOLT |
|--------------|-----------------------------------|---------------------|-------------------------------------|----------------------|------------------------------------|--------------------------------------|
| | UNPLATED | PLATED W/ZnCr | UNPLATED | PLATED W/ZnCr | | |
| M4 | 2.2 N·m (19 lb in) | 2.9 N·m (26 lb in) | 3.2 N·m (28 lb in) | 4.2 N·m (37 lb in) | 2 N·m (18 lb in) | 2.9 N·m (26 lb in) |
| M5 | 4.5 N·m (40 lb in) | 5.9 N·m (52 lb in) | 6.4 N·m (57 lb in) | 8.5 N·m (75 lb in) | 4 N·m (36 lb in) | 5.8 N·m (51 lb in) |
| M6 | 7.5 N·m (66 lb in) | 10 N·m (89 lb in) | 11 N·m (96 lb in) | 15 N·m (128 lb in) | 6.8 N·m (60 lb in) | 10 N·m (89 lb in) |
| M8 | 18 N·m (163 lb in) | 25 N·m (217 lb in) | 26 N·m (234 lb in) | 35 N·m (311 lb in) | 17 N·m (151 lb in) | 24 N·m (212 lb in) |
| M10 | 37 N·m (27 lb ft) | 49 N·m (36 lb ft) | 52 N·m (38 lb ft) | 70 N·m (51 lb ft) | 33 N·m (25 lb ft) | 48 N·m (35 lb ft) |
| M12 | 64 N·m (47 lb ft) | 85 N·m (63 lb ft) | 91 N·m (67 lb ft) | 121 N·m (90 lb ft) | 58 N·m (43 lb ft) | 83 N·m (61 lb ft) |
| M16 | 158 N·m (116 lb ft) | 210 N·m (155 lb ft) | 225 N·m (166 lb ft) | 301 N·m (222 lb ft) | 143 N·m (106 lb ft) | 205 N·m (151 lb ft) |
| M20 | 319 N·m (235 lb ft) | 425 N·m (313 lb ft) | 440 N·m (325 lb ft) | 587 N·m (433 lb ft) | 290 N·m (214 lb ft) | 400 N·m (295 lb ft) |
| M24 | 551 N·m (410 lb ft) | 735 N·m (500 lb ft) | 762 N·m (560 lb ft) | 1016 N·m (750 lb ft) | 501 N·m (370 lb ft) | 693 N·m (510 lb ft) |

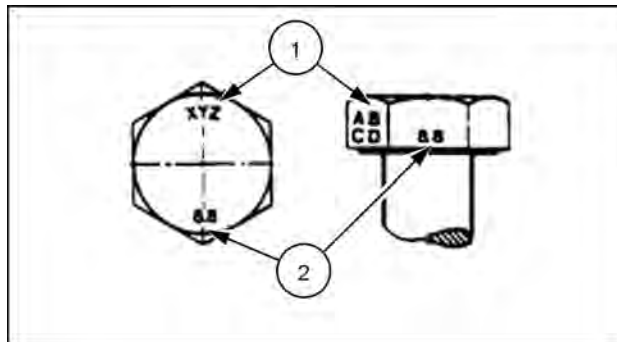
NOTE: M4 through M8 hardware torque specifications are shown in pound-inches. M10 through M24 hardware torque specifications are shown in pound-feet.

METRIC FLANGED HARDWARE

| NOM. SIZE | CLASS 8.8 BOLT and CLASS 8 NUT | | CLASS 10.9 BOLT and CLASS 10 NUT | | LOCKNUT CL.8 W/CL8.8 BOLT | LOCKNUT CL.10 W/CL10.9 BOLT |
|-----------|--------------------------------|---------------------|----------------------------------|----------------------|---------------------------|-----------------------------|
| | UNPLATED | PLATED W/ZnCr | UNPLATED | PLATED W/ZnCr | | |
| M4 | 2.4 N·m (21 lb in) | 3.2 N·m (28 lb in) | 3.5 N·m (31 lb in) | 4.6 N·m (41 lb in) | 2.2 N·m (19 lb in) | 3.1 N·m (27 lb in) |
| M5 | 4.9 N·m (43 lb in) | 6.5 N·m (58 lb in) | 7.0 N·m (62 lb in) | 9.4 N·m (83 lb in) | 4.4 N·m (39 lb in) | 6.4 N·m (57 lb in) |
| M6 | 8.3 N·m (73 lb in) | 11 N·m (96 lb in) | 12 N·m (105 lb in) | 16 N·m (141 lb in) | 7.5 N·m (66 lb in) | 11 N·m (96 lb in) |
| M8 | 20 N·m (179 lb in) | 27 N·m (240 lb in) | 29 N·m (257 lb in) | 39 N·m (343 lb in) | 18 N·m (163 lb in) | 27 N·m (240 lb in) |
| M10 | 40 N·m (30 lb ft) | 54 N·m (40 lb ft) | 57 N·m (42 lb ft) | 77 N·m (56 lb ft) | 37 N·m (27 lb ft) | 53 N·m (39 lb ft) |
| M12 | 70 N·m (52 lb ft) | 93 N·m (69 lb ft) | 100 N·m (74 lb ft) | 134 N·m (98 lb ft) | 63 N·m (47 lb ft) | 91 N·m (67 lb ft) |
| M16 | 174 N·m (128 lb ft) | 231 N·m (171 lb ft) | 248 N·m (183 lb ft) | 331 N·m (244 lb ft) | 158 N·m (116 lb ft) | 226 N·m (167 lb ft) |
| M20 | 350 N·m (259 lb ft) | 467 N·m (345 lb ft) | 484 N·m (357 lb ft) | 645 N·m (476 lb ft) | 318 N·m (235 lb ft) | 440 N·m (325 lb ft) |
| M24 | 607 N·m (447 lb ft) | 809 N·m (597 lb ft) | 838 N·m (618 lb ft) | 1118 N·m (824 lb ft) | 552 N·m (407 lb ft) | |

IDENTIFICATION

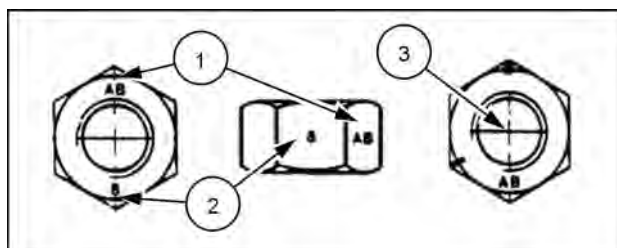
Metric Hex head and carriage bolts, classes 5.6 and up



20083680 1

1. Manufacturer's Identification
2. Property Class

Metric Hex nuts and locknuts, classes 05 and up



20083681 2

1. Manufacturer's Identification
2. Property Class
3. Clock Marking of Property Class and Manufacturer's Identification (Optional), i.e. marks **60** ° apart indicate Class 10 properties, and marks **120** ° apart indicate Class 8.

INCH NON-FLANGED HARDWARE

| NOMINAL SIZE | SAE GRADE 5 BOLT and NUT | | SAE GRADE 8 BOLT and NUT | | LOCKNUT GrB W/ Gr5 BOLT | LOCKNUT GrC W/ Gr8 BOLT |
|--------------|----------------------------|---------------------|----------------------------|----------------------|-------------------------|-------------------------|
| | UN-PLATED or PLATED SILVER | PLATED W/ZnCr GOLD | UN-PLATED or PLATED SILVER | PLATED W/ZnCr GOLD | | |
| 1/4 | 8 N·m (71 lb in) | 11 N·m (97 lb in) | 12 N·m (106 lb in) | 16 N·m (142 lb in) | 8.5 N·m (75 lb in) | 12.2 N·m (109 lb in) |
| 5/16 | 17 N·m (150 lb in) | 23 N·m (204 lb in) | 24 N·m (212 lb in) | 32 N·m (283 lb in) | 17.5 N·m (155 lb in) | 25 N·m (220 lb in) |
| 3/8 | 30 N·m (22 lb ft) | 40 N·m (30 lb ft) | 43 N·m (31 lb ft) | 57 N·m (42 lb ft) | 31 N·m (23 lb ft) | 44 N·m (33 lb ft) |
| 7/16 | 48 N·m (36 lb ft) | 65 N·m (48 lb ft) | 68 N·m (50 lb ft) | 91 N·m (67 lb ft) | 50 N·m (37 lb ft) | 71 N·m (53 lb ft) |
| 1/2 | 74 N·m (54 lb ft) | 98 N·m (73 lb ft) | 104 N·m (77 lb ft) | 139 N·m (103 lb ft) | 76 N·m (56 lb ft) | 108 N·m (80 lb ft) |
| 9/16 | 107 N·m (79 lb ft) | 142 N·m (105 lb ft) | 150 N·m (111 lb ft) | 201 N·m (148 lb ft) | 111 N·m (82 lb ft) | 156 N·m (115 lb ft) |
| 5/8 | 147 N·m (108 lb ft) | 196 N·m (145 lb ft) | 208 N·m (153 lb ft) | 277 N·m (204 lb ft) | 153 N·m (113 lb ft) | 215 N·m (159 lb ft) |
| 3/4 | 261 N·m (193 lb ft) | 348 N·m (257 lb ft) | 369 N·m (272 lb ft) | 491 N·m (362 lb ft) | 271 N·m (200 lb ft) | 383 N·m (282 lb ft) |
| 7/8 | 420 N·m (310 lb ft) | 561 N·m (413 lb ft) | 594 N·m (438 lb ft) | 791 N·m (584 lb ft) | 437 N·m (323 lb ft) | 617 N·m (455 lb ft) |
| 1 | 630 N·m (465 lb ft) | 841 N·m (620 lb ft) | 890 N·m (656 lb ft) | 1187 N·m (875 lb ft) | 654 N·m (483 lb ft) | 924 N·m (681 lb ft) |

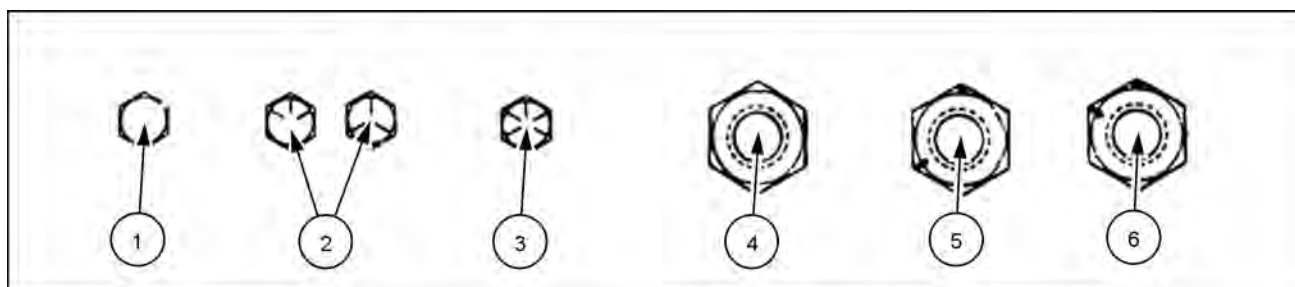
NOTE: For Imperial Units, *1/4 in* and *5/16 in* hardware torque specifications are shown in pound-inches. *3/8 in* through *1 in* hardware torque specifications are shown in pound-feet.

INCH FLANGED HARDWARE

| NOM- INAL SIZE | SAE GRADE 5 BOLT and NUT | | SAE GRADE 8 BOLT and NUT | | LOCKNUT GrF W/ Gr5 BOLT | LOCKNUT GrG W/ Gr8 BOLT |
|----------------------|---------------------------------|--------------------------|---------------------------------|--------------------------|-------------------------------|-------------------------------|
| | UNPLATED or PLATED SILVER | PLATED W/ZnCr GOLD | UNPLATED or PLATED SILVER | PLATED W/ZnCr GOLD | | |
| 1/4 | 9 N·m (80 lb in) | 12 N·m (106 lb in) | 13 N·m (115 lb in) | 17 N·m (150 lb in) | 8 N·m (71 lb in) | 12 N·m (106 lb in) |
| 5/16 | 19 N·m (168 lb in) | 25 N·m (221 lb in) | 26 N·m (230 lb in) | 35 N·m (310 lb in) | 17 N·m (150 lb in) | 24 N·m (212 lb in) |
| 3/8 | 33 N·m (25 lb ft) | 44 N·m (33 lb ft) | 47 N·m (35 lb ft) | 63 N·m (46 lb ft) | 30 N·m (22 lb ft) | 43 N·m (32 lb ft) |
| 7/16 | 53 N·m (39 lb ft) | 71 N·m (52 lb ft) | 75 N·m (55 lb ft) | 100 N·m (74 lb ft) | 48 N·m (35 lb ft) | 68 N·m (50 lb ft) |
| 1/2 | 81 N·m (60 lb ft) | 108 N·m (80 lb ft) | 115 N·m (85 lb ft) | 153 N·m (113 lb ft) | 74 N·m (55 lb ft) | 104 N·m (77 lb ft) |
| 9/16 | 117 N·m (86 lb ft) | 156 N·m (115 lb ft) | 165 N·m (122 lb ft) | 221 N·m (163 lb ft) | 106 N·m (78 lb ft) | 157 N·m (116 lb ft) |
| 5/8 | 162 N·m (119 lb ft) | 216 N·m (159 lb ft) | 228 N·m (168 lb ft) | 304 N·m (225 lb ft) | 147 N·m (108 lb ft) | 207 N·m (153 lb ft) |
| 3/4 | 287 N·m (212 lb ft) | 383 N·m (282 lb ft) | 405 N·m (299 lb ft) | 541 N·m (399 lb ft) | 261 N·m (193 lb ft) | 369 N·m (272 lb ft) |
| 7/8 | 462 N·m (341 lb ft) | 617 N·m (455 lb ft) | 653 N·m (482 lb ft) | 871 N·m (642 lb ft) | 421 N·m (311 lb ft) | 594 N·m (438 lb ft) |
| 1 | 693 N·m (512 lb ft) | 925 N·m (682 lb ft) | 979 N·m (722 lb ft) | 1305 N·m (963 lb ft) | 631 N·m (465 lb ft) | 890 N·m (656 lb ft) |

IDENTIFICATION

Inch Bolts and free-spinning nuts

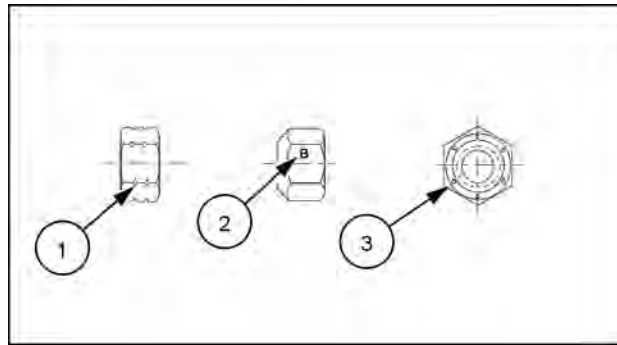


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Grade Marking Examples

| SAE Grade Identification | | | |
|--------------------------|-----------------------|---|---------------------------------|
| 1 | Grade 2 - No Marks | 4 | Grade 2 Nut - No Marks |
| 2 | Grade 5 - Three Marks | 5 | Grade 5 Nut - Marks 120 ° Apart |
| 3 | Grade 8 - Five Marks | 6 | Grade 8 Nut - Marks 60 ° Apart |

Inch Lock Nuts, All Metal (Three optional methods)



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Grade Identification

| Grade | Corner Marking Method (1) | Flats Marking Method (2) | Clock Marking Method (3) |
|---------|-----------------------------|--------------------------|--------------------------|
| Grade A | No Notches | No Mark | No Marks |
| Grade B | One Circumferential Notch | Letter B | Three Marks |
| Grade C | Two Circumferential Notches | Letter C | Six Marks |

Torque - Standard torque data for hydraulics

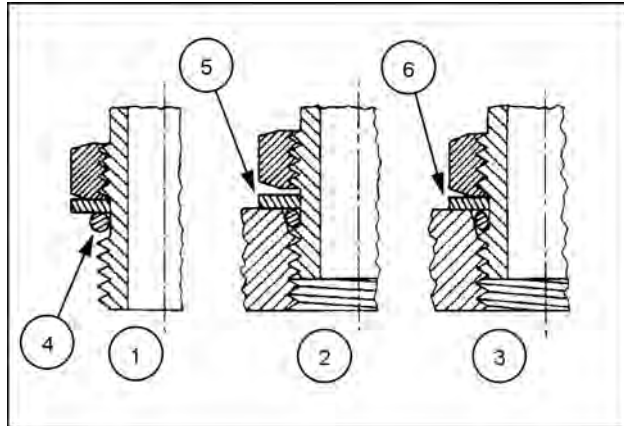
SR130, SR175, SV185, SR220, SR250, SV250, SV300, SR160, TR320, TV380

INSTALLATION OF ADJUSTABLE FITTINGS IN STRAIGHT THREAD O RING BOSSES

1. Lubricate the O-ring by coating it with a light oil or petroleum. Install the O-ring in the groove adjacent to the metal backup washer which is assembled at the extreme end of the groove (4).
2. Install the fitting into the SAE straight thread boss until the metal backup washer contacts the face of the boss (5).

NOTE: Do not over tighten and distort the metal backup washer.

3. Position the fitting by turning out (counterclockwise) up to a maximum of one turn. Holding the pad of the fitting with a wrench, tighten the locknut and washer against the face of the boss (6).



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STANDARD TORQUE DATA FOR HYDRAULIC TUBES AND FITTINGS

| TUBE NUTS FOR 37° FLARED FITTINGS | | | | O-RING BOSS PLUGS ADJUSTABLE FITTING LOCKNUTS, SWIVEL JIC- 37° SEATS |
|-----------------------------------|--------------------|-------------|---------------------------------|---|
| SIZE | TUBING OD | THREAD SIZE | TORQUE | TORQUE |
| 4 | 6.4 mm (1/4 in) | 7/16-20 | 12 - 16 N·m (9 - 12 lb ft) | 8 - 14 N·m (6 - 10 lb ft) |
| 5 | 7.9 mm (5/16 in) | 1/2-20 | 16 - 20 N·m (12 - 15 lb ft) | 14 - 20 N·m (10 - 15 lb ft) |
| 6 | 9.5 mm (3/8 in) | 9/16-18 | 29 - 33 N·m (21 - 24 lb ft) | 20 - 27 N·m (15 - 20 lb ft) |
| 8 | 12.7 mm (1/2 in) | 3/4-16 | 47 - 54 N·m (35 - 40 lb ft) | 34 - 41 N·m (25 - 30 lb ft) |
| 10 | 15.9 mm (5/8 in) | 7/8-14 | 72 - 79 N·m (53 - 58 lb ft) | 47 - 54 N·m (35 - 40 lb ft) |
| 12 | 19.1 mm (3/4 in) | 1-1/16-12 | 104 - 111 N·m (77 - 82 lb ft) | 81 - 95 N·m (60 - 70 lb ft) |
| 14 | 22.2 mm (7/8 in) | 1-3/16-12 | 122 - 136 N·m (90 - 100 lb ft) | 95 - 109 N·m (70 - 80 lb ft) |
| 16 | 25.4 mm (1 in) | 1-5/16-12 | 149 - 163 N·m (110 - 120 lb ft) | 108 - 122 N·m (80 - 90 lb ft) |
| 20 | 31.8 mm (1-1/4 in) | 1-5/8-12 | 190 - 204 N·m (140 - 150 lb ft) | 129 - 158 N·m (95 - 115 lb ft) |
| 24 | 38.1 mm (1-1/2 in) | 1-7/8-12 | 217 - 237 N·m (160 - 175 lb ft) | 163 - 190 N·m (120 - 140 lb ft) |
| 32 | 50.8 mm (2 in) | 2-1/2-12 | 305 - 325 N·m (225 - 240 lb ft) | 339 - 407 N·m (250 - 300 lb ft) |

These torques are not recommended for tubes of 12.7 mm (1/2 in) OD and larger with wall thickness of 0.889 mm (0.035 in) or less. The torque is specified for 0.889 mm (0.035 in) wall tubes on each application individually.

Before installing and torquing 37° flared fittings, clean the face of the flare and threads with a clean solvent or Loctite cleaner and apply hydraulic sealant **LOCTITE® 569** to the 37° flare and the threads.

Install fitting and torque to specified torque, loosen fitting and retorque to specifications.

PIPE THREAD FITTING TORQUE

Before installing and tightening pipe fittings, clean the threads with a clean solvent or Loctite cleaner and apply sealant **LOCTITE® 567 PST PIPE SEALANT** for all fittings including stainless steel or **LOCTITE® 565 PST** for most metal fittings. For high filtration/zero contamination systems use **LOCTITE® 545**.

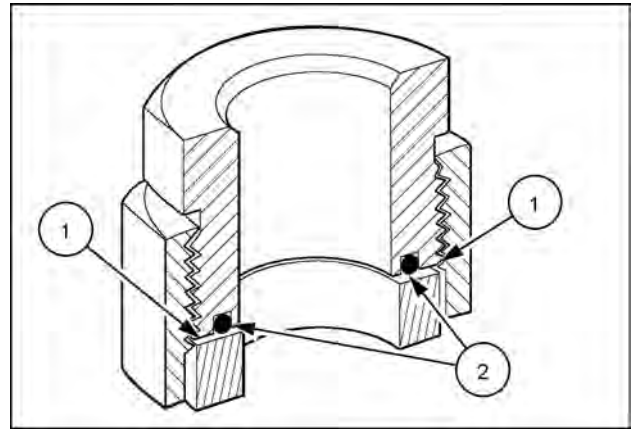
| PIPE THREAD FITTING | |
|---------------------|--------------------------|
| Thread Size | Torque (Maximum) |
| 1/8-27 | 13 N·m (10 lb ft) |
| 1/4-18 | 16 N·m (12 lb ft) |
| 3/8-18 | 22 N·m (16 lb ft) |
| 1/2-14 | 41 N·m (30 lb ft) |
| 3/4-14 | 54 N·m (40 lb ft) |

INSTALLATION OF ORFS (O-RING FLAT FACED) FITTINGS

When installing ORFS fittings thoroughly clean both flat surfaces of the fittings **(1)** and lubricate the O-ring **(2)** with light oil. Make sure both surfaces are aligned properly. Torque the fitting to specified torque listed throughout the repair manual.

NOTICE: *If the fitting surfaces are not properly cleaned, the O-ring will not seal properly. If the fitting surfaces are not properly aligned, the fittings may be damaged and will not seal properly.*

NOTICE: *Always use genuine factory replacement oils and filters to ensure proper lubrication and filtration of engine and hydraulic system oils.*



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The use of proper oils, grease, and keeping the hydraulic system clean will extend machine and component life.