

# SHOP MANUAL

# SK714-5 SK815-5

**SKID - STEER LOADER**

SERIAL NUMBER

**SK714-5 37AF00004** and up

**SK815-5 37BF00006** and up



---

## CONTENTS

|  | Page |
|--|------|
| <b>10 STRUCTURE AND FUNCTION</b> .....   | 10-1 |
| <b>20 TESTING AND ADJUSTING</b> .....    | 20-1 |
| <b>30 DISASSEMBLY AND ASSEMBLY</b> ..... | 30-1 |
| <b>40 MAINTENANCE STANDARD</b> .....     | 40-1 |

The affected pages are indicated by the use of the following marks. It is requested that necessary actions be taken to these pages according to table below.

| Mark | Indication          | Action required |
|------|---------------------|-----------------|
| ○    | Page to be newly    | Add             |
| ●    | Page to be replaced | Replace         |
| ( )  | Page to be delete   | Discard         |

Pages having no marks are those previously revised or made additions.

LIST OF REVISED PAGES

| Mark | Page   | Time of revision | Mark | Page  | Time of revision | Mark | Page  | Time of revision | Mark | Page   | Time of revision | Mark | Page  | Time of revision |
|------|--------|------------------|------|-------|------------------|------|-------|------------------|------|--------|------------------|------|-------|------------------|
|      | 00-1   |                  |      | 10-17 |                  |      | 10-58 |                  |      | 10-99  |                  |      | 20-32 |                  |
|      | 00-2   |                  |      | 10-18 |                  |      | 10-59 |                  |      | 10-100 |                  |      | 20-34 |                  |
|      | 00-2-1 |                  |      | 10-19 |                  |      | 10-60 |                  |      | 10-101 |                  |      | 20-35 |                  |
|      | 00-2-2 |                  |      | 10-20 |                  |      | 10-61 |                  |      | 10-102 |                  |      | 20-36 |                  |
|      | 00-3   |                  |      | 10-21 |                  |      | 10-62 |                  |      | 10-103 |                  |      | 20-37 |                  |
|      | 00-4   |                  |      | 10-22 |                  |      | 10-63 |                  |      | 10-104 |                  |      |       |                  |
|      | 00-5   |                  |      | 10-23 |                  |      | 10-64 |                  |      | 10-105 |                  |      | 30-1  |                  |
|      | 00-6   |                  |      | 10-24 |                  |      | 10-65 |                  |      | 10-106 |                  |      | 30-2  |                  |
|      | 00-7   |                  |      | 10-25 |                  |      | 10-66 |                  |      |        |                  |      | 30-3  |                  |
|      | 00-8   |                  |      | 10-26 |                  |      | 10-67 |                  |      | 20-1   |                  |      | 30-4  |                  |
|      | 00-9   |                  |      | 10-27 |                  |      | 10-68 |                  |      | 20-2   |                  |      | 30-5  |                  |
|      | 00-10  |                  |      | 10-28 |                  |      | 10-69 |                  |      | 20-3   |                  |      | 30-6  |                  |
|      | 00-11  |                  |      | 10-29 |                  |      | 10-70 |                  |      | 20-4   |                  |      | 30-7  |                  |
|      | 00-12  |                  |      | 10-30 |                  |      | 10-71 |                  |      | 20-5   |                  |      | 30-8  |                  |
|      | 00-13  |                  |      | 10-31 |                  |      | 10-72 |                  |      | 20-6   |                  |      | 30-9  |                  |
|      | 00-14  |                  |      | 10-32 |                  |      | 10-73 |                  |      | 20-7   |                  |      | 30-10 |                  |
|      | 00-15  |                  |      | 10-33 |                  |      | 10-74 |                  |      | 20-8   |                  |      | 30-11 |                  |
|      | 00-16  |                  |      | 10-34 |                  |      | 10-75 |                  |      | 20-9   |                  |      | 30-12 |                  |
|      | 00-17  |                  |      | 10-35 |                  |      | 10-76 |                  |      | 20-10  |                  |      | 30-13 |                  |
|      | 00-18  |                  |      | 10-36 |                  |      | 10-77 |                  |      | 20-11  |                  |      | 30-14 |                  |
|      | 00-19  |                  |      | 10-37 |                  |      | 10-78 |                  |      | 20-12  |                  |      | 30-15 |                  |
|      | 00-20  |                  |      | 10-38 |                  |      | 10-79 |                  |      | 20-13  |                  |      | 30-16 |                  |
|      | 00-21  |                  |      | 10-39 |                  |      | 10-80 |                  |      | 20-14  |                  |      | 30-17 |                  |
|      | 00-22  |                  |      | 10-40 |                  |      | 10-81 |                  |      | 20-15  |                  |      | 30-18 |                  |
|      |        |                  |      | 10-41 |                  |      | 10-82 |                  |      | 20-16  |                  |      | 30-19 |                  |
|      | 10-1   |                  |      | 10-42 |                  |      | 10-83 |                  |      | 20-17  |                  |      | 30-20 |                  |
|      | 10-2   |                  |      | 10-43 |                  |      | 10-84 |                  |      | 20-18  |                  |      | 30-21 |                  |
|      | 10-3   |                  |      | 10-44 |                  |      | 10-85 |                  |      | 20-19  |                  |      | 30-22 |                  |
|      | 10-4   |                  |      | 10-45 |                  |      | 10-86 |                  |      | 20-20  |                  |      | 30-23 |                  |
|      | 10-5   |                  |      | 10-46 |                  |      | 10-87 |                  |      | 20-21  |                  |      | 30-24 |                  |
|      | 10-6   |                  |      | 10-47 |                  |      | 10-88 |                  |      | 20-22  |                  |      | 30-25 |                  |
|      | 10-7   |                  |      | 10-48 |                  |      | 10-89 |                  |      | 20-23  |                  |      | 30-26 |                  |
|      | 10-8   |                  |      | 10-49 |                  |      | 10-90 |                  |      | 20-24  |                  |      | 30-27 |                  |
|      | 10-9   |                  |      | 10-50 |                  |      | 10-91 |                  |      | 20-25  |                  |      | 30-28 |                  |
|      | 10-10  |                  |      | 10-51 |                  |      | 10-92 |                  |      | 20-26  |                  |      | 30-29 |                  |
|      | 10-11  |                  |      | 10-52 |                  |      | 10-93 |                  |      | 20-27  |                  |      | 30-30 |                  |
|      | 10-12  |                  |      | 10-53 |                  |      | 10-94 |                  |      | 20-28  |                  |      | 30-31 |                  |
|      | 10-13  |                  |      | 10-54 |                  |      | 10-95 |                  |      | 20-29  |                  |      | 30-32 |                  |
|      | 10-14  |                  |      | 10-55 |                  |      | 10-96 |                  |      | 20-30  |                  |      | 30-33 |                  |
|      | 10-15  |                  |      | 10-56 |                  |      | 10-97 |                  |      | 20-31  |                  |      | 30-34 |                  |
|      | 10-16  |                  |      | 10-57 |                  |      | 10-98 |                  |      | 20-32  |                  |      | 30-35 |                  |

| Mark | Page  | Time of revision | Mark | Page | Time of revision | Mark | Page | Time of revision | Mark | Page | Time of revision | Mark | Page | Time of revision |
|------|-------|------------------|------|------|------------------|------|------|------------------|------|------|------------------|------|------|------------------|
|      | 30-36 |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 30-37 |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 30-38 |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 30-39 |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 30-40 |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 30-41 |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 30-42 |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 30-43 |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 30-44 |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 30-45 |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 30-46 |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 30-47 |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 30-48 |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 30-49 |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 30-50 |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 30-51 |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 30-52 |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 30-53 |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 30-54 |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 40-1  |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 40-2  |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 40-3  |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 40-4  |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 40-5  |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 40-6  |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 40-7  |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 40-8  |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 40-9  |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 40-10 |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 40-11 |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 40-12 |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 40-13 |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 40-14 |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 40-15 |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 40-16 |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 40-17 |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 40-18 |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 40-19 |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 40-20 |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 40-21 |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |
|      | 40-22 |                  |      |      |                  |      |      |                  |      |      |                  |      |      |                  |



## IMPORTANT SAFETY NOTICE

Proper service and repair is extremely important for the safe operation of your machine.

The service and repair techniques recommended by Komatsu Utility and describe in this manual are both effective and safe methods of operation. Some of these operations require the use of tools specially designed by Komatsu Utility for the purpose.

To prevent injury to workers, the symbols  and  are used to mark safety precautions in this manual. The cautions accompanying these symbols should always be carefully followed. If any danger arises or may possibly arise, first consider safety, and take necessary steps to face.



## SAFETY

### GENERAL PRECAUTIONS

Mistakes in operation extremely dangerous.

Read all the Operation and Maintenance Manual carefully BEFORE operating the machine.

1. Before carrying out any greasing or repairs, read all the precautions written on the decals which are stuck on the machine.
2. When carrying out any operation, always wear safety shoes and helmet. Do not wear loose work clothes, or clothes with buttons missing.
  - Always wear safety glasses when hitting parts with a hammer.
  - Always wear safety glasses when grinding parts with a grinder, etc.
3. If welding repairs are needed, always have a trained, experienced welder carry out the work. When carrying out welding work, always wear welding gloves, apron, glasses, cap and other clothes suited for welding work.
4. When carrying out any operation with two or more workers, always agree on the operating procedure before starting. Always inform your fellow workers before starting any step of the operation. Before starting work, hang UNDER REPAIR signs on the controls in the operator's compartment.
5. Keep all tools in good condition and learn the correct way to use them.
6. Decide a place in the repair workshop to keep tools and removed parts. Always keep the tools and parts in their correct places. Always keep the work area clean and make sure that there is no dirt or oil on the floor.
 

Smoke only in the areas provided for smoking. Never smoke while working.

### PREPARATIONS FOR WORK

7. Before adding or making any repairs, park the machine on hard, level ground, and block the wheels to prevent the machine from moving.
8. Before starting work, lower outrigger, bucket or any other work equipment to the ground. If this is not possible, use blocks to prevent the work equipment from falling down. In addition, be sure to lock all the control levers and hang warning sign on them.
9. When disassembling or assembling, support the machine with blocks, jacks or stands before starting work.
10. Remove all mud and oil from the steps or other places used to get on and off the machine. Always use the handrails, ladders or steps when getting on or off the machine.
 

Never jump on or off the machine.

If it is impossible to use the handrails, ladders or steps, use a stand to provide safe footing.

### PRECAUTIONS DURING WORK

11. When removing the oil filler cap, drain plug or hydraulic pressure measuring plugs, loosen them slowly to prevent the oil from spurting out.
 

Before disconnecting or removing components of the hydraulic circuit and engine cooling circuit, first remove the pressure completely from the circuit.
12. The water and oil in the circuits are not hot when the engine is stopped, so be careful not to get burned.
 

Wait for the oil water to cool before carrying out any work on the cooling water circuits.
13. Before starting work, remove the leads from the battery. Always remove the lead from the negative ( - ) terminal first.

14. When raising heavy components, use a hoist or crane. Check that the wire rope, chains and hooks are free from damage.  
Always use lifting equipment which has ample capacity. Install the lifting equipment at the correct places.  
Use a hoist or crane and operate slowly to prevent the component from hitting any other part.  
Do not work with any part still raised by the hoist or crane.
15. When removing covers which are under internal pressure or under pressure from a spring, always leave two bolts in position on opposite sides. Slowly release the pressure, then slowly loosen the bolts to remove.
16. When removing components, be careful not to break or damage the wiring.  
Damage wiring may cause electrical fires.
17. When removing piping, stop the fuel or oil from spilling out. If any fuel or oil drips on to the floor, wipe it up immediately.  
Fuel or oil on the floor can cause you to slip, or can even start fires.
18. As a general rule, do not use gasoline to wash parts. In particular, use only the minimum of gasoline when washing electrical parts.
19. Be sure to assemble all parts again in their original places. Replace any damage parts with new parts. When installing hoses and wires, be sure that they will not be damaged by contact with other parts when the machine is being operated.
20. When installing high pressure hoses, make sure that they are not twisted. Damaged tubes are dangerous, so be extremely careful when installing tubes for high pressure circuits. Also, check that connecting parts are correctly tightened.
21. When assembling or installing parts, always use specified tightening torques.  
When installing the parts which vibrate violently or rotate at high speed, be particularly careful to check that they are correctly installed.
22. When aligning two holes, never insert your fingers or hand.
23. When measuring hydraulic pressure, check that the measuring tool is correctly assembled before taking any measurement.
24. Take care when removing or installing wheels.

---

## FOREWORD

---

This shop manual has been prepared as an aid to improve the quality of repairs by giving the operator an accurate understanding of the product and by showing him the correct way to perform repairs and make judgements. Make sure you understand the contents of this manual and use it to full effect at every opportunity.

This shop manual mainly contains the necessary technical information for operations performed in a service workshop.

The manual is divided into chapters on each main group of components; these chapters are further divided into the following sections.

### **STRUCTURE AND FUNCTION**

This section explains the structure and function of each component. It serves not only to give an understanding of the structure, but also serves as reference material for troubleshooting.

### **TESTING AND ADJUSTING**

This sections explains checks to be made before and after performing repairs, as well as adjustments to be made at completion of the checks and repairs.

Troubleshooting charts correlating «Problems» to «Causes» are also included in this section.

### **DISASSEMBLY AND ASSEMBLY**

This section explains the order to be followed when removing, installing, disassembling or assembling each component, as well as precautions to be taken for these operations.

### **MAINTENANCE STANDARD**

This section gives the judgement standards when inspecting disassembled parts.

#### **NOTE**

**The specifications contained in this shop manual are subject to change at any time and without any notice.**

**Contact your Komatsu Utility distributor for the latest information.**

# HOW TO READ THE SHOP MANUAL

## VOLUMES

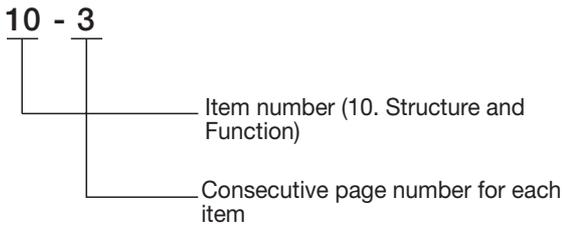
Shop manual are issued as a guide to carry out repairs. These various volumes are designed to avoid duplicating the same information.

## DISTRIBUTION AND UPDATING

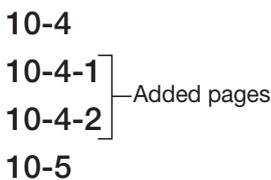
Any additions, amendments or other changes will be sent to Komatsu Utility distributors. Get the most up-to-date information before you start any work.

## FILING METHOD

1. See the page number on the bottom of the page. File the pages in correct order.
2. Following examples show you how to read the page number. Example:



3. Additional pages: additional pages are indicated by a hyphen (-) and number after the page number. File as in the example. Example:



## REVISED EDITION MARK

① ② ③ ....)

When a manual is revised, an edition mark is recorded on the bottom outside corner of the pages.

## REVISIONS

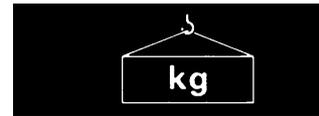
Revised pages are shown on the LIST OF REVISED PAGES between the title page and SAFETY page.

## SYMBOLS

In order to make the shop manual greatly helpful, important points about safety and quality are marked with the following symbols.

| Symbol | Item              | Remarks  |
|--------|-------------------|--|
|        | Safety            | Special safety precautions are necessary when performing the work.   |
|        |                   | Extra special safety precautions are necessary when performing the work because it is under internal pressure.         |
|        | Caution           | Special technical precautions or other precautions for preserving standards are necessary when performing the work.    |
|        | Weight            | Weight of parts or systems. Caution necessary when selecting hoisting wire, or when working posture is important, etc. |
|        | Tightening torque | Parts that require special attention for the tightening torque during assembly.  |
|        | Coat              | Parts to be coated with adhesives and lubricants etc.  |
|        | Oil, water        | Places where oil, water or fuel must be added, and their quantity.   |
|        | Drain             | Places where oil or water must be drained, and quantity to be drained.   |

# HOISTING INSTRUCTIONS



**!** Heavy parts (25 kg or more) must be lifted with a hoist etc. In the **Disassembly and Assembly** section, every part weighing 25 kg or more is clearly indicated with the symbol

1. If a part cannot be smoothly removed from the machine by hoisting, the following checks should be made:
  - Check for removal of all bolts fastening the part to the relative parts.
  - Check for any part causing interference with the part to be removed.

## 2. Wire ropes

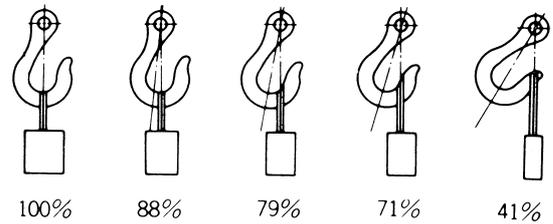
- 1) Use adequate ropes depending on the weight of parts to be hoisted, referring to the table below:

| WIRE ROPES<br>(Standard «S» or «Z» twist ropes<br>without galvanizing) |                       |
|--|-----------------------|
| Rope diameter (mm)   | Allowable load (tons) |
| 10.0   | 1.0                   |
| 11.2   | 1.4                   |
| 12.5   | 1.6                   |
| 14.0   | 2.2                   |
| 16.0   | 2.8                   |
| 18.0   | 3.6                   |
| 20.0   | 4.4                   |
| 22.4   | 5.6                   |
| 30.0   | 10.0                  |
| 40.0   | 18.0                  |
| 50.0   | 28.0                  |
| 60.0   | 40.0                  |

The allowable load value is estimated to be one-sixth or one-seventh of the breaking strength of the rope used.

- 2) Sling wire ropes from the middle portion of the hook. Slinging near the edge of the hook may cause the rope to slip off the hook during hoisting, and a serious accident can result.

Hooks have maximum strength at the middle portion.



- 3) Do not sling a heavy load with one rope alone, but sling with two or more ropes symmetrically wound on to the load.

**!** Slinging with one rope may cause turning of the load during hoisting, untwisting of the rope, or slipping of the rope from its original winding position on the load, which can cause dangerous accidents.

- 4) Do not sling a heavy load with ropes forming a wide hanging angle from the hook.

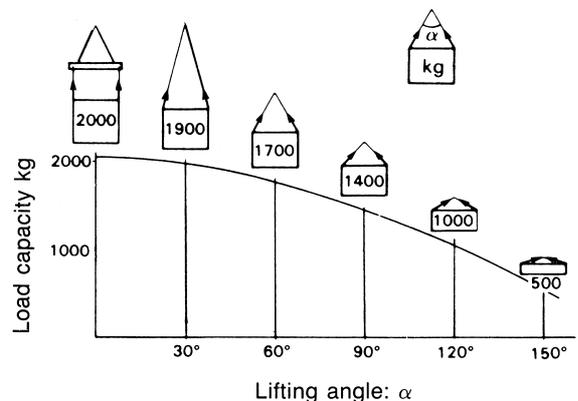
When hoisting a load with two or more ropes, the force subjected to each rope will increase with the hanging angles.

The table below shows the variation of allowable load (kg) when hoisting is made with two ropes, each of which is allowed to sling up to 1000 kg vertically, at various hanging angles.

When two ropes sling a load vertically, up to 2000 kg of total weight can be suspended.

This weight becomes 1000 kg when two ropes make a 120° hanging angle.

On the other hand, two ropes are subjected to an excessive force as large as 4000 kg if they sling a 2000 kg load at a lifting angle of 150°.

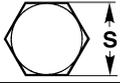




## STANDARD TIGHTENING TORQUE

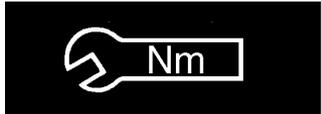
The following charts give the standard tightening torques of bolts and nuts.  
Exceptions are given in section of «Disassembly and Assembly».

### 1. STANDARD TIGHTENING TORQUE OF BOLTS AND NUT

| Thread diameter of bolts (mm) | Pitch of bolts (mm) | Width across flat (mm)  |   | 8.8      |          | 10.9     |          |
|-------------------------------|---------------------|---|---|----------|----------|----------|----------|
|                               |                     |  |  | kgm      | Nm       | kgm      | Nm       |
| 6                             | 1                   | 10  | 8   | 0.96±0.1 | 9.5±1    | 1.3±0.15 | 13.5±1.5 |
| 8                             | 1.25                | 13  | 6   | 2.3±0.2  | 23±2     | 3.2±0.3  | 32.2±3.5 |
| 10                            | 1.5                 | 17  | 8   | 4.6±0.5  | 45±4.9   | 6.5±0.6  | 63±6.5   |
| 12                            | 1.75                | 19  | 10  | 7.8±0.8  | 77±8     | 11±1     | 108±11   |
| 14                            | 2                   | 22  | 12  | 12.5±1   | 122±13   | 17.5±2   | 172±18   |
| 16                            | 2                   | 24  | 14  | 19.5±2   | 191±21   | 27±3     | 268±29   |
| 18                            | 2.5                 | 27  | 14  | 27±3     | 262±28   | 37±4     | 366±36   |
| 20                            | 2.5                 | 30  | 17  | 38±4     | 372±40   | 53±6     | 524±57   |
| 22                            | 2.5                 | 32  | 17  | 52±6     | 511±57   | 73±8     | 719±80   |
| 24                            | 3                   | 36  | 19  | 66±7     | 644±70   | 92±10    | 905±98   |
| 27                            | 3                   | 41  | 19  | 96±10    | 945±100  | 135±15   | 1329±140 |
| 30                            | 3.5                 | 46  | 22  | 131±14   | 1287±140 | 184±20   | 1810±190 |
| 33                            | 3.5                 | 50  | 24  | 177±20   | 1740±200 | 250±27   | 2455±270 |
| 36                            | 4                   | 55  | 27  | 230±25   | 2250±250 | 320±35   | 3150±350 |
| 39                            | 4                   | 60  | —   | 295±33   | 2900±330 | 410±45   | 4050±450 |

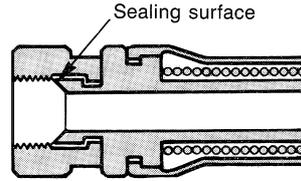
This torque table does not apply to bolts or nuts which have to fasten nylon or other parts non-ferrous metal washer.

★ Nm (newton meter): 1 Nm = 0.102 kgm

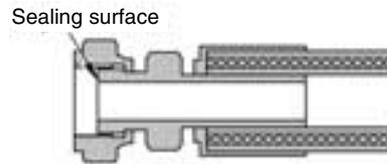


**2. TIGHTENING TORQUE FOR NUTS OF FLARED**

Use these torques for nut part of flared.



| Thread diameter of nut part (mm) | Width across flats of nut part (mm) | TIGHTENING TORQUE |            |
|----------------------------------|-------------------------------------|-------------------|------------|
|                                  |                                     | kgm               | Nm         |
| 1/2" - 20                        | 17                                  | 2.6±0.5           | 25.5±4.9   |
| 9/16" - 18                       | 17                                  | 4±0.5             | 39.2±4.9   |
| 3/4" - 16                        | 22                                  | 6.7±2             | 65.7±19.6  |
| 7/8" - 14                        | 27                                  | 8±2               | 78.5±19.6  |
| 1.1/16 - 12                      | 32                                  | 9.7±3             | 95.15±29.4 |
| 1.5/16 - 12                      | 38                                  | 17±3              | 166.7±29.4 |
| 1.5/8 - 12                       | 50                                  | 20±5              | 196.2±49   |
| 22                               | 27                                  | 8±2               | 78.5±19.6  |
| 33                               | 41                                  | 20±5              | 196.2±49   |



| Thread diameter of nut part (mm) | Width across flats of nut part (mm) | TIGHTENING TORQUE |         |
|----------------------------------|-------------------------------------|-------------------|---------|
|                                  |                                     | kgm               | Nm      |
| 9/16" - 18                       | 17                                  | 2.3–2.5           | 23–25   |
| 11/16" - 16                      | 22                                  | 3.4–3.9           | 33–38   |
| 13/16" - 16                      | 24                                  | 5.2–5.8           | 51–57   |
| 1" - 14                          | 30                                  | 8.2–9.2           | 80–90   |
| 1.3/16 - 12                      | 36                                  | 12.2–13.3         | 120–130 |
| 1.7/16 - 12                      | 41                                  | 15.3–17.3         | 150–170 |
| 1.11/16 - 12                     | 50                                  | 18.4–20.4         | 180–200 |
| 2" - 12                          | 57                                  | 20.4–24.4         | 200–240 |



## COATING MATERIALS

The recommended coating materials prescribed in Komatsu Utility Shop Manuals are listed below:

| Nomenclature   | Code                   | Applications  |
|--|------------------------|---|
| Adhesives  | Bostik 99              | Used to apply rubber pads, rubber gaskets and cork plugs.   |
|  | Loctite 406            | Used to apply resin, rubber, metallic and non-metallic parts when a fast, strong seal is needed.  |
|  | Loctite 222            | Used for low resistance locking of screws, check nuts and adjustment nuts.  |
|  | Loctite 242            | To prevent the loosening of bolts, nuts and plugs and the leakage of oil. Used for medium resistance locking of screws and nuts of every type, and for locking keys and bearings. |
|  | Loctite 262            | Used for high resistant of threaded parts that can be removed with normal tools.  |
|  | Loctite 270            | Used for high resistant locking and for sealing threaded parts, bolts and stud bolts.   |
|  | Loctite 542            | Used for sealing the union threads for hydraulic tubes.   |
|  | Loctite 573            | Used for sealing rather exact plane surfaces when the option of possible future dismantling is required.  |
|  | Loctite 601            | Used for high resistant locking of mechanical components that can be removed only after heating   |
|  | Loctite 675            | Used to lock cylindrical couplings and for the permanent locking of threaded parts, and also to lock shafts to bearings, gears, pulleys, pins, bushings, etc.                     |
| Gasket sealant   | Loctite 542            | Used by itself to seal grease fittings, tapered screw fittings and tapered screw fittings in hydraulic circuits of less than 50 mm in diameter.                                   |
|  | Loctite 510            | Used by itself on mounting flat surface<br>(Clearance between surfaces within 0.2 mm)   |
|  | Loctite 518            | Used by itself on mounting flat surface<br>(Clearance between surfaces within 0.5 mm)   |
| Antifriction compound<br>(Lubricant including<br>Molybdenum disulfide) | Litio EP MS2<br>NLGI 2 | Applied to bearings and taper shaft to facilitate press-fitting and to prevent sticking, burning or rusting.  |
| Grease<br>(Lithium grease)   | Litio EP<br>NLGI 2     | Applied to bearings, sliding parts and oil seals for lubrication, rust prevention and facilitation of assembling work.  |
| Vaseline   | —                      | Used for protecting battery electrode terminals from corrosion  |

In the wiring diagrams various colour and symbols are employed to indicate the thickness of wires.

This wire code table will help you understand WIRING DIAGRAMS.

Example: R-N 1.5 indicates a cable having a nominal number 1.5 and red coating with black stripe.

### CLASSIFICATION BY THICKNESS

| Nominal number | Copper wire    |                   |                    | Cable O.D. (mm) | Current rating (A) |
|----------------|----------------|-------------------|--------------------|-----------------|--------------------|
|                | Number strands | Ø of strands (mm) | Cross section (mm) |                 |                    |
| 0.5            | 16             | 0.20              | 0.35               | 1.55            | 3.5                |
| 1              | 14             | 0.30              | 0.99               | 2.80            | 11                 |
| 1.5            | 21             | 0.30              | 1.48               | 3.35            | 14                 |
| 2.5            | 35             | 0.30              | 2.47               | 3.80            | 20                 |
| 4              | 56             | 0.30              | 3.95               | 4.60            | 28                 |
| 6              | 84             | 0.30              | 5.93               | 5.20            | 37                 |

### CLASSIFICATION BY COLOUR AND CODE

| Code   | Primary    | Auxiliary          |     |                   |     |                  |     |                |     |                  |     |
|--------|------------|--------------------|-----|-------------------|-----|------------------|-----|----------------|-----|------------------|-----|
|        | A          | A-B                | A/B | A-G               | -   | A-N              | A/N | A-R            | -   | A-V              | A/V |
| Colour | Light Blue | Light Blue – White |     | Light Blue–Yellow |     | Light Blue–Black |     | Light Blue–Red |     | Light Blue–Green |     |
| Code   | B          | B-G                | -   | B-N               | B/N | B-R              | B/R | -              | -   | -                | -   |
| Colour | White      | White–Yellow       |     | White–Black       |     | White–Red        |     | -              |     | -                |     |
| Code   | C          | C-B                | C/B | C-L               | -   | C-N              | C/N | -              | -   | -                | -   |
| Colour | Orange     | Orange–White       |     | Orange–Blue       |     | Orange–Black     |     | -              |     | -                |     |
| Code   | G          | G-N                | G/N | -                 | G/R | -                | -   | -              | -   | -                | -   |
| Colour | Yellow     | Yellow–Black       |     | Yellow–Red        |     | -                |     | -              |     | -                |     |
| Code   | H          | H-L                | -   | H-N               | -   | H-R              | H/R | -              | -   | -                | -   |
| Colour | Grey       | Grey–Blue          |     | Grey–Black        |     | Grey–Red         |     | -              |     | -                |     |
| Code   | L          | -                  | L/B | L-G               | L/G | L-N              | L/N | L-R            | L/R | -                | -   |
| Colour | Blue       | Blue–White         |     | Blue–Yellow       |     | Blue–Black       |     | Blue–Red       |     | -                |     |
| Code   | M          | M-B                | M/B | M-N               | -   | M-V              | -   | -              | -   | -                | -   |
| Colour | Brown      | Brown–White        |     | Brown–Black       |     | Brown–Green      |     | -              |     | -                |     |
| Code   | N          | -                  | -   | -                 | -   | -                | -   | -              | -   | -                | -   |
| Colour | Black      | -                  |     | -                 |     | -                |     | -              |     | -                |     |
| Code   | R          | R-G                | -   | R-N               | R/N | R-V              | -   | -              | -   | -                | -   |
| Colour | Red        | Red–Yellow         |     | Red–Black         |     | Red–Green        |     | -              |     | -                |     |
| Code   | S          | S-G                | -   | S-N               | S/N | -                | -   | -              | -   | -                | -   |
| Colour | Pink       | Pink–Yellow        |     | Pink–Black        |     | -                |     | -              |     | -                |     |
| Code   | V          | V-B                | V/B | V-N               | V/N | -                | -   | -              | -   | -                | -   |
| Colour | Green      | Green–White        |     | Green–Black       |     | -                |     | -              |     | -                |     |
| Code   | Z          | Z-B                | -   | Z-N               | Z/N | -                | -   | -              | -   | -                | -   |
| Colour | Violet     | Violet–White       |     | Violet–Black      |     | -                |     | -              |     | -                |     |

### COMPOSITION OF THE COLOURS

The coloration of two-colour wires is indicated by the composition of the symbol listed.

Example: G-V = Yellow-Green with longitudinal colouring

G/V = Yellow-Green with transversal colouring

## WEIGHT TABLE

 This weight table is a guide for use when transporting or handling components.

Unit: kg

| Machine model                            | SK714-5 | SK815-5 |
|--|---------|---------|
| Engine assembly - Muffler - Exhaust pipe | 200     | 200     |
| Radiator                                 | 22      | 22      |
| Hydraulic oil tank (without oil)         | 21.5    | 21.5    |
| Engine hood                              | 14.5    | 14.5    |
| Cabin (without seat)                     | 215     | 215     |
| Seat:                                    |         |         |
| • standard                               | 10      | 10      |
| • with suspension                        | 16      | 16      |
| Engine-pump group                        | 278–285 | 283–290 |
| Piston pump:                             |         |         |
| • standard                               | 78      | 82      |
| • High-Flow                              | 84      | 88      |
| Wheel, assy. (standard)                  | 43      | 44      |
| Control valve:                           |         |         |
| • 3-spool (standard)                     | 19      | 19      |
| • 4-spool (High-Flow)                    | 21.5    | 21.5    |
| Work equipment (without bucket)          |         |         |
| • Arm                                    | 280     | 295     |
| • Work equipment support                 | 49      | 49      |
| • Bucket (L=1460 mm)                     | 159     | 171,5   |
| • Tilt cylinder                          | 17,3    | 16,8    |
| • Dump cylinder                          | 12      | 12      |

## TABLE OF OIL AND COOLANT QUANTITIES

| RESERVOIR                                     | KIND OF FLUID      | AMBIENT TEMPERATURE |           |            |   |               |        |    |    | CAPACITY (ℓ) |           |        |
|---|--------------------|---------------------|-----------|------------|---|---------------|--------|----|----|--------------|-----------|--------|
|   |                    | -30                 | -20       | -10        | 0 | 10            | 20     | 30 | 40 | 50°C         | Specified | Refill |
| Engine oil pan                                | OIL<br>• API CD    |                     |           | SAE 10W    |   |               | SAE 30 |    |    |              | 8         | 8      |
|   |                    |                     |           |            |   | SAE 40        |        |    |    |              |           |        |
|   |                    |                     |           | SAE 10W-30 |   |               |        |    |    |              |           |        |
|   |                    |                     | SAE 5W-30 |            |   |               |        |    |    |              |           |        |
| Hydraulic system and hydrostatic trasmissione | OIL<br>• API CD    |                     |           | SAE 10W    |   |               |        |    |    |              | 38        | 27     |
|   |                    |                     | SAE 5W-30 |            |   |               |        |    |    |              |           |        |
| Hydraulic circuit with biodegradable oil      |                    |                     |           |            |   |               |        |    |    |              | 38        | 27     |
| Final transmission case (ea.)                 | OIL<br>• API CD    |                     |           | SAE 10W-30 |   |               |        |    |    |              | 15.5      | 15.5   |
| Fuel tank                                     | DIESEL OIL         |                     | *         |            |   | ASTM D975 N.2 |        |    |    |              | 53        | -      |
| Engine cooling system                         | WATER + ANTIFREEZE |                     |           |            |   |               |        |    |    |              | 9         | -      |
|   | PERMANENT COOLANT  |                     |           |            |   |               |        |    |    |              | 9         | -      |

\* ASTM D975 N.

**IMPORTANT:**

(1) When the diesel oil sulphur content is less then 0.5%, change the engine oil according to the periodic maintenance intervals indicated in the operation and maintenance manual. In the diesel oil sulphur content exceeds 0.5% change the engine oil according to the following table:

| Sulphur content  | Engine oil change interval |
|------------------|----------------------------|
| from 0.5 to 1.0% | 1/2 of regular interval    |
| over 1.0%        | 1/4 of regular interval    |

(2) When starting the engine at temperatures below 0 °C, use engine oil SAE 10W, 20W-20 and 10W-30, even if during the day the temperature increases by 10 °C.

(3) Use engine oil with CD classification; if oil with CD classification is used, reduce the engine oil change interval by a half.

(4) Use original products, which have characteristics specifically formulated and approved for the engine, the hydraulic circuit of equipment and for reductions.

**First filling quantity:**

total quantity of oil, including the oil for the components and pipes.

**Oil change quantity:**

quantity of oil necessary to fill the system or unit during the normal inspection and maintenance operations.

ASTM: American Society of Testing and Materials

SAE: Society of Automotive Engineers

API: American Petroleum Institute

**PAGE INTENTIONALLY  
LEFT BLANK**

# CONVERSION TABLE

## METHOD OF USING THE CONVERSION TABLE

The conversion table in this section is provided to enable simple conversion of figures. For details of the method of using the conversion table, see the example given below.

### EXAMPLE

- Method of using the conversion table to convert from millimeters to inches.

#### 1. Convert 55 mm into inches.

- Locate the number 50 in the vertical column at the left side, take this as **(A)**, then draw a horizontal line from **(A)**.
- Locate the number 5 in the row across the top, take this as **(B)**, then draw a perpendicular line down from **(B)**.
- Take the point where the two lines cross as **(C)**. This point **(C)** gives the value when converting from millimeters to inches. Therefore, 55 mm = 2.165 in.

#### 2. Convert 550 mm into inches

- The number 550 does not appear in the table, so divide by 10 (move the decimal point one place to the left) to convert it to 55 mm.
- Carry out the same procedure as above to convert 55 mm to 2.165 in.
- The original value (550 mm) was divided by 10, so multiply 2.165 in. by 10 (move the decimal point one place to the right) to return to the original value. This gives 550 mm = 21.65 in.

From millimeters to inches

1 mm = 0.03937 in.

|               | 0     | 1     | 2     | 3     | 4     | 5                | 6     | 7     | 8     | 9     |
|---------------|-------|-------|-------|-------|-------|------------------|-------|-------|-------|-------|
| 0             | 0     | 0.039 | 0.079 | 0.118 | 0.157 | 0.197            | 0.236 | 0.276 | 0.315 | 0.354 |
| 10            | 0.394 | 0.433 | 0.472 | 0.512 | 0.551 | 0.591            | 0.630 | 0.669 | 0.709 | 0.748 |
| 20            | 0.787 | 0.827 | 0.866 | 0.906 | 0.945 | 0.984            | 1.024 | 1.063 | 1.102 | 1.142 |
| 30            | 1.181 | 1.220 | 1.260 | 1.299 | 1.339 | 1.378            | 1.417 | 1.457 | 1.496 | 1.536 |
| 40            | 1.575 | 1.614 | 1.654 | 1.693 | 1.732 | 1.772            | 1.811 | 1.850 | 1.890 | 1.929 |
| <b>(A)</b> 50 | 1.969 | 2.008 | 2.047 | 2.087 | 2.126 | <b>(C)</b> 2.165 | 2.205 | 2.244 | 2.283 | 2.323 |
| 60            | 2.362 | 2.402 | 2.441 | 2.480 | 2.520 | 2.559            | 2.598 | 2.638 | 2.677 | 2.717 |
| 70            | 2.756 | 2.795 | 2.835 | 2.874 | 2.913 | 2.953            | 2.992 | 3.032 | 3.071 | 3.110 |
| 80            | 3.150 | 3.189 | 3.228 | 3.268 | 3.307 | 3.346            | 3.386 | 3.425 | 3.465 | 3.504 |
| 90            | 3.543 | 3.583 | 3.622 | 3.661 | 3.701 | 3.740            | 3.780 | 3.819 | 3.858 | 3.898 |

**CONVERSION TABLE****From mm to in.**

1 mm = 0.03937 in.

|    | 0     | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     |
|----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0  | 0     | 0.039 | 0.079 | 0.118 | 0.157 | 0.197 | 0.236 | 0.276 | 0.315 | 0.354 |
| 10 | 0.394 | 0.433 | 0.472 | 0.512 | 0.551 | 0.591 | 0.630 | 0.669 | 0.709 | 0.748 |
| 20 | 0.787 | 0.827 | 0.866 | 0.906 | 0.945 | 0.984 | 1.024 | 1.063 | 1.102 | 1.142 |
| 30 | 1.181 | 1.220 | 1.260 | 1.299 | 1.339 | 1.378 | 1.417 | 1.457 | 1.496 | 1.536 |
| 40 | 1.575 | 1.614 | 1.654 | 1.693 | 1.732 | 1.772 | 1.811 | 1.850 | 1.890 | 1.929 |
| 50 | 1.969 | 2.008 | 2.047 | 2.087 | 2.126 | 2.165 | 2.205 | 2.244 | 2.283 | 2.323 |
| 60 | 2.362 | 2.402 | 2.441 | 2.480 | 2.520 | 2.559 | 2.598 | 2.638 | 2.677 | 2.717 |
| 70 | 2.756 | 2.795 | 2.835 | 2.874 | 2.913 | 2.953 | 2.992 | 3.032 | 3.071 | 3.110 |
| 80 | 3.150 | 3.189 | 3.228 | 3.268 | 3.307 | 3.346 | 3.386 | 3.425 | 3.465 | 3.504 |
| 90 | 3.543 | 3.583 | 3.622 | 3.661 | 3.701 | 3.740 | 3.780 | 3.819 | 3.858 | 3.898 |

**From kg to lb.**

1 kg = 2.2046 lb.

|    | 0      | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      |
|----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0  | 0      | 2.20   | 4.41   | 6.61   | 8.82   | 11.02  | 13.23  | 15.43  | 17.64  | 19.84  |
| 10 | 22.05  | 24.25  | 26.46  | 28.66  | 30.86  | 33.07  | 35.27  | 37.48  | 39.68  | 41.89  |
| 20 | 44.09  | 46.30  | 48.50  | 50.71  | 51.91  | 55.12  | 57.32  | 59.53  | 61.73  | 63.93  |
| 30 | 66.14  | 68.34  | 70.55  | 72.75  | 74.96  | 77.16  | 79.37  | 81.57  | 83.78  | 85.98  |
| 40 | 88.18  | 90.39  | 92.59  | 94.80  | 97.00  | 99.21  | 101.41 | 103.62 | 105.82 | 108.03 |
| 50 | 110.23 | 112.44 | 114.64 | 116.85 | 119.05 | 121.24 | 123.46 | 125.66 | 127.87 | 130.07 |
| 60 | 132.28 | 134.48 | 136.69 | 138.89 | 141.10 | 143.30 | 145.51 | 147.71 | 149.91 | 152.12 |
| 70 | 154.32 | 156.53 | 158.73 | 160.94 | 163.14 | 165.35 | 167.55 | 169.76 | 171.96 | 174.17 |
| 80 | 176.37 | 178.57 | 180.78 | 182.98 | 185.19 | 187.39 | 189.60 | 191.80 | 194.01 | 196.21 |
| 90 | 198.42 | 200.62 | 202.83 | 205.03 | 207.24 | 209.44 | 211.64 | 213.85 | 216.05 | 218.26 |

**From liter to U.S. Gall.**

1 ℓ = 0.2642 U.S. Gall.

|    | 0      | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      |
|----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0  | 0      | 0.264  | 0.528  | 0.793  | 1.057  | 1.321  | 1.585  | 1.849  | 2.113  | 2.378  |
| 10 | 2.642  | 2.906  | 3.170  | 3.434  | 3.698  | 3.963  | 4.227  | 4.491  | 4.755  | 5.019  |
| 20 | 5.283  | 5.548  | 5.812  | 6.076  | 6.340  | 6.604  | 6.869  | 7.133  | 7.397  | 7.661  |
| 30 | 7.925  | 8.189  | 8.454  | 8.718  | 8.982  | 9.246  | 9.510  | 9.774  | 10.039 | 10.303 |
| 40 | 10.567 | 10.831 | 11.095 | 11.359 | 11.624 | 11.888 | 12.152 | 12.416 | 12.680 | 12.944 |
| 50 | 13.209 | 13.473 | 13.737 | 14.001 | 14.265 | 14.529 | 14.795 | 15.058 | 15.322 | 15.586 |
| 60 | 15.850 | 16.115 | 16.379 | 16.643 | 16.907 | 17.171 | 17.435 | 17.700 | 17.964 | 18.228 |
| 70 | 18.492 | 18.756 | 19.020 | 19.285 | 19.549 | 19.813 | 20.077 | 20.341 | 20.605 | 20.870 |
| 80 | 21.134 | 21.398 | 21.662 | 21.926 | 22.190 | 22.455 | 22.719 | 22.983 | 23.247 | 23.511 |
| 90 | 23.775 | 24.040 | 24.304 | 24.568 | 24.832 | 25.096 | 25.361 | 25.625 | 25.889 | 26.153 |

**From liter to U.K. Gall.**

1 ℓ = 0.21997 U.K. Gall.

|    | 0      | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      |
|----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0  | 0      | 0.220  | 0.440  | 0.660  | 0.880  | 1.100  | 1.320  | 1.540  | 1.760  | 1.980  |
| 10 | 2.200  | 2.420  | 2.640  | 2.860  | 3.080  | 3.300  | 3.520  | 3.740  | 3.950  | 4.179  |
| 20 | 4.399  | 4.619  | 4.839  | 5.059  | 5.279  | 5.499  | 5.719  | 5.939  | 6.159  | 6.379  |
| 30 | 6.599  | 6.819  | 7.039  | 7.259  | 7.479  | 7.699  | 7.919  | 8.139  | 8.359  | 8.579  |
| 40 | 8.799  | 9.019  | 9.239  | 9.459  | 9.679  | 9.899  | 10.119 | 10.339 | 10.559 | 10.778 |
| 50 | 10.998 | 11.281 | 11.438 | 11.658 | 11.878 | 12.098 | 12.318 | 12.528 | 12.758 | 12.978 |
| 60 | 13.198 | 13.418 | 13.638 | 13.858 | 14.078 | 14.298 | 14.518 | 14.738 | 14.958 | 15.178 |
| 70 | 15.398 | 15.618 | 15.838 | 16.058 | 16.278 | 16.498 | 16.718 | 16.938 | 17.158 | 17.378 |
| 80 | 17.598 | 17.818 | 18.037 | 12.257 | 18.477 | 18.697 | 18.917 | 19.137 | 19.357 | 19.577 |
| 90 | 19.797 | 20.017 | 20.237 | 20.457 | 20.677 | 20.897 | 21.117 | 21.337 | 21.557 | 21.777 |

**CONVERSION TABLE**

**From Nm to lb.ft.**

1 Nm = 0.737 lb.ft.

|     | 0       | 1       | 2       | 3       | 4       | 5       | 6       | 7       | 8       | 9       |
|-----|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0   | 0       | 0.737   | 1.474   | 2.211   | 2.948   | 3.685   | 4.422   | 5.159   | 5.896   | 6.633   |
| 10  | 7.370   | 8.107   | 8.844   | 9.581   | 10.318  | 11.055  | 11.792  | 12.529  | 13.266  | 14.003  |
| 20  | 14.740  | 15.477  | 16.214  | 16.951  | 17.688  | 18.425  | 19.162  | 19.899  | 20.636  | 21.373  |
| 30  | 22.110  | 22.847  | 23.584  | 24.321  | 25.058  | 25.795  | 26.532  | 27.269  | 28.006  | 28.743  |
| 40  | 29.480  | 30.217  | 30.954  | 31.691  | 32.428  | 33.165  | 33.902  | 34.639  | 35.376  | 36.113  |
| 50  | 36.850  | 37.587  | 38.324  | 39.061  | 39.798  | 40.535  | 41.272  | 42.009  | 42.746  | 43.483  |
| 60  | 44.220  | 44.957  | 45.694  | 46.431  | 47.168  | 47.905  | 48.642  | 49.379  | 50.116  | 50.853  |
| 70  | 51.590  | 52.327  | 53.064  | 53.801  | 54.538  | 55.275  | 56.012  | 56.749  | 57.486  | 58.223  |
| 80  | 58.960  | 59.697  | 60.434  | 61.171  | 61.908  | 62.645  | 63.382  | 64.119  | 64.856  | 65.593  |
| 90  | 66.330  | 67.067  | 67.804  | 68.541  | 69.278  | 70.015  | 70.752  | 71.489  | 72.226  | 72.963  |
| 100 | 73.700  | 74.437  | 75.174  | 75.911  | 76.648  | 77.385  | 78.122  | 78.859  | 79.596  | 80.333  |
| 110 | 81.070  | 81.807  | 82.544  | 83.281  | 84.018  | 84.755  | 85.492  | 86.229  | 86.966  | 87.703  |
| 120 | 88.440  | 89.177  | 89.914  | 90.651  | 91.388  | 92.125  | 92.862  | 93.599  | 94.336  | 95.073  |
| 130 | 95.810  | 96.547  | 97.284  | 98.021  | 98.758  | 99.495  | 100.232 | 100.969 | 101.706 | 102.443 |
| 140 | 103.180 | 103.917 | 104.654 | 105.391 | 106.128 | 106.865 | 107.602 | 108.339 | 109.076 | 109.813 |
| 150 | 110.550 | 111.287 | 112.024 | 112.761 | 113.498 | 114.235 | 114.972 | 115.709 | 116.446 | 117.183 |
| 160 | 117.920 | 118.657 | 119.394 | 120.131 | 120.868 | 121.605 | 122.342 | 123.079 | 123.816 | 124.553 |
| 170 | 125.290 | 126.027 | 126.764 | 127.501 | 128.238 | 128.975 | 129.712 | 130.449 | 131.186 | 131.923 |
| 180 | 132.660 | 133.397 | 134.134 | 134.871 | 135.608 | 136.345 | 137.082 | 137.819 | 138.556 | 139.293 |
| 190 | 140.030 | 140.767 | 141.504 | 142.241 | 142.978 | 143.715 | 144.452 | 145.189 | 145.926 | 146.663 |

From Nm to kgm

1 Nm = 0.102 kgm

|     | 0      | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0   | 0      | 0.102  | 0.204  | 0.306  | 0.408  | 0.510  | 0.612  | 0.714  | 0.816  | 0.918  |
| 10  | 1.020  | 1.222  | 1.224  | 1.326  | 1.428  | 1.530  | 1.632  | 1.734  | 1.836  | 1.938  |
| 20  | 2.040  | 2.142  | 2.244  | 2.346  | 2.448  | 2.550  | 2.652  | 2.754  | 2.856  | 2.958  |
| 30  | 3.060  | 3.162  | 3.264  | 3.366  | 3.468  | 3.570  | 3.672  | 3.774  | 3.876  | 3.978  |
| 40  | 4.080  | 4.182  | 4.284  | 4.386  | 4.488  | 4.590  | 4.692  | 4.794  | 4.896  | 4.998  |
| 50  | 5.100  | 5.202  | 5.304  | 5.406  | 5.508  | 5.610  | 5.712  | 5.814  | 5.916  | 6.018  |
| 60  | 6.120  | 6.222  | 6.324  | 6.426  | 6.528  | 6.630  | 6.732  | 6.834  | 6.936  | 7.038  |
| 70  | 7.140  | 7.242  | 7.344  | 7.446  | 7.548  | 7.650  | 7.752  | 7.854  | 7.956  | 8.058  |
| 80  | 8.160  | 8.262  | 8.364  | 8.466  | 8.568  | 8.670  | 8.772  | 8.874  | 8.976  | 9.078  |
| 90  | 9.180  | 9.282  | 9.384  | 9.486  | 9.588  | 9.690  | 9.792  | 9.894  | 9.996  | 10.098 |
| 100 | 10.200 | 10.302 | 10.404 | 10.506 | 10.608 | 10.710 | 10.812 | 10.914 | 11.016 | 11.118 |
| 110 | 11.220 | 11.322 | 11.424 | 11.526 | 11.628 | 11.730 | 11.832 | 11.934 | 12.036 | 12.138 |
| 120 | 12.240 | 12.342 | 12.444 | 12.546 | 12.648 | 12.750 | 12.852 | 12.954 | 13.056 | 13.158 |
| 130 | 13.260 | 13.362 | 13.464 | 13.566 | 13.668 | 13.770 | 13.872 | 13.974 | 14.076 | 14.178 |
| 140 | 14.280 | 14.382 | 14.484 | 14.586 | 14.688 | 14.790 | 14.892 | 14.994 | 15.096 | 15.198 |
| 150 | 15.300 | 15.402 | 15.504 | 15.606 | 15.708 | 15.810 | 15.912 | 16.014 | 16.116 | 16.218 |
| 160 | 16.320 | 16.422 | 16.524 | 16.626 | 16.728 | 16.830 | 16.932 | 17.034 | 17.136 | 17.238 |
| 170 | 17.340 | 17.442 | 17.544 | 17.646 | 17.748 | 17.850 | 17.952 | 18.054 | 18.156 | 18.258 |
| 180 | 18.360 | 18.462 | 18.564 | 18.666 | 18.768 | 18.870 | 18.972 | 19.074 | 19.176 | 19.278 |
| 190 | 19.380 | 19.482 | 19.584 | 19.686 | 19.788 | 19.890 | 19.992 | 20.094 | 20.196 | 20.298 |

**CONVERSION TABLE**

**From kgm to lb.ft.**

1 kgm = 7.233 lb.ft.

|     | 0      | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0   | 0      | 7.2    | 14.5   | 21.7   | 28.9   | 36.2   | 43.4   | 50.6   | 57.9   | 65.1   |
| 10  | 72.3   | 79.6   | 86.8   | 94.0   | 101.3  | 108.5  | 115.7  | 123.0  | 130.2  | 137.4  |
| 20  | 144.7  | 151.9  | 159.1  | 166.4  | 173.6  | 180.8  | 188.1  | 195.3  | 202.5  | 209.8  |
| 30  | 217.0  | 224.2  | 231.5  | 238.7  | 245.9  | 253.2  | 260.4  | 267.6  | 274.9  | 282.1  |
| 40  | 289.3  | 296.6  | 303.8  | 311.0  | 318.3  | 325.5  | 332.7  | 340.0  | 347.2  | 354.4  |
| 50  | 361.7  | 368.9  | 376.1  | 383.4  | 390.6  | 397.8  | 405.1  | 412.3  | 419.5  | 426.8  |
| 60  | 434.0  | 441.2  | 448.5  | 455.7  | 462.9  | 470.2  | 477.4  | 484.6  | 491.8  | 499.1  |
| 70  | 506.3  | 513.5  | 520.8  | 528.0  | 535.2  | 542.5  | 549.7  | 556.9  | 564.2  | 571.4  |
| 80  | 578.6  | 585.9  | 593.1  | 600.3  | 607.6  | 614.8  | 622.0  | 629.3  | 636.5  | 643.7  |
| 90  | 651.0  | 658.2  | 665.4  | 672.2  | 679.9  | 687.1  | 694.4  | 701.6  | 708.8  | 716.1  |
| 100 | 723.3  | 730.5  | 737.8  | 745.0  | 752.2  | 759.5  | 766.7  | 773.9  | 781.2  | 788.4  |
| 110 | 795.6  | 802.9  | 810.1  | 817.3  | 824.6  | 831.8  | 839.0  | 846.3  | 853.5  | 860.7  |
| 120 | 868.0  | 875.2  | 882.4  | 889.7  | 896.9  | 904.1  | 911.4  | 918.6  | 925.8  | 933.1  |
| 130 | 940.3  | 947.5  | 954.8  | 962.0  | 969.2  | 976.5  | 983.7  | 990.9  | 998.2  | 1005.4 |
| 140 | 1012.6 | 1019.9 | 1027.1 | 1034.3 | 1041.5 | 1048.8 | 1056.0 | 1063.2 | 1070.5 | 1077.7 |
| 150 | 1084.9 | 1092.2 | 1099.4 | 1106.6 | 1113.9 | 1121.1 | 1128.3 | 1135.6 | 1142.8 | 1150.0 |
| 160 | 1157.3 | 1164.5 | 1171.7 | 1179.0 | 1186.2 | 1193.4 | 1200.7 | 1207.9 | 1215.1 | 1222.4 |
| 170 | 1129.6 | 1236.8 | 1244.1 | 1251.3 | 1258.5 | 1265.8 | 1273.0 | 1280.1 | 1287.5 | 1294.7 |
| 180 | 1301.9 | 1309.2 | 1316.4 | 1323.6 | 1330.9 | 1338.1 | 1345.3 | 1352.6 | 1359.8 | 1367.0 |
| 190 | 1374.3 | 1381.5 | 1388.7 | 1396.0 | 1403.2 | 1410.4 | 1417.7 | 1424.9 | 1432.1 | 1439.4 |

From bar to psi (lb/in<sup>2</sup>)

1 bar = 14.503 psi

|     | 0      | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0   | 0      | 14.5   | 29.0   | 43.5   | 58.0   | 72.5   | 87.0   | 101.5  | 116.0  | 130.5  |
| 10  | 145.0  | 159.5  | 174.0  | 188.5  | 203.0  | 217.5  | 232.0  | 246.5  | 261.0  | 275.6  |
| 20  | 290.0  | 304.6  | 319.1  | 333.6  | 348.1  | 362.6  | 377.1  | 391.6  | 406.1  | 420.6  |
| 30  | 435.1  | 449.6  | 464.1  | 478.6  | 493.1  | 507.6  | 522.1  | 536.6  | 551.1  | 565.6  |
| 40  | 580.1  | 594.6  | 609.1  | 623.6  | 638.1  | 652.6  | 667.1  | 681.6  | 696.1  | 710.6  |
| 50  | 725.1  | 739.6  | 754.1  | 768.6  | 783.2  | 797.7  | 812.2  | 826.7  | 841.2  | 855.7  |
| 60  | 870.2  | 884.7  | 899.2  | 913.7  | 928.2  | 942.7  | 957.2  | 971.7  | 986.2  | 1000.7 |
| 70  | 1015.2 | 1029.7 | 1044.2 | 1058.7 | 1073.2 | 1087.7 | 1102.2 | 1116.7 | 1131.2 | 1145.7 |
| 80  | 1160.2 | 1174.7 | 1189.2 | 1203.7 | 1218.2 | 1232.7 | 1247.2 | 1261.8 | 1276.3 | 1290.8 |
| 90  | 1305.3 | 1319.8 | 1334.3 | 1348.8 | 1363.3 | 1377.8 | 1392.3 | 1406.8 | 1421.3 | 1435.8 |
| 100 | 1450.3 | 1464.8 | 1479.3 | 1493.8 | 1508.3 | 1522.8 | 1537.3 | 1551.8 | 1566.3 | 1580.8 |
| 110 | 1595.3 | 1609.8 | 1624.3 | 1638.8 | 1653.3 | 1667.8 | 1682.3 | 1696.8 | 1711.3 | 1725.8 |
| 120 | 1740.4 | 1754.9 | 1769.4 | 1783.9 | 1798.4 | 1812.9 | 1827.4 | 1841.9 | 1856.4 | 1870.8 |
| 130 | 1885.4 | 1899.9 | 1914.4 | 1928.9 | 1943.4 | 1957.9 | 1972.4 | 1986.9 | 2001.4 | 2015.9 |
| 140 | 2030.4 | 2044.9 | 2059.4 | 2073.9 | 2088.4 | 2102.9 | 1217.4 | 2131.9 | 2146.4 | 2160.9 |
| 150 | 2175.4 | 2189.9 | 2204.4 | 2218.9 | 2233.5 | 2248.0 | 2262.5 | 2277.0 | 2291.5 | 2306.0 |
| 160 | 2320.5 | 2335.0 | 2349.5 | 2364.0 | 2378.5 | 2393.0 | 2407.5 | 2422.0 | 2436.5 | 2451.0 |
| 170 | 2465.5 | 2480.0 | 2494.5 | 2509.0 | 2523.5 | 2538.0 | 2552.5 | 2567.0 | 2581.5 | 2596.0 |
| 180 | 2610.5 | 2625.0 | 2639.5 | 2654.0 | 2668.5 | 2683.0 | 2697.7 | 2712.1 | 2726.6 | 2641.1 |
| 190 | 2755.6 | 2770.0 | 2784.6 | 2799.1 | 2813.6 | 2828.1 | 2842.6 | 2857.1 | 2871.6 | 2886.1 |
| 200 | 2900.6 | 2915.1 | 2929.6 | 2944.1 | 2958.6 | 2973.1 | 2987.6 | 3002.1 | 3016.6 | 3031.1 |
| 210 | 3045.6 | 3060.1 | 3074.6 | 3089.1 | 3103.6 | 3118.1 | 3132.6 | 3147.1 | 3161.6 | 3176.1 |
| 220 | 3190.7 | 3205.2 | 3219.7 | 3234.2 | 3248.7 | 3263.2 | 3277.7 | 3192.2 | 3306.7 | 3321.2 |
| 230 | 3335.7 | 3350.2 | 3364.7 | 3379.2 | 3393.7 | 3408.2 | 3422.7 | 3437.2 | 3451.7 | 3466.2 |
| 240 | 3480.7 | 3495.2 | 3509.7 | 3524.2 | 3538.7 | 3553.2 | 3567.7 | 3582.2 | 3596.7 | 3611.2 |

**TEMPERATURE**

Fahrenheit-Centigrade conversion; a simple way to convert a Fahrenheit temperature reading into a Centigrade temperature reading or vice versa is to enter the accompanying table in the center or boldface column of figures.

These figures refer to the temperature in either Fahrenheit or Centigrade degrees.

If it is desired to convert from Fahrenheit to Centigrade degrees, consider the center column as a table of Fahrenheit temperatures and read the corresponding Centigrade temperature in the column at the left.

If it is desired to convert from Centigrade to Fahrenheit degrees, consider the center column as a table of Centigrade values and read the corresponding Fahrenheit temperature on the right.

1 °C = 33.8°F

| °C    |            | °F    | °C    |           | °F    | °C   |           | °F    | °C   |            | °F    |
|-------|------------|-------|-------|-----------|-------|------|-----------|-------|------|------------|-------|
| -40.4 | <b>-40</b> | -40.0 | -11.7 | <b>11</b> | 51.8  | 7.8  | <b>46</b> | 144.8 | 27.2 | <b>81</b>  | 117.8 |
| -37.2 | <b>-35</b> | -31.0 | -11.1 | <b>12</b> | 53.6  | 8.3  | <b>47</b> | 116.6 | 27.8 | <b>82</b>  | 179.6 |
| -34.4 | <b>-30</b> | -22.0 | -10.6 | <b>13</b> | 55.4  | 8.9  | <b>48</b> | 118.4 | 28.3 | <b>83</b>  | 181.4 |
| -31.7 | <b>-25</b> | -13.0 | -10.0 | <b>14</b> | 57.2  | 9.4  | <b>49</b> | 120.2 | 28.9 | <b>84</b>  | 183.2 |
| -28.9 | <b>-20</b> | -4.0  | -9.4  | <b>15</b> | 59.0  | 10.0 | <b>50</b> | 122.0 | 29.4 | <b>85</b>  | 185.0 |
| -28.3 | <b>-19</b> | -2.2  | -8.9  | <b>16</b> | 60.8  | 10.6 | <b>51</b> | 123.8 | 30.0 | <b>86</b>  | 186.8 |
| -27.8 | <b>-18</b> | -0.4  | -8.3  | <b>17</b> | 62.6  | 11.1 | <b>52</b> | 125.6 | 30.6 | <b>87</b>  | 188.6 |
| -27.2 | <b>-17</b> | 1.4   | -7.8  | <b>18</b> | 64.4  | 11.7 | <b>53</b> | 127.4 | 31.1 | <b>88</b>  | 190.4 |
| -26.7 | <b>-16</b> | 3.2   | -7.2  | <b>19</b> | 66.2  | 12.2 | <b>54</b> | 129.2 | 31.7 | <b>89</b>  | 192.2 |
| -26.1 | <b>-15</b> | 5.0   | -6.7  | <b>20</b> | 68.0  | 12.8 | <b>55</b> | 131.0 | 32.2 | <b>90</b>  | 194.0 |
| -25.6 | <b>-14</b> | 6.8   | -6.1  | <b>21</b> | 69.8  | 13.3 | <b>56</b> | 132.8 | 32.8 | <b>91</b>  | 195.8 |
| -25.0 | <b>-13</b> | 8.6   | -5.6  | <b>22</b> | 71.6  | 13.9 | <b>57</b> | 134.6 | 33.3 | <b>92</b>  | 197.6 |
| -24.4 | <b>-12</b> | 10.4  | -5.0  | <b>23</b> | 73.4  | 14.4 | <b>58</b> | 136.4 | 33.9 | <b>93</b>  | 199.4 |
| -23.9 | <b>-11</b> | 12.2  | -4.4  | <b>24</b> | 75.2  | 15.0 | <b>59</b> | 138.2 | 34.4 | <b>94</b>  | 201.2 |
| -23.3 | <b>-10</b> | 14.0  | -3.9  | <b>25</b> | 77.0  | 15.6 | <b>60</b> | 140.0 | 35.0 | <b>95</b>  | 203.0 |
| -22.8 | <b>-9</b>  | 15.8  | -3.3  | <b>26</b> | 78.8  | 16.1 | <b>61</b> | 141.8 | 35.6 | <b>96</b>  | 204.8 |
| -22.2 | <b>-8</b>  | 17.6  | -2.8  | <b>27</b> | 80.6  | 16.7 | <b>62</b> | 143.6 | 36.1 | <b>97</b>  | 206.6 |
| -21.7 | <b>-7</b>  | 19.4  | -2.2  | <b>28</b> | 82.4  | 17.2 | <b>63</b> | 145.4 | 36.7 | <b>98</b>  | 208.4 |
| -21.1 | <b>-6</b>  | 21.2  | -1.7  | <b>29</b> | 84.2  | 17.8 | <b>64</b> | 147.2 | 37.2 | <b>99</b>  | 210.2 |
| -20.6 | <b>-5</b>  | 23.0  | -1.1  | <b>30</b> | 86.0  | 18.3 | <b>65</b> | 149.0 | 37.8 | <b>100</b> | 212.0 |
| -20.0 | <b>-4</b>  | 24.8  | -0.6  | <b>31</b> | 87.8  | 18.9 | <b>66</b> | 150.8 | 40.6 | <b>105</b> | 221.0 |
| -19.4 | <b>-3</b>  | 26.6  | 0.0   | <b>32</b> | 89.6  | 19.4 | <b>67</b> | 152.6 | 43.3 | <b>110</b> | 230.0 |
| -18.9 | <b>-2</b>  | 28.4  | 0.6   | <b>33</b> | 91.4  | 20.0 | <b>68</b> | 154.4 | 46.1 | <b>115</b> | 239.0 |
| -18.3 | <b>-1</b>  | 30.2  | 1.1   | <b>34</b> | 93.2  | 20.6 | <b>69</b> | 156.2 | 48.9 | <b>120</b> | 248.0 |
| -17.8 | <b>0</b>   | 32.0  | 1.7   | <b>35</b> | 95.0  | 21.1 | <b>70</b> | 158.0 | 51.7 | <b>125</b> | 257.0 |
| -17.2 | <b>1</b>   | 33.8  | 2.2   | <b>36</b> | 96.8  | 21.7 | <b>71</b> | 159.8 | 54.4 | <b>130</b> | 266.0 |
| -16.7 | <b>2</b>   | 35.6  | 2.8   | <b>37</b> | 98.6  | 22.2 | <b>72</b> | 161.6 | 57.2 | <b>135</b> | 275.0 |
| -16.1 | <b>3</b>   | 37.4  | 3.3   | <b>38</b> | 100.4 | 22.8 | <b>73</b> | 163.4 | 60.0 | <b>140</b> | 284.0 |
| -15.6 | <b>4</b>   | 39.2  | 3.9   | <b>39</b> | 102.2 | 23.3 | <b>74</b> | 165.2 | 62.7 | <b>145</b> | 293.0 |
| -15.0 | <b>5</b>   | 41.0  | 4.4   | <b>40</b> | 104.0 | 23.9 | <b>75</b> | 167.0 | 65.6 | <b>150</b> | 302.0 |
| -14.4 | <b>6</b>   | 42.8  | 5.0   | <b>41</b> | 105.8 | 24.4 | <b>76</b> | 168.8 | 68.3 | <b>155</b> | 311.0 |
| -13.9 | <b>7</b>   | 44.6  | 5.6   | <b>42</b> | 107.6 | 25.0 | <b>77</b> | 170.6 | 71.1 | <b>160</b> | 320.0 |
| -13.3 | <b>8</b>   | 46.4  | 6.1   | <b>43</b> | 109.4 | 25.6 | <b>78</b> | 172.4 | 73.9 | <b>165</b> | 329.0 |
| -12.8 | <b>9</b>   | 48.2  | 6.7   | <b>44</b> | 111.2 | 26.1 | <b>79</b> | 174.2 | 76.7 | <b>170</b> | 338.0 |
| -12.2 | <b>10</b>  | 50.0  | 7.2   | <b>45</b> | 113.0 | 26.7 | <b>80</b> | 176.0 | 79.4 | <b>175</b> | 347.0 |

**GROUP**

**10**



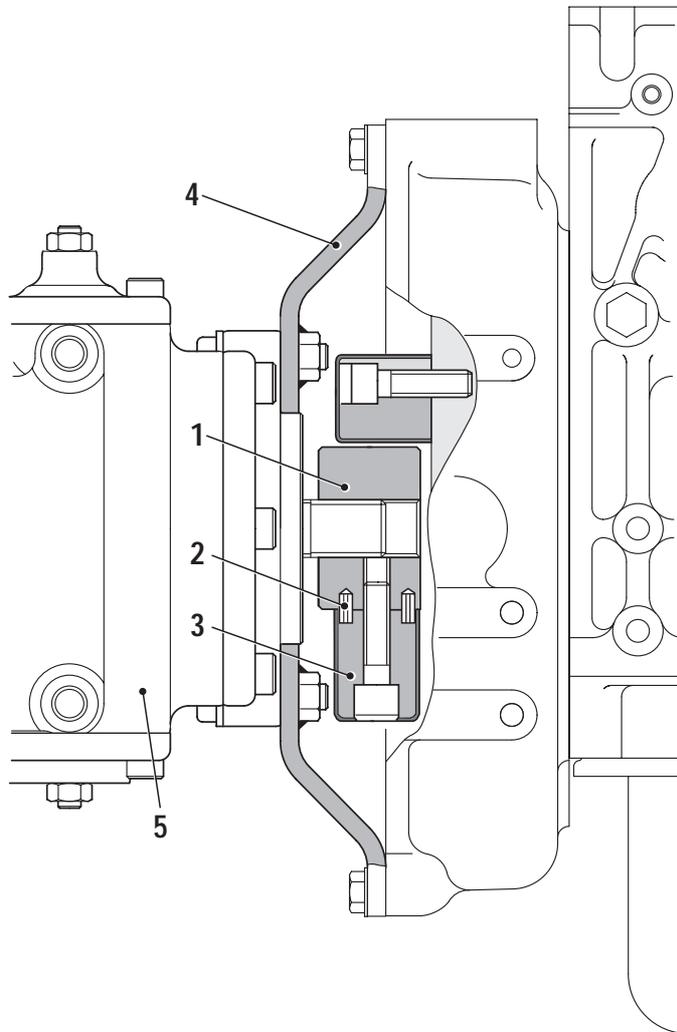
---

# 10 STRUCTURE AND FUNCTION

---

|  |    |   |     |
|--|----|---|-----|
| P.T.O. ....  | 2  | Pattern change valve (Optional).....                    | 54  |
| Power train .....                                  | 3  | R.H. PPC Valve (Standard).....                          | 58  |
| Transmission .....                                 | 4  | R.H. PPC Valve (Pattern Change) (Optional) .....        | 62  |
| Final drive .....                                  | 6  | L.H. PPC Valve (Standard) .....                         | 66  |
| Hydraulic circuit SK714-5 (Standard) .....         | 13 | L.H. PPC VALVE (Pattern Change) (Optional) .....        | 70  |
| Hydraulic circuit SK714-5 (Road homologation)..... | 14 | Cylinders .....   | 74  |
| Hydraulic circuit SK815-5 (Standard) .....         | 15 | Electrical diagram (Engine line).....                   | 75  |
| Hydraulic circuit SK815-5 (Road homologation)..... | 16 | Electrical diagram (Frame line standard) .....          | 79  |
| Hydraulic pump.....                                | 17 | Electrical diagram (Frame line optional) .....          | 83  |
| Control valve (3-Spool).....                       | 36 | Electrical diagram (Cabin line standard) .....          | 87  |
| Control valve (4-Spool).....                       | 39 | Electrical diagram (Cabin line optional).....           | 93  |
| CLSS .....   | 43 | Electrical diagram (Top-cabin light line standard) ..   | 101 |
| Solenoid valve .....                               | 51 | Electrical diagram (Top-cabin light line omologation) . | 103 |
| Accumulator.....                                   | 53 | Electrical diagram (Top-cabin light line optional)....  | 105 |

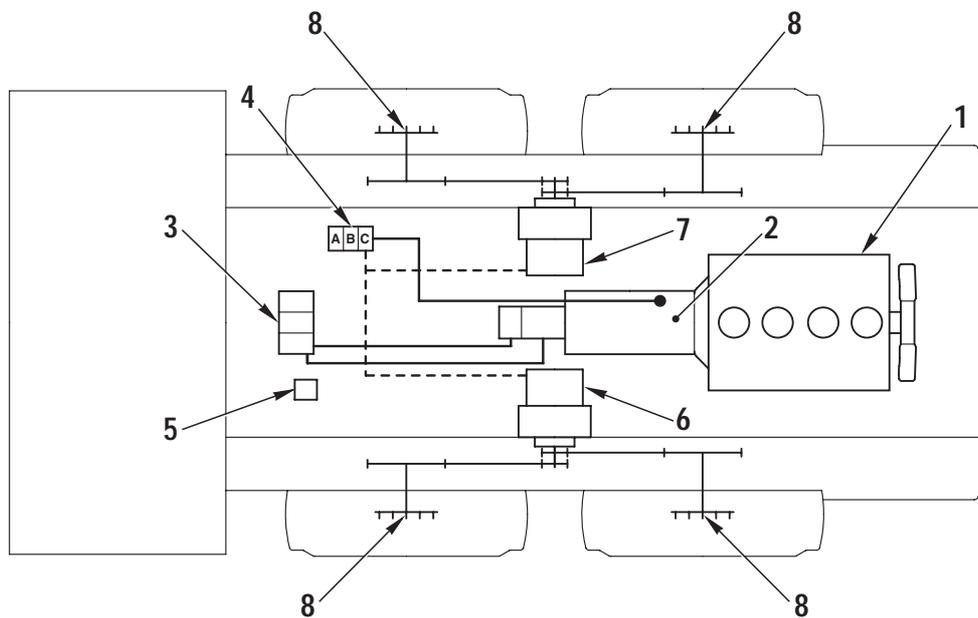
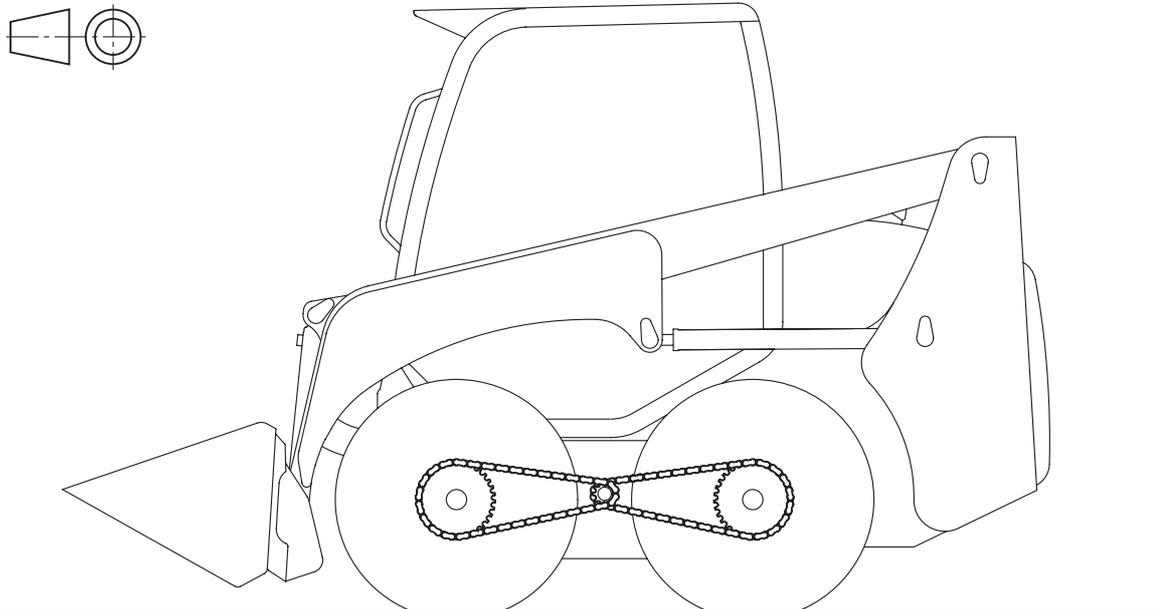
## P.T.O.



RKS01090

1. Joint
2. Spring pin
3. Dumper
4. Flywheel cover
5. Hydraulic pump

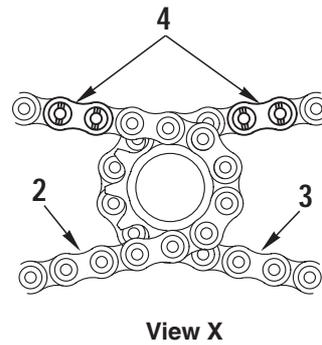
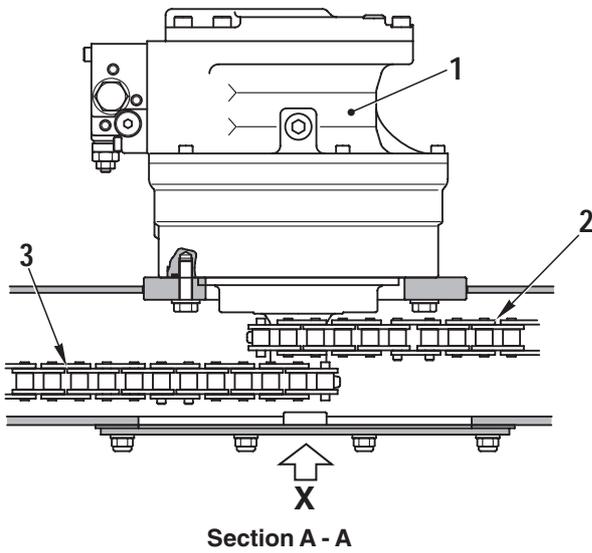
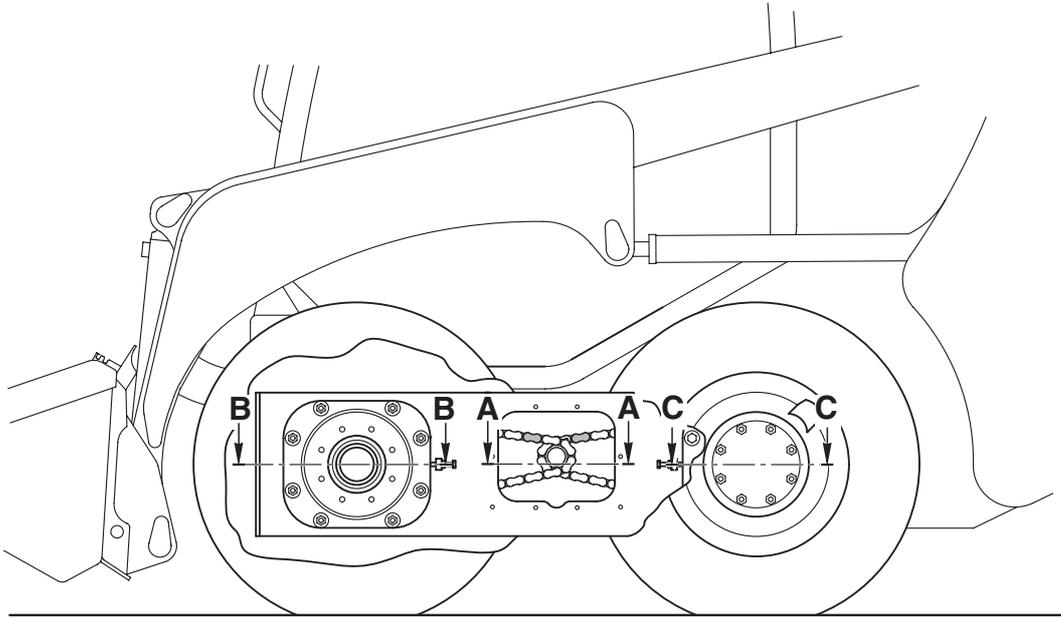
# POWER TRAIN



RKS00990

- |                     |                             |
|---------------------|-----------------------------|
| 1. Engine           | 5. High-flow solenoid valve |
| 2. Hydraulic pump   | 6. L.H. final drive         |
| 3. Control valve    | 7. R.H. final drive         |
| 4. Solenoid valve   | 8. Axle                     |
| 4a. Servocontrol    |                             |
| 4b. Speed increment |                             |
| 4c. Parking brake   |                             |

# TRANSMISSION



RKS01001

- 1. L.H. final drive
- 2. Front trasmission chain
- 3. Rear trasmission chain
- 4. Master link