

Product: New Holland LS180.B,LS185.B,LS190.B Skid Steer Loader Service Repair Workshop Manual
Full Download: <https://www.arepairmanual.com/downloads/new-holland-ls180-bl-s185-bl-s190-b-skid-steer-loader-service-repair-workshop-manual/>



NEW HOLLAND

LS180.B
LS185.B
LS190.B

Workshop
Manual

Workshop
Manual

Print No. 604.13.552.01
English - Printed in Italy

 **NEW HOLLAND**

LS180.B
LS185.B
LS190.B

Sample of manual Download All 837 pages at:
<https://www.arepairmanual.com/downloads/new-holland-ls180-bl-s185-bl-s190-b-skid-steer-loader-service-repair-workshop-manual/>

PROVEN PERFORMANCE



REPAIR MANUAL



LS180.B
LS185.B
LS190.B

Contents

INTRODUCTION

DISTRIBUTION SYSTEMS

A

| | |
|----------------------------------|--------|
| PRIMARY HYDRAULIC POWER SYSTEM | A.10.A |
| SECONDARY HYDRAULIC POWER SYSTEM | A.12.A |
| HIGH-FLOW HYDRAULIC POWER SYSTEM | A.16.A |
| ELECTRICAL POWER SYSTEM | A.30.A |
| LIGHTING SYSTEM | A.40.A |

POWER PRODUCTION

B

| | |
|---------------------------|--------|
| ENGINE | B.10.A |
| FUEL AND INJECTION SYSTEM | B.20.A |
| AIR INTAKE SYSTEM | B.30.A |
| ENGINE COOLANT SYSTEM | B.50.A |
| LUBRICATION SYSTEM | B.60.A |
| STARTING SYSTEM | B.80.A |

POWER TRAIN

C

| | |
|-------------------------------|--------|
| POWER COUPLING Fixed coupling | C.10.B |
| TRANSMISSION Hydrostatic | C.20.F |

TRAVELLING

D

| | |
|--------------------------|--------|
| FRONT AXLE | D.10.A |
| REAR AXLE | D.12.A |
| STEERING Steering clutch | D.20.F |
| PARKING BRAKE Hydraulic | D.32.C |
| WHEELS AND TRACKS Wheels | D.50.C |
| Final drive | D.15.A |

BODY AND STRUCTURE

E

| | |
|------------------------------------|--------|
| USER CONTROLS AND SEAT | E.32.A |
| USER PLATFORM | E.34.A |
| ENVIRONMENT CONTROL Heating system | E.40.B |

ENVIRONMENT CONTROL Air-conditioning system E.40.C

SAFETY SECURITY ACCESSORIES Safety E.50.B

WORKING ARM H

BOOM Lift H.20.B

SINGLE ARM Lift H.40.B

SINGLE ARM TOOL ATTACHMENT Tilt H.50.C

TOOLS AND COUPLERS J

CARRYING Unarticulated tools J.50.B

COUPLING Hydraulic coupling J.80.C

COUPLING Mechanical coupling J.80.B

INTRODUCTION

Contents

INTRODUCTION

| | |
|-----------------------------------|----|
| Basic instructions (- A.90.A.05) | 3 |
| Torque (- A.90.A.10) | 7 |
| Conversion factors (- A.92.A.21) | 11 |

Basic instructions (- A.90.A.05)

Technical Information

This manual has been produced by a new technical information system. This new system is designed to deliver technical information electronically through CDROM and in paper manuals. A coding system called ICE has been developed to link the technical information to other Product Support functions e.g. Warranty.

Technical information is written to support the maintenance and service of the functions or systems on a customer's machine. When a customer has a concern on his machine it is usually because a function or system on his machine is not working at all, is not working efficiently, or is not responding correctly to his commands. When you refer to the technical information in this manual to resolve that customer's concern, you will find all the information classified using the new ICE coding, according to the functions or systems on that machine. Once you have located the technical information for that function or system then you will find all the mechanical, electrical or hydraulic devices, components, assemblies and sub-assemblies for that function or system. You will also find all the types of information that have been written for that function or system, the technical data (specifications), the functional data (how it works), the diagnostic data (fault codes and troubleshooting) and the service data (remove, install adjust, etc.).

By integrating this new ICE coding into technical information, you will be able to search and retrieve just the right piece of technical information you need to resolve that customer's concern on his machine. This is made possible by attaching 3 categories to each piece of technical information during the authoring process.

The first category is the Location, the second category is the Information Type and the third category is the Product:

LOCATION - is the component or function on the machine, that the piece of technical information is going to describe e.g. Fuel tank.

INFORMATION TYPE - is the piece of technical information that has been written for a particular component or function on the machine e.g. Capacity would be a type of Technical Data that would describe the amount of fuel held by the Fuel tank.

PRODUCT - is the model that the piece of technical information is written for.

Every piece of technical information will have those 3 categories attached to it. You will be able to use any combination of those categories to find the right piece of technical information you need to resolve that customer's concern on his machine.

That information could be:

the description of how to remove the cylinder head

a table of specifications for a hydraulic pump

a fault code

a troubleshooting table

a special tool

How to Use this Manual

This manual is divided into Sections. Each Section is then divided into Chapters. Contents pages are included at the beginning of the manual, then inside every Section and inside every Chapter. An alphabetical Index is included at the end of a Chapter. Page number references are included for every piece of technical information listed in the Chapter Contents or Chapter Index.

Each Chapter is divided into four Information types:

(D) Technical Data (specifications) for all the mechanical, electrical or hydraulic devices, components and assemblies.

(C) Functional Data (how it works) for all the mechanical, electrical or hydraulic devices, components and assemblies.

INTRODUCTION

(G) Diagnostic Data (fault codes, electrical and hydraulic troubleshooting) for all the mechanical, electrical or hydraulic devices, components and assemblies.

(F) Service data (remove disassembly, assemble, install) for all the mechanical, electrical or hydraulic devices, components and assemblies.

Sections

Sections are grouped according to the main functions or a systems on the machine. Each Section is identified by a letter A, B, C etc. The amount of Sections included in the manual will depend on the type and function of the machine that the manual is written for. Each Section has a Contents page listed in alphabetic/numeric order. This table illustrates which Sections could be included in a manual for a particular product.

| PRODUCT | SECTION | | | | | | | | | | |
|--|--------------------------|---|---|---|---|---|---|---|---|---|---|
| | A - Distribution Systems | | | | | | | | | | |
| | B - Power Production | | | | | | | | | | |
| | C - Power Train | | | | | | | | | | |
| | D - Travelling | | | | | | | | | | |
| | E - Body and Structure | | | | | | | | | | |
| | F - Frame Positioning | | | | | | | | | | |
| | G - Tool Positioning | | | | | | | | | | |
| | H - Working Arm | | | | | | | | | | |
| | J - Tools and Couplers | | | | | | | | | | |
| | K - Crop Processing | | | | | | | | | | |
| L - Field Processing | | | | | | | | | | | |
| Tractors | X | X | X | X | X | X | | X | X | | |
| Vehicles with working arms: backhoes, excavators, skid steers, | X | X | X | X | X | X | X | X | X | | |
| Combines, forage harvesters, balers, | X | X | X | X | X | X | X | X | X | X | |
| Seeding, planting, floating, spraying equipment, | X | X | X | X | X | X | X | | X | | X |
| Mounted equipment and tools, | | | | | X | X | X | | X | | |

Chapters

Each Chapter is identified by a letter and number combination e.g. Engine B.10.A The first letter is identical to the Section letter i.e. Chapter B.10 is inside Section B, Power Production.

CONTENTS

The Chapter Contents lists all the **(D)** technical data (specifications), **(C)** functional data (how it works), **(F)** service data (remove, install adjust, etc..) and **(G)** diagnostic data (fault codes and troubleshooting) that have been written in that Chapter for that function or system on the machine.

Contents

POWER PRODUCTION ENGINE _ 10.A

| | |
|---|---|
| TECHNICAL DATA | |
| ENGINE - General specification (B.10.A - D.40.A.10) | 3 |
| FUNCTIONAL DATA | |
| ENGINE - Dynamic description (B.10.A - C.30.A.10) | 4 |
| SERVICE | |
| ENGINE - Remove (B.10.A - F.10.A.10) | 5 |
| DIAGNOSTIC | |
| ENGINE - Troubleshooting (B.10.A - G.40.A.10) | 6 |

INDEX

INTRODUCTION

The Chapter Index lists in alphabetical order all the types of information (called Information Units) that have been written in that Chapter for that function or system on the machine.

Index

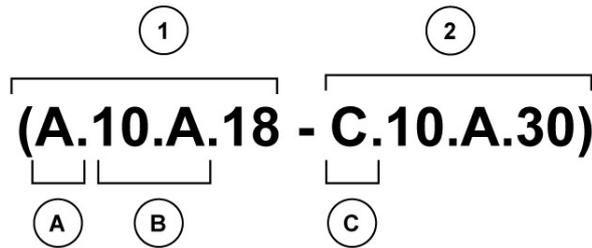
POWER PRODUCTION - B ENGINE

| | |
|---|---|
| ENGINE - Dynamic description (B.10.A - C.30.A.10) | 4 |
| ENGINE - General specification (B.10.A - D.40.A.10) | 3 |
| ENGINE - Remove (B.10.A - F.10.A.10) | 5 |
| ENGINE - Troubleshooting (B.10.A - G.40.A.10) | 6 |

Information Units and Information Search

Each chapter is composed of information units. Each information unit has the ICE code shown in parentheses which indicates the function and the type of information written in that information unit. Each information unit has a page reference within that Chapter. The information units provide a quick and easy way to find just the right piece of technical information you are looking for.

| | | | | | |
|---------------------------|--|-------------------------|-------------|-----------------|----------------|
| example information unit | Stack valve - Sectional View (A.10.A.18 - C.10.A.30) | | | | |
| Information Unit ICE code | A | 10.A | 18 | C | 10.A.30 |
| ICE code classification | Distribution systems | Primary hydraulic power | Stack valve | Functional data | Sectional view |



CRIL03J033E01 1

Navigate to the correct information unit you are searching for by identifying the function and information type from the ICE code.

(1) Function and **(2)** Information type.

(A) corresponds to the sections of the repair manual.

(B) corresponds to the chapters of the repair manual.

(C) corresponds to the type of information listed in the chapter contents, **(D)** Technical data, **(C)** Functional Data, **(G)** Diagnostic or **(F)** Service.

(A) and **(B)** are also shown in the page numbering on the page footer.

THE REST OF THE CODING IS NOT LISTED IN ALPHA-NUMERIC ORDER IN THIS MANUAL.

You will find a table of contents at the beginning and end of each section and chapter.

You will find an alphabetical index at the end of each chapter.

By referring to **(A)**, **(B)** and **(C)** of the coding, you can follow the contents or index (page numbers) and quickly find the information you are looking for.

Page Header and Footer

The page header will contain the following references:

Section and Chapter description

The page footer will contain the following references:

Publication number for that Manual, Section or Chapter.

Version reference for that publication.

Publication date

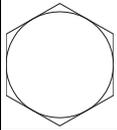
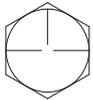
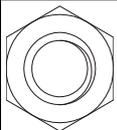
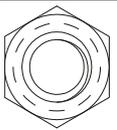
Section, chapter and page reference e.g. A.10.A / 9

Torque (- A.90.A.10)

BOLT TORQUE INFORMATION

DECIMAL HARDWARE

- Fasteners should be replaced with the same or higher grade. If higher grade fasteners are used, these should only be tightened to the strength of the original.
- Make sure the fasteners threads are clean and that thread engagement is started. This will prevent them from failing when being tightened.
- Tighten plastic insert or crimped steel-type lock nuts to approximately **50 %** of the dry torque, applied to the nut, not to the bolt head. Tighten toothed or serrated-type lock nuts to the full torque value.
- The L9 (Alloy) fasteners torque values are for a bolt, nut, and two washers. When using L9 (Alloy) fasteners, do not use the values in this table for tapped holes.

| GRADE | | | | | | | |
|---------------------------------------|--|--|---|---|---|--|--|
| | 1 or 2 | 5 | 5.1 | 5.2 | 8 | 8.2 | L9 (Alloy) |
| SAE Markings for Bolts and Cap Screws |  |  |  |  |  |  |  |
| SAE Markings for Hex Nuts |  |  | | |  |  |  |

| SIZE | GRADE 2 * | | | | GRADE 5, 5.1 or 5.2 | | | | GRADE 8 or 8.2 | | | | GRADE L9 (Alloy) | | | |
|----------|-----------|-------|---------------|-------|---------------------|-------|---------------|-------|----------------|-------|---------------|-------|------------------|-------|------|-------|
| | Dry ** | | Lubricated ** | | Dry** | | Lubricated ** | | Dry** | | Lubricated ** | | Head | | Nut | |
| | Nm | lb/ft | Nm | lb/ft | Nm | lb/ft | Nm | lb/ft | Nm | lb/ft | Nm | lb/ft | Nm | lb/ft | Nm | lb/ft |
| 1/4 UNF | 7.5 | 5.5 | 5.7 | 4.2 | 10.8 | 8 | 8.5 | 6.3 | 16.3 | 12 | 12.2 | 9 | 13.6 | 10 | 14.9 | 11 |
| 1/4 UNC | 8.5 | 6.3 | 6.4 | 4.7 | 13.6 | 10 | 9.8 | 7.2 | 19 | 14 | 13.6 | 10 | 16.3 | 12 | 17.6 | 13 |
| 5/16 UNF | 15 | 11 | 11 | 8 | 23 | 17 | 18 | 13 | 33 | 24 | 24 | 18 | 26 | 19 | 28 | 21 |
| 5/16 UNC | 16 | 12 | 12 | 9 | 26 | 19 | 19 | 14 | 37 | 27 | 27 | 20 | 27 | 20 | 31 | 23 |
| 3/8 UNF | 27 | 20 | 20 | 15 | 41 | 30 | 31 | 23 | 61 | 45 | 47 | 35 | 41 | 30 | 45 | 33 |
| 3/8 UNC | 31 | 23 | 23 | 17 | 47 | 35 | 34 | 25 | 68 | 50 | 47 | 35 | 47 | 35 | 52 | 38 |
| 7/16 UNF | 43 | 32 | 33 | 24 | 68 | 50 | 47 | 35 | 95 | 70 | 68 | 50 | 75 | 55 | 81 | 60 |
| 7/16 UNC | 49 | 36 | 37 | 27 | 75 | 55 | 54 | 40 | 108 | 80 | 81 | 60 | 81 | 60 | 88 | 65 |
| 1/2 UNF | 68 | 50 | 47 | 35 | 102 | 75 | 75 | 55 | 149 | 110 | 108 | 80 | 115 | 85 | 129 | 95 |
| 1/2 UNC | 75 | 55 | 54 | 40 | 115 | 85 | 88 | 65 | 163 | 120 | 122 | 90 | 129 | 95 | 142 | 105 |
| 9/16 UNF | 95 | 70 | 75 | 55 | 149 | 110 | 108 | 80 | 203 | 150 | 149 | 110 | 163 | 120 | 190 | 140 |
| 9/16 UNC | 108 | 80 | 81 | 60 | 163 | 120 | 122 | 90 | 231 | 170 | 176 | 130 | 183 | 135 | 203 | 150 |

INTRODUCTION

| SIZE | GRADE 2 * | | | | GRADE 5, 5.1 or 5.2 | | | | GRADE 8 or 8.2 | | | | GRADE L9 (Alloy) | | | |
|-----------|-----------|-------|---------------|-------|---------------------|-------|---------------|-------|----------------|-------|---------------|-------|------------------|-------|------|-------|
| | Dry ** | | Lubricated ** | | Dry** | | Lubricated ** | | Dry** | | Lubricated ** | | Head | | Nut | |
| | Nm | lb/ft | Nm | lb/ft | Nm | lb/ft | Nm | lb/ft | Nm | lb/ft | Nm | lb/ft | Nm | lb/ft | Nm | lb/ft |
| 5/8 UNF | 136 | 100 | 102 | 75 | 203 | 150 | 149 | 110 | 285 | 210 | 217 | 160 | 231 | 170 | 251 | 185 |
| 5/8 UNC | 149 | 110 | 115 | 85 | 231 | 170 | 176 | 130 | 325 | 240 | 244 | 180 | 258 | 190 | 278 | 205 |
| 3/4 UNF | 237 | 175 | 176 | 130 | 353 | 260 | 271 | 200 | 515 | 380 | 380 | 280 | 359 | 265 | 393 | 290 |
| 3/4 UNC | 271 | 200 | 190 | 140 | 407 | 300 | 298 | 220 | 570 | 420 | 420 | 310 | 447 | 330 | 481 | 355 |
| 7/8 UNF | 231 | 170 | 170 | 125 | 583 | 430 | 434 | 320 | 814 | 600 | 610 | 450 | 644 | 475 | 685 | 505 |
| 7/8 UNC | 244 | 180 | 190 | 140 | 637 | 470 | 475 | 350 | 909 | 670 | 678 | 500 | 705 | 520 | 793 | 585 |
| 1 UNF | 339 | 250 | 258 | 190 | 868 | 640 | 651 | 480 | 1234 | 910 | 922 | 680 | 746 | 550 | 1051 | 775 |
| 1 UNC | 380 | 280 | 285 | 210 | 976 | 720 | 732 | 540 | 1383 | 1020 | 1031 | 760 | 949 | 700 | 1220 | 900 |
| 1-1/8 UNF | 475 | 350 | 366 | 270 | 1071 | 790 | 800 | 590 | 1749 | 1290 | 1315 | 970 | 1390 | 1025 | 1559 | 1150 |
| 1-1/8 UNC | 542 | 400 | 407 | 300 | 1207 | 890 | 909 | 670 | 1953 | 1440 | 1464 | 1080 | 1559 | 1150 | 1797 | 1325 |
| 1-1/4 UNF | 678 | 500 | 515 | 380 | 1519 | 1120 | 1139 | 840 | 2468 | 1820 | 1844 | 1360 | 1898 | 1400 | 2170 | 1600 |
| 1-1/4 UNC | 746 | 550 | 570 | 420 | 1681 | 1240 | 1261 | 930 | 2726 | 2010 | 2048 | 1510 | 2170 | 1600 | 2373 | 1750 |
| 1-1/2 UNF | 1180 | 870 | 881 | 650 | 2644 | 1950 | 1980 | 1460 | 4285 | 3160 | 3214 | 2370 | 3932 | 2900 | 4407 | 3250 |
| 1-1/2 UNC | 1329 | 980 | 990 | 730 | 2983 | 2200 | 2224 | 1640 | 4827 | 3560 | 3621 | 2670 | 4475 | 3300 | 4949 | 3650 |

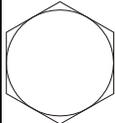
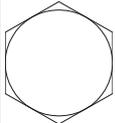
IMPORTANT: DO NOT use these values if a different torque value or tightening procedure is given for a specific application. Torque values listed are for general use only. Check tightness of fasteners periodically. Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical grade.

NOTES

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

** - "Lubricated" means coated with a lubricant such as engine oil, or fasters with phosphate and oil coatings. "Dry" means plained or zinc plated without any lubrication.

TORQUE SPECIFICATIONS - METRIC HARDWARE

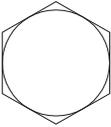
| GRADE 8.8 Bolts, Nuts and Studs | | | | GRADE 10.9 Bolts, Nuts and Studs | | |
|---|----------|------------|----------|--|------------|----------|
| Dry | | | | Dry | | |
| SIZE | Nm | lb/in | lb/ft | Nm | lb/in | lb/ft |
|  | | | |  | | |
| M4 | 3 to 4 | 31 to 35 | | 5 to 6 | 44 to 49 | |
| M5 | 5 to 6 | 49 to 55 | | 8 to 9 | 71 to 79 | |
| M6 | 10 to 11 | 84 to 94 | | 14 to 15 | 120 to 136 | |
| M8 | 23 to 26 | 229 to 277 | | 33 to 37 | 293 to 329 | |
| M10 | 46 to 51 | 408 to 460 | | 65 to 74 | | 48 to 54 |
| M12 | 80 to 90 | | 59 to 66 | 114 to 128 | | 85 to 94 |

INTRODUCTION

| GRADE 8.8 Bolts, Nuts and Studs | | | | GRADE 10.9 Bolts, Nuts and Studs | | |
|---------------------------------|--------------|-------|--------------|----------------------------------|-------|--------------|
| Dry | | | | Dry | | |
| SIZE | Nm | lb/in | lb/ft | Nm | lb/in | lb/ft |
| M14 | 128 to 145 | | 94 to 106 | 183 to 205 | | 136 to 153 |
| M16 | 200 to 220 | | 149 to 161 | 285 to 320 | | 208 to 235 |
| M20 | 400 to 450 | | 293 to 330 | 555 to 620 | | 406 to 460 |
| M24 | 690 to 780 | | 510 to 575 | 955 to 1075 | | 705 to 790 |
| M30 | 1375 to 1545 | | 1010 to 1140 | 1900 to 2140 | | 1400 to 1580 |
| M36 | 2400 to 2700 | | 1770 to 1990 | 3315 to 3730 | | 2445 to 2750 |

Use the above torques when specifications are not given.

These values apply to fasteners with both coarse and fine threads as received from supplier, plated or unplated, or when lubricated with engine oil. These values do not apply if graphite or Molydisulfide grease or oil is used. Use of a click type torque wrench, or better is required.

| Grade 12.9 Bolts, Nuts, and Studs |
|---|
|  |

Usually torque values specified to grade 10.9 fasteners can be used satisfactorily on grade 12.9 fasteners.

TORQUE SPECIFICATIONS - STEEL HYDRAULIC FITTINGS

| 37 Degree Flare Fitting | | | | | | |
|-------------------------|-----------------|------------|-------------|---------------|------------|------------|
| Nom. SAE Dash Size | Tube OD/Hose ID | | Thread Size | Newton metres | lb/in | lb/ft |
| -2 | | | 5/16 - 24 | 8 to 9 | 72 to 84 | |
| -3 | | | 3/8 - 24 | 11 to 12 | 96 to 108 | |
| -4 | 6.4 mm | 1/4 inch | 7/16 - 20 | 14 to 16 | 120 to 144 | |
| -5 | 7.9 mm | 5/16 inch | 1/2 - 20 | 18 to 21 | 156 to 192 | |
| -6 | 9.5 mm | 3/8 inch | 9/16 - 18 | 27 to 33 | 240 to 300 | |
| -8 | 12.7 mm | 1/2 inch | 3/4 - 16 | 46 - 56 | 408 to 504 | |
| -10 | 15.9 mm | 5/8 inch | 7/8 - 14 | 77 to 85 | 684 to 756 | |
| -12 | 19.0 mm | 3/4 inch | 1-1/16 - 12 | 107 to 119 | | 79 to 88 |
| -14 | 22.2 mm | 7/8 inch | 1-3/16 - 12 | 127 to 140 | | 94 to 103 |
| -16 | 25.4 mm | 1.0 inch | 1-5/16 - 12 | 131 to 156 | | 97 to 117 |
| -20 | 31.8 mm | 1-1/4 inch | 1-5/8 - 12 | 197 to 223 | | 145 to 165 |
| -24 | 38.1 mm | 1-1/2 inch | 1-7/8 - 12 | 312 to 338 | | 230 to 250 |

| Straight Thread with O-ring | | | | | | |
|-----------------------------|-----------------|------------|-------------|---------------|------------|------------|
| Nom. SAE Dash Size | Tube OD/Hose ID | | Thread Size | Newton metres | lb/in | lb/ft |
| -2 | | | 5/16 - 24 | 8 to 9 | 72 to 84 | |
| -3 | | | 3/8 - 24 | 11 to 12 | 96 to 108 | |
| -4 | 6.4 mm | 1/4 inch | 7/16 - 20 | 20 to 25 | 180 to 228 | |
| -5 | 7.9 mm | 5/16 inch | 1/2 - 20 | 27 to 33 | 240 to 300 | |
| -6 | 9.5 mm | 3/8 inch | 9/16 - 18 | 43 to 54 | 384 to 480 | |
| -8 | 12.7 mm | 1/2 inch | 3/4 - 16 | 73 to 90 | 648 to 804 | |
| -10 | 15.9 mm | 5/8 inch | 7/8 - 14 | 100 to 124 | | 74 to 92 |
| -12 | 19.0 mm | 3/4 inch | 1-1/16 - 12 | 138 to 173 | | 102 to 128 |
| -14 | 22.2 mm | 7/8 inch | 1-3/16 - 12 | 173 to 216 | | 128 to 160 |
| -16 | 25.4 mm | 1.0 inch | 1-5/16 - 12 | 203 to 253 | | 150 to 187 |
| -20 | 31.8 mm | 1-1/4 inch | 1-5/8 - 12 | 308 to 357 | | 227 to 264 |
| -24 | 38.1 mm | 1-1/2 inch | 1-7/8 - 12 | 492 to 542 | | 363 to 400 |

INTRODUCTION

| Split Flange Mounting Bolts | | | |
|-----------------------------|---------------|------------|------------|
| Size | Newton metres | lb/in | lb/ft |
| 5/16 - 18 | 20 to 27 | 180 to 240 | |
| 3/8 - 16 | 27 to 34 | 240 to 300 | |
| 7/16 - 14 | 47 to 61 | 420 to 540 | |
| 1/2 - 13 | 74 to 88 | | 55 to 65 |
| 5/8 - 11 | 190 to 203 | | 140 to 150 |

| O-Ring Face Seal End | | | | | | |
|----------------------|---------|------------|--------------|---------------|------------|------------|
| Nom. SAE Dash Size | Tube OD | | Thread Size | Newton metres | lb/in | lb/ft |
| -4 | 6.4 mm | 1/4 inch | 9/16 - 18 | 23 to 26 | 204 to 228 | |
| -6 | 9.5 mm | 3/8 inch | 11/16 - 16 | 34 to 40 | 300 to 348 | |
| -8 | 12.7 mm | 1/2 inch | 13/16 - 16 | 52 to 57 | 456 to 504 | |
| -10 | 15.9 mm | 5/8 inch | 1-14 | 81 to 90 | 720 to 792 | |
| -12 | 19.0 mm | 3/4 inch | 1-3/16 - 12 | 117 to 128 | | 86 to 94 |
| -16 | 25.4 mm | 1.0 inch | 1-7/16 - 12 | 152 to 174 | | 112 to 128 |
| -20 | 31.8 mm | 1-1/4 inch | 1-11/16 - 12 | 179 to 201 | | 132 to 148 |
| -24 | 38.1 mm | 1-1/2 inch | 2 - 12 | 213 to 235 | | 157 to 173 |

| O-Ring Boss End Fitting or Lock Nut | | | | |
|-------------------------------------|-------------|---------------|------------|------------|
| Nom. SAE Dash Size | Thread Size | Newton metres | lb/in | lb/ft |
| -6 | 9/16 - 18 | 48 to 54 | 432 to 480 | |
| -8 | 3/4 - 16 | 70 to 78 | 612 to 684 | |
| -10 | 7/8 - 14 | 102 to 114 | | 75 to 84 |
| -12 | 1-1/16 - 12 | 142 to 160 | | 105 to 117 |
| -16 | 1-5/16 - 12 | 237 to 254 | | 175 to 187 |

| Pipe Fitting | | |
|--------------------|----------------|-------------------------------|
| Nom. SAE Dash Size | Thread Size | TFFT (Turns For Finger Tight) |
| -2 | 1/8 - 27 | 2.0 - 3.0 |
| -3 | 1/8 - 27 | 2.0 - 3.0 |
| -4 | 1/8 - 27 | 2.0 - 3.0 |
| -5 | 1/8 - 27 | 2.0 - 3.0 |
| -6 | 1/4 - 18 | 1.5 - 3.0 |
| -8 | 3/8 - 18 | 2.0 - 3.0 |
| -10 | 1/2 - 14 | 2.0 - 3.0 |
| -12 | 3/4 - 14 | 2.0 - 3.0 |
| -14 | 3/4 - 14 | 2.0 - 3.0 |
| -16 | 1 - 11-1/2 | 1.5 - 2.5 |
| -20 | 1-1/4 - 11-1/2 | 1.5 - 2.5 |
| -24 | 1-1/2 - 11-1/2 | 1.5 - 2.5 |
| -32 | 2 - 11-1/2 | 1.5 - 2.5 |

NOTE: Apply sealant/lubricant to male pipe threads. The first two threads should be left uncovered to avoid system contamination. Screw pipe fitting into female pipe port to the finger tight position. Wrench tighten fitting to the appropriate turns from finger tight (TFFT) shown in table above, making sure the tube end of an elbow or tee fitting is aligned to receive incoming tube or hose fitting.

INTRODUCTION

Conversion factors (- A.92.A.21)

| Metric to U.S. | | | |
|-----------------------|------------------|-------------|-------------------------|
| | MULTIPLY | BY | TO OBTAIN |
| AREA: | square meter | 10.763 91 | square foot |
| | hectare | 2.471 05 | acre |
| FORCE: | newton | 3.596 942 | ounce force |
| | newton | 2.224 809 | pound force |
| LENGTH: | millimeter | 0.039 370 | inch |
| | meter | 3.280 840 | foot |
| | kilometer | 0.621 371 | mile |
| MASS: | kilogram | 2.204 622 | pound |
| MASS/AREA: | kilogram/hectare | 0.000 466 | ton/acre |
| MASS/ENERGY: | gr/kW/hr. | 0.001 644 | lbs/hp/hr. |
| MASS/VOLUME: | kg/cubic meter | 1.685 555 | lb/cubic yd. |
| POWER: | kilowatt | 1.341 02 | horsepower |
| PRESSURE: | kilopascal | 0.145 038 | lb/sq. inch |
| | bar | 14.50385 | lb/sq. inch |
| TEMPERATURE: | degree C | 1.8 x C +32 | degree F |
| TORQUE: | newton meter | 8.850 748 | lb/inch |
| | newton meter | 0.737 562 | lb/foot |
| VELOCITY: | kilometer/hr. | 0.621 371 | miles/hr. |
| VOLUME: | cubic centimeter | 0.061 024 | cubic inch |
| | cubic meter | 35.314 66 | cubic foot |
| | cubic meter | 1.307 950 | cubic yd. |
| | milliliter | 0.033 814 | ounce (US fluid) |
| | litre | 1.056 814 | quart (US liquid) |
| | litre | 0.879 877 | quart (Imperial) |
| | litre | 0.264 172 | gallon (US liquid) |
| | litre | 0.219 969 | gallon (Imperial) |
| VOLUME/TIME: | litre/min. | 0.264 172 | gallon/min. (US liquid) |
| | litre/min. | 0.219 969 | gallon/min. (Imperial) |

| U.S. to Metric | | | |
|-----------------------|-----------------|-------------|------------------|
| | MULTIPLY | BY | TO OBTAIN |
| AREA: | square foot | 0.092 903 | square meter |
| | acre | 0.404 686 | hectare |
| FORCE: | ounce force | 0.278 014 | newton |
| | pound force | 4.448 222 | newton |
| LENGTH: | inch | 25.4 * | millimeter |
| | foot | 0.304 8 * | meter |
| | mile | 1.609 344 * | kilometer |
| MASS: | pound | 0.453 592 | kilogram |
| | ounce | 28.35 | gram |
| MASS/AREA: | ton/acre | 2241 702 | kilogram/hectare |
| MASS/ENERGY: | lb/hp/hr | 608.277 4 | gr/kW/hr |
| MASS/VOLUME: | lb/cubic yd. | 0.593 276 | kg/cubic meter |
| POWER: | horsepower | 0.745 700 | kilowatt |
| PRESSURE: | lbs/sq. in | 6.894 757 | kilopascal |
| | lbs/sq. in | 0.069 | bar |
| | lbs/sq. in | 0.070 303 | kg/sq. cm |
| TEMPERATURE: | degree F | 1.8 F - 32 | degree C |
| TORQUE: | pound/inch | 0.112 985 | newton meter |
| | pound/foot | 1.355 818 | newton meter |
| VELOCITY: | miles/hr. | 1.609 344 * | kilometer/hr. |

INTRODUCTION

| U.S. to Metric | | | |
|-----------------------|-------------------|-----------|------------------|
| | MULTIPLY | BY | TO OBTAIN |
| VOLUME: | cubic inch | 16.387 06 | cubic centimeter |
| | cubic foot | 0.028 317 | cubic meter |
| | cubic yard | 0.764.555 | cubic meter |
| | ounce (US fluid) | 29.573 53 | milliliter |
| | quart (US liquid) | 0.946 353 | litre |
| | quart (Imperial) | 1.136 523 | litre |
| | gallon (US) | 3.785 412 | litre |
| | gallon (Imperial) | 4.546 092 | litre |
| VOLUME/TIME: | gallon/min. | 3.785 412 | litre/min. |

REPAIR MANUAL
DISTRIBUTION SYSTEMS



LS180.B
LS185.B
LS190.B

Contents

DISTRIBUTION SYSTEMS - A

| | |
|--|--------|
| PRIMARY HYDRAULIC POWER SYSTEM LS180.B , LS185.B , LS190.B | A.10.A |
| SECONDARY HYDRAULIC POWER SYSTEM LS180.B , LS185.B , LS190.B | A.12.A |
| HIGH-FLOW HYDRAULIC POWER SYSTEM LS180.B , LS185.B , LS190.B | A.16.A |
| ELECTRICAL POWER SYSTEM LS180.B , LS185.B , LS190.B | A.30.A |
| LIGHTING SYSTEM LS180.B , LS185.B , LS190.B | A.40.A |

DISTRIBUTION SYSTEMS - A

PRIMARY HYDRAULIC POWER SYSTEM - 10.A

LS180.B
LS185.B
LS190.B

Contents

DISTRIBUTION SYSTEMS - A

PRIMARY HYDRAULIC POWER SYSTEM - 10.A

TECHNICAL DATA

PRIMARY HYDRAULIC POWER SYSTEM

| | |
|---|---|
| Capacity (A.10.A - D.40.A.20) | 4 |
| Special tools (A.10.A - D.20.A.40) | 4 |
| General specification (A.10.A - D.40.A.10) | 5 |
| Relief valve | |
| General specification (A.10.A.16 - D.40.A.10) | 6 |
| Hydraulic pump | |
| General specification (A.10.A.20 - D.40.A.10) | 7 |
| Oil filter by-pass | |
| General specification (A.10.A.25 - D.40.A.10) | 8 |

FUNCTIONAL DATA

PRIMARY HYDRAULIC POWER SYSTEM

| | |
|---|----|
| Identification (A.10.A - C.40.C.01) | 9 |
| Hydraulic schematic frame 01 (A.10.A - C.20.H.01) | 10 |
| Hydraulic schematic frame 02 (A.10.A - C.20.H.02) | 11 |
| Hydraulic schematic frame 03 (A.10.A - C.20.H.03) | 13 |
| Hydraulic schematic frame 04 (A.10.A - C.20.H.04) | 15 |
| Hydraulic schematic frame 05 (A.10.A - C.20.H.05) | 17 |
| Hydraulic schematic frame 06 (A.10.A - C.20.H.06) | 18 |
| Hydraulic pump | |
| Sectional view (A.10.A.20 - C.10.A.30) | 19 |

SERVICE

PRIMARY HYDRAULIC POWER SYSTEM

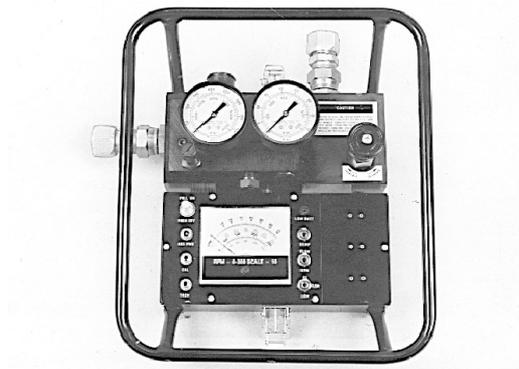
| | |
|---|----|
| Cleaning (A.10.A - F.30.A.10) | 20 |
| Decontaminating (A.10.A - F.30.A.60) | 24 |
| Relief valve | |
| Flow test (A.10.A.16 - F.40.A.45) | 26 |
| Pressure test (A.10.A.16 - F.40.A.30) | 28 |
| Hydraulic pump | |
| Flow test (A.10.A.20 - F.40.A.45) | 29 |
| Disassemble (A.10.A.20 - F.10.A.25) | 31 |
| Visual inspection (A.10.A.20 - F.40.A.10) | 36 |
| Assemble (A.10.A.20 - F.10.A.20) | 38 |
| Remove (A.10.A.20 - F.10.A.10) | 43 |

| | |
|--|----|
| Install (A.10.A.20 - F.10.A.15) | 45 |
| Charge pump | |
| Pressure test (A.10.A.21 - F.40.A.30) | 47 |
| Reservoir | |
| Apply vacuum (A.10.A.22 - F.35.A.50) | 51 |
| Filling (A.10.A.22 - F.60.A.10) | 52 |
| Remove (A.10.A.22 - F.10.A.10) | 53 |
| Install (A.10.A.22 - F.10.A.15) | 56 |
| Visual inspection (A.10.A.22 - F.40.A.10) | 58 |
| Oil filter | |
| Remove (A.10.A.24 - F.10.A.10) | 59 |
| Install (A.10.A.24 - F.10.A.15) | 60 |
| Oil cooler | |
| Remove (A.10.A.32 - F.10.A.10) | 61 |
| Install (A.10.A.32 - F.10.A.15) | 62 |
| | |
| DIAGNOSTIC | |
| Sensing system | |
| Temperature sensor - Testing (A.10.A.95.90 - G.40.A.20) | 63 |
| Filter restriction sensor - Testing (A.10.A.95.94 - G.40.A.20) | 63 |

PRIMARY HYDRAULIC POWER SYSTEM - Capacity (A.10.A - D.40.A.20)

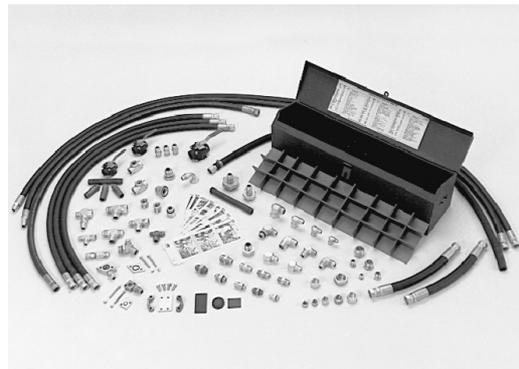
| Hydraulic System | |
|-------------------|--------------------|
| Capacity - System | 57 L (14.8 US gal) |

PRIMARY HYDRAULIC POWER SYSTEM - Special tools (A.10.A - D.20.A.40)



CAS10280 1

CAS - 10280 Flowmeter



CAS1808 2

CAS-1808 Flowmeter Fitting Kit



CAS10090 3

CAS-10090 Hand Pump



B877558M_1 4

CAS-1804 Pressure Test Fitting Kit

PRIMARY HYDRAULIC POWER SYSTEM - General specification (A.10.A - D.40.A.10)

| Hydraulic System Oil | Type of Oil | Capacity |
|--|--|-------------------------------|
| Total System | NEW HOLLAND AMBRA AUTO SUPREME SAE 10W-30 | 57 L (14.8 US gal) |
| Chain Tank (LS180.B and LS185.B Machines) | NEW HOLLAND AMBRA AUTO SUPREME SAE 10W-30 | Each Side 10.1 L (10.7 US qt) |
| Chain Tank (LS190.B Machines) | NEW HOLLAND AMBRA AUTO SUPREME SAE 10W-30 | Each Side 12.3 L (13 US qt) |

Relief valve - General specification (A.10.A.16 - D.40.A.10)

| Loader Control Valve Main Relief Pressure Settings |
|---|
| Main Relief Pressure at 20 gpm |
| LS180.B, LS185.B and LS190.B Machines 20,498 kPa (205 bar) (2975 -50/+140 psi) at 2300 rpm |
| LT185.B and LT190.B Machines 20,500 kPa (205 bar) (2975 psi) at 2300 rpm |

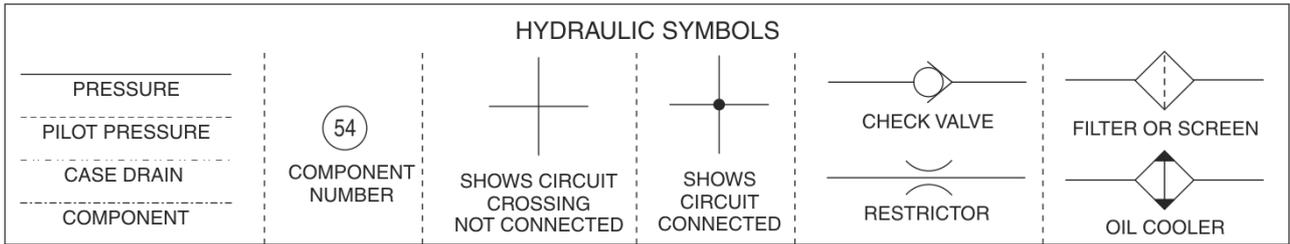
Hydraulic pump - General specification (A.10.A.20 - D.40.A.10)

| Hydraulic Pump | |
|--|----------------------------------|
| Type | Gear |
| Displacement (Per Revolution) LS180.B - LS185.B - LT185.B Machines | 31.8 cc (1.94 in ³) |
| Flow at Engine Rated rpm at 100% Volumetric Efficiency LS180.B - LS185.B - LT185.B Machines | 73.1 L/min (19.3 US gpm) |
| Displacement (Per Revolution) LS190.B and LT190.B Machines | 36.05 cc (2.20 in ³) |
| Flow at Engine Rated rpm at 100% Volumetric Efficiency LS190.B and LT190.B Machines | 82.9 L/min (21.9 US gpm) |
| Pump to Engine Speed (All Models) | Ratio 1:1 |

Oil filter by-pass - General specification (A.10.A.25 - D.40.A.10)

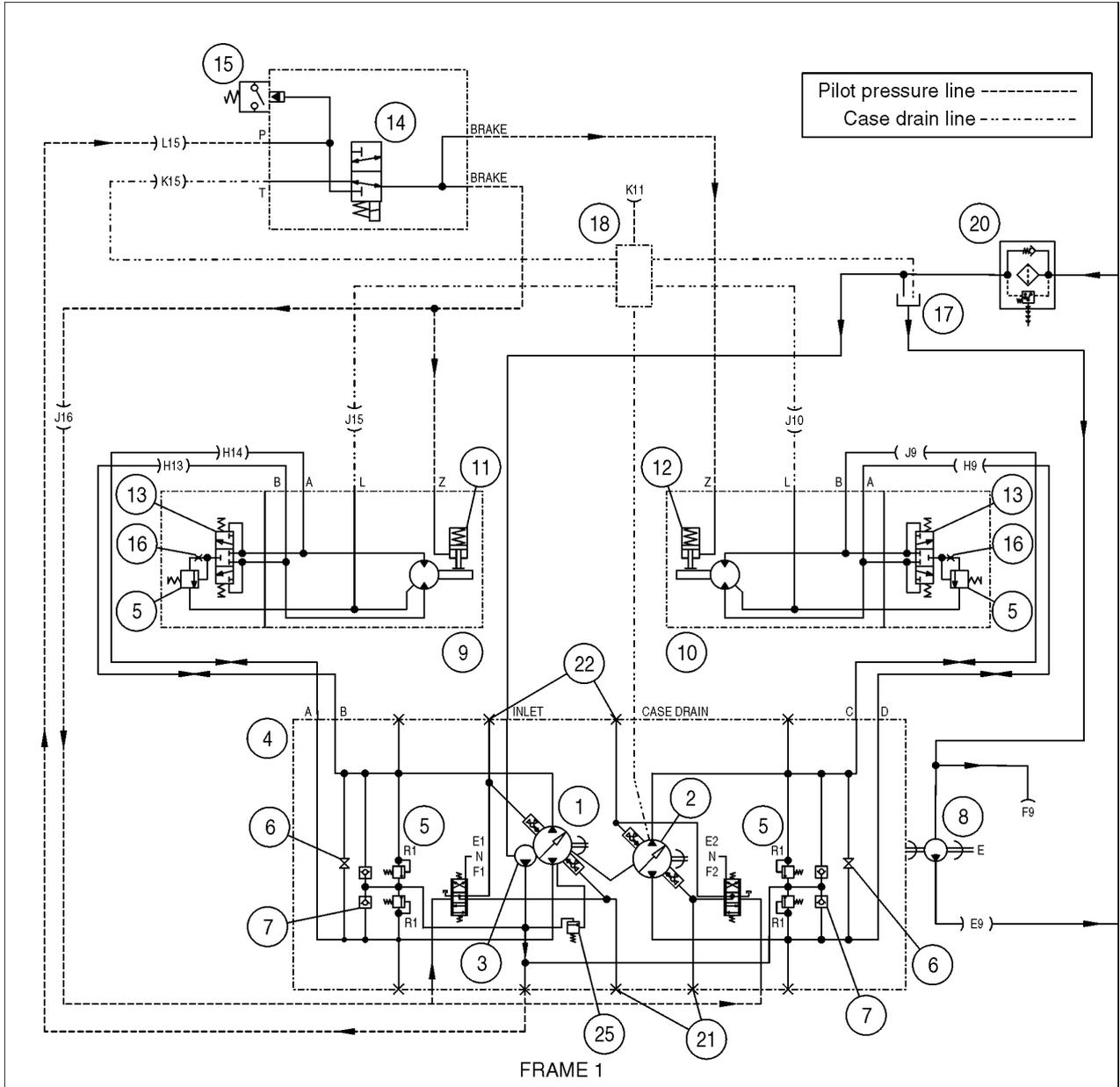
| | |
|-----------------|------------------|
| Return Filter | |
| Bypass Pressure | 345 kPa (50 psi) |

PRIMARY HYDRAULIC POWER SYSTEM - Identification (A.10.A - C.40.C.01)



bs05e050 1

PRIMARY HYDRAULIC POWER SYSTEM - Hydraulic schematic frame 01 (A.10.A - C.20.H.01)



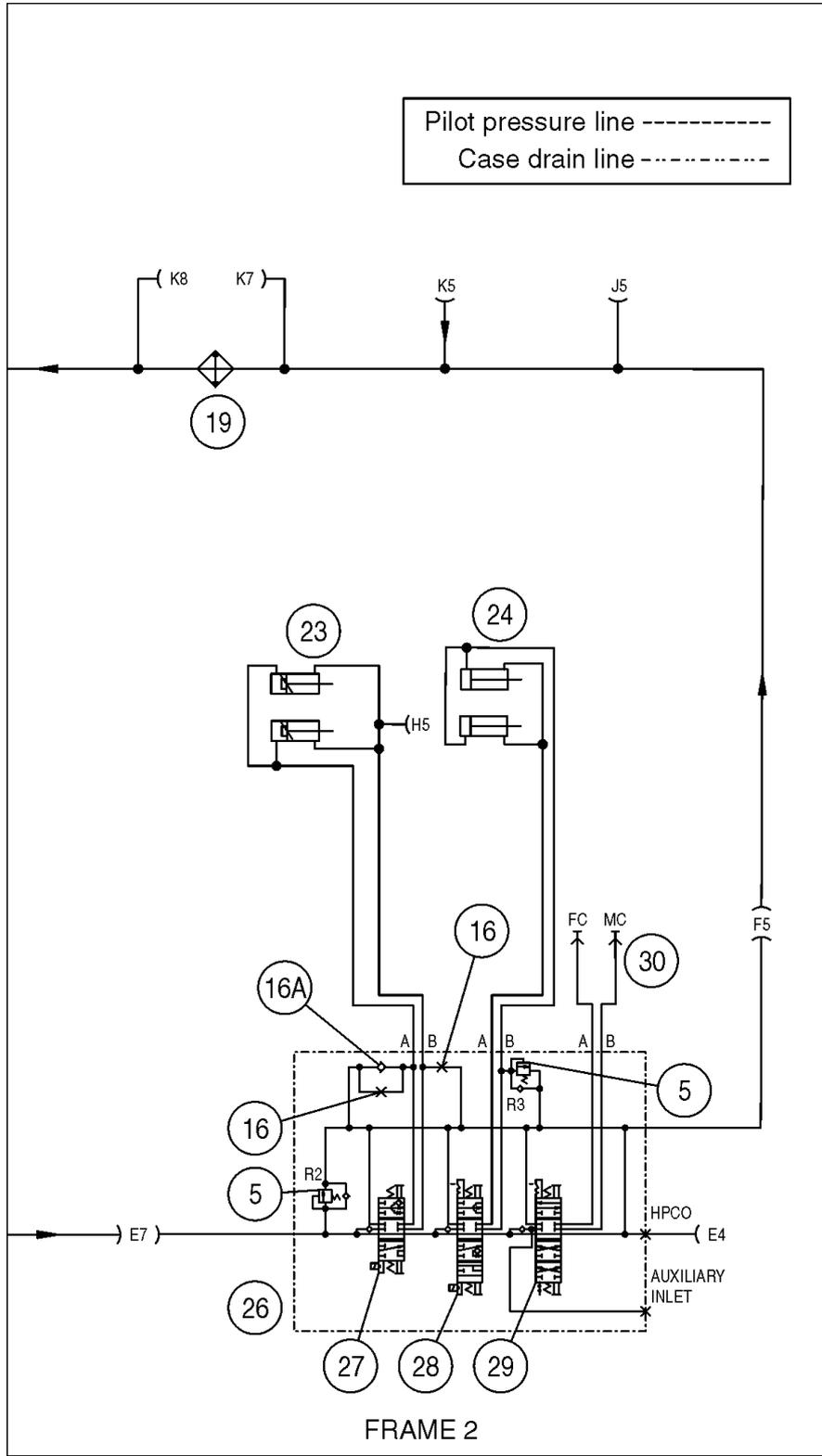
bc04h204-01_3 1

BC04H204-01

| | | |
|-------------------------|----------------------------|-------------------------------|
| 1. Left piston pump | 9. Left drive motor | 17. Hydraulic reservoir |
| 2. Right piston pump | 10. Right drive motor | 18. Drain manifold |
| 3. Change pump | 11. Left brake | 20. Oil Cooler Bypass valve |
| 4. Hydrostatic pump | 12. Right brake | 21. Backup alarm switch ports |
| 5. Circuit relief valve | 13. Flushing valve | 22. Brake light switch ports |
| 6. Tow valve | 14. Brake solenoid valve | 25. Main relief valve |
| 7. Check valve | 15. Charge pressure switch | |
| 8. Hydraulic pump | 16. Orifice | |

DISTRIBUTION SYSTEMS - PRIMARY HYDRAULIC POWER SYSTEM

PRIMARY HYDRAULIC POWER SYSTEM - Hydraulic schematic frame 02 (A.10.A - C.20.H.02)



bc04h204-02_2 1

BC04H204-02

| | | |
|--------------------------|---------------------|----------------------|
| (5) Circuit Relief Valve | (23) Tilt Cylinders | (28) Lift Spool |
| (16) Shut - Off Plug | (24) Lift Cylinders | (29) Auxiliary Spool |

Sample of manual. Download All 837 pages at:

<https://www.arepairmanual.com/downloads/new-holland-ls180-bl-s185-bl-s190-b-skid-steer-loader-service-repair-workshop-manu>

1 3/24/2006
A.10.A / 11