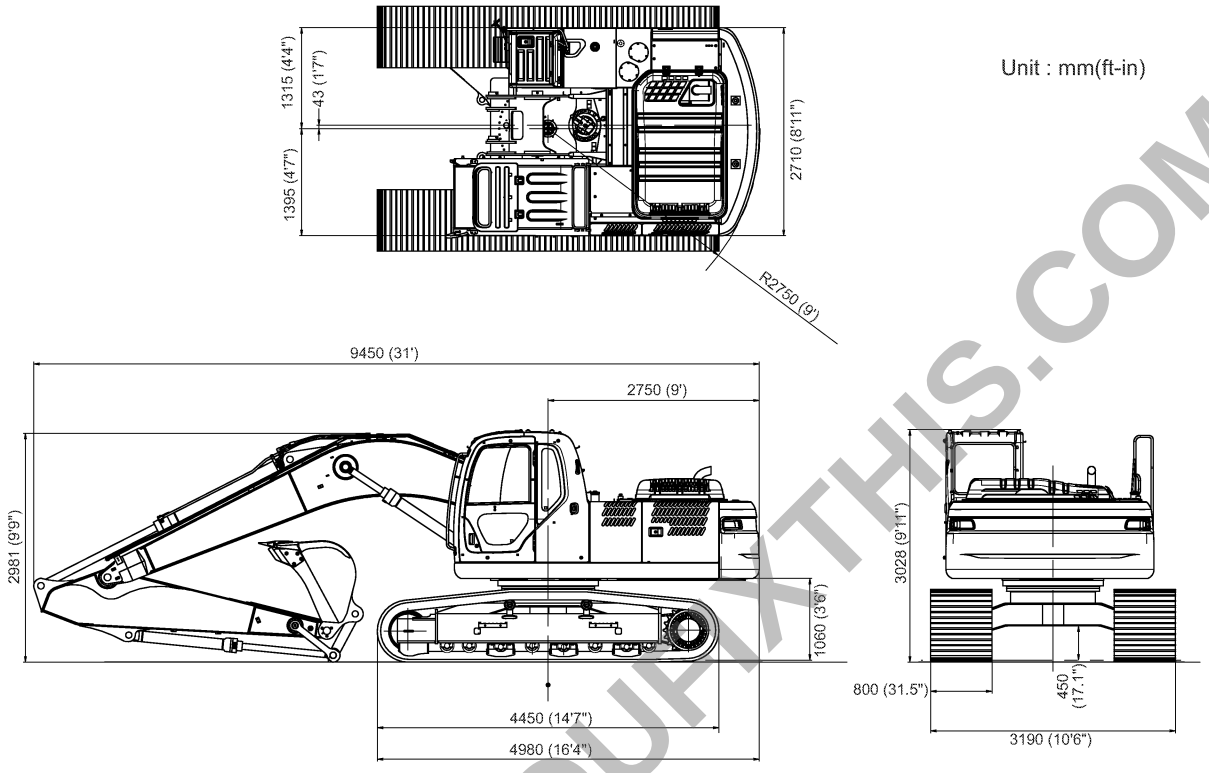
## 2.2 GENERAL DIMENSIONS

### 2.2.1 SK210–8 [5.65m (18ft-6in) Boom+2.94m (9ft-8in) Standard Arm+0.80m³ (1.05cu•yd) Bucket Shoe]

Unit : mm(ft-in)

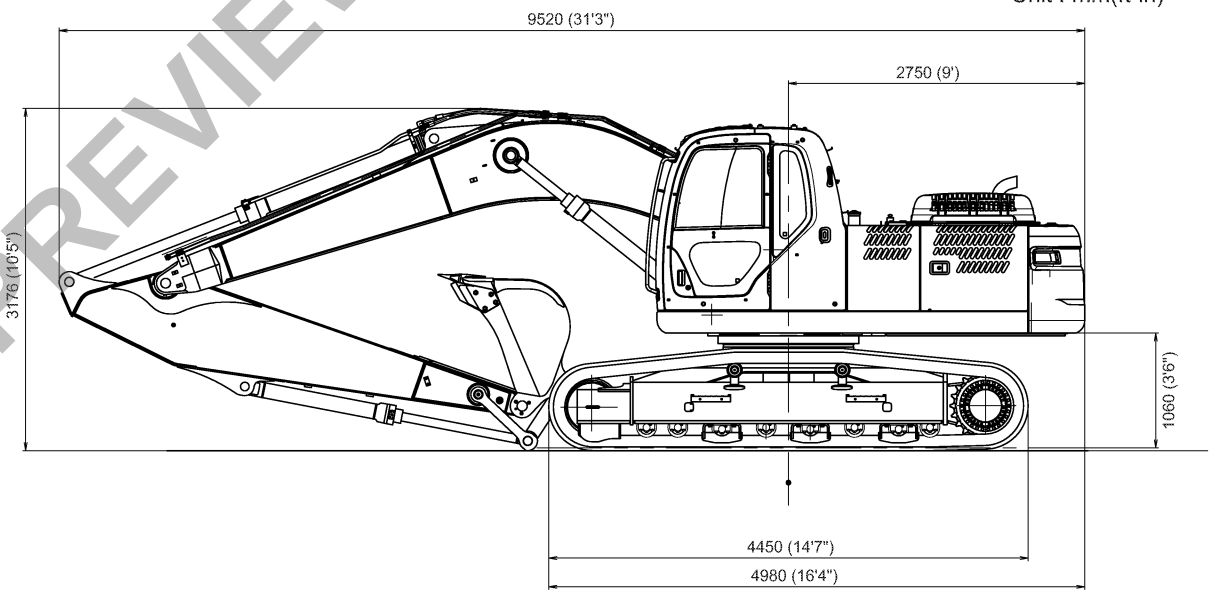



**Note**

Dimensions marked * do not include the height of the shoe lug.

### 2.2.2 SK210–8 [5.65m (18ft-6in) Boom+3.5m (11ft-6in) Long Arm+0.70m³ (0.92cu•yd) Bucket Shoe]

Unit : mm(ft-in)




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## 22.2 HYDRAULIC CIRCUITS AND COMPONENTS

| STD. SCHEMATIC HYD. LINES | | YN01Z00175P1 | |
|---|---|---|---|
| Item | Component name | Part No. | Model No. |
| 1 | Hyd. pump assy | YN10V00036F1 | |
| 2 | Control valve (main) | YN30V00101F1 | KMX15YD |
| 3 | Swing motor unit | YN15V00036F1 | M5X130-CHB |
| 4 | Travel motor unit | YN15V00037F1 | GM38VB |
| 5 | Boom cylinder (RH & LH) | YN01V00151F1 | ø85× ø120× 1355 |
| 6 | Arm cylinder | YN01V00175F1 | ø95× ø135× 1558 |
| 7 | Bucket cylinder | YN01V00153F1 | ø80× ø120× 1080 |
| 8 | Swivel joint | YN55V00053F1 | |
| 9 | Pilot valve (ATT) | YN30V00111F1 | PV48K2 |
| 10 | Pilot valve (travel) | YN30V00105F1 | 6TH6 NRZ |
| 11 | Inline filter | YN50V00020F1 | Y-457400 |
| 12 | Suction strainer | YW50V00004F7 | Y-501400 |
| 13 | Solenoid valve assy | YN35V00047F1 | 8KWE5A-30 |
| 14 | Return filter | YN52V01008F3 | FZ1F183A012A |
| 15 | Air breather | YN57V00004F1 | AB0210GA008A |
| 16 | Restrictor | YN21V00005F1 | 07381-00000 |

**Note**

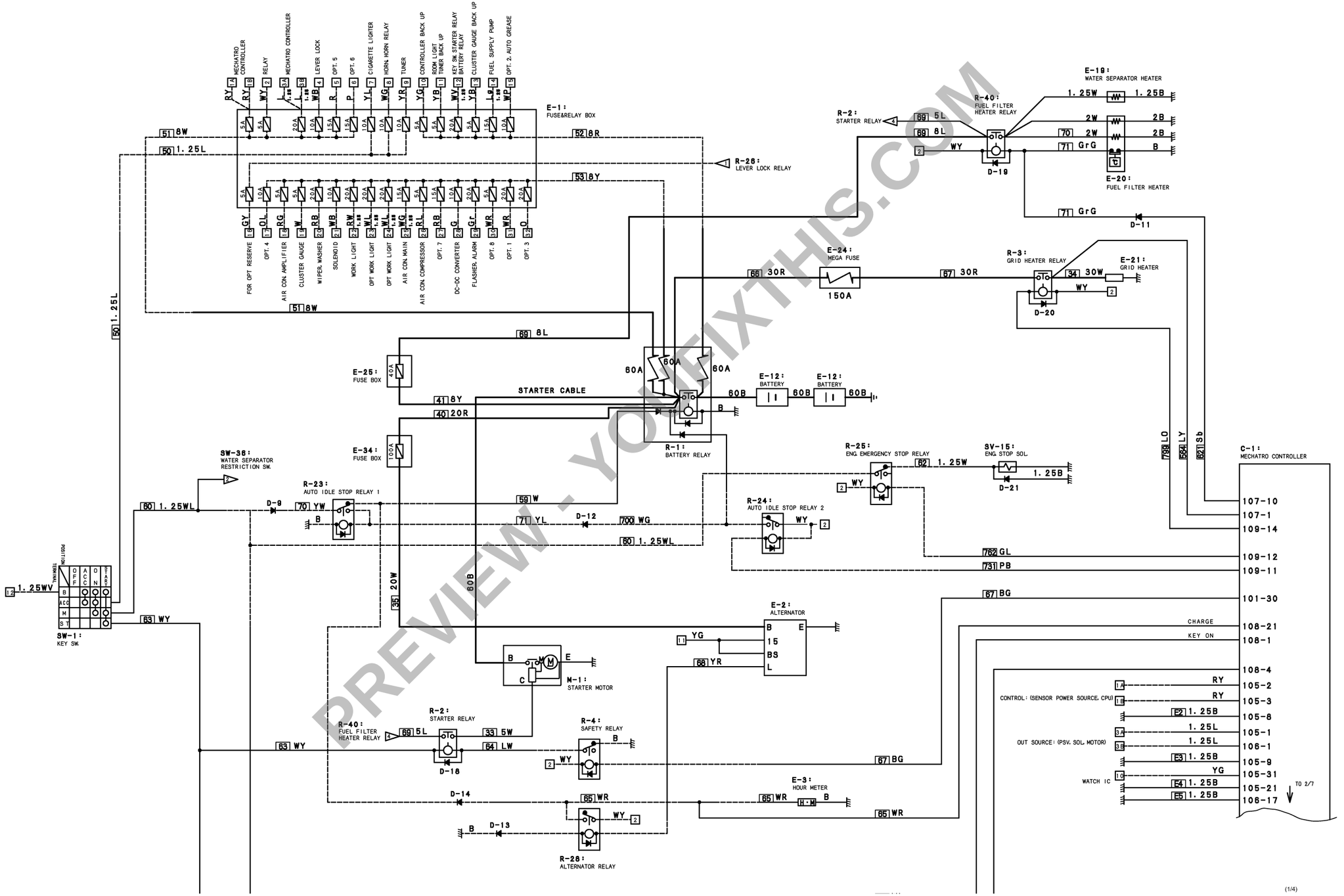
The part numbers may be changed due to modification, so use only the numbers for references.

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## 23.1 ELECTRIC CIRCUIT DIAGRAM




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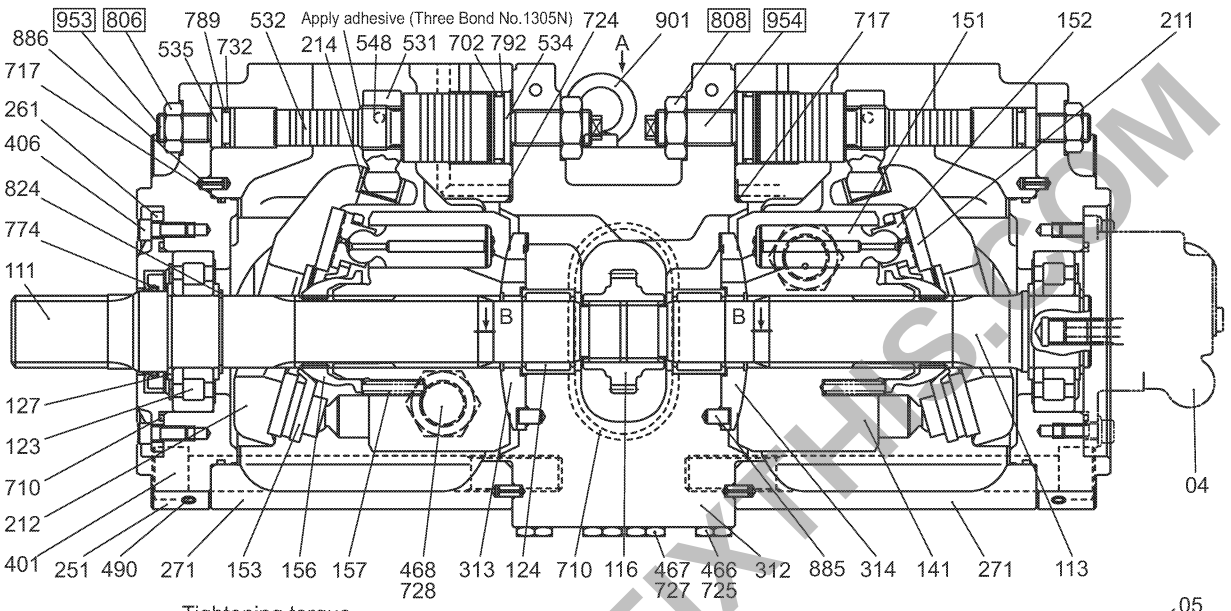


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### 24.1.1.2 HYDRAULIC PUMP

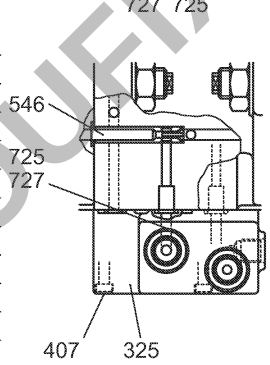
#### 24.1.1.2.1 CONSTRUCTION

(1) Main pump

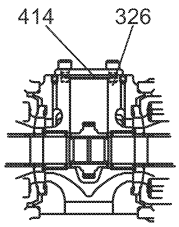



Tightening torque

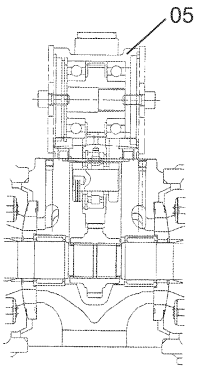
| Item number | Thread size | Tightening torque N·m (lbf·ft) |
|---|---|---|
| 401 | M20 | 430 (317) |
| 406 | M8 | 29 (21) |
| 407 | M6 | 12 (8.9) |
| 414 | M10 | 57 (42) |
| 466 | PF 1/4 | 36 (27) |
| 467 | PF 3/8 | 74 (55) |
| 468 | PF 3/4 | 170 (125) |
| 490 | NPTF1/16 | 8.8 (6.5) |
| 531,532 | M24X2 | 240 (177) |
| 806 | M16 | 130 (96) |
| 808 | M20 | 240 (177) |




VIEW A




SECTION B-B




SECTION B-B
(with PTO unit)

| No. | Parts | Q'ty | No. | Parts | Q'ty | No. | Parts | Q'ty |
|---|---|---|---|---|---|---|---|---|
| 111 | Drive shaft (F) | 1 | 314 | Valve plate (L) | 1 | 724 | O-ring ; 1B P8 | 16 |
| 113 | Drive shaft (R) | 1 | 325 | Sensor block | 1 | 725 | O-ring ; 1B P11 | 9 |
| 116 | Gear #1 | 1 | 326 | Cover | 1 | 727 | O-ring ; 1B P14 | 3 |
| 123 | Roller bearing | 2 | 401 | Socket bolt ; M20X210 | 8 | 728 | O-ring ; 1B P24 | 4 |
| 124 | Needle bearing | 2 | 406 | Socket bolt ; M8X20 | 4 | 732 | O-ring ; 1B P18 | 2 |
| 127 | Bearing spacer | 3 | 407 | Socket bolt ; M6X55 | 3 | 774 | Oil seal | 1 |
| 141 | Cylinder block | 2 | 414 | Socket bolt ; M10X20 | 4 | 789 | Back up ring ; P18 | 2 |
| 151 | Piston | 18 | 466 | VP plug ; PF1/4 | 2 | 792 | Back up ring ; G35 | 2 |
| 152 | Shoe | 18 | 467 | VP plug ; PF3/8 | 2 | 806 | Nut ; M16 | 2 |
| 153 | Retainer plate | 2 | 468 | VP plug ; PF3/4 | 4 | 808 | Nut ; M20 | 2 |
| 156 | Spherical bushing | 2 | 490 | Plug ; NPTF1/16 | 4 | 824 | Snap ring | 2 |
| 157 | Cylinder spring | 18 | 531 | Tilting pin ; M24X2 | 32 | 885 | Valve plate pin | 2 |
| 211 | Shoe plate | 2 | 532 | Servo piston ; M24X2 | 2 | 886 | Spring pin | 4 |
| 212 | Swash plate | 2 | 534 | Stopper(L) | 2 | 901 | Eye bolt ; M10 | 2 |
| 214 | Tilting bushing | 2 | 535 | Stopper(S) | 2 | 953 | Socket screw ; M16X35 | 2 |
| 251 | Swash plate support | 2 | 546 | Spacer | 2 | 954 | Set screw ; M20 | 2 |
| 261 | Seal cover (F) | 1 | 548 | Feed back pin | 2 | 04 | Gear pump | 1 |
| 271 | Pump casing | 2 | 702 | O-ring ; 1B G35 | 2 | 05 | PTO unit (option) | (1) |
| 312 | Valve block | 1 | 710 | O-ring ; 1B G95 | 2 | | | |
| 313 | Valve plate (R) | 1 | 717 | O-ring ; 1B G145 | 4 | | | |

□ The codes in a rectangle represent adjust screws. Do not tamper with the adjust screws as much as possible.

**Fig. 24-3**



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## 11.1 TORQUES SPECIFICATIONS FOR CAPSCREWS AND NUTS

Tables Table11-1 and Table11-2 indicate tightening torques applicable to cases where no special note is given.
Overtightening of bolts may result in a twist-off and a fracture under load.
Insufficient tightening may lead to a loosening or loss of bolts. Always tighten bolts to proper torques.

**Table11-1 Torque specifications for metric coarse threads (not plated)**

Unit : N•m (lbf•ft)

| Classification | | 4.8T | | 7T | | 10.9T | |
|---|---|---|---|---|---|---|---|
| Nominal size | | No lubrication | Oil lubrication | No lubrication | Oil lubrication | No lubrication | Oil lubrication |
| M6 | P=1 | 4.4±0.5 (3.2±0.4) | 3.7±0.4 (2.7±0.3) | 9.6±1.0 (7.1±0.7) | 8.1±0.8 (6.0±0.6) | 17.4±1.8 (12.8±1.3) | 14.7±1.5 (10.8±1.1) |
| M8 | P=1.25 | 10.7±1.1 (7.9±0.8) | 9.0±0.9 (6.6±0.7) | 23.5±2.0 (17.3±1.5) | 19.6±2.0 (14.5±1.5) | 42.2±3.9 (31.1±2.9) | 35.3±3.9 (26.0±2.9) |
| M10 | P=1.5 | 21.6±2.0 (15.9±1.4) | 17.9±1.8 (13.2±1.3) | 46.1±4.9 (34.0±3.6) | 39.2±3.9 (28.9±2.9) | 83.4±8.8 (61.5±6.5) | 70.6±6.9 (52.1±5.1) |
| M12 | P=1.75 | 36.3±3.9 (26.8±2.9) | 31.4±2.9 (23.2±2.1) | 79.4±7.8 (58.6±5.8) | 66.7±6.9 (49.2±5.1) | 143±15 (105±11) | 121±12 (89.2±8.9) |
| M14 | P=2 | 57.9±5.9 (42.7±4.4) | 49.0±4.9 (36.1±3.6) | 126±13 (92.9±9.6) | 106±10 (78.2±7.4) | 226±20 (167±15) | 191±19 (141±14) |
| M16 | P=2 | 88.3±8.8 (65.1±6.5) | 74.5±6.9 (55.0±5.1) | 191±20 (141±15) | 161±16 (119±12) | 343±39 (253±29) | 284±29 (209±21) |
| M18 | P=2.5 | 122±12 (90.0±8.9) | 103±10 (75.8±7.2) | 265±29 (195±21) | 226±20 (167±15) | 481±49 (355±36) | 402±39 (297±29) |
| M20 | P=2.5 | 172±17 (127±13) | 144±14 (106±10) | 373±39 (275±29) | 314±29 (232±21) | 667±69 (492±51) | 559±59 (412±44) |
| M22 | P=2.5 | 226±20 (167±15) | 192±20 (142±15) | 500±49 (369±36) | 422±39 (311±29) | 902±88 (665±65) | 755±78 (557±58) |
| M24 | P=3 | 294±29 (217±21) | 235±29 (173±21) | 637±69 (470±51) | 520±49 (383±36) | 1160±118 (856±87) | 941±98 (694±72) |
| M27 | P=3 | 431±39 (318±29) | 353±39 (260±29) | 941±98 (694±72) | 765±78 (564±58) | 1700±167 (1250±123) | 1370±137 (1010±101) |
| M30 | P=3.5 | 588±59 (434±44) | 490±49 (361±36) | 1285±127 (948±94) | 1079±108 (796±80) | 2300±235 (1700±173) | 1940±196 (1430±145) |
| M33 | P=3.5 | 794±78 (586±58) | 667±69 (492±51) | 1726±177 (1270±131) | 1451±147 (1070±108) | 3110±314 (2290±232) | 2610±265 (1930±195) |
| M36 | P=4 | 1030±98 (760±72) | 863±88 (637±65) | 2226±226 (1640±167) | 1863±186 (1370±137) | 4010±402 (2960±297) | 3360±333 (2480±246) |

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**Table46-9**

| | | | | |
|---|---|---|---|---|
| Error code | | B012 | | |
| Trouble | | Boom up pressure sensor outputs error | | |
| Judging condition | | After starter switch ON and engine does not start yet. And the input voltage from the sensor after starter switch ON is in the range of 1.4V or more to less than 4.7V. | | |
| Symptom | | The boom up operability becomes poor. | | |
| Control in the event of failure | | Normal control | | |
| Returned in normal condition | | Not returned automatically under normal condition. Switch the power OFF once and turns on it again. | | |
| Service diagnosis checking screen | | Screen No. | 5 | B-1 BOOM RAISE |
| | | Screen No. | | |
| | | Screen No. | | |
| Checking object | | | | Checking contents and remedy |
| 1 | • Boom up pressure sensor SE-3 | | | When B012 is cancelled and other error occurs by turning starter switch on after exchanging the connector with other sensor.<br>Check sensor unit for possible failure. If failure found, replace it. |
| 2 | • Wiring between boom up pressure sensor and controller<br>CN-126F<br>CN-101F | | | When B012 is displayed after turning the starter switch on after the connector is exchanged with other sensor.<br>Check wiring for possible failure according to the wiring checking procedure and repair it if necessary. |
| 3 | • Mechatro controller | | | Check that the error is corrected after replacement of controller. |

**Table46-10**

| | | | | |
|---|---|---|---|---|
| Error code | | B013 | | |
| Trouble | | Boom up pressure sensor's wiring disconnects. | | |
| Judging condition | | The input voltage from boom up pressure sensor is less than 0.1V. | | |
| Symptom | | The boom up speed slows down. | | |
| Control in the event of failure | | Set proportional valve output rate of P1 and P2 pumps to 0mA. (Hydraulic pump emergency mode)<br>Set output of P1 unload proportional valve to 0mA. (Valve emergency mode) | | |
| Returned in normal condition | | It returns automatically in normal condition. | | |
| Service diagnosis checking screen | | Screen No. | 5 | B-1 BOOM RAISE |
| | | Screen No. | | |
| | | Screen No. | | |
| Checking object | | | | Checking contents and remedy |
| 1 | • Boom up pressure sensor SE-3 | | | When B013 is cancelled and other error occurs after exchanging the connector with other sensor.<br>Check sensor unit for possible failure. If failure found, replace it. |
| 2 | • Wiring between boom up pressure sensor and controller<br>CN-126F<br>CN-101F | | | When B013 is displayed after the connector is exchanged with other sensor.<br>Check wiring for possible failure according to the wiring checking procedure and repair it if necessary. |
| 3 | • Mechatro controller | | | Check that the error is corrected after replacement of controller. |

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## 32.1 REMOVING AND INSTALLING

### 32.1.1 ATTACHMENT ASSY

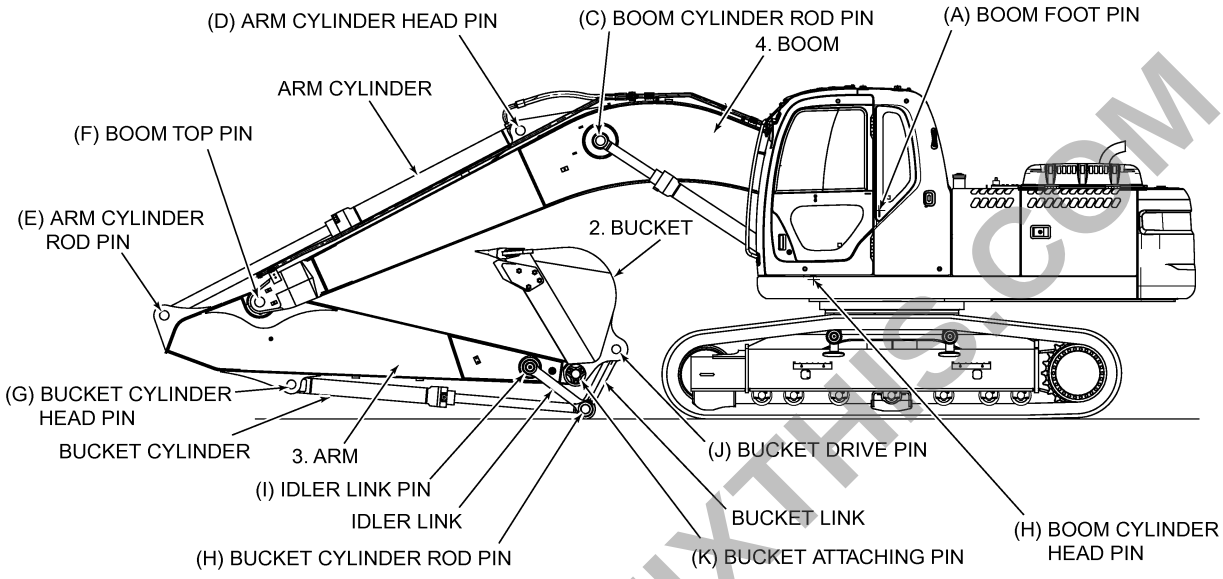



**Fig. 32-1 Front attachment and position**

### 32.1.2 BUCKET

#### 32.1.2.1 REMOVING BUCKET

(1) Put the machine in position to remove bucket.

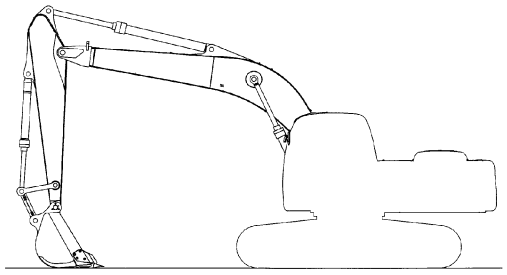


**Fig. 32-2 Position to remove bucket**

(2) Removing pin (2)
Expand slit of ring (1) with screwdriver, and remove it. Push out the pin (2) with flat-blade screwdriver .

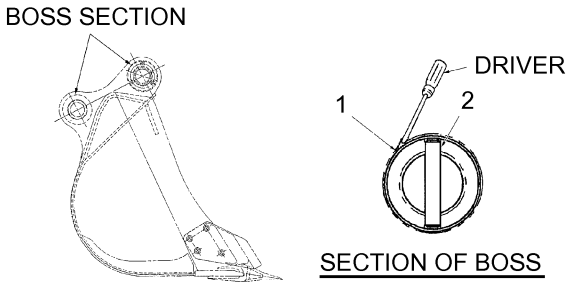



**Fig. 32-3 Removing pin (2)**



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## 47.1 HYDRAULIC SYSTEM

Preface:
The troubleshooting for the failures shown below is explained here.
Identify the failure and trouble and carry forward the troubleshooting in order of the failure item number.

(1) All controls do not function/slow
(2) Engine down/stalled
(3) Move at lever neutral position
(4) Poor fine operability
(5) Slow boom up, insufficient power
(6) Slow boom down, insufficient power for lifting up body
(7) Slow arm in, insufficient power
(8) Slow independent arm out (in the air)
(9) Slow bucket digging
(10) Slow bucket dumping
(11) Swing operation not functioned/slow
(12) Noise during swing operation
(13) Swing on a slope drifts when control lever is in neutral position
(14) Swing drifts when swing operation is stopped
(15) Slow travel speed/weak
(16) Travel deviation
(17) Travel 1st/2nd speed not changed
(18) Travel parking on a slope is not held
(19) Travel does not run straightly when both crawlers and attachment operated simultaneously.
(20) Slow breaker (crusher) operation, weak power
(21) Option selector valve malfunction: not switched to breaker circuit
(22) Option selector valve malfunction: not switched to nibbler circuit

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## 2.3 WEIGHT OF COMPONENTS

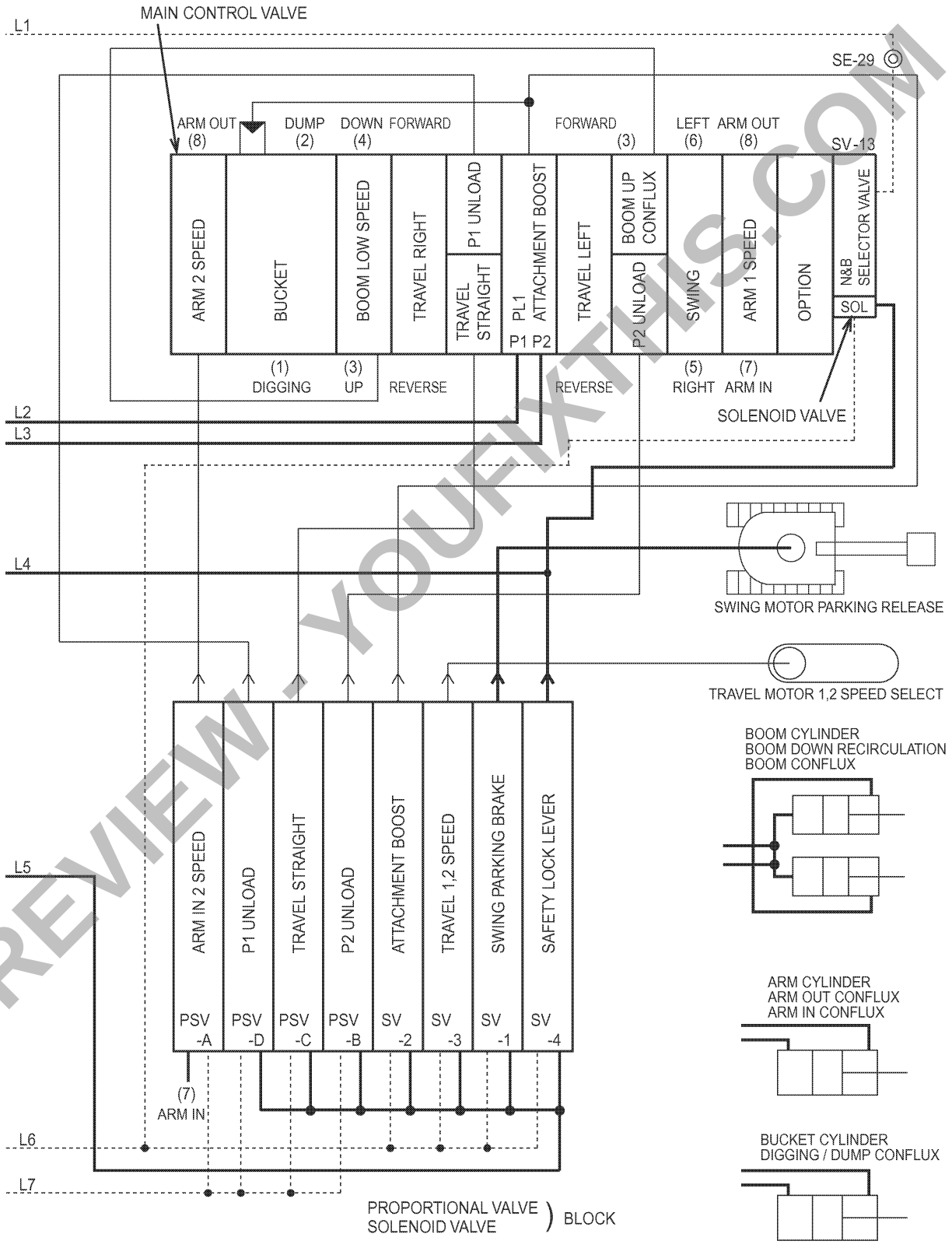
Unit ; kg (lb)

| Item \ Model | SK210 - 8 |
|---|---|
| Machine complete | 21,700 (47,800) |
| 1. Upper frame assy (Assembly of following :) | 9,500 (21,000) |
| 1.1 Upper frame | 1,770 (3,900) |
| 1.2 Counter weight (Semi-weighted) | 4,640 (10,230) |
| 1.3 Cab | 260 (570) |
| 1.4 Engine | *520 (1,150) |
| 1.5 Hydraulic oil tank | *150 (330) |
| 1.6 Fuel tank | *110 (240) |
| 1.7 Slewing motor (including reduction unit) | *210 (460) |
| 1.8 Control valve | *230 (510) |
| 1.9 Boom cylinder | *170 (375) × 2 |
| 1.10 Pin (for mounting boom) | 70 (150) |
| 1.11 Pump | *130 (290) |
| 1.12 Radiator (including intercooler) | *100 (220) |
| 2. Lower frame assy (Assembly of following :) | 7,980 (17,600) |
| 2.1 Lower frame | 2,420 (5,340) |
| 2.2 Slewing bearing | 250 (550) |
| 2.3 Travel motor (including reduction unit) | 260 (570) × 2 |
| 2.4 Upper roller | 20 (44) × 2 |
| 2.5 Lower roller | 30 (66) × 16 |
| 2.6 Front idler | 110 (240) × 2 |
| 2.7 Idler adjuster | 100 (220) × 2 |
| 2.8 Sprocket | 50 (110) × 2 |
| 2.9 Swivel joint | *30 (66) |
| 2.10 Track link with 800mm (31.5in) shoes assy | 1,700 (3,750) × 2 |
| 2.10.1 Track link assy | 540 (1,190) × 2 |
| 3. Attachment (Assembly of following / STD :) | 3,640 (8,030) |
| {5.65m (18ft-6in) Boom + 2.94m (9ft-8in) Arm + 0.80m³ (1cu•yd) Bucket} | |
| 3.1 Bucket assy (STD) | 640 (1,410) |
| 3.2 STD Arm assy (Assembly of following :) | 1,170 (2,580) |
| 3.2.1 STD Arm | 770 (1,700) |
| 3.2.2 Bucket cylinder | *140 (310) |
| 3.2.3 Idler link | 20 (44) × 2 |
| 3.2.4 Bucket link | 90 (198) |
| 3.2.5 Pin (2pcs. for mounting bucket cylinder / 2pcs. for mounting bucket) | 100 (220) |
| 3.3 Boom assy (Assembly of following :) | 1,830 (4,040) |
| 3.3.1 Boom | 1,420 (3,130) |
| 3.3.2 Arm cylinder | *250 (550) |
| 3.3.3 Pin (Mounting arm • Mounting arm cylinder) | 80 (180) |

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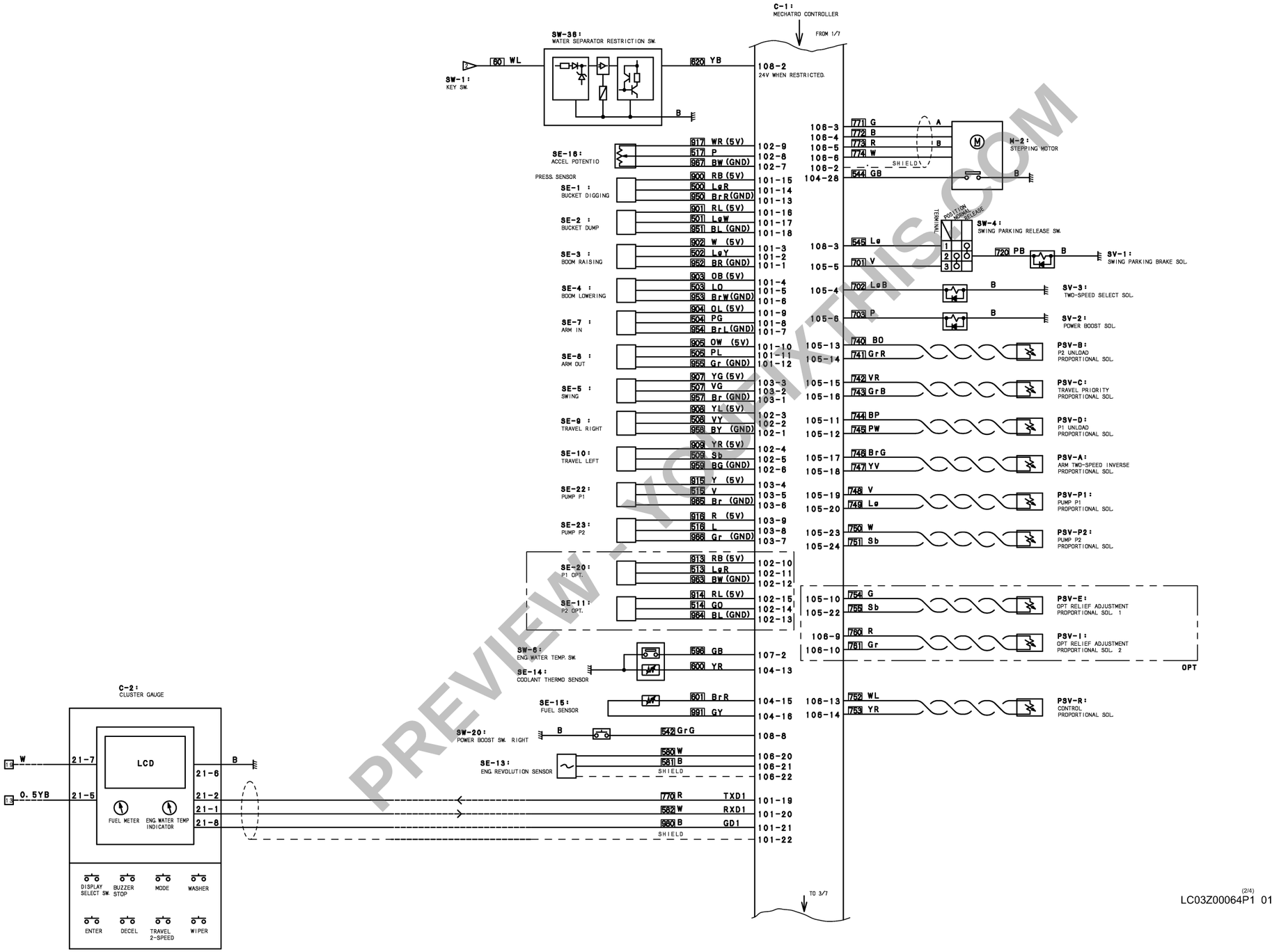
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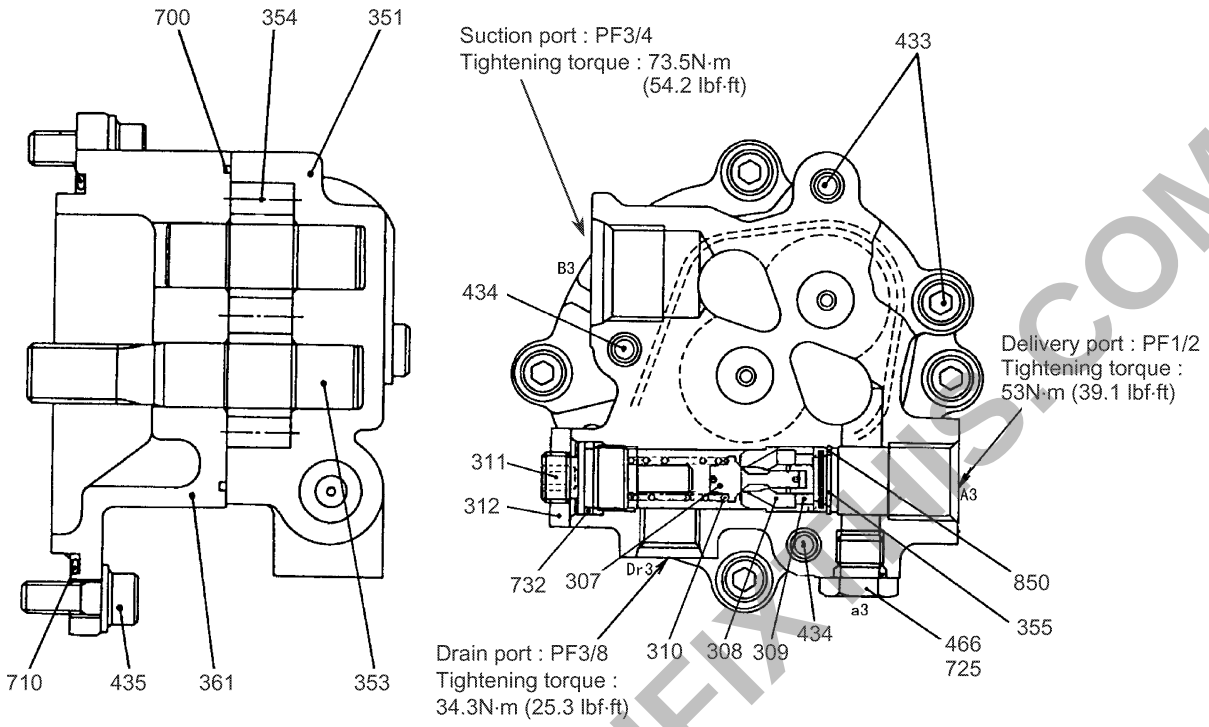

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(2/4)
LC03Z00064P1 01



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(2) Gear pump (For pilot)




| No. | Parts | Q'ty | No. | Parts | Q'ty |
|---|---|---|---|---|---|
| 307 | Poppet | 1 | 361 | Front case | 1 |
| 308 | Seat | 1 | 433 | Flange socket; M8×40 | 2 |
| 309 | Ring | 1 | 434 | Flange socket; M8×55 | 2 |
| 310 | Spring | 1 | 435 | Flange socket; M8×20 | 4 |
| 311 | Adjust screw | 1 | 466 | VP plug ; PF1/4 | 1 |
| 312 | Lock nut ; M14×1.5 | 1 | 700 | Ring | 1 |
| 351 | Gear case | 1 | 710 | O-ring ; 1B G95 | 1 |
| 353 | Drive gear | 1 | 725 | O-ring ; 1B P11 | 1 |
| 354 | Driven gear | 1 | 732 | O-ring ; 1B P16 | 1 |
| 355 | Filter | 1 | 850 | Locking ring | 1 |

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**Table11-2 Torques specifications for metric fine threads (not plated)**

Torque value Unit : N•m (lbf•ft)

| Classification | | 4.8T | | 7T | | 10.9T | |
|---|---|---|---|---|---|---|---|
| Nominal size | | No lubrication | Oil lubrication | No lubrication | Oil lubrication | No lubrication | Oil lubrication |
| M8 | P=1.0 | 11.3±1.1 (8.3±0.8) | 9.5±1.0 (7.0±0.7) | 24.5±2.0 (18.1±1.5) | 20.6±2.0 (15.2±1.5) | 44.1±3.9 (32.5±2.9) | 37.3±3.9 (27.5±2.9) |
| M10 | P=1.25 | 22.6±2.0 (16.7±1.5) | 18.7±1.9 (13.8±1.4) | 48.1±4.9 (35.5±3.6) | 41.2±3.9 (30.3±2.9) | 87.3±8.8 (64.4±6.5) | 73.5±6.9 (54.2±5.1) |
| M12 | P=1.25 | 39.2±3.9 (28.9±2.9) | 33.3±2.9 (24.6±2.1) | 85.3±8.8 (62.9±6.5) | 71.6±6.9 (52.8±5.1) | 154±16 (114±12) | 129±13 (95.2±9.6) |
| M16 | P=1.5 | 92.2±8.8 (68.0±6.5) | 77.5±7.8 (57.2±5.8) | 196±20 (145±15) | 169±17 (125±13) | 363±39 (268±29) | 304±29 (224±21) |
| M20 | P=1.5 | 186±19 (137±14) | 155±16 (114±12) | 402±39 (297±29) | 333±29 (246±21) | 726±69 (535±51) | 608±59 (448±44) |
| M24 | P=2 | 314±29 (232±21) | 265±29 (195±21) | 686±69 (506±51) | 569±59 (420±44) | 1240±118 (915±87) | 1030±98 (760±72) |
| M30 | P=2 | 637±59 (470±44) | 530±49 (391±36) | 1390±137 (1030±101) | 1157±118 (853±87) | 2500±255 (1840±188) | 2080±206 (1530±152) |
| M33 | P=2 | 853±88 (629±65) | 706±70 (521±52) | 1860±186 (1370±137) | 1550±155 (1140±114) | 3350±334 (2470±246) | 2790±275 (2060±203) |
| M36 | P=3 | 1070±108 (789±80) | 892±88 (658±65) | 2330±226 (1720±167) | 1940±196 (1430±145) | 4200±422 (3100±311) | 3500±353 (2580±260) |

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| Error Code | Trouble | Described page |
|---|---|---|
| B032 | Incorrect output of arm out pressure sensor | 46-14 |
| B033 | Disconnection of arm out pressure sensor | 46-14 |
| B034 | Short-circuit of arm out pressure sensor | 46-15 |
| B042 | Incorrect output of arm in pressure sensor | 46-15 |
| B043 | Disconnection of arm in pressure sensor | 46-16 |
| B044 | Short-circuit of arm in pressure sensor | 46-16 |
| B052 | Incorrect output of bucket digging pressure sensor | 46-17 |
| B053 | Disconnection of bucket digging pressure sensor | 46-17 |
| B054 | Short-circuit of bucket digging pressure sensor | 46-18 |
| B062 | Incorrect output of bucket dump pressure sensor | 46-18 |
| B063 | Disconnection of bucket dump pressure sensor | 46-19 |
| B064 | Short-circuit of bucket dump pressure sensor | 46-19 |
| B072 | Incorrect output of swing pressure sensor | 46-20 |
| B073 | Disconnection of swing pressure sensor | 46-20 |
| B074 | Short-circuit of swing pressure sensor | 46-21 |
| B092 | Incorrect output of travel right pressure sensor | 46-21 |
| B093 | Disconnection of travel right pressure sensor | 46-22 |
| B094 | Short-circuit of travel right pressure sensor | 46-22 |
| B102 | Incorrect output of travel left pressure sensor | 46-23 |
| B103 | Disconnection of travel left pressure sensor | 46-23 |
| B104 | Short-circuit of travel left pressure sensor | 46-24 |
| B113 | Disconnection of pressure sensor of optional selector positioning | 46-24 |
| B114 | Short-circuit of pressure sensor of optional selector positioning | 46-25 |
| B162 | Incorrect output of P1 optional side pressure sensor | 46-25 |
| B163 | Disconnection of P1 side optional pressure sensor | 46-26 |
| B164 | Short-circuit of P1 side optional pressure sensor | 46-26 |
| B172 | Incorrect output of P2 optional side pressure sensor | 46-27 |
| B173 | Disconnection of P2 side optional pressure sensor | 46-27 |
| B174 | Short-circuit of P2 side optional pressure sensor | 46-28 |
| C012 | Incorrect output of P1 pump pressure sensor | 46-28 |
| C013 | Disconnection of P1 pump pressure sensor | 46-29 |
| C014 | Short-circuit of P1 pump pressure sensor | 46-29 |
| C022 | Incorrect output of P2 pump pressure sensor | 46-30 |
| C023 | Disconnection of P2 pump pressure sensor | 46-30 |
| C024 | Short-circuit of P2 pump pressure sensor | 46-31 |
| C033 | Disconnection of boom head pressure sensor | 46-31 |
| C034 | Short-circuit of boom head pressure sensor | 46-32 |
| D012 | Failure of output transistor ON at P1 unload proportional valve | 46-32 |
| D013 | Disconnection of P1 unload proportional valve | 46-33 |
| D022 | Failure of output transistor ON at P2 unload proportional valve | 46-33 |
| D023 | Disconnection of P2 unload proportional valve | 46-34 |
| D032 | Failure of output transistor ON at travel straight proportional valve | 46-34 |
| D033 | Disconnection of travel straight proportional valve | 46-35 |
| D062 | Failure of output transistor ON at arm in high speed proportional valve | 46-35 |
| D063 | Disconnection of arm in high speed proportional valve | 46-36 |
| E012 | Failure of output transistor ON at P1 pump proportional valve | 46-36 |
| E013 | Disconnection of P1pump proportional valve | 46-37 |
| E022 | Failure of output transistor ON at P2 pump proportional valve | 46-37 |



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(3) Removing bucket attaching pin (K)
Lift up bucket, position it so that bucket attaching pin (K) is not loaded, adjust bucket link, and pull out bucket attaching pin (K).

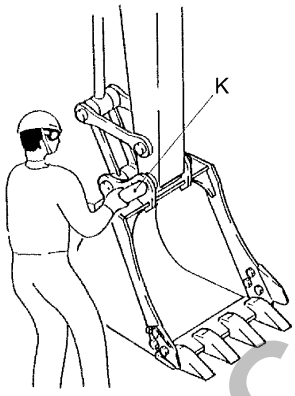



**Fig. 32-4 Removing bucket attaching pin**

(4) Removing bucket drive pin (J)
Put bucket on the ground. Position it so that the bucket drive pin (J) is not loaded. Adjust the bucket link and pull out pin (J).
Store the removed pin (J) in original position.

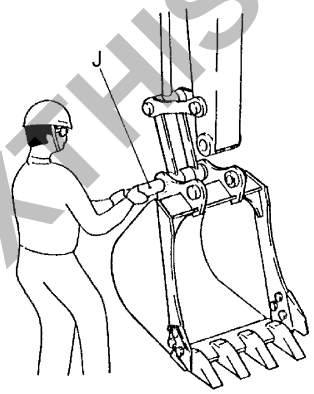



**Fig. 32-5 Removing bucket drive pin**

### 32.1.2.2 ATTACHING BUCKET

(1) Attaching bucket drive pin (J)
Attach bucket drive pin (J) first, then continue in the reverse procedure of removing.

**WARNING**

- **When aligning the pin holes, do not put your finger in the pin holes, but align them visually.**
- **Check the seals for damaged and replace as necessary.**
- **When inserting the pin, coat the shaft with grease.**

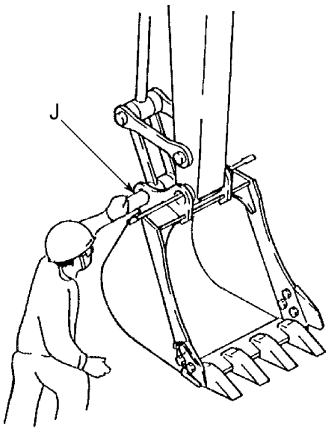



**Fig. 32-6 Attaching bucket**

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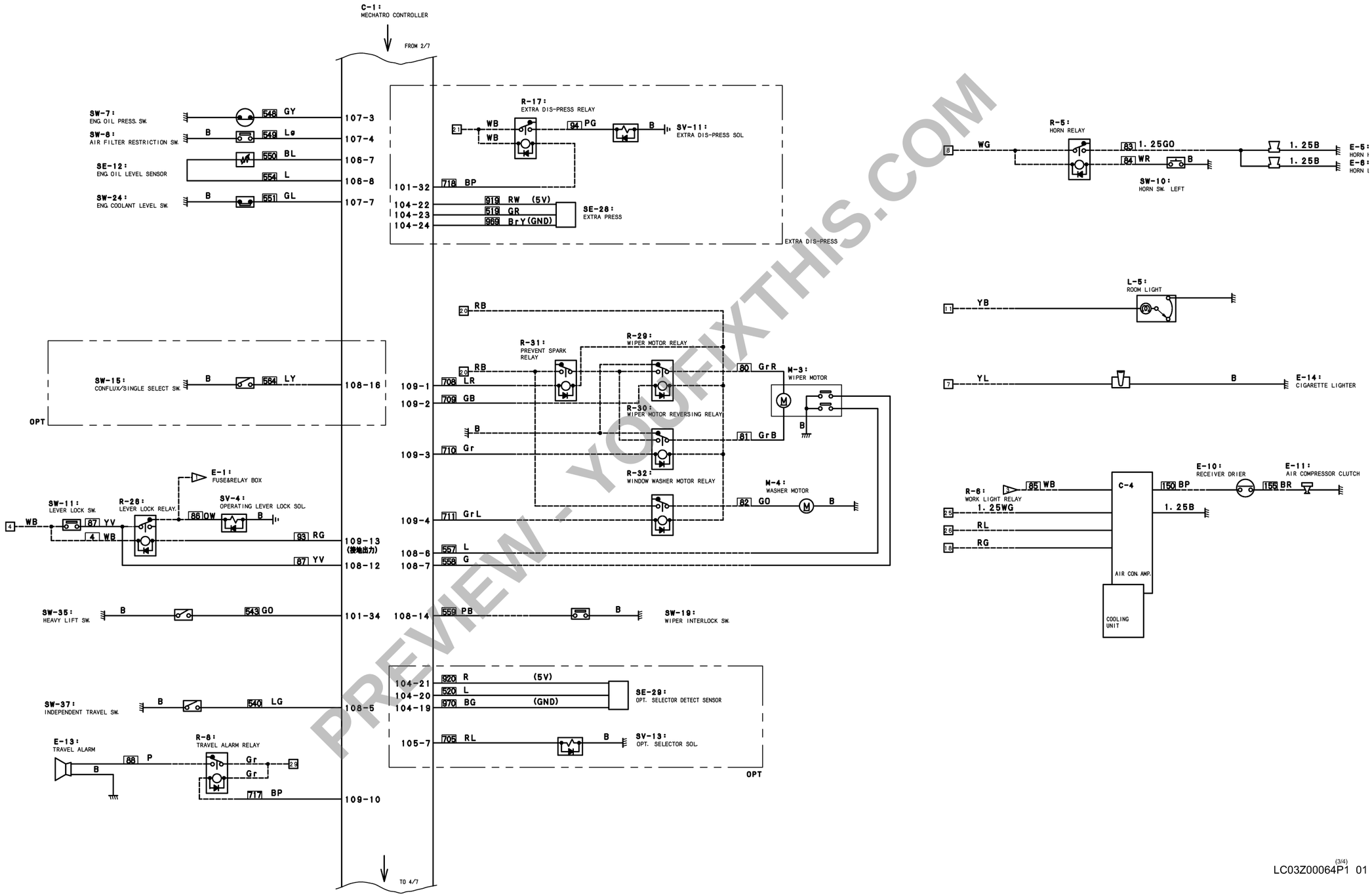
(1) All controls do not function/slow

| No. | Sections | Contents/normal value | | Corrective action, others |
|---|---|---|---|---|
| 1 | Fuse | Check fuse No.4 (10A) | | If the fuse is blown out, check on the short-circuited section. |
| 2 | Safety lever lock switch | Carry out service diagnosis | No.4 K-4 switch:<br>Push down the lever and it turns on, push up and it turns off. | Check action of switch by tester, or check that the power voltage is lowered by pushing the lever down. |
| 3 | Safety lever lock switching | Check that the solenoid is switched correctly | Measure both terminals of solenoid connector. 24V by pushing the lever down, 0V by pushing it up | Check solenoid unit for possible failure.<br>Check harness for possible failure. |
| 4 | Safety lever lock relay | Carry out service diagnosis | No.4 K-4 lock lever:<br>Push down the lever and it turns off, push up and it turns on. | Check action of relay by tester |
| 5 | Pilot pressure sensor | | •Stop engine stop and key is on position.<br>All pilot low pressure sensors are 0MPa to 0.1MPa. | Check 5V power for controller |
| 6 | Solenoid valve for safety lock lever | Measure pressure of solenoid A1 port | About 0MPa by pushing the lever up, and 4MPa or more by push it down. | Replace solenoid valve |
| 7 | Pilot line filter | Disassemble and check it visually | Check filter for clogging | Clean filter |
| 8 | Pilot gear pump | Measure pilot primary pressure at gear pump | Check that it is 4MPa or more in high idling | Check gear pump and the relief valve for possible failure |
| 9 | Multi control valve (in case that travel is operable) | Change position | Since all are blocked due to poor switching performance, check that the lever select pattern is set to the proper position. | |
| 10 | Measurment of current value of P1/P2 unload proportional valve | Carry out service diagnosis | •No.8 D-1 P1 unload valve (cut valve)<br>D-1 P2 unload valve (cut valve)<br>•See Service Diagnosis Data List<br>Operation No.3 Boom up full lever & relief | In case where the reading is largely differed from the actually measured value, check proportional valve and controller for possible failure. |
| 11 | Secondary pressure of P1, P2 unload proportional valve | Measure the proportional valve secondary pressure directly at the ports A7 and A5 of 8 sections solenoid block | Check that P1/P2 unload secondary pressures are within the range of 0.5 to 1.2MPa in boom up full lever and high idling operation | Replace proportional valve |
| 12 | Actual measuring current value of P1/P2 pump proportional valve | Carry out service diagnosis. | •No.9 E-1 P1 pump<br>E-2 P2 pump<br>•See Service Diagnosis Data List<br>Operation No.18 Travel right full lever & idling<br>Operation No.19 Travel left full lever & idling | In case where the reading is largely differed from the actually measured value, check proportional valve and controller for possible failure. |
| 13 | Secondary pressure of pump proportional valve | Measure the pump proportional valve secondary pressure directly in idling operation. (Ports a3, a4) | Check that pump proportional valve secondary pressure is 2.7MPa or more in right (left) travel full lever and high idling operation<br>Right travel: P1 pump proportional valve<br>Left travel: P2 pump proportional valve | Replace proportional valve |

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(3/4)
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| Error Code | Trouble | Described page |
|---|---|---|
| E023 | Disconnection of P2 pump proportional valve | 46-38 |
| F011 | Failure of output transistor OFF and GND short of attachment boost SOL valve | 46-38 |
| F013 | Failure of output transistor ON and disconnection of attachment boost SOL valve | 46-39 |
| F021 | Failure of output transistor OFF and GND short of swing parking SOL valve | 46-39 |
| F023 | Failure of output transistor ON and disconnection of swing parking SOL valve | 46-40 |
| F031 | Failure of output transistor OFF and GND short of travel 1-2 speed SOL valve | 46-40 |
| F033 | Failure of output transistor ON and disconnection of travel 1-2 speed SOL valve | 46-41 |
| F041 | Failure of output transistor OFF and GND short of optional selector SOL valve | 46-41 |
| F043 | Failure of output transistor ON and disconnection of optional selector SOL valve | 46-42 |
| G011 | Failure of output transistor on governor motor | |
| G013 | Disconnection of governor motor | |
| G023 | Starting point indexing is impossible | |
| G032 | Overrun of speed sensor of direct input Mechatro-controller | 46-42 |
| G033 | Disconnection of speed sensor of direct input Mechatro-controller | 46-43 |
| H013 | Disconnection of acceleration potentio | 46-43 |
| H014 | Power short-circuit of acceleration potentio | 46-44 |
| H023 | Disconnection of boom angle potentio | 46-44 |
| H024 | Power short-circuit of boom angle potentio | 46-45 |
| H033 | Disconnection of arm angle potentio | 46-45 |
| H034 | Power short-circuit of arm angle potentio | 46-46 |
| H091 | Failure of GND short-circuit of fuel sensor | 46-46 |
| H093 | Disconnection of fuel sensor | 46-47 |
| I313 | Received error of cluster communication (time-out error) | 46-47 |
| K014 | Adhesion of battery relay terminal | 46-48 |
| R014 | Failure of arc prevention relay of wiper motor | 46-49 |
| R024 | Failure of normal rotation relay of wiper motor | 46-50 |
| R034 | Failure of reverse rotation relay of wiper motor | 46-51 |
| R044 | Failure of washer motor relay | 46-52 |
| R134 | Failure of swing flasher relay | 46-52 |
| R144 | Failure of swing flasher relay | 46-53 |
| R154 | Failure of travel alarm relay | 46-53 |
| R164 | Failure of auto idling stop relay 2 | 46-54 |
| R174 | Failure of engine forcible stop relay | 46-55 |
| R184 | Failure of lever lock relay | 46-56 |
| R214 | Failure of safety relay | 46-56 |

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### 32.1.2.3 PROCEDURE FOR ADJUSTING CLEARANCE

Adjustment of clearance between bucket and arm

(1) Move the O-ring (3) toward the bucket boss, using an appropriate tool. (a→b)

(2) When adjusting clearance (B), bring the non-adjusting side of the bucket in contact with the arm.

(3) Measure clearance (B) and check that it is within 1.0mm (0.04in).

(4) Adjust clearance (B) where it is more than 1.0mm (0.04in).

(5) An average of 5 shims (9) of 1mm (0.04in) thickness are set in the plate (8) fixed by the three capscrews (11). The clearance can be decreased by 1mm (0.04in) if one shim is removed.

: 24mm,
Tightening torque : 279N•m (206 lbf•ft)

(6) After adjustment, tighten the capscrews evenly.
• The gap exceeding the specified dimension causes early wear.

(7) Operate the bucket and confirm that the total sum of both clearance is within 1.0mm (0.04in).

(8) Replace O-ring (3) on its original position.

**⚠CAUTION**

- When shifting O-ring (3) by means of a spatula, use care so as not to damage O-ring (3).
- Remove shims (9), push out bushing (7) rightwards by means of three capscrews (11) and adjust clearance (B) so it settles within the standard value evenly all round.

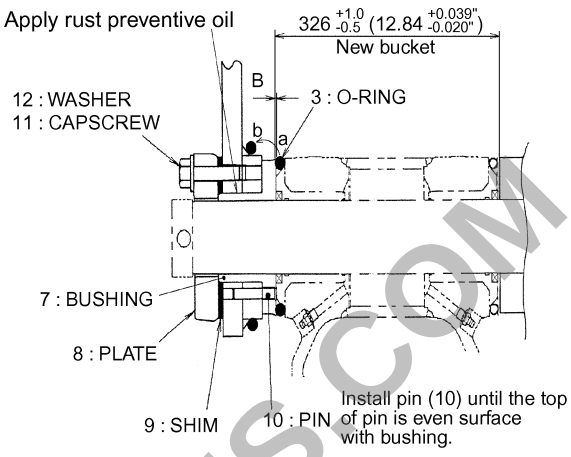



**Fig. 32-7 Adjusting clearance between bucket and arm**

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## GENERAL SAFETY INFORMATION

**⚠WARNING**

**Do not operate or perform any maintenance on this machine until all instructions found in the OPERATOR'S MANUAL and this MANUAL have been thoroughly read and understood.**
**Improper operation or maintenance of this machine may cause accidents and could result in serious injury or death.**
**Always keep the manual in storage.**
**If it is missing or damaged, place an order with your dealer for a replacement.**
**If you have any questions, consult your dealer.**

(1) Most accidents, which occur during operation, are due to neglect of precautionary measures and safety rules. Sufficient care should be taken to avoid these accidents. Incorrect operation, lubrication or maintenance services are very dangerous and may cause injury or death of personnel. Therefore all precautionary measures, NOTES, DANGERS, WARNINGS and CAUTIONS contained in the manual and on the machine should be read and understood by all personnel before starting any work with or on the machine.

(2) Operation, inspection, and maintenance should be carefully carried out, and safety must be given the first priority. Messages of safety are indicated with marks. The safety information contained in the manual is intended only to supplement safety codes, insurance requirements, local laws, rules and regulations.

(3) Messages of safety appear in the manual and on the machine : All messages of safety are identified by either word of "DANGER", "WARNING" and "CAUTION".

1) **DANGER-** Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury and is represented as follows:

**⚠DANGER**

2) **WARNING-** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury and is represented as follows:

**⚠WARNING**

3) **CAUTION-** Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against possible damage to the machine and its components and is represented as follows:

**⚠CAUTION**

(4) It is very difficult to forecast every danger that may occur during operation. However, safety can be ensured by fully understanding proper operating procedures for this machine according to methods recommended by Manufacturer.

(5) While operating the machine, be sure to perform work with great care, so as not to damage the machine, or allow accidents to occur.

(6) Continue studying the manual until all Safety, Operation and Maintenance procedures are completely understood by all persons working with the machine.

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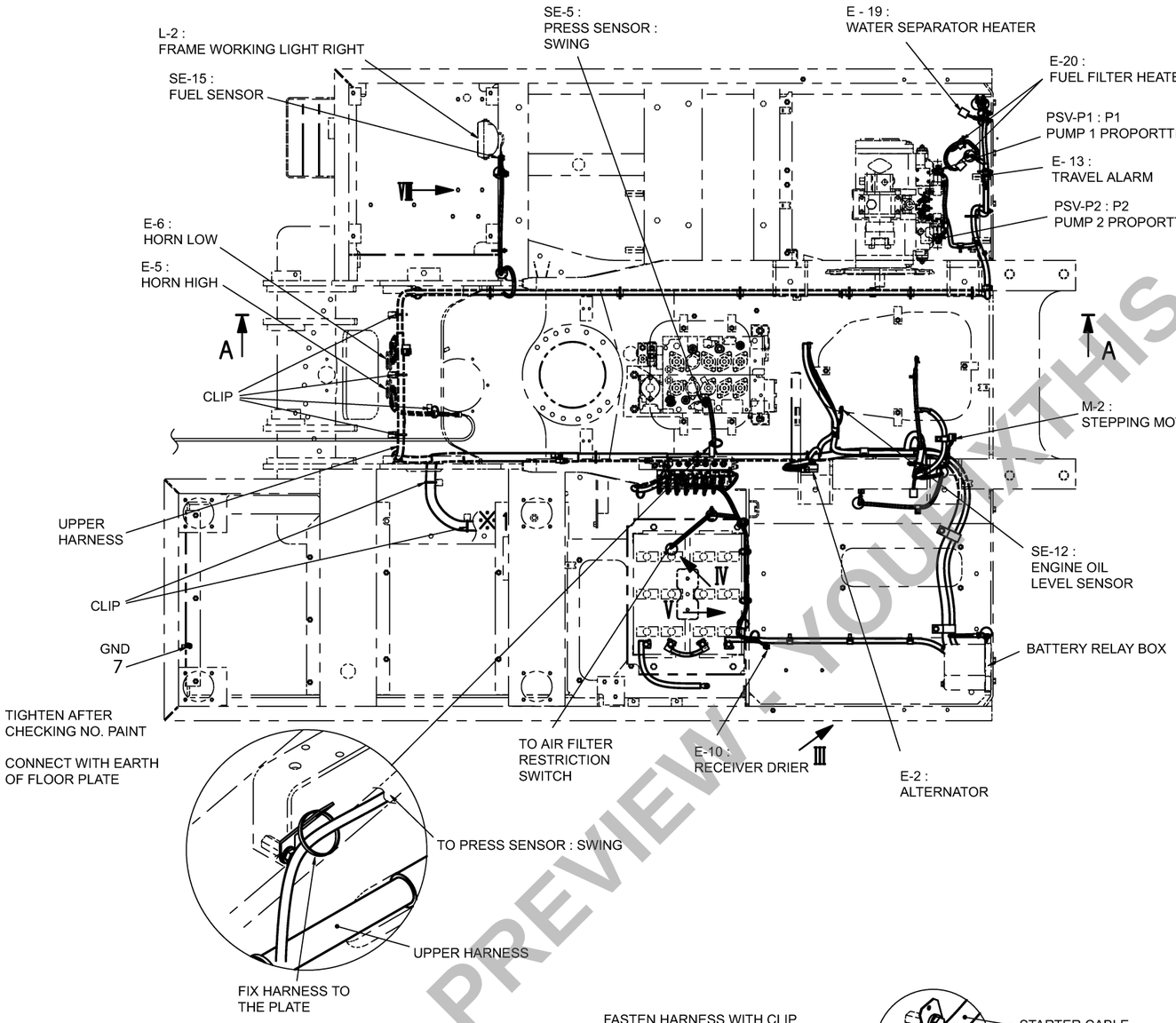
| REVISION HISTORY | | | |
|---|---|---|---|
| Issue | Issue Date | Applicable Machines | Remarks |
| First Edition | 01-2007 | SK210-8 ACERA MARK 8 TIER III | YN91ZU0007P1 NA |

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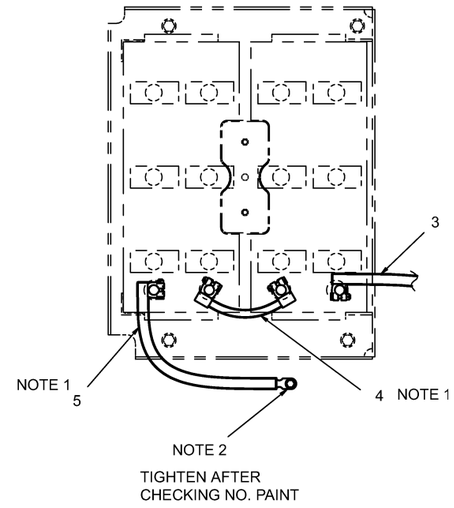
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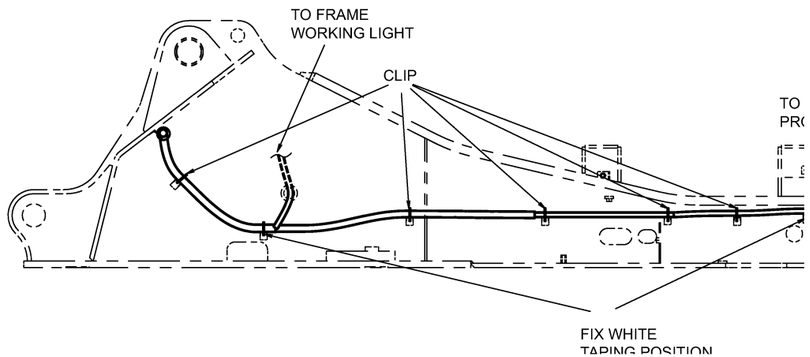
## 23.3.6 UPPER HARNESS ASSY (1/6)




| UPPER HARNESS ASSY | YN13E00118F1 | | (03) | |
|---|---|---|---|---|
| ITEM | PART NAME | PART No. | Q'TY | REMARKS |
| 1 | HARNESS | YN13E01461P1 | 1 | UPPER |
| 2 | CABLE | YN13E01462P1 | 1 | STARTER |
| 3 | CABLE | YN13E01463P1 | 1 | BATTERY - RELAY |
| 4 | CABLE | YN13E01435P1 | 1 | BATTERY - BATTERY |
| 5 | CABLE | YN13E01436P1 | 1 | BATTERY - GROUND |
| 6 | CABLE | YN13E01464P1 | 1 | ENGINE - GROUND |
| 7 | CABLE | LE13E01006P1 | 1 | FLOOR GROUND |
| 8 | HARNESS | LC13E01193P1 | 1 | AIR CLEANER |

NOTES:
(1) TIGHTENING TORQUE OF
BATTERY TERMINALS ARE 3.4N-M.
(2) TIGHTENING TORQUE OF
GROUNDING CABLES ARE 10.7N-M.




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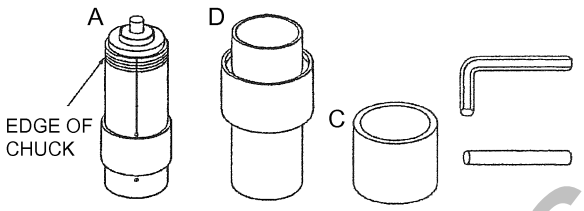
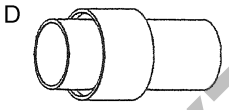
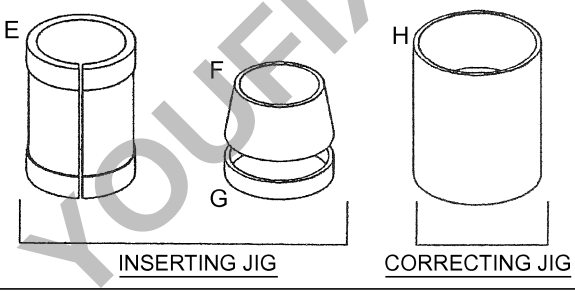
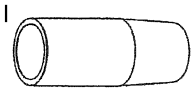
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### 32.2.1.9 JIGS LIST

#### 32.2.1.9.1 SPECIAL JIG LIST (POSSIBLE TO SUPPLY)

When assembling, the following jigs are required.

**Table32-5**

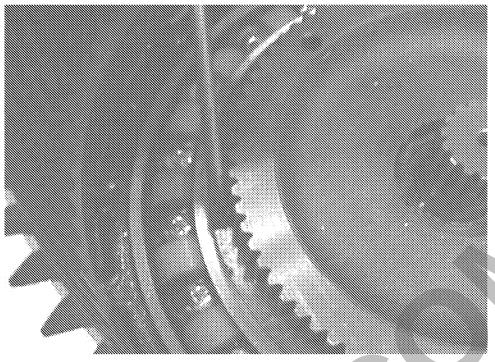
| Application | Shape | Described paragraph |
|---|---|---|
| For removing and press fitting bushing |  | 32.2.1.3.4, 32.2.1.5.2 |
| For press fitting wiper ring |  | 32.2.1.5.2 |
| For correcting seal ring |  | 32.2.1.5.2 |
| For inserting rod cover |  | 32.2.1.5.4 |

For above jigs, contact our dealer.
(The Jig No. List provided by cylinder maker is shown in the following page.)

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3) Position a flat-blade driver or equivalent to the space between two lock washers (22). Remove while striking the driver obliquely downward.



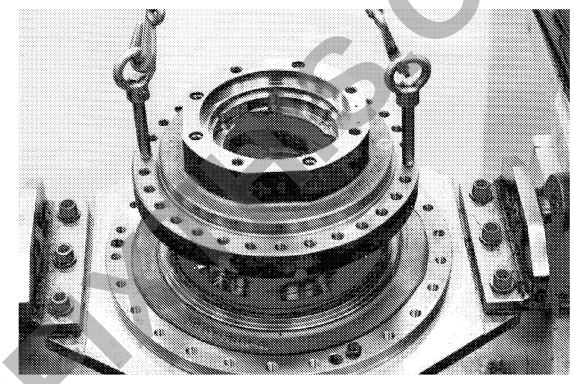
This picture of motor differs from actual motor.

(9) Removing spindle

1) Position the spindle side upward.
2) Remove the special jig used to secure hub and spindle.
3) Attach eye bolt to spindle and lift the spindle using a hoist.

**WARNING**

**Slowly lift the spindle parallel with the shaft of hub. Do not put any side force on the spindle or damage and injury may result. When it is hard to lift out, do not forced with the hoist to remove. Use a press to remove it safely.**



(10) Removing floating seal

1) Grasp the inner side of floating seal (29) by hand, and remove by pulling upward.

**Note**

Use gloves when removing the seal to protect your hands. If stuck due to mud, use a screw driver as a lever.



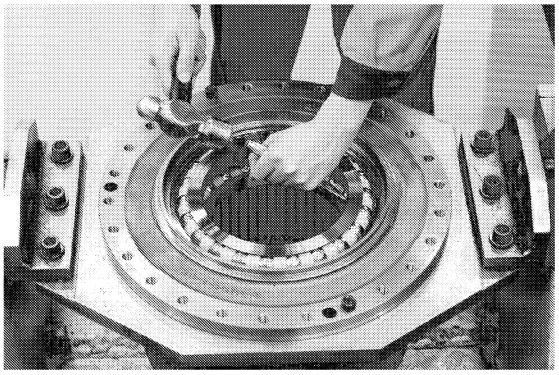
This picture of motor differs from actual motor.

(11) Removing angular ball bearing

1) Apply iron bar to the inner ring of angular ball bearing (24) and remove it little by little while striking 3 or 4 points divided into equal divisions on the circumference by hammer.

**Note**

If the inner ring is struck, the raceway surface may be damaged. The reuse of ball bearings will be impossible. The angular ball bearing should be removed only when replacement is necessary.



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