SERVICE MANUAL
Excavator
9045B
7-11401

1. Trim along dashed line.
2. Slide into pocket on Binder Spine.

TYPE 1-4

SERVICE MANUAL
Excavator
9045B
7-11401

1. Trim along dashed line.
2. Slide into pocket on Binder Spine.

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TYPE 1-4

9045B Excavator Service Manual 7-11401

Table of Contents

Description	Section No.	Form No.
General	**Tab 1**	
Safety, General information and Standard Torque Specifications	1001	7-62010
Specifications	1002	7-11250
Loctite Product Chart		8-98900
Engines	**Tab 2**	
Engine Removal and Installation	2000	7-11260
Engine Radiator and Oil Cooler and Cooling System Reservoir	2001	7-11270
6-830 Diesel Engine Specification Details	2403	8-28426
Cylinder Head and Valve Train	2415	8-28434
Cylinder Block	2425	8-28444
Lubrication System	2445	8-28453
Cooling System	2455	8-28464
Turbocharger	2465	8-28471
Turbocharger Failure Analysis	2565	9-78325
Fuel System	**Tab 3**	
Fuel Tank, Filters and Lines	3001	7-11280
Fuel System and Filters	3410	8-28482
Injection Pump	3412	8-28494
Fuel Injectors	3413	8-28503
Electrical	**Tab 4**	
Electrical Specifications and Troubleshooting	4001	7-62401
Electrical Schematic Foldout	In Rear Pocket	7-15350
Battery Testing, Maintenance and Booster Battery Connections	4002	7-62060
Controller	4003	7-62070
Tracks	**Tab 5**	
Tracks, Rollers, and Idlers	5002	7-11290
Power Train	**Tab 6**	
Drive Motor and Final Drive Transmission	6002	7-11300
Swing Motor and Swing Reduction Gear	6003	7-62100

CASE CORPORATION
700 State Street
Racine, WI 53404 U.S.A.

CASE CANADA CORPORATION
450 Sherman Avenue
Hamilton, ON L8N 4C4 CANADA

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9045B Excavator
Service Manual
7-11401

Table of Contents

Description	Section No.	Form No.
Hydraulics	**Tab 8**	
Cleaning the Hydraulic System	8000	7-11310
Hydraulic Specifications, Troubleshooting and Pressure Checks	8001	7-62411
Hydraulic Schematic Foldout (In Process)	In Rear Pocket	7-15360
Main Hydraulic Pump	8002	7-11320
Main Hydraulic Control Valve	8003	7-11330
Cylinders	8004	7-11340
Hand Control Valves, Foot Left and Right Travel Control Valves, Foot Straight Travel Control Valve, Shuttle Valve, Travel Block, and Accumulator	8005	7-62150
Eight Spool Solenoid Valve, Swing Lock and Swing Brake Solenoid Valve, Free Swing Solenoid Valve, and Quick Change Solenoid Valve	8006	7-11350
Cushion Control Valve	8007	7-62170
Auxiliary Hydraulics	8008	7-62180
Hydraulic Pilot Filter, Hydraulic Inline Filter, and Bypass Oil Filter	8011	7-62210
Hydraulic Swivel	8013	7-11360
Mounted Equipment	**Tab 9**	
Upper Structure and Counterweight	9002	7-11370
Boom, Arm, and Bucket	9003	7-11380
Operator's Seat, Operator's Seat Bracket, and Seat Belts	9004	7-62260
Cab and Cab Equipment	9005	7-11390
Air Conditioner Troubleshooting and System Checks	9006	7-62280
Air Conditioner Removal and Installation	9008	7-62300
Air Conditioner Components	9009	7-62310

NOTE: Case Corporation reserves the right to make improvements in design or changes in specifications at any time without incurring any obligation to install them on units previously sold.

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Section

1001

SAFETY, GENERAL INFORMATION AND TORQUE SPECIFICATIONS

CASE CORPORATION

Rac 7-62010

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December 1994

TABLE OF CONTENTS

SAFETY 3

GENERAL INFORMATION 5

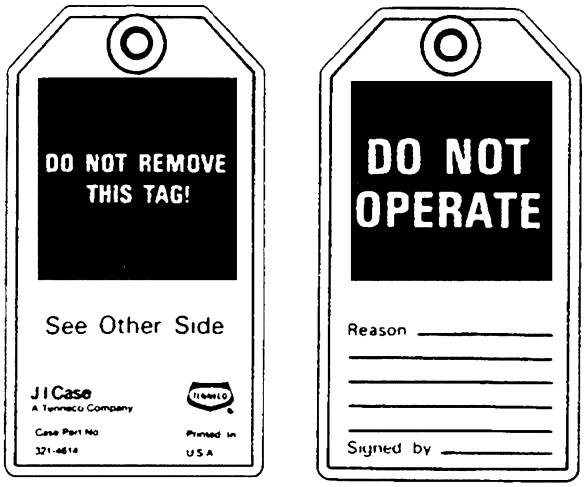
STANDARD TORQUE DATA FOR CAP SCREWS AND NUTS 6

SAFETY

This symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED. The message that follows the symbol contains important information about safety. Carefully read the message. Make sure you fully understand the causes of possible injury or death. SB001

To prevent injury always follow the Warning, Caution and Danger notes in this section and throughout the manual.

Put the warning tag shown below on the key for the keyswitch when servicing or repairing the machine. One warning tag is supplied with each machine. Additional tags Part Number 331-4614 are available from your service parts supplier.



1001-01

WARNING: *Read the operator's manual to familiarize yourself with the correct control functions.* 46-27

WARNING: *Operate the machine and equipment controls from the seat position only. Any other method could result in serious injury.* 48-55

WARNING: *This is a one man machine, no riders allowed.* 35-8

WARNING: *Before starting engine, study Operator's Manual safety messages. Read all safety signs on machine. Clear the area of other persons. Learn and practice safe use of controls before operating.*
It is your responsibility to understand and follow manufacturers instructions on machine operation, service and to observe pertinent laws and regulations. Operator's and Service Manuals may be obtained from your Case dealer. SA055

WARNING: *If you wear clothing that is too loose or do not use the correct safety equipment for your job, you can be injured. Always wear clothing that will not catch on objects. Extra safety equipment that can be required includes hard hat, safety shoes, ear protection, eye or face protection, heavy gloves and reflector clothing.* 45-3A

WARNING: *When working in the area of the fan belt with the engine running, avoid loose clothing if possible, and use extreme caution.* 35-4

WARNING: *When doing checks and tests on the equipment hydraulics, follow the procedures as they are written. DO NOT change the procedure.* 47-44

WARNING: *When putting the hydraulic cylinders on this machine through the necessary cycles to check operation or to remove air from a circuit, make sure all people are out of the way.* 47-45

WARNING: *Use insulated gloves or mittens when working with hot parts.* 47-41A

CAUTION: *Lower all attachments to the ground or use stands to safely support the attachments before you do any maintenance or service.* 49-11

CAUTION: *Pin sized and smaller streams of hydraulic oil under pressure can penetrate the skin and result in serious infection. If hydraulic oil under pressure does penetrate the skin, seek medical treatment immediately. Maintain all hoses and tubes in good condition. Make sure all connections are tight. Make a replacement of any tube or hose that is damaged or thought to be damaged. DO NOT use your hand to check for leaks, use a piece of cardboard or wood.* 40-6A

CAUTION: *When removing hardened pins such as a pivot pin, or a hardened shaft, use a soft head (brass or bronze) hammer or use a driver made from brass or bronze and a steel head hammer.* 46-17

CAUTION: *When using a hammer to remove and install pivot pins or separate parts using compressed air or using a grinder, wear eye protection that completely encloses the eyes (approved goggles or other approved eye protectors).* 46-13

CAUTION: *Use suitable floor (service) jacks or chain hoist to raise wheels or tracks off the floor. Always block machine in place with suitable safety stands.* 40-7A

CAUTION: *When servicing or repairing the machine, keep the shop floor and operator's compartment and steps free of oil, water, grease, tools, etc. Use an oil absorbing material and/or shop cloths as required. Use safe practices at all times.* 40-8

CAUTION: *Some components of this machine are very heavy. Use suitable lifting equipment or additional help as instructed in this Service Manual.* 40-10

DANGER: *Engine exhaust fumes can cause death. If it is necessary to start the engine in a closed place, remove the exhaust fumes from the area with an exhaust pipe extension. Open the doors and get outside air into the area.* 48-56

WARNING: *When the battery electrolyte is frozen, the battery can explode if (1), you try to charge the battery, or (2), you try to jump start and run the engine. To prevent the battery electrolyte from freezing, try to keep the battery at full charge. If you do not follow these instructions, you or others in the area can be injured.* SA033

GENERAL INFORMATION

CLEANING

Clean all metal parts except bearings, in a suitable cleaning solvent or by steam cleaning. Do not use caustic soda for steam cleaning. After cleaning, dry and put oil on all parts. Clean oil passages with compressed air. Clean bearings in a suitable cleaning solvent, dry the bearings completely and put oil on the bearings.

INSPECTION

Check all parts when the parts are disassembled. Replace all parts that have wear or damage. Small scoring or grooves can be removed with a hone or crocus cloth. Complete a visual inspection for indications of wear, pitting and the replacement of parts necessary to prevent early failures.

BEARINGS

Check bearings for easy action. If bearings have a loose fit or rough action replace the bearing. Wash bearings with a suitable cleaning solvent and permit to air dry. DO NOT DRY BEARINGS WITH COMPRESSED AIR.

NEEDLE BEARINGS

Before you press needle bearings in a bore always remove any metal protrusions in the bore or edge of the bore. Before you press bearings into position put petroleum jelly on the inside and outside diameter of the bearings.

GEARS

Check all gears for wear and damage. Replace gears that have wear or damage.

OIL SEALS, O-RINGS AND GASKETS

Always install new oil seals, O-rings and gaskets. Put petroleum jelly on seals and O-rings.

SHAFTS

Check all shafts that have wear or damage. Check the bearing and oil seal surfaces of the shafts for damage.

SERVICE PARTS

Always install genuine Case service parts. When ordering refer to the Parts Catalog for the correct part number of the genuine Case replacement items. Failures due to the use of other than genuine Case replacement parts are not covered by warranty.

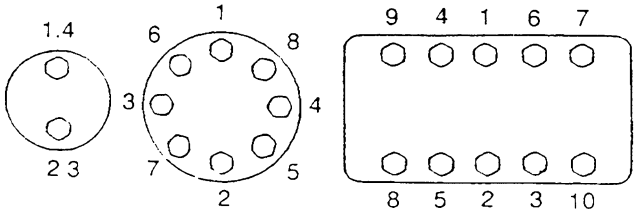
LUBRICATION

Only use the oils and lubricants specified in the Operator's or Service Manuals. Failures due to the use of non-specified oils and lubricants are not covered by warranty.

STANDARD TORQUE DATA FOR CAP SCREWS AND NUTS

TIGHTENING OF CAP SCREWS, NUTS

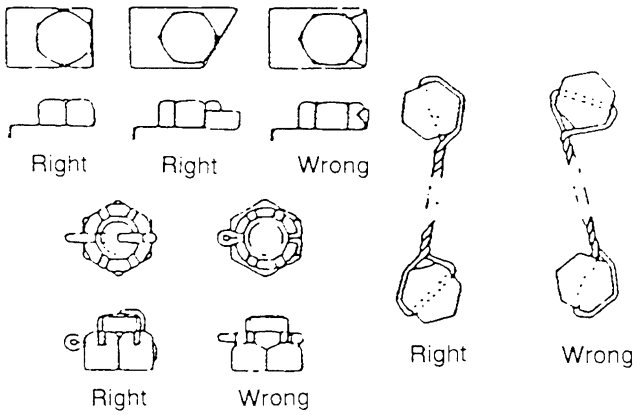
Tighten alternately so that tightening torque can be applied evenly. The numbers in the figure below indicate the order of tightening.



1001-02

Apply engine oil to the thread portion of the cap screw so that uniform tightening torque is obtained.

The cap screws and nuts that cannot be inspected externally or those as indicated in the assembly/installation sections should be saftied with lockwire, cotter pin or bent washer.



1001-03

Cap screws which have had Loctite used (white residue remains after removal) should be cleaned with light oil or suitable cleaning solvent and dried. Apply 2-3 drops of Loctite to the thread portion of the cap screw and then tighten.

TORQUE TABLE

Tighten cap screws and nuts according to the table below if there are no other special instructions.

Cap Screw Name Size (Size)			M6	M8	M10	M12	M14	M16	M18	M20
Cap Screw	Spanner	[mm]	10	13	17	19	22	24	27	30
		[in.]	0.39	0.51	0.67	0.75	0.87	0.95	1.06	1.18
	Tightening torque	[Nm]	6.9	15.7	32.3	58.8	98.0	137.2	196.0	274.0
		[lb-ft]	5.1	11.6	23.9	43.4	72.3	101.2	144.6	202.4
Socket Head Cap Screw	Spanner	[mm]	5	6	8	10	12	14	14	17
		[in.]	0.20	0.24	0.32	0.39	0.47	0.55	0.55	0.67
	Tightening torque	[Nm]	8.8	21.6	42.1	78.4	117.6	176.4	245.0	343.0
		[lb-ft]	6.5	15.9	31.1	57.8	86.8	130.1	180.8	253.1

Section

1002

1002

SPECIFICATIONS

CASE CORPORATION
700 State Street
Racine, WI 53404 U.S.A.

CASE CANADA CORPORATION
3350 SOUTH SERVICE ROAD
BURLINGTON, ON L7N 3M6 CANADA

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TABLE OF CONTENTS

MODEL AND PIN NUMBERS 3

GENERAL SPECIFICATIONS 4
- Capacities 4
- Drawbar Pull 4
- Drive Speed 4
- Electrical System 4
- Fluids and Lubricants 4
  - Fuel 5
- Hydraulic System 5
- Tracks, Rollers and Idlers 6
- Weights 12
- Buckets 12

GAUGE TABLE 13

RUN-IN INSTRUCTIONS 15
- Engine Lubrication 15
- Run-In Procedure For Rebuilt Engine 15
- Run-In Procedure For Rebuilt Engine (With A Dynamometer) 15
- Run-In Procedure For Rebuilt Engines (Without A Dynamometer) 15
- Run-In Procedure 15
- Engine Cooling System 16
- Engine Lubrication 16
  - Engine Oil Type 16
- Engine Oil Viscosity Chart 16

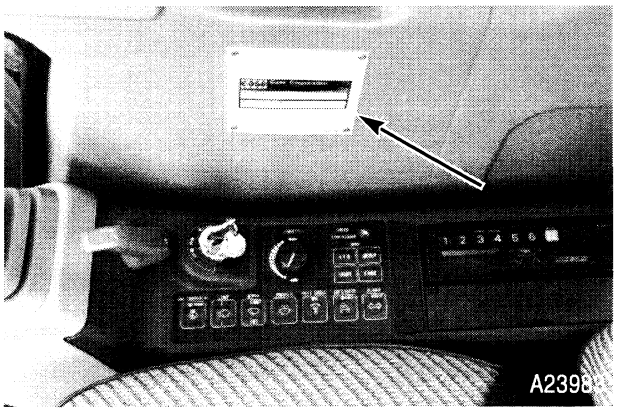
GENERAL ENGINE SPECIFICATIONS 17
- General 17
- Pistons and Connecting Rods 17
- Main Bearings 17
- Engine Lubricating System 17
- Fuel System 18

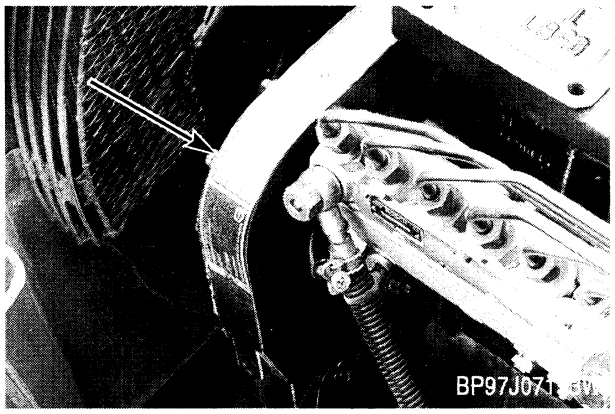
DETAILED ENGINE SPECIFICATIONS 19
- Cylinder Block 19
- Pistons 19
- Piston Pins 19
- Piston Rings 19
- Cylinder Head 19
- Lifters 19
- Connecting Rods 20
- Crankshaft 20
- Camshaft 21
- Turbocharger 21
- Gear Train 21
- Rocker Arm Assembly 21
- Intake Valves 22
- Exhaust Valves 22
- Valve Springs 22

TRANSPORTING DIMENSIONS 23

MODEL AND PIN NUMBERS

When ordering parts or when requesting information or assistance, always give the identification numbers of your machine. Write the model and PIN numbers of your machine on the lines below.





Machine Model Number _____

Machine PIN Number _____

Engine Serial Number_____

GENERAL SPECIFICATIONS

Capacities

Engine Crank Case Capacity	23.2 liters	6.1 US gallons
Engine Cooling System	25.8 liters	6.8 US gallons
Fuel Tank	310 liters	82 US gallons
Hydraulic Oil Tank Capacity	120 liters	31.7 US gallons
Total Hydraulic System Capacity	224 liters	59 US gallons
Final Drive Case Capacity	4.7 liters	1.2 gallons
Swing Drive Case Capacity	6.0 liters	1.6 gallons
Swing Ring Gear	20 kg	44 pounds
Track Front Idlers	360 to 370 cc	11.8 to 12.21 oz
Track Lower Rollers	190 to 200 cc	6.27 to 6.60 oz

NOTE: *These capacities are only a guide to the quantities. Always use the dipstick, sight gauges or level plug to make sure that fluid levels are correct.*

Drawbar Pull

Drawbar Pull	18400 kg	40565 lb

Drive Speed

Drive Speed: High	5.0 km/h	3.1 mph
Drive Speed: Middle	3.5 km/h	2.2 mph
Drive Speed: Low	2.5 km/h	1.5 mph

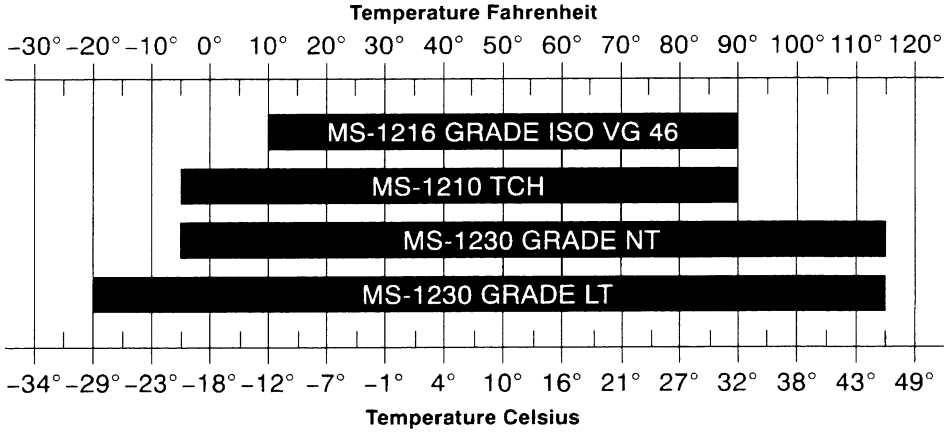
Electrical System

Type of System	24 volts negative ground
Alternator	
Manufacturer	Robert Bosch
Output	65 amperes
Batteries	
Number of batteries required	2
Voltage of each battery	12 volts
Reserve capacity	160 minutes
Cold cranking capacity at -17˚C (0˚F)	800 amperes
Load for capacity (load) test	400 amperes
Starter Motor	
Manufacturer	DelcoRemy
Voltage	24 volts

Fluids and Lubricants

Batteries	add drinking or distilled water
Engine Coolant Solution	refer to page 16
Engine Lubrication	refer to page 16
Fuel	refer to entry on page 5
Hydraulic System	CASE MS-1210 TCH FLUID
Final Drive Lubricant	API GL-4, SAE 90
Swing Drive Case Lubricant	API GL-4, SAE 90
Track Roller and Front Idler Lubricant	Case IH No. 1 Single Grade engine oil SAE 30
Turntable Ring Gear Lubricant	No. 2 EP lithium grease
Grease Fitting Lubricant	No. 2 EP lithium grease

Use only hydraulic oils meeting Case specifications or equivalent AW (anti-wear) hydraulic oils.



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NOTE: *Case specification MS-1210 TCH Fluid is used in place of ISO VG 32 (-5 to +65 F) and ISO VG 46 (+10 to +90 F).*

Case specifications MS-1230 Grade NT or Grade LT is used in place of SO VG 32 (-5 to +65 F), ISO VG 46 (+10 to +90 F), ISO VG 100 (+30 to +115 F), and MS-1210 TCH.

Hydraulic Fluid Chart

Fuel

Use Number Two Diesel fuel having a grade of ASTM D 975 - Grade 2-D.

Hydraulic System

Hydraulic Pump		
Kawasaki K3V112DT-1M4R (KB2316)		
Displacement	96.5 cm^3/rev x 2	5.89 in^3/rev x 2
Working Pressure: Set	314 Bar	4553 psi
Working Pressure: Maximum	343 (travel) Bar	4980 (travel) psi
Speed		2200 min^{-1}
Maximum Flow	211 l/min^{-1}	55.75 gpm^{-1}
Minimum Flow	50 l/min^{-1}	13.21 gpm^{-1}
Regulator		
Proportional Pressure Reducing Valve		
Maximum Primary Pressure	39.2 Bar	569 psi
Maximum Back Pressure (Allowable Pressure)	9.8 Bar	142 psi
Secondary Pressure Range Setting	0 ~ 39.2 Bar	0 ~ 569 psi
Maximum Flow Rate	6 l/min	1.6 gpm
Flow in Drain Line:	Maximum 0.2 l (0.4 pints)/min at secondary pressure = 0 ~ 39.2 Bar	0 ~ 569 psi
	Maximum 1.2 l (2.5 pints)/min at secondary pressure = 19.6 Bar	285 psi
Hydraulic Oil Test Temperature	45 ~ 55°C	113 ~ 131°F
Circuit Relief Valves:		
Main Relief: standard	318 ±20 Bar	4612 ±290 psi
Main Relief: pressure raising	343 ±20 Bar	4975 ±290 psi
Boom Port Relief: raising	382 ±15 Bar	5540 ±217 psi
Boom Port Relief: lowering	245 ±15 Bar	3553 ±217 psi
Bucket Port Relief: open, close	382 ±15 Bar	5540 ±217 psi
Arm Port Relief: open, close	382 ±15 Bar	5540 ±217 psi
Swing Port Relief; left, right	304 ±15 Bar	4409 ±217 psi
Left Travel Port Relief: rear, front	402 ±20 Bar	5830 ±290 psi
Right Travel Port Relief: rear, front	402 ±20 Bar	5830 ±290 psi
Pilot Relief	40 ±3 Bar	580 ±43 psi

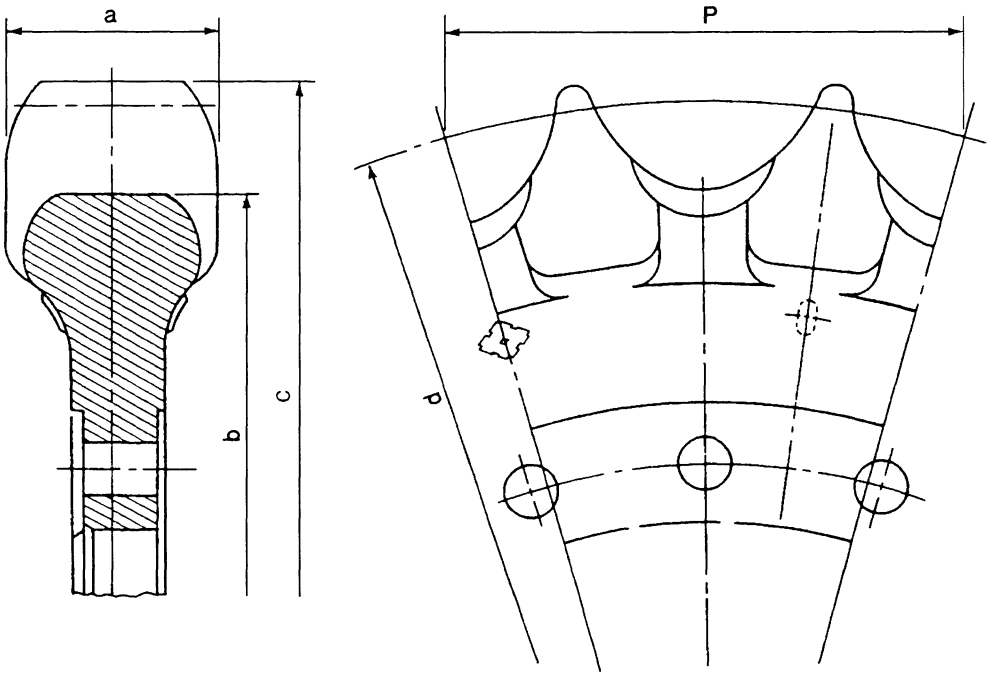
Tracks, Rollers and Idlers

Lower Mechanism (with standard 800 grouser shoe)

Total Length	4840 mm	15 ft. 10.5 in.
Total Width	3400 mm	11 ft. 1.9 in.
Total Weight (approximate)	11728 kg	25801 lb

Drive Sprocket

Sprocket:	a	standard value	80 mm	3.15 in.
		service limit	70 mm	2.76 in.
	b	standard value	686 mm	27 in.
		service limit	678 mm	26.69 in.
	c	standard value	770 mm	30.31 in.
		service limit	760 mm	29.92 in.
	d	standard value	753 mm	29.65 in.
		service limit	—	—
	P	standard value	203.2 mm	8 in.
		service limit	—	—



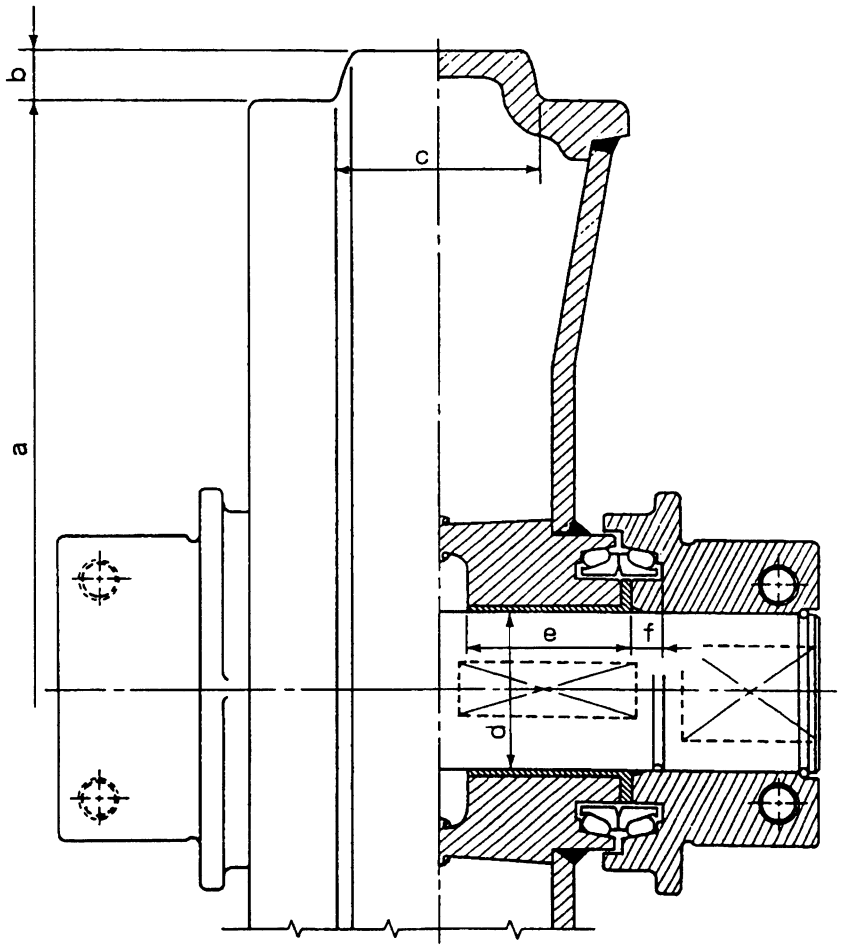
Drive Sprocket

NOTE: *Refer to Gauge Table for measurement gauges to be used.*

1002-3

Take-Up Roller

Take-Up Roller:	a	standard value	600 mm	23.62 in.
		service limit	590 mm	23.23 in.
	b	standard value	20 mm	0.79 in.
		service limit	—	—
	c	standard value	102 mm	4.02 in.
		service limit	92 mm	3.62 in.
Shaft:	d	standard value	80 mm	3.15 in.
		service limit	79 mm	3.11 in.
Bushing:	d	standard value	80 mm	3.15 in.
		service limit	81.5 mm	3.21 in.
	e	standard value	81.5 mm	3.21 in.
		service limit	80 mm	3.15 in.
Hub:	f	standard value	17 mm	0.67 in.
		service limit	16.5 mm	0.65 in.

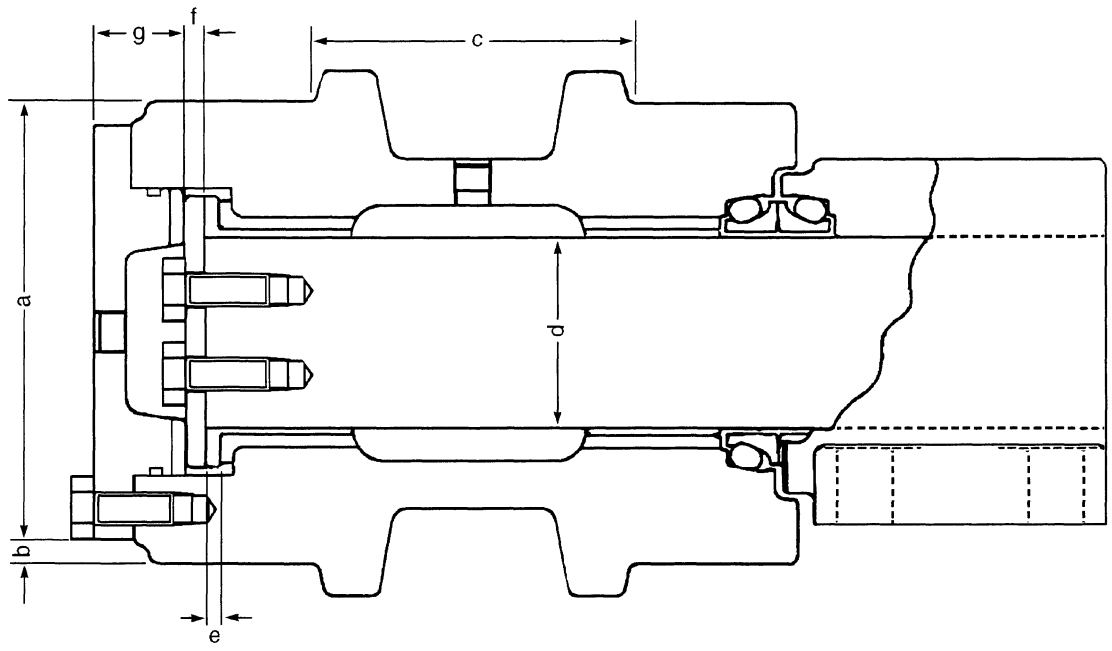


Take-Up Roller

NOTE: *Refer to Gauge Table for measurement gauges to be used.*

Upper Roller

Carrier Roller:	a	standard value	145 mm	5.71 in.
		service limit	137 mm	5.39 in.
	b	standard value	10 mm	0.39 in.
		service limit	—	—
	c	standard value	100 mm	3.94 in.
		service limit	92 mm	3.62 in.
Shaft:	d	standard value	60 mm	2.36 in.
		service limit	59 mm	2.32 in.
Bushing:	d	standard value	60 mm	2.36 in.
		service limit	61 mm	2.40 in.
Bushing:	e	standard value	4.5 mm	0.18 in.
		service limit	3.5 mm	0.14 in.
Thrust Plate:	f	standard value	6 mm	0.24 in.
		service limit	5.5 mm	0.22 in.
Cover:	g	standard valve	28.5 mm	1.12 in.
		service limit	22.5 mm	0.89 in.



Upper Roller

NOTE: *Refer to Gauge Table for measurement gauges to be used.*

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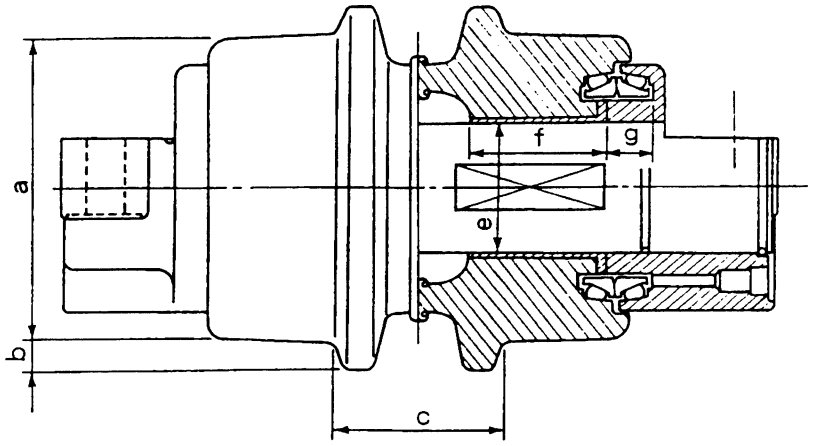
Lower Roller (Inside)

Track Roller (Inside):	a	standard value	180 mm	7.09 in.
		service limit	192 mm	7.56 in.
	b	standard value	20 mm	0.79 in.
		service limit	—	—
	c	standard value	100 mm	3.94 in.
		service limit	92 mm	3.62 in.
Shaft:	e	standard value	70 mm	2.76 in.
		service limit	69 mm	2.72 in.
Bushing:	e	standard value	70 mm	2.76 in.
		service limit	71.5 mm	2.81 in.
	f	standard value	82.5 mm	3.25 in.
		service limit	81.5 mm	3.21 in.
Collar:	g	standard value	20.5 mm	0.81 in.
		service limit	20 mm	0.79 in.



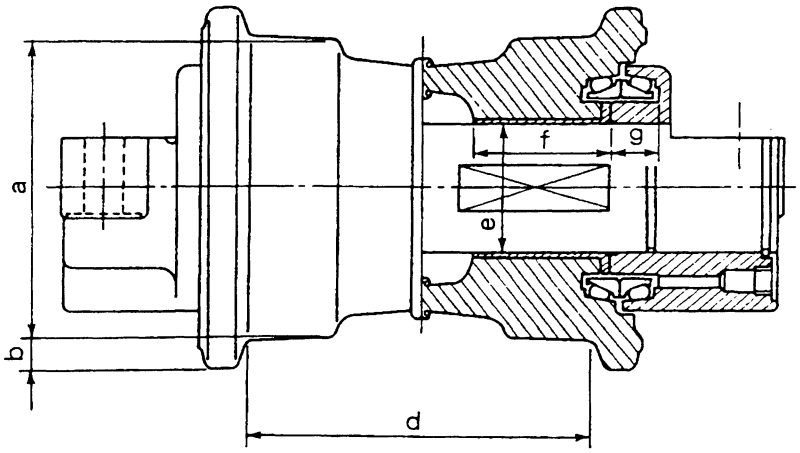
Lower Roller (Inside)

NOTE: *Refer to Gauge Table for measurement gauges to be used.*

1002-6

Lower Roller (Outside)

Track Roller:	a	standard value	180 mm	7.09 in.
		service limit	172 mm	6.77 in.
	b	standard value	20 mm	0.79 in.
		service limit	—	—
	d	standard value	200 mm	7.87 in.
		service limit	208 mm	8.19 in.
Shaft:	e	standard value	70 mm	2.76 in.
		service limit	69 mm	2.72 in.
Bushing:	e	standard value	70 mm	2.76 in.
		service limit	71.5 mm	2.81 in.
	f	standard value	82.5 mm	3.25 in.
		service limit	81.5 mm	3.21 in.
Collar:	g	standard value	20.5 mm	0.81 in.
		service limit	20 mm	0.79 in



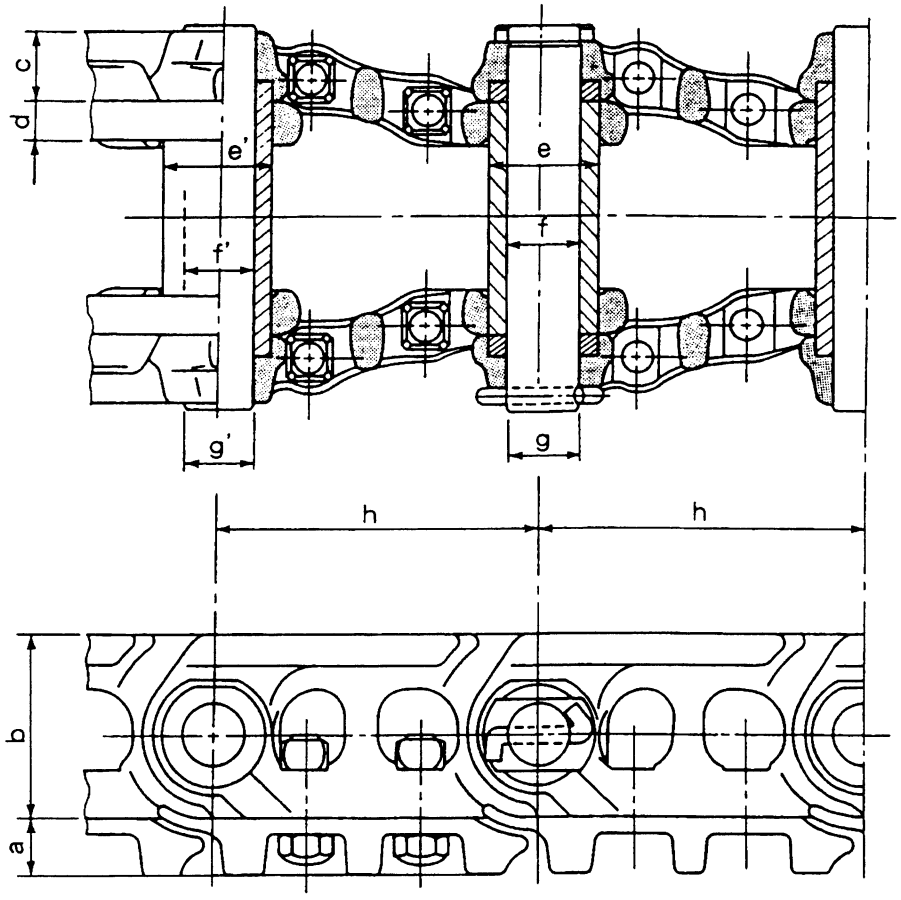
Lower Roller (Outside)

NOTE: *Refer to Gauge Table for measurement gauges to be used.*

1002-7

Track Shoe (Grouser Shoe)

Shoe Plate:	a	standard value	37 mm	1.46 in.
		service limit	26 mm	1.02 in.
Link:	b	standard value	116.4 mm	4.58 in.
		service limit	112 mm	4.41 in.
	c	standard value	43 mm	1.69 in.
		service limit	41 mm	1.61 in.
	d	standard value	24 mm	0.94 in.
		service limit	23 mm	0.90 in.
Master Bushing:	e	standard value	66.6 mm	2.62 in.
		service limit	63 mm	2.48 in.
	f	standard value	44.7 mm	1.76 in.
		service limit	47 mm	1.85 in.
Master Pin:	g	standard value	44.1 mm	1.74 in.
		service limit	42 mm	1.65 in.
Link Pitch:	h	standard value	203 mm	7.99 in.
		service limit	207 mm	8.15 in.
Track Bushing:	e'	standard value	66.6 mm	2.62 in.
		service limit	63 mm	2.48 in.
	f'	standard value	44.8 mm	1.76 in.
		service limit	47 mm	1.85 in.
Track Pin:	g'	standard value	44.4 mm	1.75 in.
		service limit	42 mm	1.65 in.



Track Shoe (Grouser Shoe)

NOTE: *Refer to Gauge Table for measurement gauges to be used.*

Weights

Operating Weight		
3.40 m (11 ft. 2 in.) Arm	28000 kg	61730 lb
3.96 m (13 ft. 0 in.) Arm	28132 kg	62020 lb
Counterweight	5620 kg	12392lb
Engine	495 kg	1091 lb
Turntable Bearing	389 kg	858 lb
Attachments		
Boom with Cylinder	2638 kg	5816 lb
Arm with Links and Cylinder	1268 kg	2795 lb
Cylinders		
Boom Cylinder (each)	211 kg	465 lb
Arm Cylinder	341 kg	752 lb
Bucket Cylinder	215 kg	474 lb

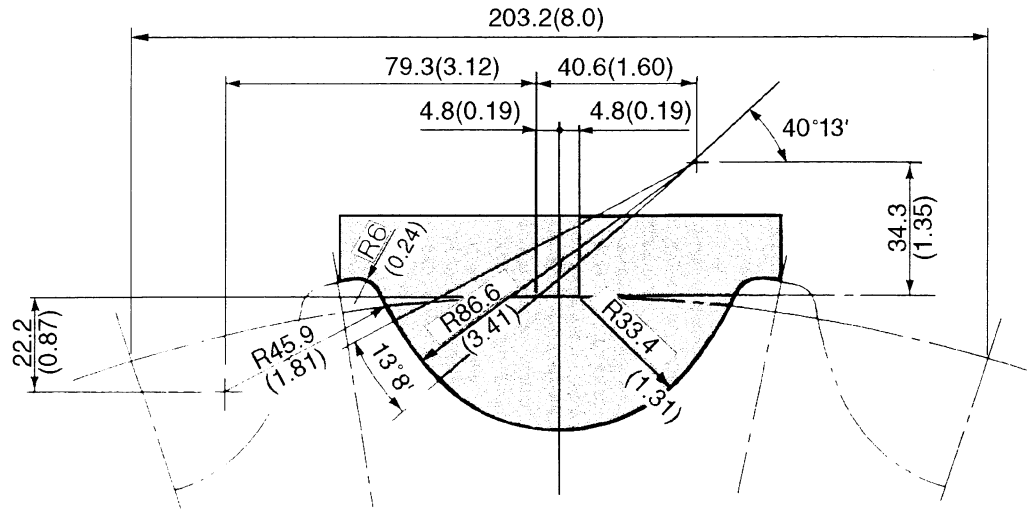
Buckets

Bucket Width	Number of Teeth	Weight	Capacity SAE Heaped
General Purpose			
30 inch (762 mm)	4	1570 lbs (710 kg)	0.95 yd^3 (0.73 m^3)
36 inch (914 mm)	5	1635 lbs (740 kg)	1.16 yd^3 (0.89 m^3)
42 inch (1067 mm)	5	1775 lbs (798 kg)	1.38 yd^3 (1.06 m^3)
48 inch (1219 mm)	6	1865 lbs (845 kg)	1.60 yd^3 (1.22 m^3)
54 inch (1372 mm)	7	2100 lbs (950 kg)	1.82 yd^3 (1.39 m^3)
General Purpose, High Capacity			
30 inch (762 mm)	4	1730 lbs (785 kg)	1.20 yd^3 (0.92 m^3)
36 inch (914 mm)	5	1840 lbs (835 kg)	1.48 yd^3 (1.13 m^3)
42 inch (1067 mm)	5	1965 lbs (890 kg)	1.75 yd^3 (1.34 m^3)
Heavy Duty			
30 inch (762 mm)	4	1925 lbs (875 kg)	0.95 yd^3 (0.73 m^3)
36 inch (914 mm)	5	2095 lbs (950 kg)	1.16 yd^3 (0.89 m^3)
42 inch (1067 mm)	5	2200 lbs (1000 kg)	1.38 yd^3 (1.06 m^3)
48 inch (1219 mm)	6	2360 lbs (1070 kg)	1.60 yd^3 (1.22 m^3)
54 inch (1372 mm)	7	2510 lbs (1140 kg)	1.82 yd^3 (1.39 m^3)
Heavy Duty, High Capacity			
30 inch (762 mm)	3	2010 lbs (910 kg)	1.20 yd^3 (0.92 m^3)
36 inch (914 mm)	4	2125 lbs (965 kg)	1.48 yd^3 (1.13 m^3)
42 inch (1067 mm)	5	2275 lbs (1030 kg)	1.75 yd^3 (1.34 m^3)
Severe Duty			
30 inch (762 mm)	3	2075 lbs (940 kg)	0.95 yd^3 (0.73 m^3)
36 inch (914 mm)	4	2180 lbs (990 kg)	1.16 yd^3 (0.89 m^3)
42 inch (1067 mm)	5	2310 lbs (1050 kg)	1.38 yd^3 (1.06 m^3)

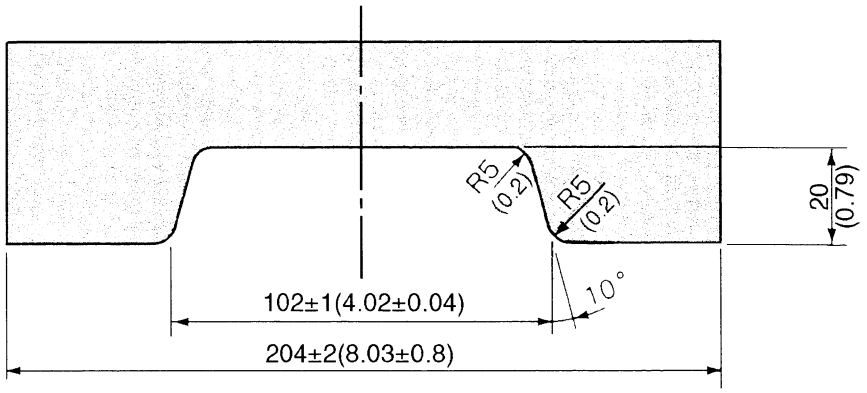
NOTE: *6 inch (152 mm) side cutter blades are available for the above buckets. The side cutter blades add 6 inches (152 mm) to the width of each bucket.*

GAUGE TABLE

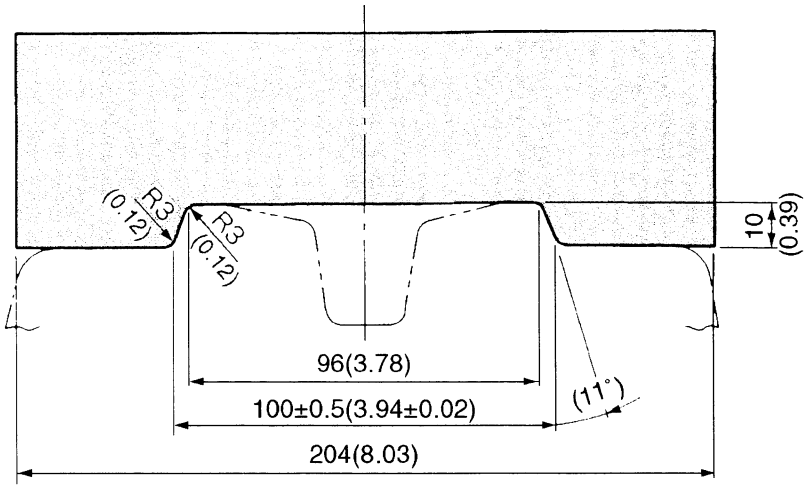
NOTE: *Units = mm (in.)*



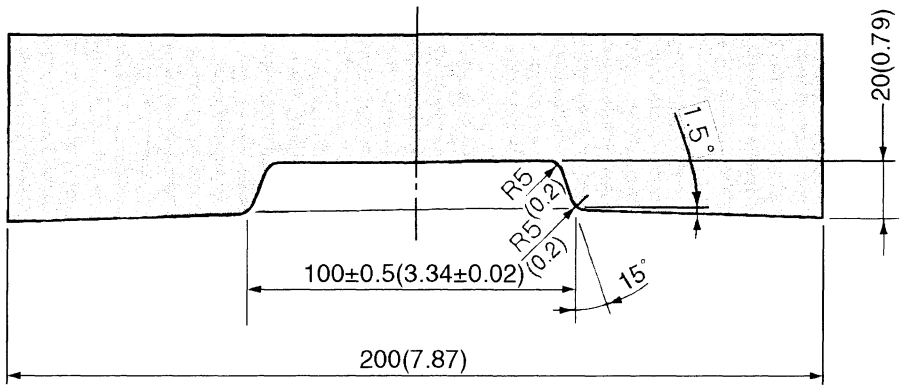
For Drive Sprocket JS01438A



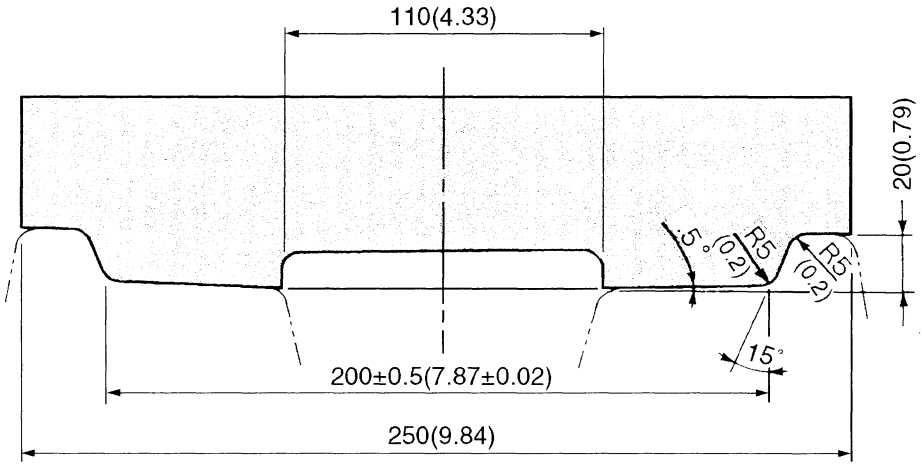
For Take-Up Roller JS01439A



For Upper Roller JS01440A



For Lower Roller (inside) JS01441A



For Lower Roller (outside) JS01442A

RUN-IN INSTRUCTIONS

Engine Lubrication

Fill the engine crankcase with CD service classification oil that has the correct viscosity rating for the ambient air temperature. Refer to Engine Lubrication on page 16. Install new oil filters, after the engine has been rebuilt.

Run-In Procedure For Rebuilt Engine

STEP 1

Disconnect the wire to the electric shut-off on the injection pump so that the engine will not start. Crank the engine for 30 seconds until there is oil pressure, then reconnect the wire.

STEP 2

Remove the air from the cooling system at the temperature sending unit.

STEP 3

Run the engine at 1000 rpm minimum load for 5 minutes and check for oil leaks.

STEP 4

During the Run-In, continue to check the oil pressure, coolant level, and coolant temperature.

Run-In Procedure For Rebuilt Engine (With A Dynamometer)

The following procedure must be followed when using a PTO dynamometer to Run-In the engine. The dynamometer will control the engine load at each speed and will remove stress on new parts during Run-In.

During the Run-In, continue to check the oil pressure, coolant level and coolant temperature.

STEP	TIME	ENGINE SPEED	DYNAMOMETER SCALE LOAD
1	5 Minutes	1000 rpm	50
2	5 Minutes	1100 rpm	1/2
3	5 Minutes	2200 rpm	Full

Run-In Procedure For Rebuilt Engines (Without A Dynamometer)

STEP	TIME	ENGINE SPEED	LOAD
1	5 Minutes	1000 rpm	No Load
2	5 Minutes	1100 rpm	Light Load
3	5 Minutes	2200 rpm	Full

Run-In Procedure

For the first 8 hours, operate the engine at full throttle maintaining a normal load. DO NOT “baby” the engine, but avoid converter or hydraulic stall. The engine must not be “lugged” below the rated engine rpm (Do not stall the engine more than 10 seconds).

Engine Cooling System

Coolant Solution ..... Ethylene Glycol

IMPORTANT: *A mixture of 50% ethylene glycol and 50% water must be used in this machine. This mixture is used if the lowest ambient temperature is above -37°C (-34°F). If the ambient temperature is lower, adjust the mixture. Never use a coolant solution containing more than 60% glycol. It is recommended that 50% ethylene glycol and 50% water be used in the machine all year.*

Thermostat ..... Starts to open at 83°C (181°F)
Fully open at 95°C (203°F)

Radiator Cap..... 0.48 Bar (7 psi)

Engine Lubrication

Engine Oil Type

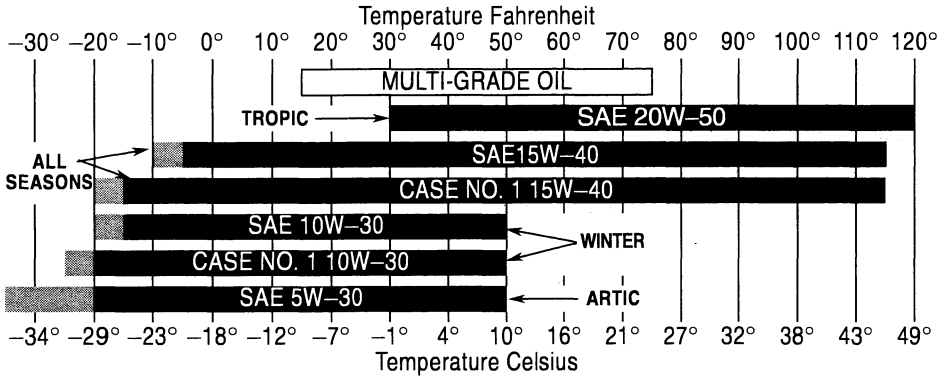
Case IH No. 1 engine oil is recommended for use in the Case engine. Case IH engine oil will lubricate the engine under all operating conditions. If Case IH No. 1 Multi-Viscosity engine oil is not available, Case IH No. 1 Single Grade engine oil can be used.

If Case IH No. 1 Multi-Viscosity or Single Grade engine oil is not available, use only oil meeting API engine oil service category CG-4 or CF-4.

See the chart below for recommended viscosity at ambient air temperature ranges.

NOTE: *DO NOT put performance additives or other oil additive products into the engine crankcase.*

Engine Oil Viscosity Chart



Indicates use of an engine oil heater or a jacket water heater is required.

GENERAL ENGINE SPECIFICATIONS

General

Make and Model		JI Case, 6T-830
Type		6 cylinder, turbocharged 4 stroke cycle
Horsepower	133 kw at 2200 rpm	178 hp at 2200 rpm
Firing Order		1, 5, 3, 6, 2, 4
Bore and Stroke	114 mm x 135 mm	4.49 x 5.32 inches
Piston Displacement	8.27 liters	505 in^3
Compression Ratio		17.3 to 1
Valve Tappet Clearance		
Exhaust (Cold)	0.610 mm	0.024 in.
Intake (Cold)	0.305 mm	0.012 in.
Engine Speeds		
Full Throttle - No Load		2310 to 2390 rpm
Full Throttle - Full Load		2200 rpm
Stall Speed, Full Load (minimum)		2040 rpm
Engine Idle Speed		900 to 1100 rpm

Pistons and Connecting Rods

Rings per Piston	3
Number of Compression Rings	2
Number of Oil Rings (two piece)	1
Type of Pins	Full Float
Type of Bearings	Steel Back Leaded Bronze

Main Bearings

Number of Bearings	7
Type of Bearings	Replaceable

Engine Lubricating System

Type of System		Pressure and Spray Lubrication
Oil Pressure (when engine warm and operating at rated speed)	2.07 to 3.45 Bar	30 to 50 psi
Oil Pump		Rotor Type
Oil Filter		Full Flow Turn-on Type
Oil Capacity		
(with filter change)	23.2 liters	24.5 US quarts
(without filter change)	22 liters	23.2 US quarts

Fuel System

Fuel Injection Pump		Robert Bosch
Pump Timing		Top Dead Center
Fuel Injectors		Bosch 17 mm
Opening Pressure (New)	205 to 213 Bar	2968 to 3084 psi
Opening Pressure (Used)	188 to 213 Bar	2722 to 3084 psi
Maximum Pressure Difference	10.34 Bar	150 psi
Number of Orifices		4
Spray Orifice Size		0.28 mm
Governor		Variable Speed, Part of the Injection Pump
First Stage Fuel Filter		Turn-on Type
Second Stage Fuel Filter		Turn-on Type
Lift Pump	0.34 to 0.48 Bar	5 to 7 psi

DETAILED ENGINE SPECIFICATIONS

Cylinder Block

Type	Wet-Sleeved
Material	Cast Iron
ID of Cylinder	114.000 to 114.040 mm
Maximum Service Limit	114.117 mm
Cylinder Out of Round (Maximum)	0.04 mm
Cylinder Taper (Maximum)	0.04 mm

Pistons

Type	Cam Ground
Material	Aluminum alloy
OD at 12 mm From the Bottom, 90 Degrees From Piston Pin	
Standard Size Piston	113.833 to 113.847 mm
Minimum Service Limit	113.776 mm
ID of Piston Pin Bore	45.006 to 45.012 mm
Maximum Service Limit	45.025 mm
Protrusion Above Cylinder Block (Maximum)	0.380 mm

Piston Pins

Type	Full Float
OD of Pin	44.997 to 45.003 mm
Minimum Service Limit	44.993 mm

Piston Rings

No. 1 Compression (6T-830 Engine)	Key Stone Type (Barrel Face)
End Gap in 114.020 ID	0.40 to 0.70 mm
No. 2 Compression	Rectangular Type (Taper Face)
End Gap in 114.020 ID	0.40 to 0.70 mm
Maximum Service Limit	0.07 to 0.125 mm
Side Clearance	0.07 to 0.125 mm
Maximum Service Limit	0.125 mm
No. 3 Oil Control Rings	Two Piece
End Gap in 114.020 ID	0.30 to 0.60 mm
Maximum Service Limit	0.60 mm
Side Clearance	0.020 to 0.065 mm

Cylinder Head

Warpage (Maximum)	0.20 mm

Lifters

Material	Hardened Iron
OD of Lifter	15.929 to 15.980 mm
Minimum Service Limit	15.925 mm