SPECIFICATIONS

	CR 920	CR 940
	NA	
Engine		
Type	CNH675 TA/CF	CNH675 TA/AA
Gross Power	190 kW (255 hp)	220 kW (295 hp)
Governor	Mechanical	Electronic
Power Rise/Boost (kW)	14/0 (18/0)	16/20 (21/27)
Rated Speed	2100 rpm	
Low Idle Speed	1300 rpm	
High Idle Speed	2205 rpm	2100 rpm
No. of Cylinders	6	
Cylinder Displacement	7500 cc	
Bore	112 mm (4-3/8″)	
Stroke	127 mm (5″)	
Water Pump Speed	3859 rpm	
Ventilator Speed	1531 rpm	

	CR 920	CR 940
	NA	
Engine		
Crankcase Capacity w/Filter	23 liters (6.08 US gals.)	
Battery	92 Ah 2 x 12V	
Alternator Type	190 Amp (12 volt)	
Alternator Speed	5830 rpm	
Starter Motor	4.3 kW (12 volt)	
Air Compressor Speed	2677 rpm	
Fuel Tank	750 liters (200 US gals)	
Rotary Screen Speed	282 rpm	
Air Conditioning Compressor	3616 rpm	

Cylinder Block

Taper of Cylinder Bore	0.025 mm (0.001 in.) Repair Limit 0.127 mm (0.005 in.) Wear Limit
Cylinder Bore Out of Round	0.030 mm (0.0015 in.) Repair Limit 0.127 mm (0.0050 in.) Wear Limit
Cylinder Bore Diameters	111.778 - 111.803 mm (4.4007 - 4.4017 in.)
Rear Oil Seal Bore Diameter	140.77 - 140.87 mm (5.542 - 5.546 in.)
Block to Head Surface Flatness	0.08 mm (0.003 in.) in any 152 mm (6 in.) 0.03 mm (0.001 in.) in any 25.40 mm (1 in.)

Cylinder Head

Valve Guide Bore Diameter	9.469 - 9.495 mm (0.3728 - 0.3738 in.)
Head to Block Surface Flatness	0.03 mm (0.001 in.) in any 25.40 mm (1 in.) or 0.127 mm (0.005 in.) Overall Limit

Exhaust Valves

Face Angle	44°15′ - 44°30′ Relative to the Head of Valve
Stem Diameter	Std: 9.401 - 9.421 mm (0.3701 - 0.3709 in.) Oversize: 0.38 mm (0.015 in.) 9.781 - 9.802 mm (0.3851 - 0.3859 in.)
Head Diameter	42.88 - 43.13 mm (1.688 - 1.698 in.)
Stem to Guide Clearance	0.048 - 0.094 mm (0.0019 - 0.0037 in.)
Lash Clearance (Cold)	0.43 - 0.53 mm (0.017 - 0.021 in.)

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SPECIFICATIONS

Tightening Torques

Description	N·m	Ft.-lbs.
Thermostat housing	18	24
Temperature senders	15	20
Tensioner pulley bolt	40	54
Tensioner front cover	40	54
Idler pulleys	40	54
Pump connector to block	18	24
Water pump to block	48	65
Fan blade to support body	17	23
Fan blade to clutch support body	78	105

Thermostat

Opening temperature	79° C - 83° C (174° F - 181° F)
Fully open	93° C - 96° C (199° F - 205° F)

Water Pump

Type	Centrifugal	V-belt drive

Drive Belt

Belt tension	Maintained by tensioner

Cooling Capacities

See Operator's Manual.

Coolant Flow

Coolant flow at rated engine speed	340.6 L/min (90 US gpm)

Cooling Fluid

See Operator's Manual.

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SPECIFICATIONS

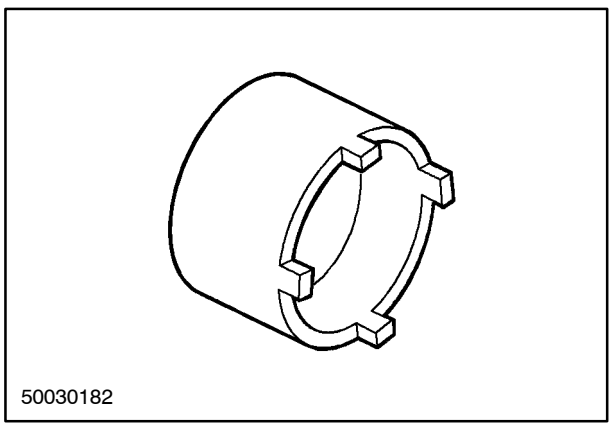
	CR920	CR940 CR960	CR970 CR980 CR940/960 Optional
Differential ratio	16/71	16/71	20/61
Differential lock	Yes/No	Yes/No	Yes/No
Gear ratio			
1st gear ratio	18/58	18/58	18/58
2nd gear ratio	35/62	35/62	35/62
3rd gear ratio	45/61	45/61	45/61
4th gear ratio	63/44	63/44	63/44
Max. input rpm (high idle)	3178	3027	2752
Max. input rpm (full load)	3027	3027	2752
Max. input torque	632 N·m (466 ft. lbs.)	632 N·m (466 ft. lbs.)	823 N·m (607 ft. lbs.)
Max. output rpm (high idle)	1025	977	1292
Max. output torque (1st gear)	8227 N·m (6067 ft. lbs.)	8242 N·m (6078 ft. lbs.)	7378 N·m (5441 ft. lbs.)
Max. power (motor - transmission input)	196 kW (262 HP)	187 kW (250 HP)	221 kW (296 HP)
Brake disc diam.	330 mm (13″)	330 mm (13″)	400 mm (15.7″)
Approx. total weight	402 kg (886 lbs)	402 kg (886 lbs)	420 kg (926 lbs)

TIGHTENING TORQUES

Nut on drive shaft	150-170 N·m (111–125 ft. lbs.)
Nut on input shaft	150-170 N·m (111–125 ft. lbs.)
Shifting disc fixation nut	25-30 N·m (19–22 ft. lbs.)
Nut on indicator plate	8–12 N·m (71–106 in. lbs.)

SPECIAL TOOLS

Nut Spanner Wrench (45 mm)
Special Tool No. 380001074


50030182

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Concave Clearance

Concave clearance is adjusted from the cab by the operator using a switch on the right console, and the relative concave clearance may be monitored using the InfoView™ monitor. The concave clearance is adjusted using an electrical actuator working a mechanical linkage to raise and lower the center plate that carries the inner ends of the concaves.

Concave Clearance Adjust

When the operator moves the concave clearance switch S16 on the right console, a 12 volt signal is sent to the right hand module (RHM). To increase concave clearance, a 12v signal is sent to connector X030 pin 3 wire 347 yellow; to decrease concave clearance, a 12v signal is sent to connector X030 pin 8 wire 346 yellow.

When the RHM receives a concave clearance increase or decrease signal, it broadcasts a message over CAN which is picked up by CCM1. CCM1 will then activate the appropriate output to change the concave clearance. Power is sent to activate the concave/covers relay K16, so that the appropriate output signal is directed to the concave clearance motor M04.

The concave clearance motor is powered by an "H-bridge" circuit in CCM1; H-bridge circuits have two connector pins associated with them to control both sides of the circuit, and function by connecting one pin to ground when the opposite pin is connected to power. To reverse direction of the output, the power and ground connections are switched. This type of output control allows the module to operate motors and actuators in both directions. The H-bridge circuit holds both sides of the circuit to ground when the circuit is not active to "lock" the motor and prevent it from rotating.

The relative concave clearance is measured at the rear of the linkage using the concave clearance potentiometer R06.

Concave Clearance Alarms

A0076 Concave Shearbolt Broken – If the relative concave clearance exceeds a certain value, this alarm will be displayed, indicating that the shear bolt in the concave clearance linkage has failed.

Concave Clearance Errors

The combine electronic system monitors the concave clearance potentiometer R06 and the H-bridge outputs to the concave clearance motor M04. In the event of any problems with these circuits, the appropriate fault code will be displayed to indicate the specific fault with these components and the circuits containing them.

The following fault codes relate to the concave clearance potentiometer R06:

E0034-03	Concave Position sensor Shorted To Low Source
E0034-05	Concave Position sensor Line Disconnected

The following fault code relates to the output to the concave / covers relay K16:

E0069-11	Covers / Concave Cl Sel Unidentified Failure Code

The following fault codes relate to the concave clearance motor M04:

E0044-06	Current Sense Concave Cl Short Circuit
E0045-06	Current Sense Bin Covers Short Circuit
E0078-11	Concave Clearance motor Unidentified Failure Code
E0079-11	Grainbin Covers motor Unidentified Failure Code

NOTE: *The concave clearance is controlled using an H-bridge-controlled circuit. The concave clearance motor (M04) circuit is paired with the grainbin covers motor (M12) circuit, and the module switches between these two circuits using the Concave / Covers relay K-16. Because these circuits are connected and driven from the same module outputs, the troubleshooting procedure must consider both circuits at the same time. Refer to the 'CCM1 Fault Codes' chapter in this manual for more information.*

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E0041 Current Sense Fan Motor 156
E0042 Current Sense Reverser 163
E0043 Current Sense Lev Shoe 171
E0044 Current Sense Concave CL 177
E0045 Current Sense Bin Covers 184
E0046 CCM1 Battery Voltage 191
E0047 V Supply Feeder Clutch 198
E0050 Isense Feeder Clutch 207
E0052 Feeder Clutch Valve 211
E0053 Chaff Spreader Valve 215
E0059 Dual Range Valve 218
E0061 Feeder Jog Forward Valve 221
E0062 Fan Sp / Reverser Select 225
E0065 Backup Alarm 229
E0066 Rear Wheel Assist Valve 233
E0067 Feeder Jog Reverse Valve 237
E0068 Unload Tube Light Relay 241
E0069 Covers / Concave CI Sel 244
E0070 Front Work Lights Relay 247
E0071 Rear Work Lights Relay 250
E0072 Side Work Lights Relay 253
E0075 Leveling Shoe Motor 256
E0076 Fan Speed Motor 262
E0077 Reverser Motor 269
E0078 Concave Clearance Motor 276
E0079 Grain Bin Covers Motor 283
E0080 HHC Module 290
E0082 Feeder Speed Incr 291
E0083 Feeder Speed Decr 296
E0084 Voting Conflicts 301
E0085 Voting Differences 301

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FRONT INFEED

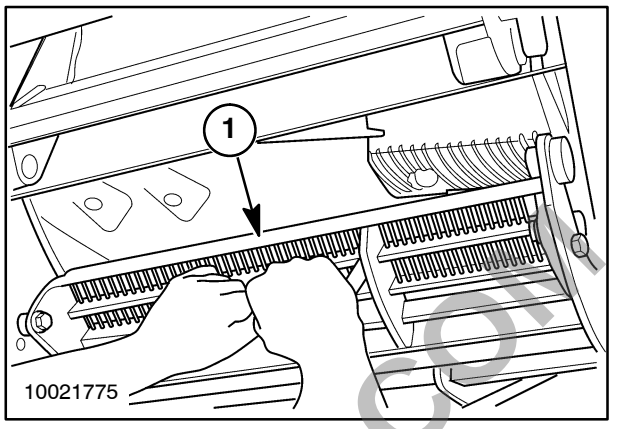
Removal

NOTE: *Remove feeder assembly as described in Section 60, Chapter 1 of this manual.*

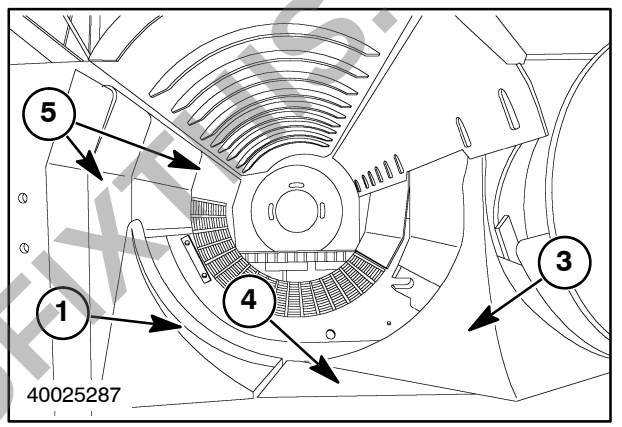
1. Lower and remove the concaves, 1, from the combine using the directions described in the CR operator's manual.

NOTE: *Concave and extension assemblies weigh approximately 120 lb. Assistance may be required when removing the concave assembly.*
NOTE: *The rotor and bearing plate have been removed for illustrative purposes. The rotors and bearing plate DO NOT need to be removed to remove the front infeed components.*

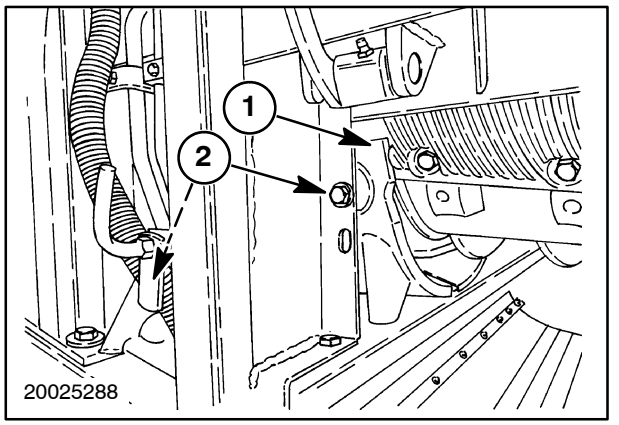
2. Remove the infeed side casting, 1, by removing the two bolts on both the side and bottom of each casting. The side bolts (only one shown), 2, and the rear bottom bolts (only one shown) are accessible through the concave area and the front bolt for each casting is accessible under the feed plate assembly.
3. Remove the infeed center casting, 3, by removing the three bottom mounting bolts. The front mounting bolt is accessible from under the feed plate, 4. The two rear bolts are located at the center of the concave area.
4. Remove the infeed wear plates, 5.



4



5



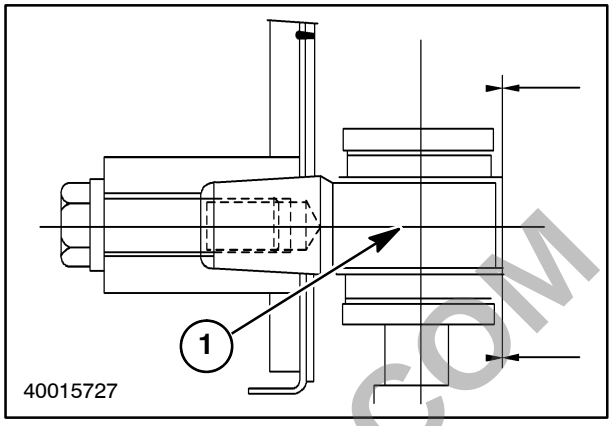
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Inspection

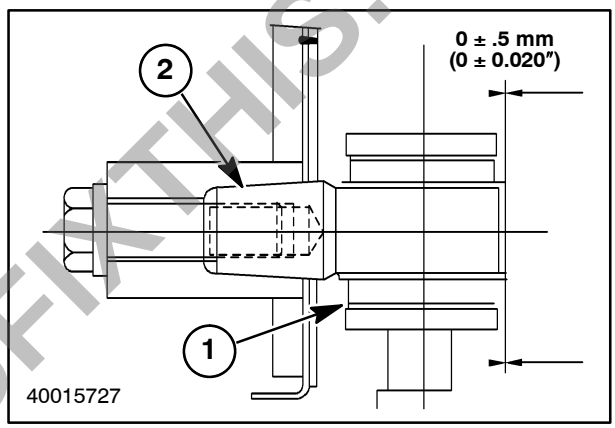
1. Inspect the journal, 1, for wear or damage. The diameter of the journal is to be 28.064 - 28.085 mm (1.105 - 1.106″). Journals with diameters less than that specified should be replaced.



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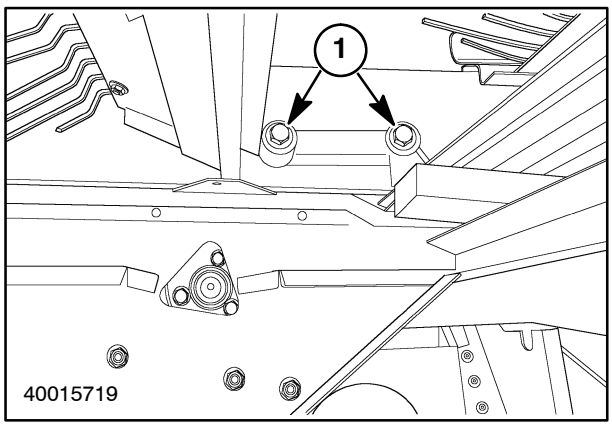
Installation

1. Press the new bushing, 1, onto the pin, 2, until the center metal insert of the bushing is flush ± .5 mm (0.020″) with the top of the pin.



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2. Install the bushing assembly with the previously removed cap screw at 1. Torque the cap screw to 150 - 170 N·m (111 - 125 ft.-lbs.).



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