W18, W20, W20B Loaders

PIN 9123140 and After

Service Manual

9-68960

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Exhaust Valve

	Decimal System	Metric System
Tappet Clearance (COLD)	.025"	.635 mm
Face angle	44°	44°
Face run-out (max. limit includng wear)	.002"	.051 mm
O.D. of head	1.445 to 1.455"	36.703 to 36.957 mm
O.D. of stem end including wear	.400 to .403"	10.160 to 10.236 mm
O.D. of taper 4.2675" (108.3947 mm) including wear	.399 to .402"	10.135 to 10.211 mm
Length	6.4025 to 6.4235"	162.6235 to 163.1569 mm
Insert seat angle	45°	45°
Seat contact width	.0800 to .1000"	2.032 to 2.540 mm
Seat run-out (max. limit including wear)	.002"	.051 mm
Insert height	.313 to .316"	7.95 to 8.026 mm
O.D. of insert	1.634 to 1.635"	41.504 to 41.529 mm
I.D. of insert	1.2676 to 1.2736"	32.1970 to 32.3494 mm

Intake and Exhaust Valve Guides

Length	3.219"	81.763 mm
O.D.	.7510 to .7515"	19.075 to 19.202 mm
I.D. (installed and reamed)	.4045 to .4055"	10.2747 to 10.2997 mm
Maximum limit including wear	.4065"	10.3251 mm
Protrusion above cylinder head	.953"	24.206 mm

Valve Spring

Free length (green stripe)	2.28"	57.912 mm
Free length (white stripe)	2.18"	55.372 mm
Total number of coils (green stripe)	7-3/4	
Total number of coils (white stripe)	7-1/4	
Wire diameter (green stripe)	0.171"	4.343 mm
Wire diameter (white stripe)	0.192"	4.877 mm
Compressed to 1.484" (37.694 mm), valve open (green stripe)	135 to 145 lbs.	601 to 645 N
Compressed to 1.484" (37.694 mm), valve open (white stripe)	153 to 167 lbs.	681 to 743 N
Compressed to 1.937" (49.2 mm), valve closed (green stripe)	40 to 50 lbs.	178 to 222 N
Compressed to 1.937" (49.2 mm), valve closed (white stripe)	50.5 to 60.5 lbs.	225 to 269 N

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ELECTRICAL SYSTEM CIRCUITS

NOTE: The numbers on the harness plugs are for identification of the terminals only. These numbers are not the same as the numbers for the electrical system circuits.

WIRE NO.	COLOR	FROM	TO
1	Gray	Instrument Lights in Instrument Cluster (FF)	15 ohm Resistor (O)
2	Red-Green	Air Pressure Gauge (CC)	Air Pressure Sending Unit (QQ)
3	Yellow-Red	Torque Converter Temperature Gauge (BB)	Converter Temperature Sending Unit (NN)
4	Black	Instrument Light (FF), Air Pressure Gauge (CC) and Torque Converter Temperature Gauge (BB)	Ground Connection at Loader Valve (H)
5	Purple	Torque Converter Temperature Gauge (BB) and Air Pressure Gauge (CC)	Cab Magnetic Switch (UU)
6	White-Red	Alternator Warning Light (Z)	Alternator (CCC and DDD)
7	Brown-Red	Brake Warning Light (AA)	Parking Brake Switch (K)
8	Purple	Alternator Warning Light (Z) and Brake Warning Light (AA)	5 Ampere Circuit Breaker (S)
9	Purple	Left Instrument Cluster Harness Plug (V)	Left Instrument Cluster Harness Plug (V)
10	Purple	Right Instument Cluster Harness Plug (U)	Right Instrument Cluster Harness Plug (U)
11	Tan-Black	Fuel Gauge (DD)	Fuel Level Sending Unit (BBB)
12	Light Blue-Yellow	Water Temperature Gauge (EE)	Engine Temperature Sending Unit (RR)
13	Black	Water Temperature Gauge (EE) and Fuel Gauge (DD)	Ground Connection at Loader Valve (H)
14	Purple	Water Temperature Gauge (EE) and Fuel Gauge (EE)	Brake Warning Air Pressure Switch (L)
15	Black-White	Engine Oil Pressure Light (Y)	Engine Oil Pressure Switch (ZZ)
16	Orange-Green	Clutch Pressure Warning Light (X)	Clutch Pressure Switch (LL)
17	Purple	Engine Oil Pressure (Y) and Clutch Pressure Warning Lights (X)	5 Ampere Circuit Breaker (S)
18	White	Key Switch (R)	Neutral Start Switch (MM)
19	Pink-White	Key Switch (R)	Light Switch (N)
20	Orange-White	Key Switch (R)	Cold Start Terminal (E)
21	Pink	Light Switch (N)	Left Driving Light (I)
22	Pink	Light Switch (N)	Right Driving Light (A)
23	Yellow	Light Switch (N)	Diode At Brake Light Switch (HH)
24	Red-Black	Light Switch (N)	Through Stop Light Switch to 30 Ampere Circuit Breaker (SS)
25	Red-Black	Light Switch (N)	30 Ampere Circuit Breaker (SS)
26	Dark Green	Light Switch (N)	Right Front Floodlight (B)
27	Dark Green	Light Switch (N)	Left Front Floodlight (J)
28	Dark Green	Light Switch (N)	Optional Floodlight on Cab (NNN)
29	Dark Blue	Light Switch (N)	Left Rear Floodlight (JJJ)
30	Gray	Light Switch (N)	15 ohm Resistor (O)
31	Gray	Light Switch (N)	39 ohm Resistor (P)
32	Gray	39 ohm Resistor (P)	Instrument Panel Lights (Q)
33	Black-Orange	Optional Cold Start Button (F)	Cold Start Solenoid (PP)
34	Orange-Black	5 Ampere Circuit Breaker (S)	Optional Auxiliary Steering (G)
35	Orange-White	5 Ampere Circuit Breaker (T)	Plugs at Loader Valve (C and D)
36	Blue-White	Plug at Loader Bucket Spool (D)	Optional Return-To-Dig Harness See Figure 4.
37	Brown-White	Plug at Loader Lift Spool (C)	Optional Bucket Height Control Harness. See Figure 4.
38	Red	Key Switch (R)	5 Ampere Circuit Breaker (T)
39	Gray	Key Switch (R)	5 Ampere Circuit Breaker (S)
40	Purple	5 Ampere Circuit Breaker (S)	Optional Turn Signal Switch (GG)
41	White-Blue	Optional Turn Signal Switch (GG)	Through Cab Harness Plug to Turn Signals on Cab (KK)
42	Light Blue	Optional Turn Signal Switch (GG)	Through Cab Harness Plug to Turn Signals on Cab (KK)
43	Tan	Stoplight Switch (II)	Stoplight (III)
44	Blue-Red	Cab Harness Plug (KK)	Optional Air Conditioning Compressor Clutch (YY)
45	Orange-Black	Cab Harness Plug (KK)	Cab Magnetic Switch (UU)
46	Orange-Black	Cab Harness Plug (KK)	Cab Magnetic Switch (UU)
47	Purple-Black	Neutral Start Switch (MM)	Starter Magnetic Switch (VV)
48	Black-Red	Optional Backup Alarm Switch (OO)	Optional Backup Alarm (HHH)
49	Purple-Red	30 Ampere Circuit Breaker (SS)	Optional Backup Alarm Switch (OO)
50	Yellow-Black	Cab Magnetic Switch (UU)	Electric Fuel Pump (AAA)
51	Red	30 Ampere Circuit Breaker (TT)	Alternator (CCC and DDD)
52	Brown	Starter Magnetic Switch (VV)	Alternator (CCC and DDD)
53	Black	Starter Magnetic Switch Mounting Bolt (VV)	Ground at Loader Control Valve (H)
54	Red	30 Ampere Circuit Breaker (SS)	30 Ampere Circuit Breaker (TT)
55	Red	30 Ampere Circuit Breaker (TT)	Cab Magnetic Switch (UU)
56	Red	30 Ampere Circuit Breaker (TT)	Starter Magnetic Switch (VV)
57	White-Red	Connector at Alternator (DDD)	Optional 65 Ampere Alternator Relay (EEE)
58	Black	Optional 65 Ampere Alternator (EEE)	Ground
59	Dark Blue	Left Rear Floodlight (JJJ)	Optional Right Rear Floodlight (FFF)
60	Tan	Left Stoplight and Taillight (III)	Right Stoplight and Taillight (not used) (GGG)
61	Orange-Black	5 Ampere Circuit Breaker	Hydraulic Filter Warning Lamp (OOO)
62	Gray-White	Hydraulic Filter Warning Lamp (OOO)	Hydraulic Filter Switch (PPP)

ELECTRICAL SYSTEM COMPONENTS

A. Right Driving Light
AA. Brake Warning Light
AAA. Electric Fuel Pump
B. Right Front Floodlight
BB. Torque Converter Temperature Gauge
BBB. Fuel Level Sending Unit
C. Connects to Lift Spool Magnetic Detent
CC. Air Pressure Gauge
CCC. 40 Ampere Alternator
D. Connects to Bucket Spool Magnetic Detent
DD. Fuel Gauge
DDD. 65 Ampere Alternator
E. Optional Cold Start Button
EE. Water Temperature Gauge
EEE. Relay
F. Optional Cold Start Valve
FF. Instrument Panel Lights
FFF. Right REar Floodlight (Optional)
G. Connects to Optional Auxiliary Steering Control
GG. Turn Signal Switch
GGG. Not Used
H. Ground Connection at Loader Control Valve
HH. Diode
HHH. Connects to Backup Alarm (Optional)
I. Left Driving Light
II. Stoplight Switch
III. Stoplight and Taillight
J. Left Front Floodlight
JJ. 10 Ohm, 12 Watt Resistor
JJJ. Left Rear Floodlight
K. Parking Brake Switch
KK. Connects to Cab Harness
KKK. 6 Volt Batteries
L. Brake Warning Air Pressure Switch
LL. Clutch Pressure Switch
LLL. Rear Harness
M. Low Air Pressure Warning Buzzer
MM. Neutral Start Switch
MMM. Front Harness
N. Light Switch
NN. Torque Converter Temperature Sending Unit
NNN. Connects to Optional Floodlight
O. 15 Ohm, 12 Watt Resistor
OO. Backup Alarm Switch (Optional)
OOO. Hydraulic Filter Warning Lamp
P. 39 Ohm, 12 Watt Resistor
PP. Connects to Mounting Bolt at Cold Start Valve
PPP. Hydraulic Filter Switch
Q. Instrument Panel Lights
QQ. Air Pressure Sending Unit
QQQ. 40 Ohm Resistor
R. Key Switch
RR. Engine Temperature Sending Unit
S. 5 Ampere Circuit Breaker
SS. 30 Ampere Circuit Breaker
T. 5 Ampere Circuit Breaker
TT. 30 Ampere Circuit Breaker
U. Connects to Right Side of Instrument Cluster
UU. Cab Magnetic Switch
V. Connects to Left Side of Instrument Cluster
VV. Starter Magnetic Switch
W. Instrument Cluster
WW. 40 Ohm Resistor
X. Clutch Pressure Warning Light
XX. Starter
Y. Engine Oil Pressure Light
YY. Connects to Air Conditioning Compressor Clutch (Optional)
Z. Alternator Warning Light
ZZ. Engine Oil Pressure Switch

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