

# SUMMARY OF OECD TESTS 2078 and 2093—NEBRASKA SUMMARY 408

## CASE IH JX 90U DIESEL

### 24 SPEED

#### POWER TAKE-OFF PERFORMANCE

Power HP (kW)	Crank shaft speed rpm	Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW/hl)	Mean Atmospheric Conditions
<b>MAXIMUM POWER AND FUEL CONSUMPTION</b>					
<b>Rated Engine Speed (PTO speed—613 rpm)</b>					
78.0 (58.2)	2496	4.77 (18.06)	0.429 (0.261)	16.34 (3.22)	
<b>Maximum Power (2 hours)</b>					
80.9 (60.3)	2191	4.61 (17.46)	0.400 (0.243)	17.51 (3.45)	
<b>Standard Power Take-off speed (538 rpm)</b>					
80.9 (60.3)	2191	4.61 (17.46)	0.400 (0.243)	17.51 (3.45)	
<b>VARYING POWER AND FUEL CONSUMPTION</b>					
78.0 (58.2)	2496	4.77 (18.06)	0.429 (0.261)	16.34 (3.22)	Air temperature
69.1 (51.5)	2606	4.44 (16.81)	0.451 (0.274)	15.54 (3.06)	66°F (19°C)
52.3 (39.0)	2655	3.75 (14.18)	0.464 (0.305)	13.96 (2.75)	Relative humidity
35.3 (26.3)	2679	2.87 (10.87)	0.502 (0.348)	12.28 (2.42)	75%
18.0 (13.4)	2688	2.46 (9.30)	0.956 (0.582)	7.32 (1.44)	Barometer
--	2708	1.59 (6.01)	--	--	29.4" Hg (99.4 kPa)
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Maximum Torque -213.5 lb.-ft. (289.5 Nm) at 1429 rpm  
 Maximum Torque Rise -30.1%  
 Torque rise at 2000 engine rpm -24%

**Location of test:** Istituto Per La Macchine Agricole  
 E Movimento Terra, Strada delle Cacce, 73-  
 10135 Torino, Italy

**Dates of test:** October 2002 - December 2003

**Manufacturer:** CNH America LLC, 700 State St.  
 Racine, Wi. 53404 USA

**FUEL and OIL:** Fuel No. 2 Diesel **Specific gravity converted to 60°/60°F (15°/15°C)** 0.842  
**Fuel weight** 7.01 lbs/gal (0.840 kg/l) **Oil** SAE 15W40  
**API service classification** CF-4/SG **Oil consumption for 10 hours** 0.02 lb (10 gm)  
**Transmission and hydraulic lubricant** Akcela  
**Front axle lubricant** Akcela  
 Nexplorer 130 **Front axle lubricant** Akcela  
 Nexplorer 130

**ENGINE: Make** Iveco Diesel **Type** four cylinder vertical with turbocharger **Serial No.** 509-864309  
**Crankshaft** lengthwise **Rated Engine speed** 2500  
**Bore and stroke** 4.094" x 4.528" (104 mm x 115 mm)  
**Compression ratio** 16.5 to 1 **Displacement** 238 cu in (3908 ml) **Starting system** 12 volt **Lubrication pressure** **Air cleaner** two paper elements **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** one paper element **Muffler** underhood **Exhaust** vertical **Cooling medium temperature control** thermostat and variable speed fan

**CHASSIS: Type** 2WD and front wheel assist **Serial No.** 001280293 **Tread width** rear 52.4" (1330 mm) to 86.8" (2205 mm) front: 2WD - 55.1" (1400 mm) to 85.4" (2170 mm), FWA - 51.2" (1301 mm) to 83.3" (2116 mm) **Wheel base** 2WD - 92.2" (2342 mm) FWA - 91.1" (2314 mm) **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Nominal travel speeds (30 km/h transmission) mph (km/h)** first 0.98 (1.58) second 1.12 (1.80) third 1.43 (2.30) fourth 1.62 (2.61) fifth 2.06 (3.31) sixth 2.29 (3.69) seventh 2.34 (3.77) eighth 2.61 (4.20) ninth 2.95 (4.74) tenth 3.33 (5.36) eleventh 3.35 (5.40) twelfth 3.79 (6.10) thirteenth 4.80 (7.73) fourteenth 5.40 (8.68) fifteenth 5.47 (8.80) sixteenth 6.15 (9.89) seventeenth 6.88 (11.07) eighteenth 7.83 (12.60) nineteenth 7.84 (12.62) twentieth 8.93 (14.37) twenty-first 11.31 (18.19) twenty-second 12.88 (20.72) twenty-third 16.20 (26.06) twenty-fourth 18.44 (29.67) reverse 1.10 (1.77), 1.60 (2.57), 2.30 (3.70), 2.57 (4.13), 3.30 (5.31), 3.73 (6.00), 5.38 (8.65), 6.04 (9.72), 7.70 (12.39), 8.79 (14.13), 12.66 (20.37), 18.13 (29.18) **Clutch** dual dry disc operated by foot pedal **Brakes** wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Power take-off** 540 rpm at 2199 engine rpm or 1000 rpm at 2381 engine rpm **Unladen tractor mass** 2WD - 8070 lb (3660 kg), FWA - 8710 lb (3950 kg)

**DRAWBAR PERFORMANCE  
BALLASTED - FRONT DRIVE ENGAGED  
FUEL CONSUMPTION CHARACTERISTICS**

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption		Temp. °F (°C)		Barom. inch Hg (kPa)
					lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	cool- ing med	Air dry bulb	
<b>75% of Pull at Maximum Power—Five Hours 12th (2M Hi) Gear</b>									
52.3 (39.0)	4205 (18.7)	4.66 (7.50)	2620	3.0	0.598 (0.364)	11.67 (2.30)	180 (82)	50 (10)	29.9 (101.3)
<b>MAXIMUM POWER IN SELECTED GEARS</b>									
5th (3S Lo) Gear									
52.3 (39.0)	9285 (41.3)	2.11 (3.40)	2630	15.1	0.547 (0.333)	12.79 (2.52)	189 (87)	54 (12)	29.9 (101.3)
6th (1M Lo) Gear									
59.8 (44.6)	9260 (41.2)	2.42 (3.90)	2516	9.9	0.552 (0.336)	12.69 (2.50)	190 (88)	54 (12)	29.9 (101.3)
7th (3S Hi) Gear									
61.6 (45.9)	8835 (39.3)	2.61 (4.20)	2497	8.7	0.544 (0.331)	12.89 (2.54)	187 (86)	54 (12)	29.9 (101.3)
8th (1M Hi) Gear									
62.9 (46.9)	8070 (35.9)	2.92 (4.70)	2490	7.3	0.532 (0.324)	13.17 (2.60)	183 (84)	54 (12)	29.9 (101.3)
9th (4S Lo) Gear									
64.1 (47.8)	7440 (33.1)	3.23 (5.20)	2484	6.0	0.521 (0.317)	13.45 (2.65)	187 (86)	54 (12)	29.9 (101.3)
10th (2M Lo) Gear									
65.0 (48.5)	6540 (29.1)	3.73 (6.00)	2482	5.0	0.514 (0.313)	13.64 (2.69)	181 (83)	54 (12)	29.9 (101.3)
11th (4S Hi) Gear									
65.2 (48.6)	6340 (28.2)	3.86 (6.20)	2475	4.8	0.513 (0.312)	13.65 (2.69)	180 (82)	52 (11)	29.9 (101.3)
12th (2M Hi) Gear									
65.4 (48.8)	5640 (25.1)	4.35 (7.00)	2458	4.3	0.511 (0.311)	13.72 (2.70)	187 (86)	52 (11)	29.9 (101.3)
13th (3M Lo) Gear									
65.0 (48.5)	4565 (20.3)	5.34 (8.60)	2447	3.7	0.513 (0.312)	13.65 (2.69)	183 (84)	52 (11)	29.9 (101.3)
14th (1F Lo) Gear									
65.0 (48.5)	4090 (18.2)	5.97 (9.60)	2438	3.5	0.513 (0.312)	13.65 (2.69)	189 (87)	52 (11)	29.9 (101.3)
15th (3M Hi) Gear									
64.6 (48.2)	3820 (17.0)	6.34 (10.20)	2432	3.0	0.523 (0.318)	13.40 (2.64)	187 (86)	52 (11)	29.9 (101.3)
16th (1F Hi) Gear									
63.8 (47.6)	3350 (14.9)	7.14 (11.50)	2427	2.7	0.523 (0.318)	13.40 (2.64)	185 (85)	52 (11)	29.9 (101.3)

**REPAIRS AND ADJUSTMENTS:** No repairs or adjustments

**REMARKS:** All test results were determined from observed data obtained in accordance with official OECD test procedures. The performance results on this summary were taken from OECD tests conducted under the Code I Test procedure.

We, the undersigned, certify that this is a true summary of data from OECD Reports No. **2078** and **2093**, Nebraska Summary 408, February 17, 2004.

Leonard L. Bashford  
Director

M.F. Kocher  
V.I. Adamchuk  
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Board of Tractor Test Engineers

**JX 90U- FWA (40 km/h transmission)**

	With Ballast	Without Ballast
<b>TIRES, BALLAST AND WEIGHT</b>		
<b>Rear Tires</b>	-No., size, ply & psi (kPa) Two 480/70R34; **,13 (90)	Two 480/70R34; **,13 (90)
<b>Ballast</b>	-Liquid (total) None	None
	-Cast Iron (total) 440 lb (200 kg)	None
<b>Front Tires</b>	-No., size, ply & psi (kPa) Two 380/70R24; **,13 (90)	Two 380/70R24; **,13 (90)
<b>Ballast</b>	-Liquid (total) None	None
	-Cast Iron (total) 1210 lb (550 kg)	None
<b>Height of Drawbar</b>	19.7 in (495 mm)	19.7 in (500 mm)
<b>Static Weight with Operator</b>		
- Rear	5765 lb (2615 kg)	5325 lb (2415 kg)
- Front	4760 lb (2160 kg)	3550 lb (1610 kg)
- Total	10525 lb (4775 kg)	8875 lb (4025 kg)

**DRAWBAR PERFORMANCE**  
**BALLASTED - 2WD**  
**FUEL CONSUMPTION CHARACTERISTICS**

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp.°F (°C) cool- ing dry bulb	Barom. inch Hg (kPa)
<b>75% of Pull at Maximum Power—Five Hours 13th (3M Lo) Gear</b>								
52.4 (39.1)	4000 (17.8)	4.91 (7.90)	2650	4.1	0.505 (0.307)	13.91 (2.74)	183 (84)	66 (19) (100.7)
<b>MAXIMUM POWER IN SELECTED GEARS</b>								
9th (4S Lo) Gear								
51.8 (38.6)	7330 (32.6)	2.65 (4.26)	2613	15.2	0.609 (0.371)	11.50 (2.27)	198 (92)	64 (18) (101.1)
10th (2M Lo) Gear								
59.4 (44.3)	7285 (32.4)	3.06 (4.92)	2497	14.8	0.573 (0.349)	12.23 (2.41)	189 (87)	66 (19) (101.1)
11th (4S Hi) Gear								
62.5 (46.6)	7305 (32.5)	3.21 (5.16)	2502	12.0	0.542 (0.330)	12.93 (2.55)	194 (90)	64 (18) (101.1)
12th (2M Hi) Gear								
62.0 (46.2)	6560 (29.2)	3.55 (5.71)	2498	6.9	0.550 (0.335)	12.74 (2.51)	190 (88)	66 (19) (101.1)
13th (3M Lo) Gear								
65.4 (48.7)	5370 (23.9)	4.57 (7.35)	2501	4.7	0.518 (0.315)	13.52 (2.66)	187 (86)	64 (18) (101.1)
14th (1F Lo) Gear								
64.8 (48.4)	4750 (21.1)	5.12 (8.24)	2500	4.5	0.527 (0.321)	13.30 (2.62)	196 (91)	64 (18) (101.1)
15th (3M Hi) Gear								
60.9 (45.4)	4315 (19.2)	5.29 (8.51)	2503	4.4	0.548 (0.333)	12.79 (2.52)	183 (84)	66 (19) (101.1)
16th (1F Hi) Gear								
63.7 (47.5)	4045 (18.0)	5.91 (9.51)	2505	4.1	0.538 (0.327)	13.05 (2.57)	187 (86)	66 (19) (101.1)
17th (4M Lo) Gear								
63.4 (47.3)	3575 (15.9)	6.65 (10.71)	2496	3.5	0.533 (0.324)	13.15 (2.59)	189 (87)	64 (18) (101.1)

**JX90U-2WD (30km/h transmission)**

<b>TIRES, BALLAST AND WEIGHT</b>			<b>With Ballast</b>	<b>Without Ballast</b>
<b>Rear Tires</b>	-No., size, ply & psi (kPa)	Two 480/70R34; **,13 (90)	Two 480/70R34; **,13 (90)	Two 480/70R34; **,13 (90)
<b>Ballast</b>	-Liquid (total)	None	None	None
	-Cast Iron (total)	440 lb (200 kg)	None	None
<b>Front Tires</b>	-No., size, ply & psi (kPa)	Two 7.50-20; 8; 54 (370)	Two 7.50-20; 8; 54 (370)	Two 7.50-20; 8; 54 (370)
<b>Ballast</b>	-Liquid (total)	None	None	None
	-Cast Iron (total)	1210 lb (550 kg)	None	None
<b>Height of Drawbar</b>		27.2 in (690 mm)	27.6 in (700 mm)	
<b>Static Weight with Operator</b>	-Rear	5600 lb (2540 kg)	5160 lb (2340 kg)	
	-Front	4285 lb (1945 kg)	3075 lb (1395 kg)	
	-Total	9885 lb (4485 kg)	8235 lb (3735 kg)	

TRACTOR SOUND LEVEL WITH CAB	FWA dB(A)	2WD dB(A)
At no load in 13th (3M Lo) gear	79.4	79.4
Bystander in 24th (4F Hi) gear	84.7	85.6

**CENTER OF GRAVITY - 2WD**

Horizontal distance forward from centerline of rear wheels	34.8" (883 mm)
Vertical distance above roadway	34.6" (880 mm)
Horizontal distance from center of rear wheel tread	0" (0 mm) to the left/right

**CENTER OF GRAVITY - FWA**

Horizontal distance forward from centerline of rear wheels	37.3" (947 mm)
Vertical distance above roadway	33.7" (855 mm)
Horizontal distance from center of rear wheel tread	0" (0 mm) to the left/right

**TURNING ON A CONCRETE SURFACE (2WD)**

Turning radius—without brake right 152" (3.85 m) left 150" (3.80 m)
Turning space radius—without brake right 154" (3.90 m) left 150" (3.80 m)

**TURNING ON A CONCRETE SURFACE (FWA)**

Turning radius—without brake right 224" (5.70 m) left 220" (5.60 m)
Turning space radius—without brake right 228" (5.80 m) left 224" (5.70 m)

**THREE POINT HITCH PERFORMANCE (OECD Static Test)**

CATEGORY: II

Quick Attach: None

Maximum force exerted through whole range:	6825 lbs (30.4 kN)
i) Opening pressure of relief valve:	NA
Sustained pressure with relief valve open:	2875 psi (198 bar)
ii) Pump delivery rate at minimum pressure:	16.3 GPM (61.8 l/min)
iii) Pump delivery rate at maximum	
hydraulic power:	13.9 GPM (52.8 l/min)
Delivery pressure:	2435 psi (168 bar)
Power:	19.7 HP (14.7 kW)

**THREE POINT HITCH PERFORMANCE (SAE Static Test)**

Observed maximum pressure psi. (bar)	2875 (198)
Location:	hydraulic pump
Hydraulic oil temperature: °F (°C)	144 (62)
Location:	hydraulic sump
Category:	II
Quick attach:	none

System pressure 2585 psi (178 Bar)

Hitch point distance to ground level in. (mm)	8.0 (203)	13.6 (345)	19.2 (488)	24.8 (630)	30.4 (773)	36.0 (915)
Lift force on frame lb	12340	11600	10455	9260	8275	7900
" " " " " " (kN)	(54.9)	(51.6)	(46.5)	(41.2)	(36.8)	(35.1)

**SAE TEST      OECD TEST**

	inch	mm	inch	mm
A	27.0	685	26.8	680
B	10.0	255	10.0	255
C	13.0	329	13.0	329
D	11.8	300	11.8	300
E	13.2	335	10.0	255
F	8.1	205	8.1	205
G	29.3	745	29.3	745
H	0.6	15	0.6	15
I	15.7	400	15.7	400
J	21.2	540	21.2	540
K	21.2	540	18.3	465
L	43.3	1100	43.3	1100
M	21.7	550	21.7	550
N	38.0	965	38.0	965
O	8.0	203	7.9	200
P	40.2	1021	45.3	1150
Q	34.3	870	35.0	870
R	25.8	655	23.8	605

**HITCH DIMENSIONS AS TESTED—NO LOAD**

