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Test 939: John Deere 4020 Syncro-Range Gas

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NEBRASKA TRACTOR TEST 939 - JOHN DEERE 4020 SYNCRO-RANGE GASOLINE

				Fuel Co	nsumption	,		Temper			F	
			Crank-			•		Temper				Darometer
	Нр		shaft speed rpm	Gal per hr	Lb per hp-hr		Hp-hr per gal	Cooling medium	Air wet bulb	A dı bu	У	Barometer inches of Mercury
			MAXI	MUM :	POWER	AN	D FUE	L CONST	J MPT	ION		
	95.	59	2200	Ra: 7.887	ted Engin		peed—T 12.12	wo Hours 170	58	7	5	28.973
			Standa	ard Pow	er Take-	off S	peed (10	000 rpm)-	-One l	Hour		
	85.	81	1895	6.856	0.487		12.52	172	58		5	28.985
		10.00	ING P	OWER	AND FU	UEL	CONSU	JMPTIO	N-TV	VO H	OUR	RS
	84.	75	2296	7.266	0.523	3	11.66	169	59	7	6	
+		00	2462	2.873		2		160	57	7	15	
+	44.		2381	4.989	0.691		8.82	167	58	7	5	
	95.		2200	7.906	0.503	3	12.13	174	59	7	7	
	22.		2418	3.950	1.081		5.64	165	59	7	7	
	64.		2343	6.292	0.591		10.31	169	59	7	8	
Av	51.		2350	5.546	0.65		9.37	167	58	7	76	28.967
				DRA	WBAR	R P	ERFO	RMAN	CE			
Ī		Draw-	Speed	Crank-	Fu Slip	el Co	nsumptio	on	Temp	Degre	ees F	Barom-
H	р	bar	miles	shaft	of	Gal	Lb	Hp-hr	Cool-	Air wet	Air dry	eter inches o
		pull lbs	per hr	speed rpm	drivers %	per hr	per hp-hr	per gal	ing med	bulb	bulb	Mercury
68.	28	4822	5.31	2333		6.83		Fen Hour 9.99	168	55	57	28.799
			500% of	Pull of	Mavim	ım l	Power_7	Two Hou	rs—4th	Gear	9	
46.	30	3173	50% of 5.47	Pull at 2355		um 1 5.55		Г wo Hou 8.34	rs—4th 164	Gear 55	57	28.840
46.	30	3173	5.47	2355	3.04	5.55	1 0.731		164 .AST	55	57	
77.	84	10658	2.74	2355 MAXIN 2269	3.04 1UM PC 14.52	5.55)WE 2nd	1 0.731 R WIT Gear	8.34 TH BALL	164 AST 174	55 57	57 75	28.780
77. 81.	84 66	10658 8243	5.47 2.74 3.71	2355 MAXIN 2269 2201	3.04 4UM PC 14.52 9.50	5.55 WE 2nd 3rd	R WIT Gear Gear	8.34 TH BALL	164 AST 174 170	55 57 56	57 75 73	28.780 28.870
77. 81. 84.	84 66 10	10658 8243 6420	5.47 2.74 3.71 4.91	2355 MAXIM 2269 2201 2201	3.04 4UM PC 14.52 9.50 6.80	5.55 DWE 2nd 3rd 4th	R WIT Gear Gear Gear	8.34 CH BALL	164 AST 174 170 168	55 57 56 55	75 73 72	28.780 28.870 28.880
77. 81. 84.	84 66 10 23	10658 8243 6420 5062	2.74 3.71 4.91 6.24	2355 MAXIM 2269 2201 2201 2199	3.04 4UM PC 14.52 9.50 6.80 4.81	5.55 2nd 3rd 4th 5th	Gear Gear Gear Gear	8.34 *H BALL	164 AST 174 170 168 171	55 57 56 55 60	75 73 72 67	28.780 28.870 28.880 28.830
77. 81. 84. 84.	84 66 10 23	10658 8243 6420 5062 3806	2.74 3.71 4.91 6.24 8.29	2355 MAXIM 2269 2201 2201 2199 2200	3.04 1UM PC 14.52 9.50 6.80 4.81 3.48	5.55 2nd 3rd 4th 5th 6th	Gear Gear Gear Gear Gear Gear	8.34 TH BALL	164 AST 174 170 168 171 170	55 57 56 55 60 60	75 73 72 67 70	28.780 28.870 28.880 28.830 28.830
77. 81. 84.	84 66 10 23	10658 8243 6420 5062	2.74 3.71 4.91 6.24	2355 MAXIM 2269 2201 2201 2199	3.04 4UM PC 14.52 9.50 6.80 4.81	5.55 2nd 3rd 4th 5th 6th	Gear Gear Gear Gear	8.34 TH BALL	164 AST 174 170 168 171	55 57 56 55 60	75 73 72 67	28.780 28.870 28.880 28.830
77. 81. 84. 84.	84 66 10 23	10658 8243 6420 5062 3806	5.47 2.74 3.71 4.91 6.24 8.29 10.81	2355 MAXIM 2269 2201 2201 2199 2200 2198 AXIMU	3.04 4UM PC 14.52 9.50 6.80 4.81 3.48 2.66 M POW	5.55 OWE 2nd 3rd 4th 5th 6th 7th	Gear Gear Gear Gear Gear Gear Gear Gear	8.34 TH BALL OUT BA	164 AST 174 170 168 171 170 170	55 57 56 55 60 60 62	57 75 73 72 67 70 70	28.780 28.870 28.880 28.830 28.830 28.820
77. 81. 84. 84. 84. 77.	84 66 10 23 18 51	10658 8243 6420 5062 3806 2827	2.74 3.71 4.91 6.24 8.29 10.81	2355 MAXIN 2269 2201 2201 2199 2200 2198 AXIMU 2247	3.04 4UM PC 14.52 9.50 6.80 4.81 3.48 2.66 M POW 14.85	5.55 2nd 3rd 4th 5th 6th 7th ER 4th	Gear Gear Gear Gear Gear Gear Gear	8.34 TH BALL	164 AST 174 170 168 171 170 170 170 LLAST	55 57 56 55 60 60 62 T	75 73 72 67 70 70	28.780 28.870 28.880 28.830 28.830 28.820
77. 81. 84. 84. 84. 77.	84 66 10 23 18 51	10658 8243 6420 5062 3806 2827	2.74 3.71 4.91 6.24 8.29 10.81	2355 MAXIN 2269 2201 2201 2199 2200 2198 AXIMU 2247	3.04 4UM PC 14.52 9.50 6.80 4.81 3.48 2.66 M POW 14.85	5.55 2nd 3rd 4th 5th 6th 7th ER 4th	Gear Gear Gear Gear Gear Gear Gear	8.34 TH BALL OUT BA	164 AST 174 170 168 171 170 170 170 LLAST	55 57 56 55 60 60 62 T	75 73 72 67 70 70	28.780 28.870 28.880 28.830 28.830 28.820
77. 81. 84. 84. 81.	84 66 10 23 18 51	10658 8243 6420 5062 3806 2827	2.74 3.71 4.91 6.24 8.29 10.81	2355 MAXIM 2269 2201 2201 2199 2200 2198 AXIMU 2247 AR PUI	3.04 4UM PC 14.52 9.50 6.80 4.81 3.48 2.66 M POW 14.85 L AND 20 66.	5.55 DWE 2nd 3rd 4th 5th 6th 7th VER 4th TRA	Gear Gear Gear Gear Gear Gear Gear Gear WITHO Gear AVEL SI	8.34 CH BALL OUT BA PEED WI 6742	164 AST 174 170 168 171 170 170 170 LLAST 172 ITH B	55 57 56 55 60 60 62 67 67	75 73 72 67 70 70 71 AST —	28.780 28.870 28.880 28.830 28.830 28.820 29.020 4th Gear
77. 81. 84. 84. 81. 77. VAI	84 66 10 23 18 51 32 RYI nds	10658 8243 6420 5062 3806 2827 6272 NG D pull	2.74 3.71 4.91 6.24 8.29 10.81 M. 4.62	2355 MAXIM 2269 2201 2201 2199 2200 2198 AXIMU 2247 AR PUI 642 84.	3.04 4UM PC 14.52 9.50 6.80 4.81 3.48 2.66 M POW 14.85 L AND 20 66. 10 77.	5.55 DWF 2nd 3rd 4th 5th 6th 7th VER 4th TRA 553	Gear Gear Gear Gear Gear Gear Gear WITHO Gear AVEL SI 6740 69.85	8.34 TH BALL OUT BA PEED WI 6742 61.25	164 AST 174 170 168 171 170 170 170 LLAST 172 ITH B 6792 52.52	55 57 56 55 60 62 7 67 ALLA	57 75 78 72 67 70 71 AST— 6713 3.31	28.780 28.870 28.880 28.830 28.820 29.020 4th Gea: 6538 33.78
77. 81. 84. 84. 81. 77. VAI	84 66 10 23 18 51 32 RYI nds	10658 8243 6420 5062 3806 2827 6272 NG D pull	2.74 3.71 4.91 6.24 8.29 10.81	2355 MAXIM 2269 2201 2291 2199 2200 2198 AXIMU 2247 AR PUI 642 84. m 220	3.04 4UM PC 14.52 9.50 6.80 4.81 3.48 2.66 M POW 14.85 L AND 20 66, 10 77.01 19	5.55 DWF 2nd 3rd 4th 5th 6th 7th TRA 4th TRA 53 96	Gear Gear Gear Gear Gear Gear Gear WITHO Gear AVEL SI 6740 69.85 1749	8.34 CH BALL OUT BA PEED WI 6742 61.25 1534	164 AST 174 170 168 171 170 170 170 LLAST 172 ITH B 6792 52.52 1308	55 57 56 55 60 62 67 67 64 41 64 64 64 64	75 73 72 67 70 70 71 AST — 6713 3.31 090	28.780 28.870 28.880 28.830 28.820 29.020 4th Gear 6538 33.78 871
77. 81. 84. 84. 81. 77. VAI	84 66 10 23 18 51 32 RYII nds rsepenksles p	10658 8243 6420 5062 3806 2827 6272 NG D pull ower naft sp	2.74 3.71 4.91 6.24 8.29 10.81 M. 4.62 RAWBA	2355 MAXIM 2269 2201 2199 2200 2198 AXIMU 2247 AR PUI 642 84. m 220 4.3	3.04 4UM PC 14.52 9.50 6.80 4.81 3.48 2.66 M POW 14.85 L AND 20 66. 10 77. 01 19 91 4.	5.55 2nd 3rd 4th 5th 6th 7th VER 4th TRA 53 96 75 39	Gear Gear Gear Gear Gear Gear Gear WITHO Gear AVEL SI 6740 69.85 1749 3.89	8.34 CH BALL OUT BA PEED WI 6742 61.25 1534 3.41	164 AST 174 170 168 171 170 170 170 LLAST 172 ITH B 6792 52.52 1308 2.90	55 57 56 55 60 60 62 7 67 ALL 4 8 1	75 73 72 67 70 70 71 71 33.31 090 2.42	28.780 28.870 28.880 28.830 28.820 29.020 4th Gear 6538 33.78 871 1.94
77. 81. 84. 84. 84. 81. 77. VAI	84 66 10 23 18 51 32 RYII nds rsepenksles p	10658 8243 6420 5062 3806 2827 6272 NG D pull ower	2.74 3.71 4.91 6.24 8.29 10.81 M. 4.62 RAWBA	2355 MAXIM 2269 2201 2291 2199 2200 2198 AXIMU 2247 AR PUI 642 84. m 220 4.3	3.04 4UM PC 14.52 9.50 6.80 4.81 3.48 2.66 M POW 14.85 L AND 20 66. 10 77. 01 19 91 4.	5.55 DWF 2nd 3rd 4th 5th 6th 7th VER 4th TRA 53 96 75	Gear Gear Gear Gear Gear Gear Gear WITHO Gear AVEL SI 6740 69.85 1749	8.34 CH BALL OUT BA PEED WI 6742 61.25 1534	164 AST 174 170 168 171 170 170 170 LLAST 172 ITH B 6792 52.52 1308	55 57 56 55 60 60 62 7 67 ALL 4 8 1	75 73 72 67 70 70 71 AST — 6713 3.31 090	28.780 28.870 28.880 28.830 28.820 29.020 4th Gear 6538 33.78 871
77. 81. 84. 84. 84. 81. 77. VAI	84 66 10 23 18 51 32 RYII nds sep- of	10658 8243 6420 5062 3806 2827 6272 NG D pull ower naft sp eer hot driver	2.74 3.71 4.91 6.24 8.29 10.81 M. 4.62 RAWBA	2355 MAXIM 2269 2201 2199 2200 2198 AXIMU 2247 AR PUI 644 84. m 220 4.9 6.	3.04 4UM PC 14.52 9.50 6.80 4.81 3.48 2.66 M POW 14.85 L AND 20 66.10 77.701 199 91 4.80 7.	5.55 DWE 2nd 3rd 4th 5th 6th 7th TRA 4th TRA 353 96 775 39 21	Gear Gear Gear Gear Gear Gear Gear Gear WITHO 69.85 1749 3.89 7.35	8.34 PEED W1 6742 61.25 1534 3.41 7.35 th Ballass	164 AST 174 170 168 171 170 170 170 LLAST 172 TH B 6792 52.52 1308 2.90 7.62	55 57 56 55 60 60 62 7 67 4ALLA 8 1	75 73 72 67 70 70 71 71 33.31 090 22.42 77.49	28.780 28.870 28.880 28.830 28.820 29.020 4th Geat 6538 33.78 871 1.94 7.21 t Ballast
77. 81. 84. 84. 84. 81. 77. VAI	84 66 10 23 18 51 32 RYII nds seep of	10658 8243 6420 5062 3806 2827 6272 NG D pull ower naft sp per hor driver	2.74 3.71 4.91 6.24 8.29 10.81 M. 4.62 RAWBA	2355 MAXIM 2269 2201 2199 2200 2198 AXIMU 2247 AR PUI 64: 84. m 220 4.9 6. nd WEI —No, si	3.04 4UM PC 14.52 9.50 6.80 4.81 3.48 2.66 M POW 14.85 L AND 20 66.10 77. 01 19 91 4. 80 7. GHT ze, ply &	5.55 DWE 2nd 3rd 4th 5th 6th 7th TRA 4th TRA 353 96 775 39 21	Gear Gear Gear Gear Gear Gear Gear Gear WITHO Gear 6740 69.85 1749 3.89 7.35 Win	8.34 FH BALL OUT BA PEED WI 6742 61.25 1534 3.41 7.35 th Ballass 18.4-34; 8	164 AST 174 170 168 171 170 170 170 LLAST 172 TH B 6792 52.52 1308 2.90 7.62	55 57 56 55 60 62 67 ALLA 3 11 5 2	75 73 72 67 70 71 71 3.31 090 2.42 7.49 ithout 18.4-3	28.780 28.870 28.880 28.830 28.820 29.020 4th Geat 6538 33.78 871 1.94 7.21
77. 81. 84. 84. 84. 81. 77. VAI	84 66 10 23 18 51 32 RYII nds seep of	10658 8243 6420 5062 3806 2827 6272 NG D pull ower naft sp eer hot driver	2.74 3.71 4.91 6.24 8.29 10.81 M. 4.62 RAWBA	2355 MAXIM 2269 2201 2199 2200 2198 AXIMU 2247 AR PUI 64: 84. m 22: 4.5 6. md WEI —No, si —Liqui	3.04 4UM PC 14.52 9.50 6.80 4.81 3.48 2.66 M POW 14.85 L AND 20 66.10 77.01 19 91 4.80 7. GHT ze, ply & d	5.55 DWE 2nd 3rd 4th 5th 6th 7th TRA 4th TRA 353 96 775 39 21	Gear Gear Gear Gear Gear Gear Gear Gear WITHO 69.85 1749 3.89 7.35 With Two 1010	8.34 PEED W1 6742 61.25 1534 3.41 7.35 th Ballass	164 AST 174 170 168 171 170 170 170 LLAST 172 TH B 6792 52.52 1308 2.90 7.62	55 57 56 55 60 60 62 7 67 4ALLA 8 1	75 73 72 67 70 70 71 AST — 71 3.31 090 2.42 7.49	28.780 28.870 28.880 28.830 28.830 28.820 29.020 4th Geat 6538 33.78 871 1.94 7.21 t Ballast
77 84 84 84 77 WAI Pour Hor Crain Mile Slip	84 66 10 23 18 51 32 RVI nds rseponksles p of	10658 8243 6420 5062 3806 2827 6272 NG D pull ower naft speer hot driver , BALL tires llast	2.74 3.71 4.91 6.24 8.29 10.81 M. 4.62 RAWBA	2355 MAXIM 2269 2201 2199 2200 2198 AXIMU 2247 AR PUI 64: 84. m 22: 4.9 6. nd WEI —No, si —Liquic Cast i	3.04 4UM PC 14.52 9.50 6.80 4.81 3.48 2.66 M POW 14.85 L AND 20 66.10 77.01 1991 91 4.80 7. GHT ze, ply & dron	5.55 DWF 2nd 3rd 4th 5th 6th 7th VER 4th TRA 53 96 775 39 21	Gear Gear Gear Gear Gear Gear Gear Gear Gear WITHO 69.85 1749 3.89 7.35 With Two 1010 1400	8.34 TH BALL OUT BA PEED WI 6742 61.25 1534 3.41 7.35 th Ballass 18.4-34; 8 lb each lb each	164 AST 174 170 168 171 170 170 170 LLAST 172 ITH B 6792 52.52 1308 2.90 7.62 t	55 57 56 55 60 60 62 67 67 ALLA 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	75 73 72 67 70 70 71 AST — 713 3.31 090 2.42 7.49 ithout 118.4-3	28.780 28.870 28.880 28.830 28.820 29.020 4th Gea: 6538 33.78 871 1.94 7.21 t Ballast 34; 8; 16
77 84 84 84 77 WAI Pour Hor Crain Mile Slip	84 66 10 23 18 51 32 RYII nds rsep- nksles p of RES cear Ba	10658 8243 6420 5062 3806 2827 6272 NG D pull ower naft sp per hor driver	2.74 3.71 4.91 6.24 8.29 10.81 M. 4.62 RAWBA	2355 MAXIM 2269 2201 2199 2200 2198 AXIMU 2247 AR PUI 64: 84. m 22: 4.9 6. nd WEI —No, si —Liquic Cast i	3.04 4UM PC 14.52 9.50 6.80 4.81 3.48 2.66 M POW 14.85 L AND 20 66, 10 77. 01 19 91 4. 80 7. GHT cze, ply & dron zze, ply & dron zze, ply &	5.55 DWF 2nd 3rd 4th 5th 6th 7th VER 4th TRA 53 96 775 39 21	Gear WITHO 69.85 1749 3.89 7.35 Wir Two 1010 1400 Two None	8.34 PEED WI 6742 61.25 1534 3.41 7.35 th Ballass 18.4-34; 8 1b each 1b each 7.50-15; 6	164 AST 174 170 168 171 170 170 170 LLAST 172 ITH B 6792 52.52 1308 2.90 7.62 t	55 57 56 55 60 60 62 67 67 ALLA 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	75 73 72 67 70 70 71 AST — 6713 33.31 090 2.42 7.49 ithout 18.4-5	28.780 28.870 28.880 28.830 28.830 28.820 29.020 4th Geat 6538 33.78 871 1.94 7.21 t Ballast
77 84 84 84 77 WAI Pour Hor Crain Mile Slip	84 66 10 23 18 51 32 RYII nds rsep- nksles p of RES cear Ba	10658 8243 6420 5062 3806 2827 6272 NG D pull ower naft sp er hor driven tires llast t tires	2.74 3.71 4.91 6.24 8.29 10.81 M. 4.62 RAWBA	2355 MAXIM 2269 2201 2199 2200 2198 AXIMU 2247 AR PUI 642 84. m 220 4.9 6.0 nd WEI —No, si —No, si —No, si	3.04 4UM PC 14.52 9.50 6.80 4.81 3.48 2.66 M POW 14.85 L AND 20 66.10 77. 01 19 91 4. 80 7. GHT ze, ply & dron ze, ply & d	5.55 DWF 2nd 3rd 4th 5th 6th 7th VER 4th TRA 53 96 775 39 21 psi	Gear WITHO 69.85 1749 3.89 7.35 Wir Two 1010 1400 Two None 150 lb	8.34 PEED WI 6742 61.25 1534 3.41 7.35 th Ballasi 18.4-34; 8 1b each 1b each 7.50-15; 6	164 AST 174 170 168 171 170 170 170 LLAST 172 ITH B 6792 52.52 1308 2.90 7.62 t	55 57 56 60 60 62 67 ALLA 10 11 Two	75 73 72 67 70 70 71 AST — 33.31 090 2.42 7.49 7.50-1	28.780 28.870 28.880 28.830 28.820 29.020 4th Gea: 6538 33.78 871 1.94 7.21 t Ballast 34; 8; 16
77. 81. 84. 84. 81. 77. Pour Horar Mild R	84 66 10 23 18 51 32 RVI nds sep- nksles p of RES ear Ba	10658 8243 6420 5062 3806 2827 6272 NG D pull ower naft speer hor driver tires llast t tires llast	2.74 3.71 4.91 6.24 8.29 10.81 M. 4.62 RAWBA	2355 MAXIM 2269 2201 2199 2200 2198 AXIMU 2247 AR PUI 64: 84. m 220 4.: 6 nd WEI —No, si —Liquic Cast i —No, si —Liquic Cast i	3.04 4UM PC 14.52 9.50 6.80 4.81 3.48 2.66 M POW 14.85 L AND 20 66.10 77. 01 19 91 4. 80 7. GHT ze, ply & dron ze, ply & dron	5.55 DWF 2nd 3rd 4th 5th 6th 7th VER 4th TRA 53 96 775 39 21 psi	Gear WITHO 69.85 1749 3.89 7.35 Wir Two 1010 1400 Two None 150 lt 19 ind	8.34 PEED WI 6742 61.25 1534 3.41 7.35 th Ballasi 18.4-34; 8 1b each 1b each 7.50-15; 6 b each ches	164 AST 174 170 168 171 170 170 170 LLAST 172 ITH B 6792 52.52 1308 2.90 7.62 t	55 57 56 55 60 62 67 67 ALLA Wi Two None None None None None None None None None None None None 201/2	75 73 72 67 70 70 71 AST — 713 3.31 090 2.42 7.49 iithout	28.780 28.870 28.880 28.830 28.820 29.020 4th Gear 6538 33.78 871 1.94 7.21 t Ballast 34; 8; 16
77. 81. 84. 84. 81. 77. Pour Horar Mild R	84 66 10 23 18 51 32 RVI nds sep- nksles p of RES ear Ba	10658 8243 6420 5062 3806 2827 6272 NG D pull ower naft speer hor driver tires llast t tires llast	2.74 3.71 4.91 6.24 8.29 10.81 M. 4.62 RAWBA	2355 MAXIM 2269 2201 2199 2200 2198 AXIMU 2247 AR PUI 64: 84. m 220 4.: 6 nd WEI —No, si —Liquic Cast i —No, si —Liquic Cast i	3.04 4UM PC 14.52 9.50 6.80 4.81 3.48 2.66 M POW 14.85 L AND 20 66.10 77. 01 19 91 4. 80 7. GHT ze, ply & dron ze, ply & dron	5.55 DWF 2nd 3rd 4th 5th 6th 7th VER 4th TRA 53 96 775 39 21 psi	Gear WITHO 69.85 1749 3.89 7.35 Wir Two 1010 1400 Two None 150 lb	8.34 TH BALL OUT BA 6742 61.25 1534 3.41 7.35 th Ballass 18.4-34; 8 1b each 1b each 7.50-15; 6 1b each ches	164 AST 174 170 168 171 170 170 170 LLAST 172 ITH B 6792 52.52 1308 2.90 7.62 t s; 20	55 57 56 55 60 60 62 67 67 ALLA Two None None None None None None None Non	75 73 72 67 70 71 71 33.31 090 22.42 7.50-12 22 23 24 25 26 27 27 27 27 28 29 20 20 20 20 20 20 20 20 20 20 20 20 20	28.780 28.870 28.880 28.830 28.820 29.020 4th Gear 6538 33.78 871 1.94 7.21 t Ballast 34; 8; 16

Department of Agricultural Engineering

Dates of Test: MAY 17 to MAY 24, 1966

Manufacturer: JOHN DEERE WATERLOO TRACTOR WORKS, WATERLOO, IOWA

FUEL, OIL and TIME Fuel regular gasoline Octane No Motor 84.5 Research 92.6 (rating taken from oil company's typical inspection data) Specific gravity converted to 60°/60° 0.7325 Weight per gallon 6.098 lb Oil SAE 20-20W API service classification MS, DG To motor 1.744 gal Drained from motor 1.531 gal Transmission and final-drive lubricant John Deere Special 303 oil Total time engine was operated 42 hours.

ENGINE Make John Deere gasoline Type 6 cylinder vertical Serial No 21E136714 Crankshaft mounted lengthwise Rated rpm 2200 Bore and stroke 4½" x 4" Compression ratio 7.5 to 1 Displacement 340 cu in Carburetor size 1¾" Ignition system battery Cranking system 12 volt electric Lubrication pressure Air cleaner dry type with replaceable paper element Oil filter full flow replaceable paper element Oil cooler radiator for transmission and hydraulic oil Fuel filter screens in carburetor and fuel pump Muffler was used Cooling medium temperature control two thermostats.

CHASSIS Type standard Serial No SNT211-R135208R Tread width rear 60" to 91" front 50.75" to 79.88" Wheel base 100.25" Center of gravity (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 26.0" Vertical distance above roadway 38.0" Horizontal distance from center of rear wheel tread 0" to the right/left Hydraulic control system direct engine drive Transmission selective gear fixed ratio with partial range syncro-mesh Advertised speeds mph first 1.9 second 3.0 third 4.0 fourth 5.1 fifth 6.3 sixth 8.3 seventh 10.8 eighth 17.6 reverse 3.9 and 6.2 Clutch single plate dry disc operated by foot pedal Brakes wet disc hydraulically power actuated operated by two foot pedals which can be locked together Steering hydraulic with power assist Turning radius (on concrete surface with brake applied) right 128" left 128" (on concrete surface without brake) right 150" left 150" Turning space diameter (on concrete surface with brake applied) right 283" left 283" (on concrete surface without brake) right 335" left 335" Belt pulley 966 rpm at 1900 engine rpm diam 12" face 8.5" Belt speed 3034 fpm Power take-off 1003 rpm at 1900 engine rpm.

REPAIRS and ADJUSTMENTS No repairs or adjustments.

REMARKS All test results were determined from observed data obtained in accordance with the SAE and ASAE test code.

First gear was not run as it was necessary to limit the pull in second gear to avoid excessive wheel slippage. Eighth gear was not run because it exceeded 15 mph.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 939.

L. F. LARSEN

Engineer-in-Charge

G. W. STEINBRUEGGE, Chairman J. J. SULEK D. E. LANE Board of Tractor Test Engineers

EXPLANATION OF TEST REPORT

GENERAL CONDITIONS

Each tractor is a production model equipped for common usage. Power consuming accessories can be disconnected only when it is convenient for the operator to do so in practice. Additional weight can be added as ballast if the manufacturer regularly supplies it for sale. The static tire loads and the inflation pressures must conform to recommendations in the Tire Standards published by the Society of Automotive Engineers.

PREPARATION FOR PERFORMANCE RUNS

The engine crankcase is drained and refilled with a measured amount of new oil conforming to specifications in the operators manual. The fuel used and the maintenance operations must also conform to the published information delivered with the tractor. The tractor is then limbered-up for 12 hours on drawbar work in accordance with the manufacturer's published recommendations. The manufacturer's representative is present to make appropriate decisions regarding mechanical adjustments.

The tractor is equipped with approximately the amount of added ballast that is used during maximum drawbar tests. The tire tread-bar height must be at least 65% of new tread height prior to the maximum power run.

BELT OR POWER TAKE-OFF PERFORMANCE

Maximum Power and Fuel Consumption. The manufacturer's representative makes carburetor, fuel pump, ignition and governor control settings which remain unchanged throughout all subsequent runs. The governor and the manually operated governor control lever is set to provide the high-idle speed specified by the manufacturer for maximum power. Maximum power is measured by connecting the belt pulley or the power take-off to a dynamometer. The dynamometer load is then gradually increased until the engine is operating at the rated speed specified by the manufacturer for maximum power. The corresponding fuel consumption is measured.

Varying Power and Fuel Consumption. Six different horsepower levels are used to show corresponding fuel consumption rates and how the governor causes the engine to react to the following changes in dynamometer load: 85% of the dynamometer torque at maximum power; minimum dynamometer torque, ½ of the 85% torque; maximum power, ¼ and ¾ of the 85% torque. Since a tractor is generally subjected to varying loads the average of the results in this test serve well for predicting the fuel consumption of a tractor in general usage.

DRAWBAR PERFORMANCE

All engine adjustments are the same as those used in the belt or power take-off tests. If the manufacturer specifies a different rated crankshaft speed for drawbar operations, then the position of the manually operated governor control is changed to provide the high-idle speed specified by the manufacturer in the operating instructions.

Varying Power and Fuel Consumption With Ballast. The varying power runs are made to show the effect of speed-control devices (engine, governor, automatic trans-

mission, etc.) on horsepower, speed and fuel consumption. These runs are made around the entire test course which has two 180 degree turns with a minimum radius of 50 feet. The drawbar pull is set at 3 different levels as follows: (1) as near to the pull at maximum power as possible and still have the tractor maintain the travel speed at maximum horsepower on the straight sections of the test course; (2) 75% of the pull at maximum power; and (3) 50% of the pull at maximum power. Prior to 1958, fuel consumption data (10 hour test) were shown only for the pull obtained at maximum power for tractors having torque converters and at 75% of the pull obtained at maximum power for gear-type tractors.

Maximum Power with Ballast. Maximum power is measured on straight level sections of the test course. Data are shown for not more than 12 different gears or travel speeds. Some gears or travel speeds may be omitted because of high slippage of the traction members or because the travel speed may exceed the safe-limit for the test course. The maximum safe speed for the Nebraska Test Course has been set at 15 miles per hour. The slippage limits have been set at 15% and 7% for pneumatic tires and steel tracks or lugs, respectively. Higher slippage gives widely varying results.

Maximum Power Without Ballast. All added ballast is removed from the tractor. The maximum drawbar power of the tractor is determined by the same procedure used for getting maximum power with ballast. The gear (or travel speed) is the same as that used in the 10-hour test.

Varying Power and Travel Speed with Ballast. Travel speeds corresponding to drawbar pulls beyond the maximum power range are obtained to show the "lugging ability" of the tractor. The run starts with the pull at maximum power; then additional drawbar pull is applied to cause decreasing speeds. The run is ended by one of three conditions: (1) maximum pull is obtained, (2) the maximum slippage limit is reached, or (3) some other operating limit is reached.

For additional information about the Nebraska Tractor Tests write to the Department of Agricultural Engineering, University of Nebraska, Lincoln, Nebraska.



John Deere 4020 Syncro-Range Gasoline