

TYTAN 324/334

ADDITIONAL OPERATION

AND

MAINTENANCE MANUAL

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1.TY-184/204/224/254 TRACTOR

MAIN TECHNICAL SPECIFICATIONS

MODEL OF TRACTOR		TY-184	TY-204	TY-224	TY-254	
TYPE OF TRACTOR		4×4 WHEELED				
Engine	Model	TY-290X	TY-295X	TY-295X	TY-295X	
	Type	Vertical, 2 cylinder, 4-stroke, water-cooled				
	Rated power (KW)	13.24	14.72	16.1	18.4	
	Rated speed (r/min.)	2200	2300	2300	2500	
	Cylinder bore×stroke (mm)	90×100	95×100	95×100	95×100	
	Fuel consumption (g/KW.h)	< 259.76	< 263.8	< 263.8	< 263.8	
	Engine oil consumption (g/KW.h)	< 2.312	< 2.72	< 2.72	< 2.72	
	Net mass (KG)	< 190	< 195	< 195	< 195	
Overall parameters	Overall dimensions (L×W×H) (mm)		2710×1222×1338		2760×1514×1365	
	Wheel tread (mm)	Front wheel	950		1000	
		Rear wheel	900--950, 970--1020		970--1300	
	Axle base (mm)		1512		1520	
	Mini. Ground clearance (mm)		266			
	Constructive weight (kg)		1060	1100	1100	1130
	Ballast (kg)		F 60, R140	F 60, R200	F 60, R200	F 60, R300
	Rated tractive force (N)		5700	6000	6500	7200
	PTO shaft power (HP)		>12	>12.8	>14	>16
	Turning circle radius (m)	one-side braking	2.6±0.2			
No braking		3.0±0.2				
Nominal speed (km/h)	Forward	1st gear	1.84	1.919	2.026	2.114
		2nd gear	3.628	3.793	4.003	4.177
		3ed gear	6.052	6.327	6.677	6.967
		4th gear	8.488	8.874	9.364	9.772
		5th gear	16.773	17.54	18.505	19.309
		6th gear	27.963	29.234	30.85	32.192
	Reverse	1st gear	1.456	1.522	1.606	1.676
		2nd gear	6.78	7.083	7.427	7.75

(To be continued)

(Continue)

Power train	Clutch		Single plate, dry, constant contact
	Gearbox		(3+1)×2 compound
	Main drive		Curved-tooth bevel gear
	Differential		Closed, 2 planetary gear
	Differential lock		Jaw type
	Final drive		Built-in, single straight spur gear
Running control system	Frame		Rigid connection, no frame
	Front axle		Inverted-U steel pipe, centralize arm
	Oscillating angle of front axle (degree)		11°
	Toe-in (mm)		4--8
	Tyre specification	Front wheel	6.00--12
		Rear wheel	8.30-24
	Tyre pressure (Kpa)	Front wheel	120--150
		Rear wheel	Field
			Transportat
	Steering trapezoid		Front-located single pull rod
Steering gear		Crank stylus pin type	
Brake		Block type	
Working device	Hydraulic hitching system	Hydraulic system type	Semiremote
		Depth control manner	Height and simple position control
		Hydraulic pump type	CBN-E306L-X lefthand gear pump,
		Theoretical displacement	6(mL/r)
		Cylinder din. ×stroke (mm)	63×100
		Distributor	Hand-operated, 3-position 4-way slide valve
		Adjusting pressure of relief valve	14.5 (MPa)
		Adjusting pressure of cylinder overload valve	18 (Mpa)
		MAX. Hoisting force (N)	3500 (At center of gravity of frame)
	Hitching mechanism type	Rear three-point hitch, 0(GB1593.4-87)	
	Hitch point's height from ground (mm)		470
PTO shaft (Rear)		Dependent, 540r/min, model 135, clockwise along the forward direction	

2. Running-in Regulations of Tractor

Before using, a new tractor must undergo a required running-in according to MODEL TY-180 WHEELED TRACTOR OPERATION AND MAINTENANCE MANUAL.

NOTE: Running-in the fifth gear and the six gears, forbid jointing the front driving axle. Only running-in the first to fourth gear, joint the front driving axle.

3. Use of Tractor

3.1 The front driving axle

3.1.1 When the tractor is working with heavy burden on damp spongy soil, may add energy by combining with the front driving axle. The method is to pull the operating lever of transfer case to the rear position, make the transfer case to the gear putting more energy, then, partial energy will be transferred to front driving axle through the transfer case. But if tractor is equal to the task, don't combine with the front driving axle.

3.1.2 When the tractor is doing general transport, forbid jointing the front driving axle, or it will make the tires early worn. Only in wet day, the road is slippery or the tractor goes up a slope or the rear wheels slide, just joint the front driving axle. After the tractor passes the hard area, should pull the operating lever of transfer case to the front to neutral gear.

3.1.3 Doing transport, the front wheels wear faster than the rear, and the two front wheels wear unequal. According to this condition, may exchange the left tire and the right tire, also may assemble the two tires in opposite direction.

4. Technical Maintenance of Tractor

Users must frequently check the technical conditions of the tractor according to MODEL TY-180 WHEELED TRACTOR OPERATION AND MAINTENANCE MANUAL and following additional stipulations, and strictly do technical maintenances.

4.1.1 Daily technical Maintenance

a. Check the tire inflation pressure of the tires. When doing transports, front tires $-120-150\text{kpa}$, rear tires $-80-120\text{kpa}$; when doing farm works, front tires $-80-120\text{kpa}$, replenish if necessary.

b. When doing paddy field works, inject the grease for the lubricating points (8 points in all) of the front driving axles. (If do transports or upland works, might inject the grease every two days.)

4.1.2 Class 2 technical maintenance (250 hours)

Check height of oil leveling in front drive axle, replenish if necessary.

4.1.3 Class 4 technical maintenance (1000 hours)

Replace the lubricating oil in front driving axle housing.

5. Main Adjustments of Tractor

5.1 Adjustments of front drive axle

5.1.1 Retighten the bearing of the bevel gear. In using, because the bearing worn, the bevel gear will have end play, if the play is greater than 0.1 mm (measured with clock gauge), it should be adjusted. In adjusting, dismount the driving bevel gear, take away some adjusting shims (Fif.1), tighten the nut 2 with the torque of $180-240\text{nm}$, make the bearing 3 and 4 retightening torque is $0.3-0.5\text{ nm}$, then lock the nut 2.

5.1.2 Adjustment Contacting Imprint and Tooth Backlash of Bevel Gear

By increasing and reducing the adjusting shim 5 (Fig.1) and 6 (Fig.2), get suitable contacting imprint and tooth backlash $-0.15-0.35$ mm. The method of adjustment see MODEL TY-180 WHEELED TRACTOR OPERATION AND MAINTENANCE MANUAL, adjustment of contacting imprint and tooth backlash of rear axle.

5.1.3 Adjustment of the class 2 straight bevel gear of the end driving by increasing and reducing the thickness of the adjusting shim 7,8,9 (Fig.3) to get suitable tooth surface contacting imprint and tooth backlash $-0.25-0.45$ mm.

5.1.4 Adjustment of Toe-in

In use of tractor, toe-in is changing because of deformation and wear of the steering mechanism and front axle parts. The right valve of the toe-in is $4-8$ mm.

6. Tractor's Troubles and Remedies

APPEARANCE	TROUBLE CAUSE	REMEDIES
1. Front tire badly worn	<ol style="list-style-type: none"> 1. Front rim seriously out of shape. 2. Toe-in is not correctly adjusted. 3. During transporting, front tire pressure too low over a long time. 4. Front driving not disengaged. 	<ol style="list-style-type: none"> 1. Rectify 2. Readjust 3. Replenish 4. Disengage the front driving axle
2. Front wheels oscillate	<ol style="list-style-type: none"> 1. Steering knuckle bush badly worn. 2. The clearance between pendulum shaft and support too big. 3. Front rim seriously out of shape. 4. Steering ball seriously worn. 5. Steering meshing clearance too big. 6. Wrongly adjusted toe-in. 	<ol style="list-style-type: none"> 1. Replace bush 2. Adjust to 0.1-0.5 mm 3. Rectify 4. Replace 5. Readjust 6. Readjust
3. Front axle noise high	<ol style="list-style-type: none"> 1. Contacting imprint of main driving gear not suitable. 2. Clearance of the main drive bearing too big or the bearing destroyed. 3. Differential shaft worn or jammed. 4. The end driving gear's contacting imprint not suitable. 5. Planet gear or washer worn. 	<ol style="list-style-type: none"> 1. Readjust 2. Readjust or replace 3. Replace 4. Readjust 5. Replace

7. APPENDIXES

LIST OF BEARING, OIL SEAL AND O-RING IN FRONT DRIVING AXLE AND TRANSFER CASE

NO.	SPECIFICATIONS	STANDARD NO.	QTY.	POSITION
1	BEARING 207	GB276-82	2	FRONT AXLE
2	BEARING 208	GB276-82	4	FRONT AXLE
3	BEARING 46206	GB292-83	2	FRONT AXLE
4	BEARING 46208	GB292-83	2	FRONT AXLE
5	BEARING 46110	GB292-83	2	FRONT AXLE
6	BEARING 7206E	GB297-84	1	FRONT AXLE
7	BEARING 2007106	GB297-84	1	FRONT AXLE
8	BEARING 8106	GB301-84	2	FRONT AXLE
9	BEARING 304	GB276-82	1	TRANSFER CASE
10	BEARING 305	GB276-82	1	TRANSFER CASE
11	BEARING K202417	GB5846-86	2	TRANSFER CASE
12	BEARING K252917	GB5846-86	2	TRANSFER CASE
13	OIL SEAL SG25×45×8	JB2600-80	1	TRANSFER CASE
14	OIL SEAL SG40×60×10	JB2600-80	2	FRONT AXLE
15	OIL SEAL SD45×70×10	JB2600-80	2	FRONT AXLE
16	OIL SEAL SD50×70×12	JB2600-80	2	FRONT AXLE
17	OIL SEAL W50×70×12	JB2600-80	1	FRONT AXLE
18	O-RING 28×2.65	GB3452.1-82	1	FRONT AXLE
19	O-RING 34.5×3.55	GB3452.1-82	2	FRONT AXLE
20	O-RING 40×3.55	GB3452.1-82	1	FRONT AXLE
21	O-RING 45×2.65	GB3452.1-82	2	FRONT AXLE
				TRANSFER CASE
22	O-RING 54.5×2.65	GB3452.1-82	1	FRONT AXLE
23	O-RING 67×3.55	GB3452.1-82	2	FRONT AXLE
24	O-RING 75×2.65	GB3452.1-82	5	FRONT AXLE
25	O-RING 145×3.55	GB3452.1-82	2	FRONT AXLE
26	O-RING 170×3.55	GB3452.1-82	2	FRONT AXLE
27	O-RING 12.5×1.8	GB3452.1-82	1	TRANSFER CASE
28	O-RING 30×2.65	GB3452.1-82	2	TRANSFER CASE
29	O-RING 125×3.55	GB3452.1-82	1	TRANSFER CASE

.7.

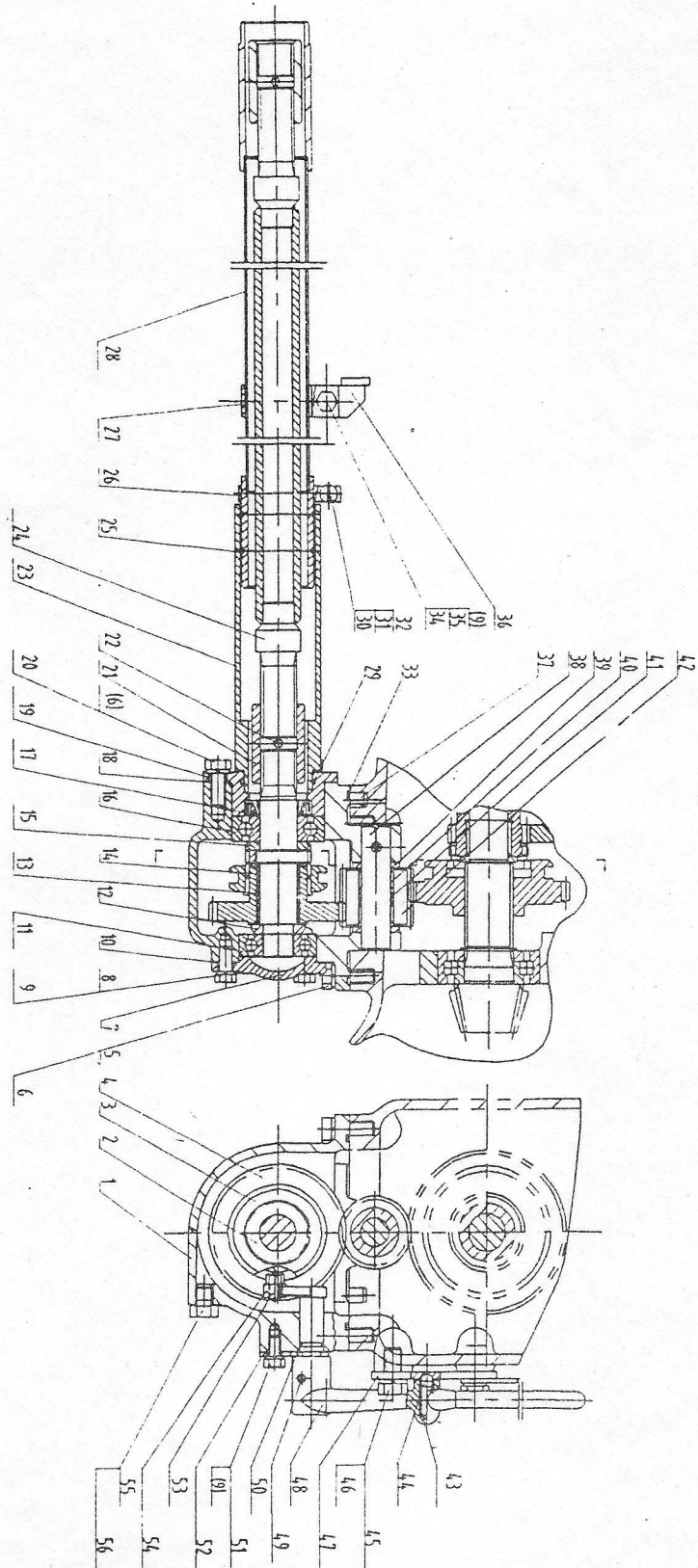
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NO.	CATALOGUE NO.	PART NAME	QUAN- TITY
	184. 31. 001	Front driving axle assembly	
1	184. 31.124-1	Front support plate	1
2	184. 31. 016	Breathing plug	1
3	184. 31. 017	Right steering knuckle	1
4	GB3452. 1-82	O ring 54.5 × 2.65	1
5	184. 31135-1	Front pendulum shaft	1
6	GB5783-86	Bolt M12 × 25	1
7	184. 31. 136-1	Washer	4
8	184. 31135-1	O ring 40 × 3. 55	1
10	184. 31. 137	Location bush	1
11	184. 31. 184	Front support frame	6
12	GB1152-89	Grease cup	1
13	GB859-87	Washer 14	8
14	GB5782-86	Bolt M14 × 50	22
15	184. 31. 123	Front driving house	6
16	150. 37. 162	Drainage bolt	1
17	150. 37. 163	Drainage shim	1
18	184. 31. 167	Front half shaft gear	1
19	184. 31. 167	Front half shaft gear	2
20	184. 31. 165	Front driven bevel gear	2
21	184.31.160	Front drive differential housing	1
22	184.31.163	Front planet gear shaft	1
23	184.31.161	Front planet gear	1
24	184.31.162	Front planet gear washer	2
25	184.31.164	Location pin	2
26	184.31.166	Stop slice	1
27	GB854-88	Washer 10	1
28	GB5786-86	Bolt M10 × 1. 25 × 20	7
29	GB292-83	Bearing 40110	8
30	GB3452.1-82	O ring 145 × 3. 55	2
31	184.31.119	Driving shaft	2
32	GB276-82	Bearing 207	2
33	GB895.1-82	Hole circlip	2

NO.	CATALOGUE NO.	PART NAME	QUAN- TITY
34	184.31.117	Middle drive gear	2
35	GB859-87	Washer 10	74
36	GB5783-86	Bolt M10×30	70
37	184.31.155	Left steering arm	1
38	184.31.156	Bush	2
39	GB3452.1-82	O ring 34.5×3.55	2
40	GB5783-86	Bolt M8×20	24
41	GB859-87	Washer 8	28
42	GB276-82	Bearing 208	4
43	184.31.114	Middle driven gear	2
44	184.31.014	Dip stick	1
45	184.31.120	Half shaft sleeve	2
46	GB3452.1-82	O ring 75×2.65	4
47	184.31.118	Adjusting washer	per needed
48	184.31.115	Vertical shaft	2
49	GB895.2-86	Cirdlip30	2
50	184.31.103	End deceleration driving	2
51	184.31.113	Vertical shaft sleeve	2
52	184.31.116	Bearing cover	2
53	184.31.102	Adjusting washer	per needed
54	JB2600-80	Oil sealing W50×72×7	2
55	JB2600-80	Oil sealing W50×70×12	2
56	184.31.153	Bush	2
57	GB301-84	Bearing 8106	2
58	184.31.110	Adjusting washer	per needed
59	184.31.154	Front final drive housing	2
60	184.31.101	Bearing cover	2
61	GB3452.1-82	O ring 110×3.55	2
62	GB292-83	Bearing 46206	2
63	184.31.104	End deceleration drive gear	2
64	184.31.106	Circlip	4
65	184.31.107	Circlip bush	2
66	GB292-83	Bearing46206	2

NO.	CATALOGUE NO.	PART NAME	QUAN-TITY
67	184.31.109	Adjusting washer	per needed
68	JB2600080	Oil sealing SD45×70×10	2
69	184.31.108	Driving shaft cover	2
70	184.31.105	Side cover oil seal	2
71	184.31.157	Mud proof ring	2
72	184.31.150	Front driving shaft	2
73	GB5786-86	Bolt M14×1.5×30	10
74	184.31.127	Left steering arm	1
75	184.31.018	Transversal pull rod	1
76	184.31.022	Longitudinal pull rod	1
77	GB3452.1-82	O ring 45×2.65	1
78	GB5783-86	Bolt M8×16	4
79	184.31.131	Dust proof pipe seat	1
80	GB3452.1-82	O ring 67×3.55	2
81	184.31.176	Bush	1
82	184.31.175	Rear support	1
83	184.31.132	Washer	1
84	GB5783-86	Bolt M10×25	4
85	184.31.180	Driving bevel gear bearing	1
86	184.31.134	Adjusting washer	per needed
87	184.31.178	Driving bevel gear shaft	1
88	GB297-84	Bearing 7206E	1
89	184.31.179	Partition bush	1
90	184.31.181	Adjusting washer	per needed
91	GB297-84	Bearing 2007106	1
92	JB2600-80	Oil seal SG40×60×10	1
93	GB3452.1-82	O ring 28 ×2.65	1
94	184.31.182	Oil seal seat	1
95	GB810-88	Round nut M27×1.5	1
96	GB858-88	Stop washer	1

POWER DISTRIBUTION BOX ASSY.(184.42.001)



APPENDES (2)

No.	Catalogue No.	Part name	Quantity
	184.42.001	POWER DISTRIBUTION BOX ASSY.	
1	184.42.101	TRANSFER CASE HOUSING	1
2	184.42.102	OUT-PUT SHAFT	1
3	184.42.103		1
4	184.42.104	TRANSFER CASE DRIVEN GEAR	1
5	GB5783-1986	BOLT M8x20	4
6	GB93-87	WASHER 10	7
7	184.42.105	REAR BEARING COVER	1
8	GB5783-1986	BOLT M8x20	3
9	GB93-87	WASHER 8	5
10	184.42.106	PAPER GASKET	1
11	GB276-1982	ROLLING BEARING 304	1
12	184.42.107	REAR THRUST RING	1
13	184.42.108	ROLLING BEARING 305	1
14	GB5846-1986	ROLLING BEARING K252917	2
15	184.42.109	FRONT THRUST RING	1
16	GB276-1982	ROLLING BEARING 305	1
17	JB2600-1982	OIL SEAL SG25x45x8	1
18	184.42.110	PAPER GASKET	1
19	184.42.111	FRONT BEARING COVER	1
20	GB5783-1986	BOLT M10x25	3
21	184.42.113	SPLINE SLEEVE	2
22	GB879-1986	PIN 6x35	3
23	184.42.129-1	PROTECTING TUBE	1
24	184.42.013	DRIVE SHAFT	1
25	GB3452.1-1982	O-RING 43.7x2.65	2
26	184.42.135	SLEEVE	1
27	184.42.131-1	SLEEVE	1
28	184.42.011-1	GUARD	1
29	GB3452.1-1982	O-RING 45x2.65	1
30	GB67-85	SCREW M6x25	1
31	GB93-87	WASHER 6	1
32	GB6170-1986	NUT M6	1
33	GB3452.1-1982	O-RING 125x3.55	1
34	GB57833-86	BOLT M8x25	1
35	GB6170-1986	NUT M8	1

No.	Catalogue No.	Part name	Quantity
36	184.42.012-1	SUPPORTER	1
37	GB119-1986	PIN A10x22	2
38	184.42.116	MIDDEL SHAFT	1
39	184.42.115	THRUST RING	2
40	GB5846-1986	ROLLING GEAR K202417	2
41	184.42.117	BEARING SPACER	1
42	184.42.118	MIDDEL GEAR	1
43	150.37.148	SPRING	1
44	GB308-1984	STEEL BALL	1
45	GB5783-1986	BOLT M12x20	1
46	GB93-1987	WASHER 12	1
47	184.42.119	CHECK PLATE	1
48	184.42.104	OPERATION LEVER	1
49	GB879-1986	PIN 6x25	1
50	GB3452.1-1982	O-RING 12.5x1.8	1
51	GB5783-1986	BOLT M8x15	1
52	184.42.120	FORK SHAFT PLATE	1
53	184.42.121	SHIFT LUMP	1
54	184.42.112	FORK SHAFT	1
55	JB398-1986	BOLT M12x1.5	1
56	184.42.123	WASHER	1