

XZJ5372JQZ50K

XZJ5393JQZ50K

XZJ5394JQZ50K

XZJ5407JQZ50K

XZJ5408JQZ50K

(**QY50K**)

TRUCK CRANE

OPERATION AND MAINTENANCE MANUAL



XUZHOU HEAVY MACHINERY CO. , LTD.

XUZHOU CONSTRUCTION MACHINERY GROUP CO. , LTD. CHINA

PREFACE

Thank you for selecting QY50K Truck Crane designed and made by Xuzhou Heavy Machinery Co., Ltd. XCMG.

This manual describes the correct operation, inspection and adjustment for QY50K Truck Crane. In order to give full rein to the crane high performance, please read, understand and use the operating instructions in this manual to ensure safety and high efficiency work for a long time. Moreover, this manual contains the information about key parts and system functions for reference of optional parts.

Only the trained and qualified personnel can work on this crane. Pay attention to periodic inspections of crane safety devices and don't use reluctantly the devices with any defects and abnormalities. What you should always keep in mind is ***“SAFETY IS THE FIRST PRIORITY”***.

This manual does not cover the operation and maintenance of the carrier, which are given in the operation manual for the carrier.

The Vehicle Identification Number (VIN) is marked on the nameplate out side operator's cab.

The product execution standard: Q/320301JAF35—2004.

We reserve the right to modify the design without notice for improvement.

XUZHOU HEAVY MACHINERY WORKS, XCMG

Add: No.165 Tongshan Road, Xuzhou, Jiangsu Province, P.R. China

Tel: ++86-(0)516-87888579

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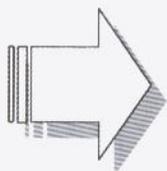
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1. APPLICATION AND FEATURES

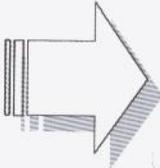
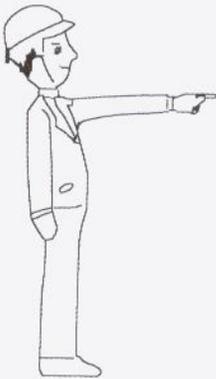




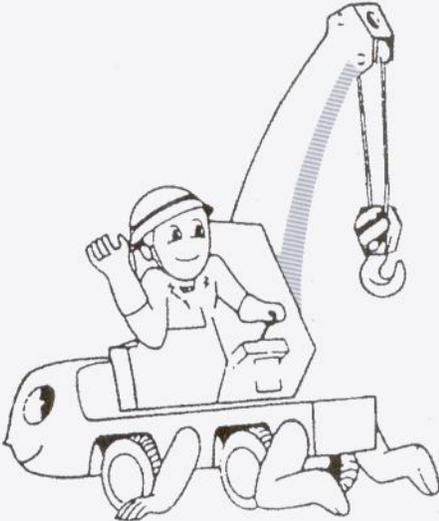
QY50K is suitable for lifting job and installation work in factories, mines, harbors, warehouse, seaport and construction sites, etc.

The features of the machine:

1. Fully hydraulic drive with infinitive speed variation in respective mechanisms, smooth of work and easy and for operation.
2. Same type of main and auxiliary winches, winch drum with integrated planetary reduction, supply oil by single pump or double pumps with variable displacement motor to get low speed for a heavy load and high speed for a light load, therefore it has high working efficiency.
3. Controllable free-swing mechanism for swing operation. The swing system uses planetary gear reducer and constant closed brake to drive internal tooth-engaged single-row slewing ring by constant-displacement motor. A buffer valve is fitted in the hydraulic system for smooth swing and stable fine motion control.
4. Complete safety devices such as load moment indicator (LMI), hoist limit switch, outrigger lock-pin, level gauge, and with illuminators and lamps for night operation.
5. Ergonomically designed cab, spacious and bright, comfortable and safe, equipped with adjustable seat, and fan and heater fitted for option.
6. Accessories available for customer selection such as jib, auxiliary winch, single top (boom tip sheave), and heater in operator's cab (optional).
7. Lower center of gravity, good stability and maneuverability, high travel speed, suitable for rapid work-site transfer.



**2. TECHNICAL PERFORMANCE
AND SPECIFICATIONS**





2.1 Crane Outline and Specifications

- (1). QY50K Truck Crane Outline (Fig. 2-1 for XZJ5372JQZ50K and XZJ5393JQZ50K);
(Fig. 2-1a for XZJ5394JQZ50K);
(Fig. 2-1b for XZJ5407JQZ50K and XZJ5408JQZ50K).
- (2). Technical Specifications (Table 2-1, Table 2-2)
- (3). Total Rated Lifting Load For Boom (Table 2-3)
- (4). Total Rated Lifting Load For Jib (Table 2-4)
- (5). Total Rated Lifting Load For Single Top (Table 2-5)
- (6). Crane Lifting Height Curves (Fig.2-2)
- (7). Crane Working Area (Fig.2-3)

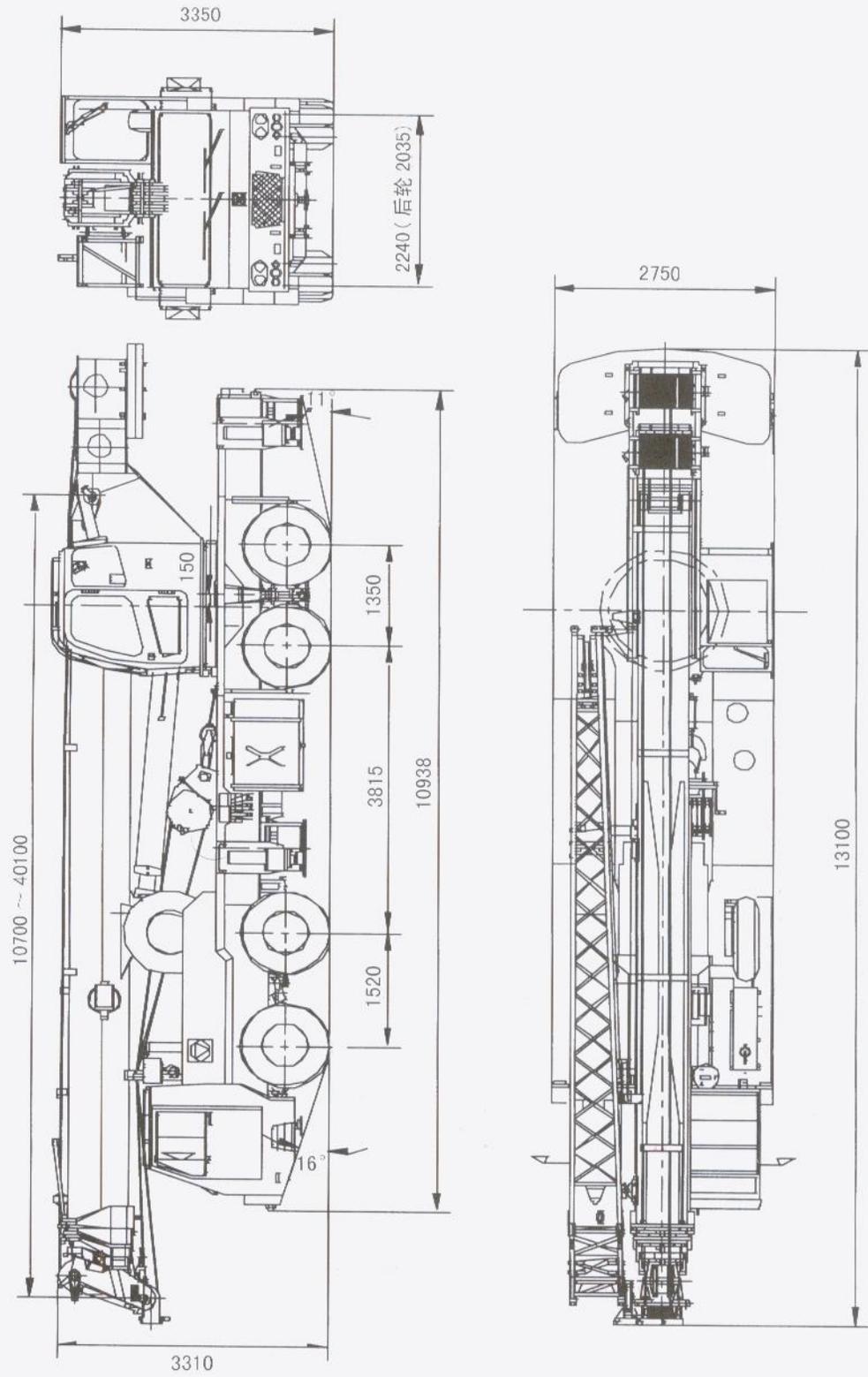


Fig. 2-1 QY50K Truck Crane Outline

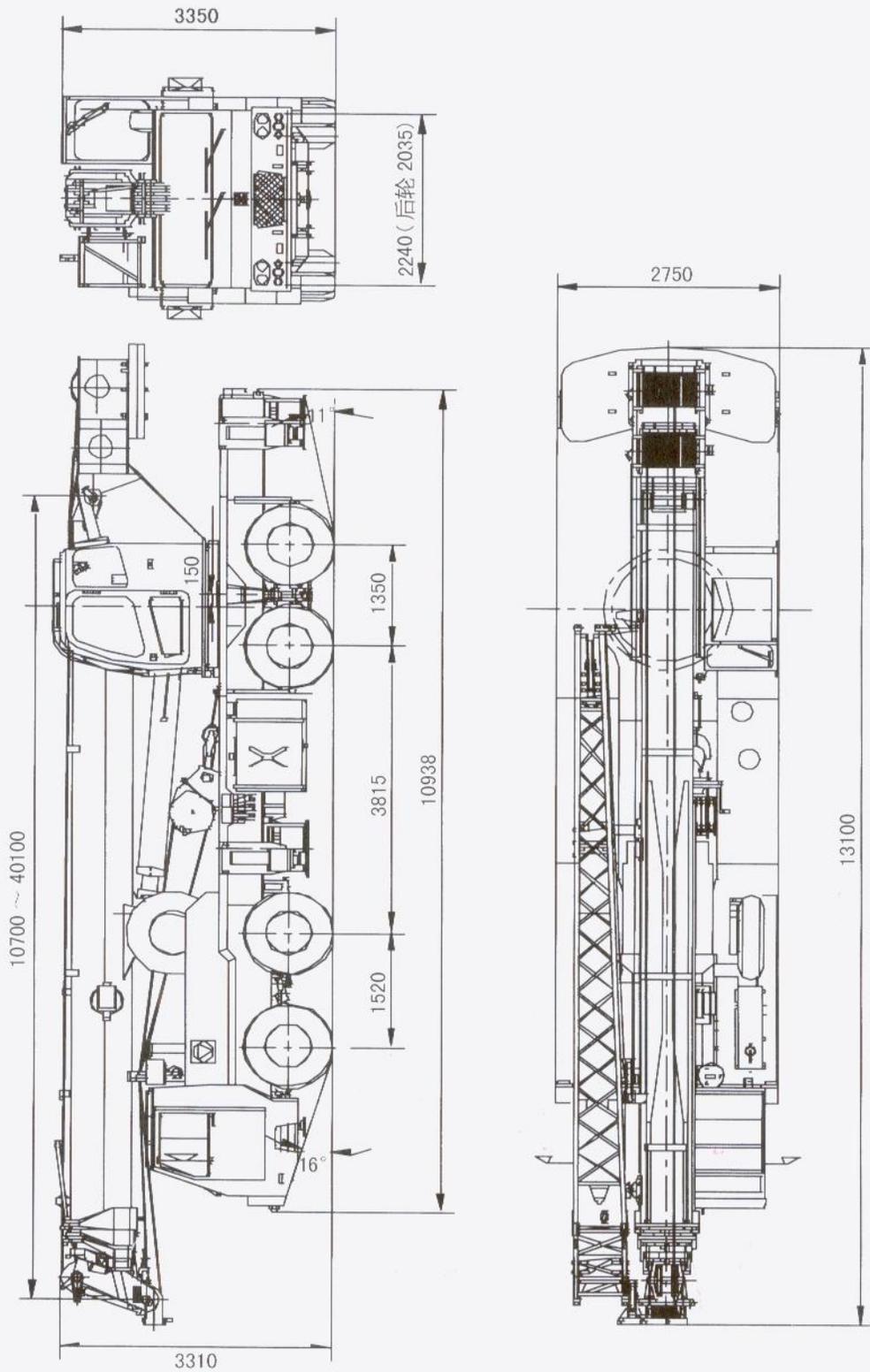


Fig. 2-1a QY50K Truck Crane Outline (for XZJ5394JQZ50K)

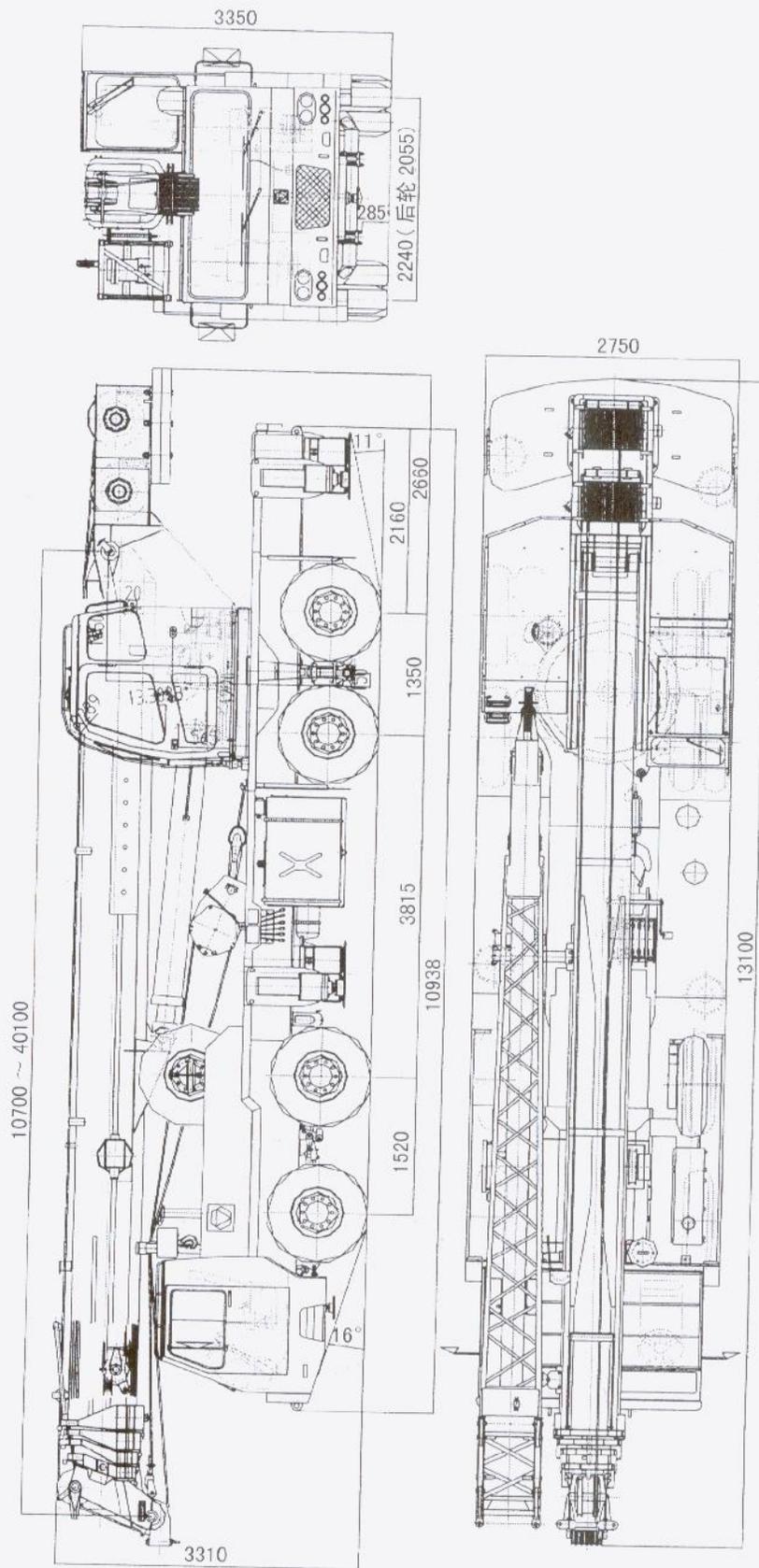


Fig. 2-1b QY50K Truck Crane Outline (for XZJ5407JQZ50K, XZJ5408JQZ50K)



(2). Technical Specifications

Main Technical Data in Travel State:

Table 2—1

Category	Item		Unit	Parameter		
				XZJ5372JQZ50K	XZJ5393JQZ50K	XZJ5394JQZ50K
				WD615.50	WD615.46	ISLE+350
Outline	Overall length		mm	13100	13100	13100
	Overall width		mm	2750	2750	2750
	Overall height		mm	3350	3350	3450
	Wheel Space	1st, 2nd Axle	mm	1520	1520	1520
		2nd, 3rd Axle	mm	3815	3815	3815
		3rd, 4th Axle	mm	1350	1350	1350
	Track	Front wheel	mm	2240	2240	2240
Rear wheel		mm	2055	2055	2055	
Weight	Dead weight in travel state		kg	36960	38580	39400
	Axle load	1st, 2nd Axle	kg	12040	12950	13420
		3rd, 4th Axle	kg	24920	25630	25980
Power	Engine rated output		kW/(r/min)	206/2200	266/2200	257/2100
	Engine rated torque		N.m(r/min)	1100/1400	1460/1400	1550/1400
	Engine rated speed		r/min.	2200	2200	2200
Travel	Travel Speed	Max. travel speed	km/h	66	78	78
		Min. travel speed	km/h	4.3	4.3	4.3
	Turning diameter	Min. turning diameter	m	24	24	24
		Min. turning diameter at boom tip	m	26.8	26.8	26.8
	Min. ground clearance		mm	285	285	285
	Approach angle		°	16	16	16
	Departure angle		°	11	11	11
	Braking distance (full load at 30 km/h)		m	≤10	≤10	≤10
	Max. grade-ability		%	35	46	46



(2). Technical Specifications

Main Technical Data in Travel State:

Table 2-1

Category	Item		Unit	Parameter			
				XZJ5407JQZ50K	XZJ5408JQZ50K		
				WD615.46	WD615.334	QSL325	
Outline	Overall length		mm	13050	13050	13100	
	Overall width		mm	2800	2800	2750	
	Overall height		mm	3430	3430	3450	
	Wheel Space	1st, 2nd Axle		mm	1520	1520	1520
		2nd, 3rd Axle		mm	3815	3815	3815
		3rd, 4th Axle		mm	1350	1350	1350
	Track	Front wheel		mm	2240	2240	2240
Rear wheel		mm	2075	2075	2075		
Weight	Dead weight in travel state		kg	40400	40400	39400	
	Axle load	1st, 2nd Axle		kg	14500	14500	13420
		3rd, 4th Axle		kg	25900	25900	25980
Power	Engine rated output		kW/(r/min)	266/2200	247/2200	242/2100	
	Engine rated torque		N.m(r/min)	1460/1400	1350/1400	1424/1400	
	Engine rated speed		r/min.	2200	2200	2100	
Travel	Travel Speed	Max. travel speed		km/h	75	75	75
		Min. travel speed		km/h	4.3	4.3	4.3
	Turning diameter	Min. turning diameter		m	24	24	24
		Min. turning diameter at boom tip		m	26.8	26.8	26.8
	Min. ground clearance		mm	285	285	285	
	Approach angle		°	16	16	16	
	Departure angle		°	11	11	11	
	Braking distance (full load at 30 km/h)		m	≤10	≤10	≤10	
	Max. grade-ability		%	46	46	46	



Main Technical Data for Lifting Operation

Table 2-2

Category	Item		Unit	Parameter		
Lifting performance	Max. total rated lifting capacity		t	50		
	Min. rated working radius		m	3		
	Turning radius at swing table tail		mm	3482		
	Max. load moment	Base boom		kN · m	1739.5	
		Full-extend boom		kN · m	617.4	
		Full-extend boom + Jib		kN · m	492.8	
	Outrigger span	Longitudinal distance		m	5.65	
		Lateral distance		m	6.6	
	Lifting height	Base boom		m	10.75	
		Full-extend boom		m	40	
		Full-extend boom + Jib		m	55.8	
	Boom length	Base boom		m	10.7	
		Full-extend boom		m	40.1	
Full-extend boom + Jib		m	55.1			
Jib erection angle				0° , 15° , 30°		
Working speed	Elevating time	Boom raising		s	88	
		Boom lowering		s	60	
	Telescoping time	Boom fully extending		s	180	
		Boom fully retracting		s	140	
	Max. swing speed			r/min	2	
	Outrigger extending and retracting time	Outrigger beam	Extending synchronously		s	30
			Retracting synchronously		s	20
		Outrigger jack	Extending synchronously		s	35
			Retracting synchronously		s	30
	Hoisting speed (single line pull at 4 th layer)	Main winch	Full load		m/min	85
			No load		m/min	110
		Auxiliary winch	Full load		m/min	85
			No load		m/min	110
Noise limit	Cab exterior noise level		dB(A)	≤118		
	Noise level at seated position		dB(A)	≤90		

Total Rated Lifting Load for Boom (hexagonal boom profile, outrigger full-extension 6.6m)

Table 2—3

Without 5th outrigger, over side or over rear; with 5th outrigger, 360° swing										
Working radius (m)	Base boom 10.70 m		Mid-extend boom 18.05 m		Mid-extend boom 25.40 m		Mid-extend boom 32.75 m		Full-extend boom 40.10 m	
	Lifting Load (kg)	Lifting Height (m)	Lifting Load (kg)	Lifting Height (m)	Lifting Load (kg)	Lifting Height (m)	Lifting Load (kg)	Lifting Height (m)	Lifting Load (kg)	Lifting Height (m)
3	50000	10.75								
3.5	45300	10.51	30000	18.37						
4	41500	10.23	27000	18.22						
4.5	38300	9.91	25500	18.05	18000	25.70				
5	35500	9.56	24700	17.87	18000	25.57				
5.5	30300	9.16	22800	17.67	16700	25.44				
6	25600	8.71	21000	17.45	15900	25.29	10800	32.90		
7	19200	7.59	18000	16.96	14400	24.96	10000	32.65		
8	15000	6.06	14600	16.39	13100	24.58	9300	32.36	7000	39.97
9	12100	3.39	11800	15.73	12000	24.16	8600	32.04	6500	39.72
10			9500	14.97	10600	23.68	7500	31.69	5700	39.43
12			6800	13.05	7700	22.55	6600	30.87	5000	38.78
14			4800	10.35	5800	21.17	5800	29.88	4500	38.01
16			3400	5.65	4400	19.47	4800	28.72	3900	37.11
18					3300	17.35	3800	27.35	3300	36.07
20					2500	14.62	3000	25.75	2900	34.89
22					1800	10.78	2300	23.87	2600	33.53
24							1800	21.62	2100	31.99
26							1300	18.87	1600	30.24
28									1200	28.22
30									900	25.88
%	II	0	100		100		100		100	
	III	0	0		33		66		100	
	IV	0	0		33		66		100	
	V	0	0		33		66		100	
Parts of line	12		8		5		4		3	
Boom angle	68.95° ~16.36°		76.16° ~17.02°		77.93° ~24.11°		77.99° ~34.21°		77.30° ~39.28°	
hook block weight	515									

The total rated lifting load for single top

Boom length	Base boom 10.70 m	Mid-extend boom 18.05 m	Mid-extend boom 25.40 m	Mid-extend boom 32.75 m	Full-extend boom 40.10 m
Lifting load (kg)	4000	4000 kg load at radius 3.5~14m, the others same as the load for boom length 18.05m at radius 16m in Table 2—3a.	4000 kg load at radius 4.5~16m, the others same as the load for boom length 25.4m at radius 18~22m in Table 2—3a.	4000 kg load at radius 6~16m, the others same as the load for boom length 32.75m at radius 18~26m in Table 2—3a.	4000 kg load at radius 8~18m, the others same as the load for boom length 40.1m at radius 20~30m in Table 2—3a.

**Total Rated Lifting Load for Boom** (hexagonal boom profile, outrigger mid-extension 5.0m)**Table 2—3a**

Without 5th outrigger, over side or over rear; with 5th outrigger, 360° swing						
Working radius (m)	Base boom 10.70 m	Mid-extend boom 18.05 m	Mid-extend boom 25.40 m	Mid-extend boom 32.75 m	Full-extend boom 40.10 m	
	Lifting Load (kg)	Lifting Load (kg)	Lifting Load (kg)	Lifting Load (kg)	Lifting Load (kg)	
3	47000					
3.5	44000	30000				
4	39000	27000				
4.5	32500	25500	18000			
5	25500	24700	18000			
5.5	20800	20200	16700			
6	17200	17000	15900	10800		
7	12400	12000	12800	10000		
8	9600	9200	10000	9300	7000	
9	7500	7200	8100	8500	6500	
10		5700	6600	7000	5700	
12		3400	4400	4800	5000	
14		2200	3200	3600	3800	
16		1350	2300	2600	2800	
18			1600	1900	2200	
20			1000	1400	1600	
22				1000	1300	
24					850	
26						
%	II	0	100	100	100	100
	III	0	0	33	66	100
	IV	0	0	33	66	100
	V	0	0	33	66	100
Parts of line	12	8	5	4	3	
Boom angle	68.95° ~16.36°	76.16° ~17.02°	77.93° ~33.88°	77.99° ~45.42°	77.30° ~51.54°	
Hook block weight	515					

The total rated lifting load for single top

Boom length	Base boom 10.70 m	Mid-extend boom 18.05 m	Mid-extend boom 25.40 m	Mid-extend boom 32.75 m	Full-extend boom 40.10 m
Lifting load (kg)	4000	4000 kg load at radius 3.5~10 m, the others same as the load for boom length 18.05m at radius 12~16m in Table 2—3a.	4000 kg load at radius 4.5~12m, the others same as the load for boom length 25.4m at radius 14~20m in Table 2—3a.	4000 kg load at radius 6~12m, the others same as the load for boom length 32.75m at radius 14~22m in Table 2—3a.	4000 kg load at radius 8~12m, the others same as the load for boom length 40.1m at radius 14~24m in Table 2—3a.



Total Rated Lifting Load for Boom (oviform boom profile, outrigger mid-extended 5.0m) **Table 2--3c**

Radius (m)	Base boom 10.70 m			Mid-extend boom 18.05 m			Mid-extend boom 25.40 m			Mid-extend boom 32.75 m			Full-extend boom 40.10 m		
	Lifting load (kg)	Boom angle (°)	Lifting height (m)	Lifting load (kg)	Boom angle (°)	Lifting height (m)	Lifting load (kg)	Boom angle (°)	Lifting height (m)	Lifting load (kg)	Boom angle (°)	Lifting height (m)	Lifting load (kg)	Boom angle (°)	Lifting height (m)
3	47000	69.36	10.75												
3.5	44000	66.44	10.51	31000	77.22	18.37									
4	39000	63.36	10.23	29000	75.60	18.22									
4.5	32500	60.22	9.91	28000	73.98	18.05	20000	79.70	25.70						
5	25500	56.96	9.56	24700	72.36	17.87	19000	78.61	25.57						
5.5	20800	53.50	9.16	20200	70.63	17.67	18500	77.55	25.44						
6	17200	49.88	8.71	17000	68.92	17.45	17500	76.50	25.29	13600	80.0	32.90			
7	12400	41.88	7.59	12000	65.35	16.96	12800	74.20	24.96	13000	79.12	32.65			
8	9600	32.15	6.06	9200	61.59	16.39	10000	71.66	24.58	10200	77.40	32.36	8200	80.0	39.97
9	7500	17.33	3.39	7200	57.72	15.73	8100	69.07	24.16	8500	75.64	32.04	8200	79.32	39.72
10				5700	53.67	14.97	6600	66.41	23.68	7000	73.82	31.69	7200	77.93	39.43
12				3400	44.96	13.05	4400	61.19	22.55	4800	69.93	30.87	5000	75.20	38.78
14				2200	34.43	10.35	3200	55.70	21.17	3600	65.86	29.88	3800	72.33	38.01
16				1350	19.11	5.65	2300	49.81	19.47	2600	61.74	28.72	2800	69.21	37.11
18							1600	43.35	17.35	1900	57.49	27.35	2200	65.91	36.07
20							1000	35.94	14.62	1400	53.07	25.75	1600	62.58	34.89
22										1000	48.33	23.87	1300	59.12	33.53
24													850	55.51	31.99
Parts of line		12			8			5			4			3	
	2nd		0%		100%			100%			100%			100%	
	3rd		0%		0%			33%			66%			100%	
	4th		0%		0%			33%			66%			100%	
	5th		0%		0%			33%			66%			100%	
Boom angle			17.33~69.36°		19.11~77.22°			35.94~79.7°			48.33~80.0°			55.51~80.0°	
Hook block weight								515 kg							



Table 2—4

Total Rated Lifting Load for Jib (oviform boom profile)

		Outrigger fully extended 6.6m, without 5th outrigger, over side or over rear; with 5th outrigger, 360° swing																					
		40.1m						15m															
		8.5m						15m															
		0°			15°			30°			0°			15°			30°						
Boom length	Jib length	Lifting load (kg)	Radius (m)	Lifting height (m)	Lifting load (kg)	Radius (m)	Lifting height (m)	Lifting load (kg)	Radius (m)	Lifting height (m)	Lifting load (kg)	Radius (m)	Lifting height (m)	Lifting load (kg)	Radius (m)	Lifting height (m)	Lifting load (kg)	Radius (m)	Lifting height (m)	Lifting load (kg)	Radius (m)	Lifting height (m)	
		4000	10.7	50	2700	12.6	49.2	2440	14.1	47.9	2000	12	55.8	1400	15.3	54.5	1100	18.1	52.3				
		3600	13.2	49.3	2500	15	48.4	2300	16.5	47	2000	14.8	55.1	1200	18	53.6	1000	20.7	51.3				
		3200	15.7	48.6	2300	17.4	47.6	2200	18.8	46	1800	17.5	54.3	1150	20.6	52.6	990	23.2	50.1				
		2900	17.3	48	2200	18.9	46.9	2100	20.3	45.3	1700	19.3	53.6	1100	22.4	51.8	950	24.9	49.2				
		2300	21.2	46.3	1900	22.7	45.1	1900	23.9	43.3	1400	23.7	51.8	950	26.6	49.7	880	28.9	46.8				
		1800	24.9	44.3	1600	26.3	42.9	1500	27.4	41	1200	27.9	49.5	800	30.6	47.1	830	32.6	44				
		1000	28.4	42	900	29.7	40.4	850	30.6	38.4	800	31.9	46.9	700	34.3	44.2	600	36.1	40.9				
		Outrigger mid-extended 5.0m, without 5th outrigger, over side or over rear; with 5th outrigger, 360° swing																					
		4000	10.7	50	2700	12.6	49.2	2440	14.1	47.9	2000	12	55.8	1400	15.3	54.5	1100	18.1	52.3				
		3600	13.2	49.3	2500	15	48.4	2300	16.5	47	2000	14.8	55.1	1200	18	53.6	1000	20.7	51.3				
		2600	15.7	48.6	2300	17.4	47.6	2000	18.8	46	1800	17.5	54.3	1150	20.6	52.6	990	23.2	50.1				
		2000	17.3	48	1800	18.9	46.9	1600	20.3	45.3	1700	19.3	53.6	1100	22.4	51.8	950	24.9	49.2				
		1000	21.2	46.3	900	22.7	45.1	800	23.9	43.3	900	23.7	51.8	700	26.6	49.7	600	28.9	46.8				
		400	24.9	44.3	300	26.3	42.9	300	27.4	41	300	27.9	49.5	200	30.6	47.1	200	32.6	44				
		100 kg (for 4t load)																					

Notes on Table 2—3, Table 2—3a, Table 2—3b, Table 2—3c and Table 2—4:

- (1). The data given in the tables are the maximum lifting capacity when the crane is set up on level and firm ground, which do not exceed 75% of tipping load.
- (2). The total rated lifting load includes the weight of hook block and slings.
- (3). The working radii in above tables are the actual values including boom deflection under load. The lifting height, boom angle and radius in above tables are for reference.
- (4). The 75% of tipping load takes into account wind force 7, i.e. lifting operation is still permissible under the condition of wind force 7 (wind pressure 125 N/m²).
- (5). In Table 2—3, 2—3a, 2—3b and 2—3c, the total rated lifting load for boom is based on boom tip not attached with jib, if with jib, the lifting load should be deducted 2000 kg.
- (6). Except for lifting with base boom on full-extended outrigger, the boom angle should not beyond the data in the above tables even with no load.



The total rated lifting load for single top (Unit: kg)

Table 2-5

Boom length (m)	10.70 m	18.05 m	25.40 m	32.75 m	40.10 m
Oviform boom profile, outrigger full-extension 6.6m	4000	4000 kg load at radius 3.5 m~14 m, the others same as the load for boom length 18.05m at radius 16m in Table 2-3b.	4000 kg load at radius 4.5 m~16 m, the others same as the load for boom length 25.4m at radius 18 m~22 m in Table 2-3b.	4000 kg load at radius 6 m~16 m, the others same as the load for boom length 32.75m at radius 18 m~26 m in Table 2-3b.	4000 kg load at radius 8 m~18 m, the others same as the load for boom length 40.1m at radius 20 m~30 m in Table 2-3c.
Oviform boom profile, outrigger mid-extension 5.0m	4000	4000 kg load at radius 3.5 m~10 m, the others same as the load for boom length 18.05m at radius 12 m~16 m in Table 2-3c.	4000 kg load at radius 4.5 m~12 m, the others same as the load for boom length 25.4m at radius 14 m~20 m in Table 2-3c.	4000 kg load at radius 6 m~12 m, the others same as the load for boom length 32.75m at radius 14 m~22 m in Table 2-3c.	4000 kg load at radius 8 m~12 m, the others same as the load for boom length 40.1m at radius 14 m~24 m in Table 2-3c.

Min. distance from hook center to sheave center



Jib



Boom

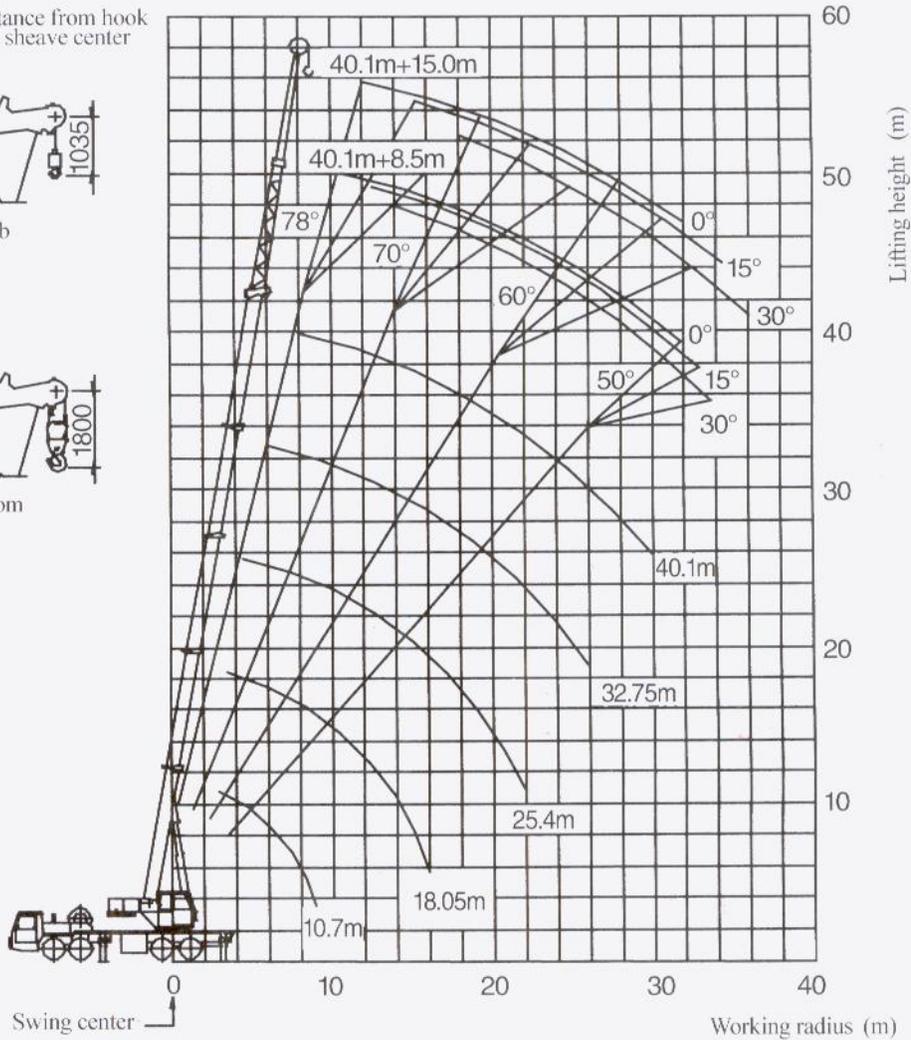


Fig 2-2 Crane Lifting Height Curves

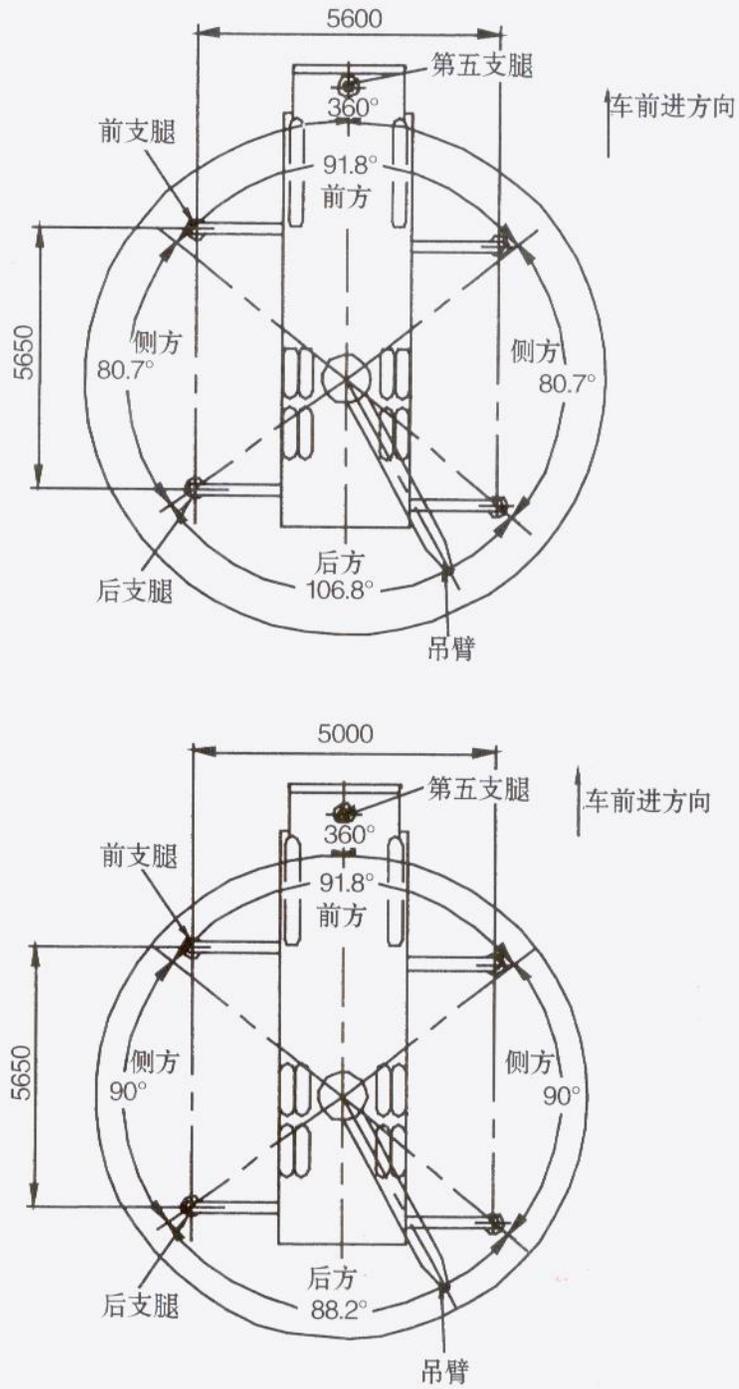


Fig. 2—3 Crane Working Area



2.2 Main Parts Structure and Specifications

(1). Slewing ring

Single row 4 point contact ball bearing slewing ring (3-row roller bearing slewing ring is for option).

Model: QAW1487*60Z (131.25.1480)

(2). Oil pump

Model: CB—80/80/40/10

Rated working pressure: 21MPa

Peak pressure: 25MPa

(3). Swing drive unit

Model: GJB17T3—104 planetary gear reducer

Reduction ratio: 104

Motor: A2F28W6.1 axial piston motor

(4). Winch (main and auxiliary)

Model: GJT26W2—51 planetary gear reducer

Reduction ratio: 50.5

Motor: A6V107HA variable displacement axial piston motor

Wire rope type: 18NAT 4V×39S+5FC—1870

Wire rope length: 180m (main winch), 125m (auxiliary winch)

(5). Boom

1 base section and 4 telescopic sections, two kinds of boom profile: round angle hexagonal boom profile and oviform boom profile.

Boom length: 10.70m (minimum), 40.1m (maximum)

2 cylinders plus wire ropes for synchronous and sequential telescoping.

(6). Jib

Lattice type structure plus box type section.

Jib length: 8.5m and 15m, two kinds

(7). Elevating cylinder

Single cylinder for front support elevation

Stroke: 2.74m

(8). Telescoping cylinder

2 telescoping cylinders, 2 double acting cylinders.

Stroke: 7.35m (same stroke for 1st stage and 2nd stage cylinders.)

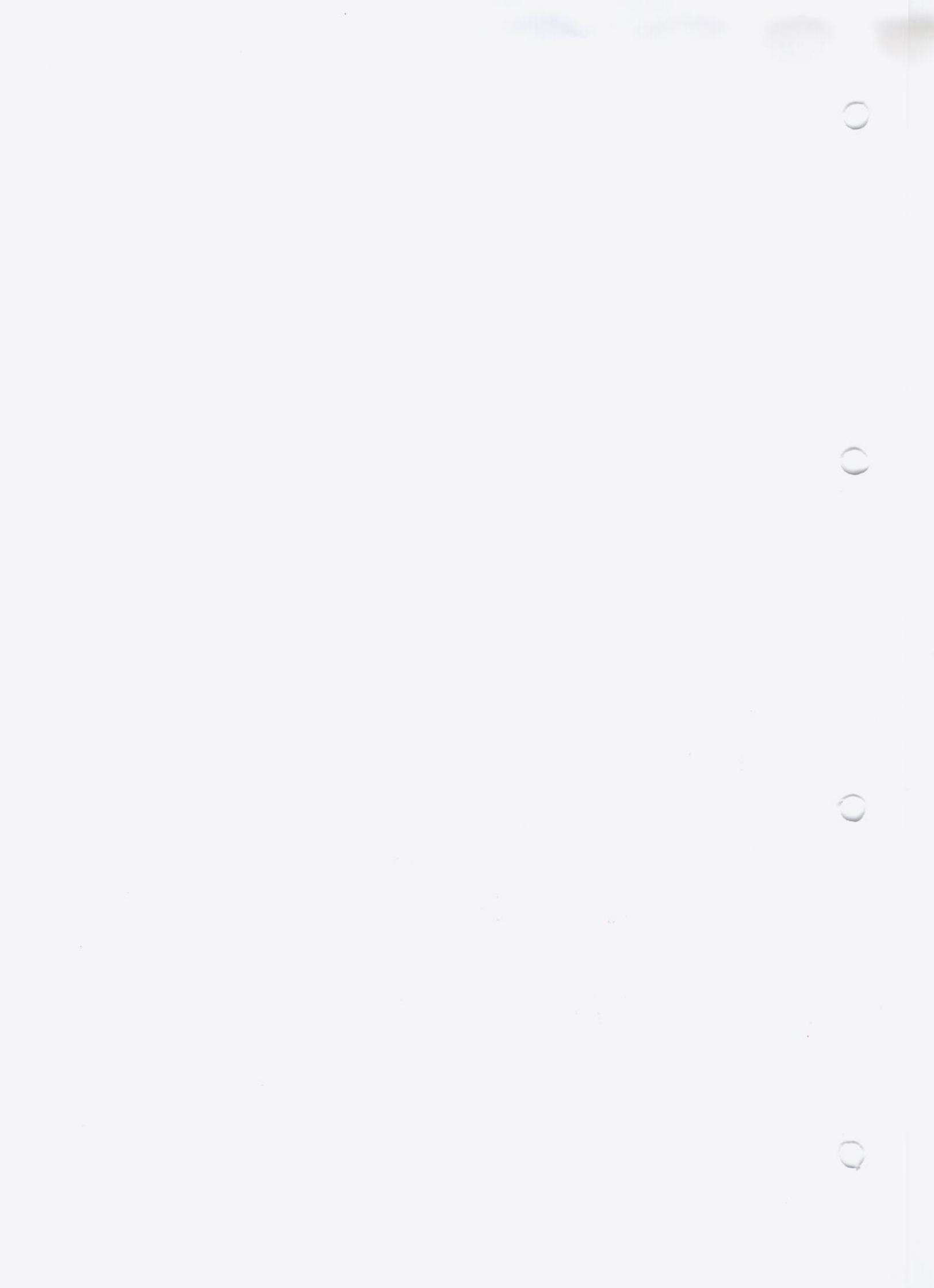


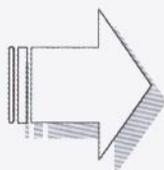
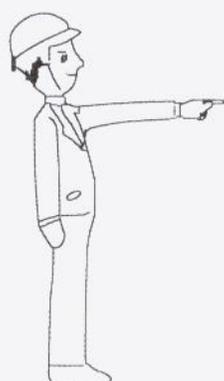
(9). Operator's cab

All round angle structure, equipped with safety glass, heater and control instruments, a wide field of vision.

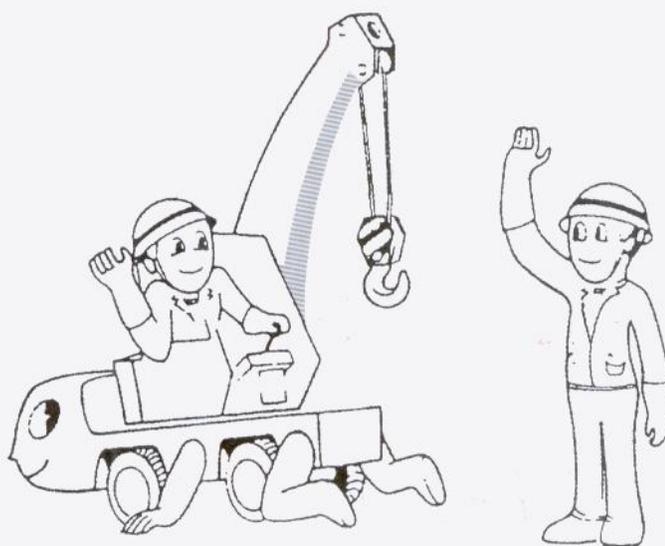
(10). Crane main valve

Model: FYZ-37





**3. PREPARATIONS FOR LIFTING
OPERATION**





Preparations Before Lifting Operation

Two preconditions for safe and reliable operation: a fully functioning crane and well-qualified operating personnel. The crane operator must be in possession of or procure all the necessary information in good time before starting the journey to the work-site:

- ◇ Nature of work;
- ◇ Site location (journey distance);
- ◇ Journey route;
- ◇ Head-rooms and side clearances;
- ◇ Electrical overhead wires (detailed voltage data refer to Table 3—1);
- ◇ Movement restrictions due to surrounding structures;
- ◇ Weight and dimensions of load(s) to be lifted;
- ◇ Required lifting height and radius;
- ◇ Load-bearing capacity of the ground (soil); etc.,

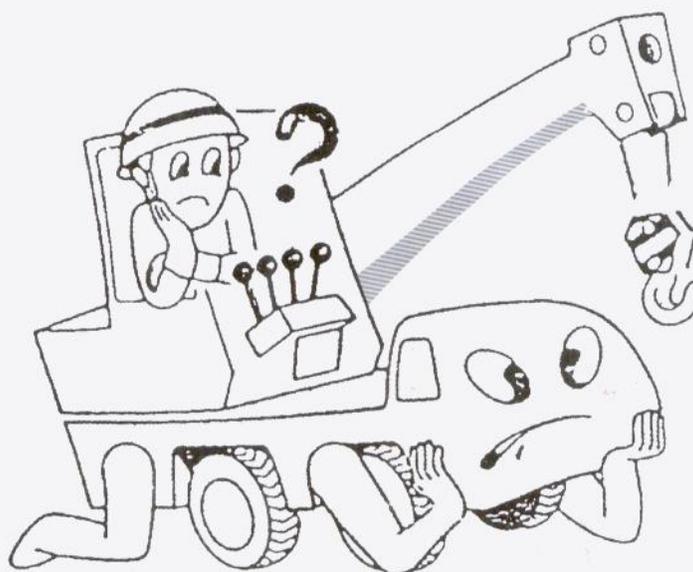
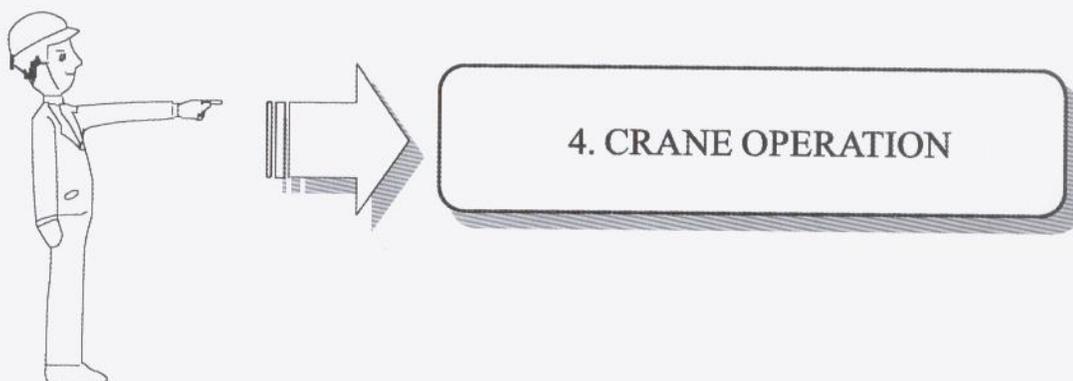
The crane operator can then use this information to decide on the correct crane operating equipment:

- ◇ Hook block;
- ◇ Single top;
- ◇ Jib;
- ◇ Underlay material for outriggers;
- ◇ Travel permits.

If the crane operator does not have all the necessary information, it may prove impossible to carry out the intended work, or he may be tempted to improvise, thus increasing the risk of accidents.

Minimum distance between boom, load and electrical overhead wires Table 3—1

Voltage of electrical overhead wires (kV)	<1	1~35	≥ 60
Minimum distance (m)	1.5	3	$0.01(v-50)+3$





4.1 Electrical System

The power for the crane electrical system is directly supplied from the carrier, DC 24 Volt, single line with negative ground.

(1). Engine Control

a. Start the engine

Insert the starting key into the starter switch (SO), turn it clockwise to I position to connect power supply for the crane electrical system. Continually turn the key to II position and the engine will start. The engine starting time for once do not exceed 5 seconds and the interval for each engine starting is not less than 15 seconds. If the engine cannot be started for 2~3 times, check the cause in the engine.

b. Stop the engine

Turn the starting key counterclockwise to III (STOP) position, delay for 1~2 seconds to stop the engine, then release the key and the switch will reset to (OFF) position.

(2). Safety Devices

a).Load moment limiter (LML): (refer to “Load Moment Limiter (LML) Operation Instruction”).

b).System pressure switch (S15, S16): turn on the switch to build up oil pressure for the system.

c).Hoist limit switch: contains the limit switch and the weight at the head of boom and jib, automatically stop and give a warning when hook block is raised up about 780mm from the center of hook block to the center of boom head sheave.

d).Rope-end limiter (A2, A3): automatically stop and give a warning when hook block lowers until 3~5 turns of wire rope left on winch drum.

e).Hydraulic oil filter blocked warning lamp (H4).

f).Engine checking

① Low oil pressure warning lamp (H1)

② High water temperature warning lamp (H2)

(3). Electric Appliances in Operator's Cab



a. Devices (Fig. 4-1)

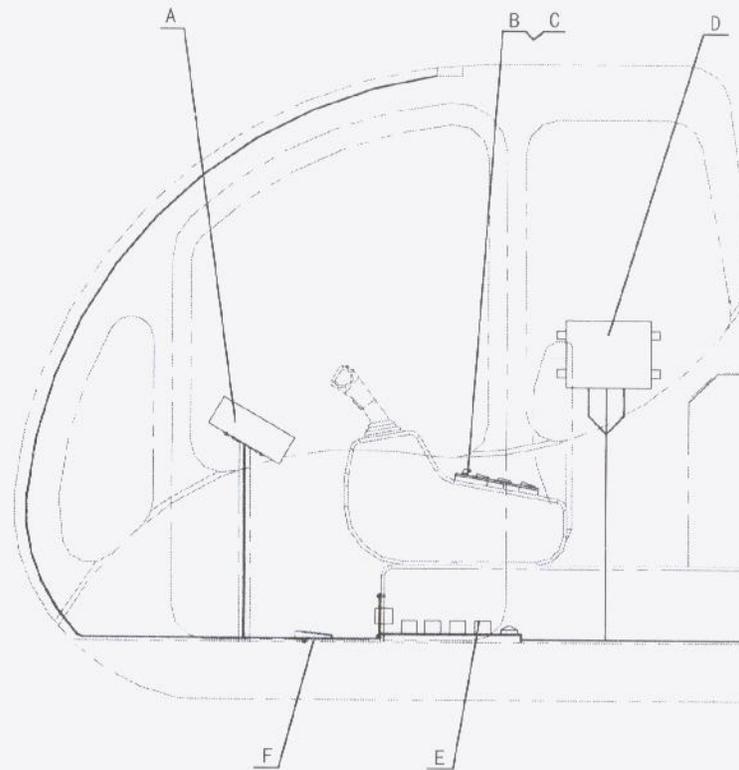


Fig. 4-1

- A) —Display (Fig. 5-2): displays working and safety conditions.
- B) —Right controller (Fig. 5-3): working condition control.
- C) —Left controller (Fig. 5-4): safety condition control
- D) —LML main unit
- E) —Control panel (Fig. 5-5): logical control unit.
- F) —Selection switch for auxiliary winch



b. Instrument Panel (Fig. 4-2)

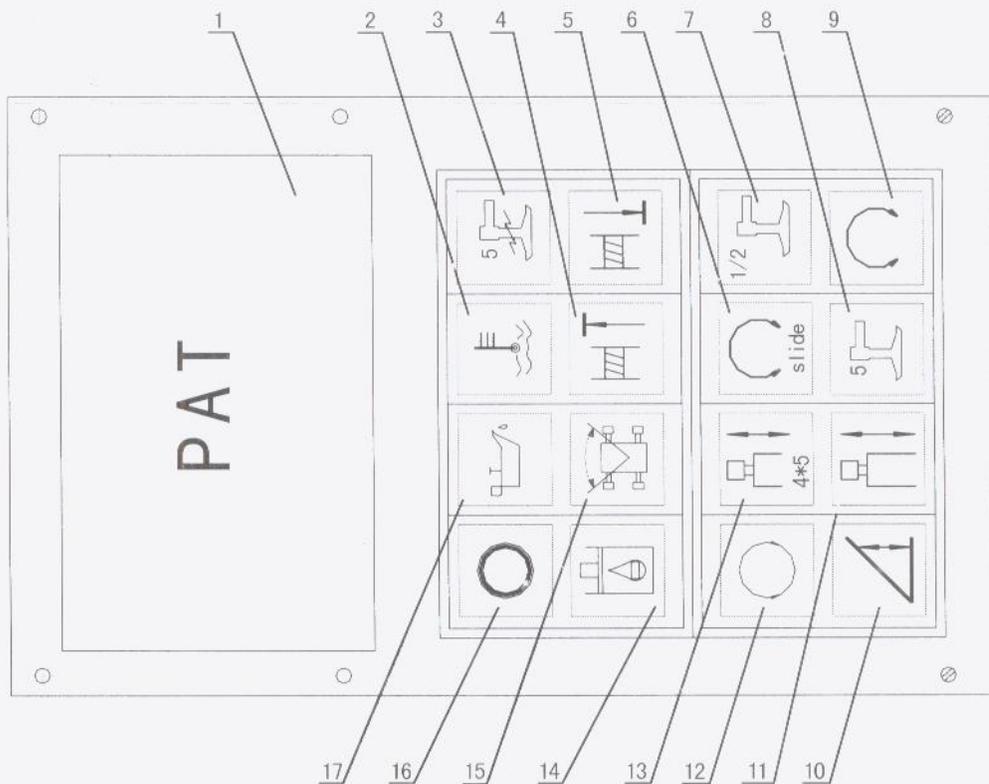


Fig 4-2

- 1) LML Display (refer to LML operation instructions)
- 2) High water temperature indicator lamp
- 3) Front jack overload indicator lamp
- 4) Over-wind warning indicator lamp
- 5) Over-release warning indicator lamp
- 6) Free swing indicator lamp
- 7) Half -extended outrigger selection indicator lamp
- 8) 5th outrigger indicator lamp
- 9) Swing brake indicator lamp
- 10) Boom elevating indicator lamp
- 11) Boom telescoping indicator lamp
- 12) System pressure indicator lamp
- 13) 3rd , 4th and 5th boom section telescoping indicator lamp
- 14) Hydraulic oil filter blocked indicator lamp
- 15) Front area indicator lamp
- 16) Power indicator lamp
- 17) Low oil pressure indicator lamp

c. Right Controller (4-3)

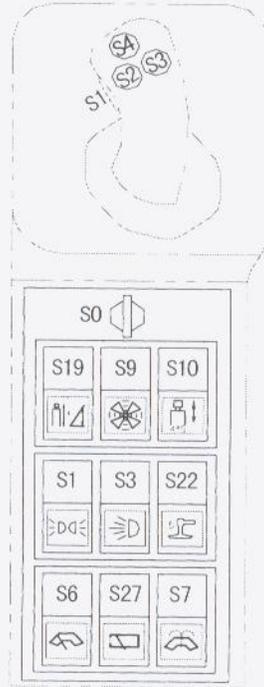


Fig 4-3

- S0 —Starting switch
- S1 —Pilot pressure switch
- S2 —Free swing switch
- S3, S19—Boom telescoping/elevating exchange switch
- S4 —Horn switch
- S9 —Cooling fan switch
- S1 —Marker lamp switch
- S3 —Working lamp switch
- S22 —5th outrigger switch
- S6 —Front windshield wiper switch
- S27 —Roof window wiper switch
- S7 —Water sprayer switch
- S10 —Boom section exchange switch



d. Left Controller (4-4)

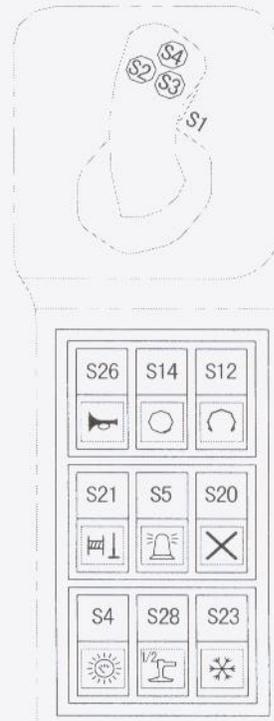


Fig 4-4

- S1, S14 —Pilot pressure switch
- S2 —Relief swing brake switch
- S3, S12 —Free swing switch
- S4, S26 —Horn switch
- S21 —Over-release relief switch
- S5 —Warning lamp switch
- S20 —Unloading relief switch
- S4 —Illumination lamp switch
- S28 —Half -extended outrigger selection switch
- S23 —Air-conditioner switch

e. Control Panel Assembly (4-5)

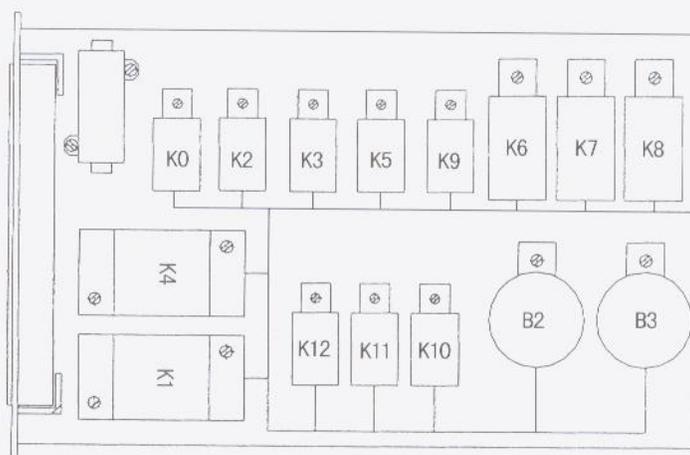


Fig 4-5

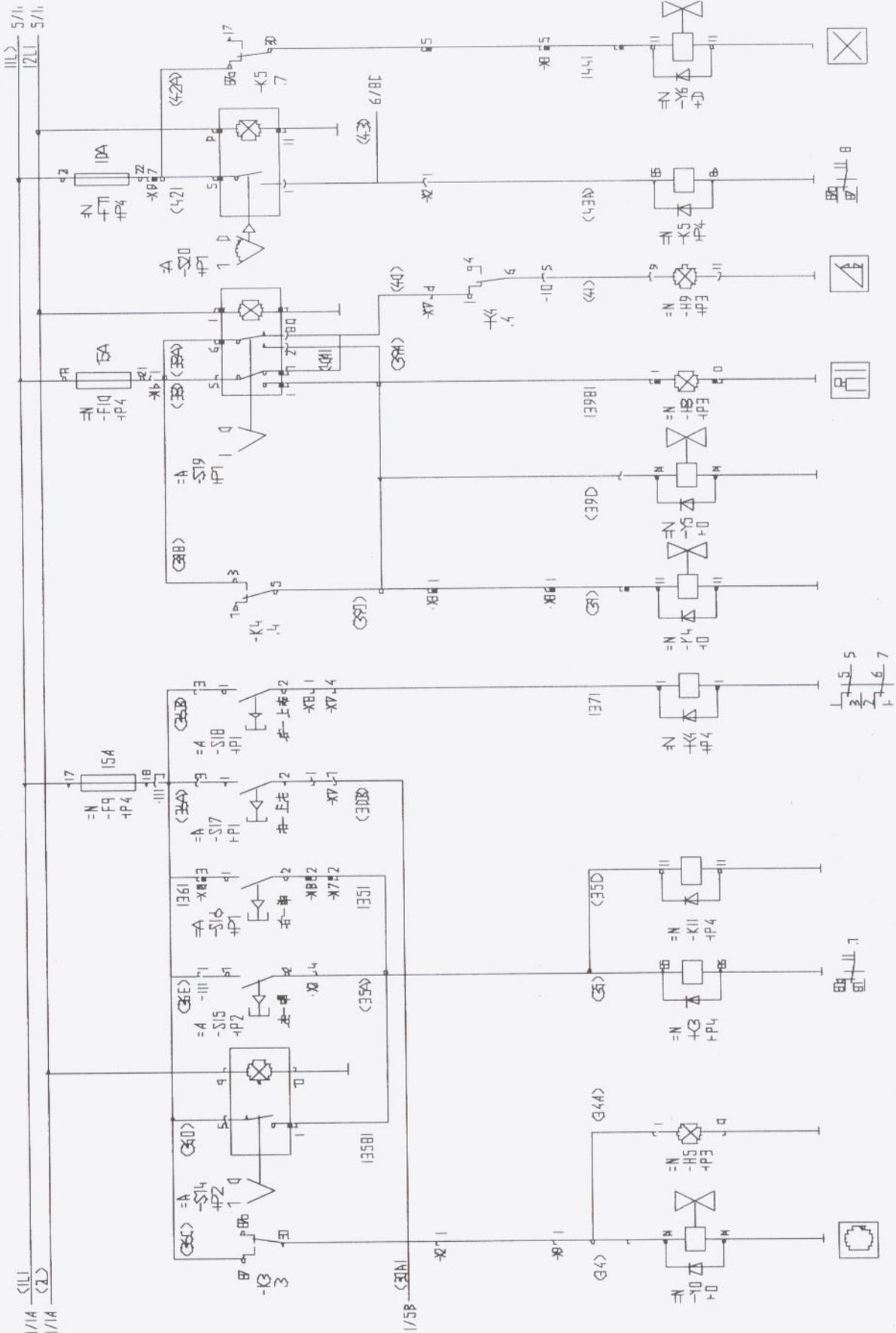
- K0—K12: Control relay
- K0+ : EURO III control relay
- B2 buzzer: warning over-load and over-release
- B3 buzzer: warning front area

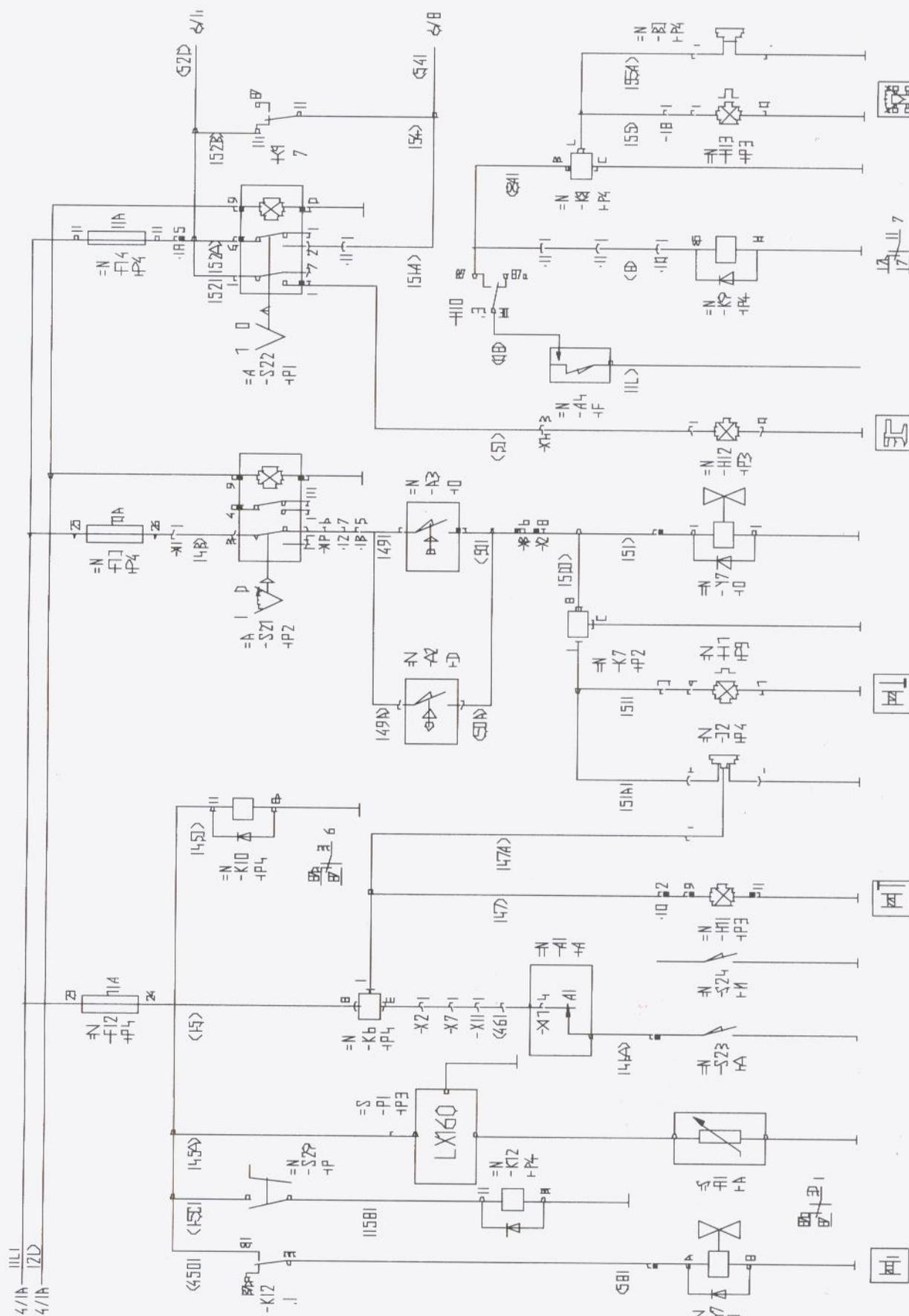
(4). Notes on operation

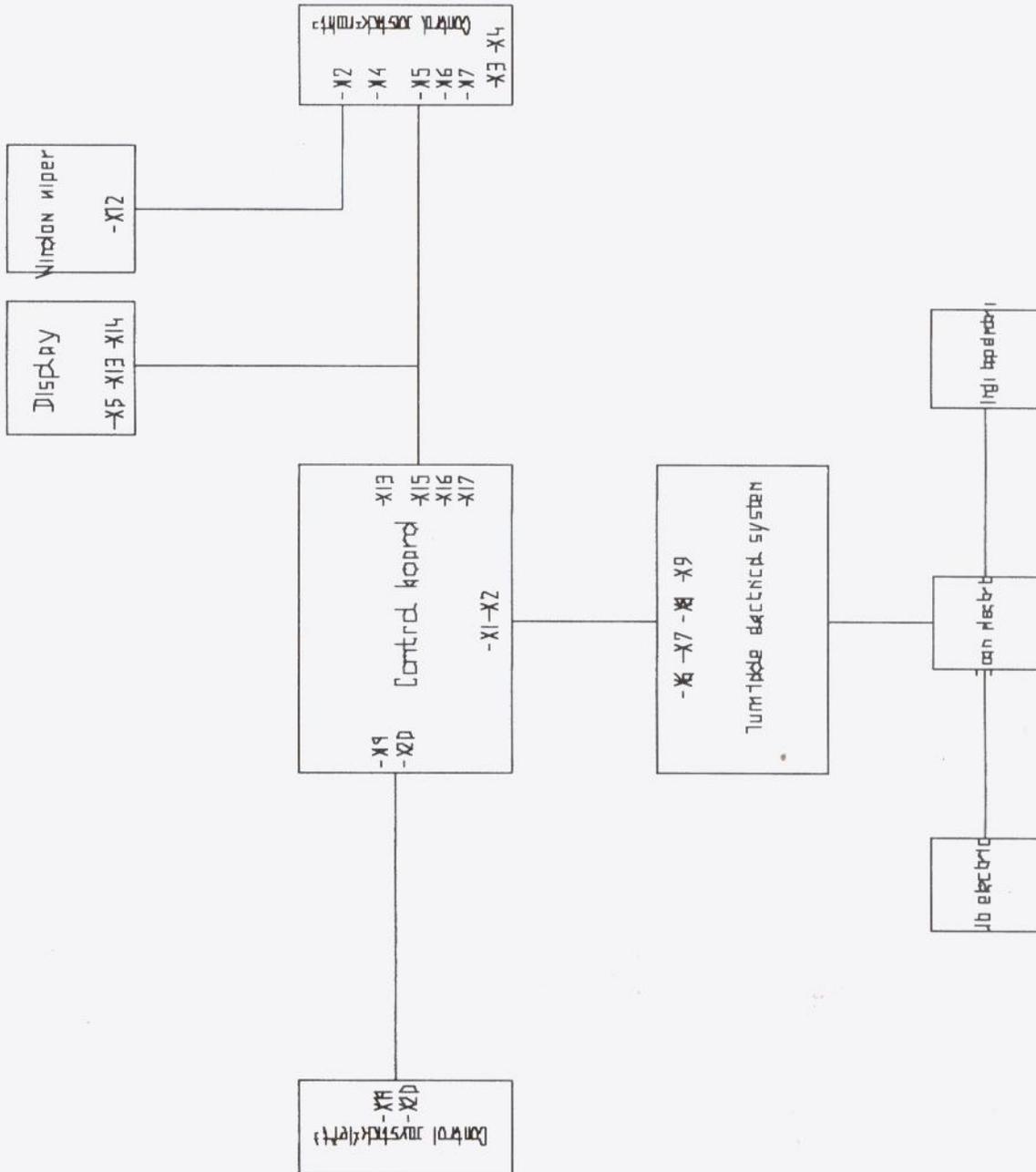
- a. Position all the control levers in neutral before turning on the main power.
- b. An overload relief switch (S20) is fitted in the system. Use this switch carefully when the crane is in overload. In general case, do not use this switch.
- c. Read carefully 《 Load Moment Limiter Operation Instruction 》 before lifting operation.
- d. The code list of working condition on load moment limiter

Code	Working Condition
1	Main boom
2	One jib section with 0° offset angle
3	Two jib sections with 0° offset angle
4	One jib section with 15° offset angle
5	Two jib sections with 15° offset angle
6	One jib section with 30° offset angle
7	Two jib sections with 30° offset angle
8	Single top

Note: When the crane is over front, the working condition indicated on display is 8X. When the crane is over side or rear, the working condition indicated on display is 0X. X is the number of the working condition.









4.2 Hydraulic System

QY50K truck crane uses an open type constant displacement pump with variable displacement motor as its hydraulic system, with a quadruple gear pump for driving and the winch motor is inclined axial piston motor. The whole system is divided into two parts, the carrier hydraulic system and the crane hydraulic system.

(1). Carrier hydraulic system

The pressure for the carrier oil circuit is supplied by a 40 ml/r displacement gear pump, the setting pressure of relief valve is 20 MPa, using a manual multi-way change valve to control outrigger beam and jack. The outrigger control console is mounted at each side of the carrier frame. The four outrigger beams and jacks can be extended or retracted separately and synchronously. A pressure relief valve is added in the new type multi-way change valve to prevent the piston rod of the outrigger beam cylinder from deflection. A two-way hydraulic lock is fitted in the four jack cylinders to prevent the piston rod of the jack cylinder from extracting during lifting operation and from extending during road traveling.

(2). Crane hydraulic system

It is a hydraulic pilot control system with multi-way change valve. The main control valve is a load sensitive type proportional multi-way change valve, with a shock-proof valve and an air-corrosion resistant valve fitted in each change valve. The pilot control valve uses an imported proportional relief valve. The moving angle of the pilot valve handle has direct ratio with the valve output pressure, so does the movement of the main control valve element. Thus the whole machine has fine motion control. Moreover the load sensitive valve enables the working speed of functional parts having no relation with load, so that reduce operating difficulty and lighten labor intensity for the operator. The winch uses variable displacement motor, so the crane can work at high speed with light load and at low speed with heavy load.

a. Winch circuit

Maximum pump displacement 160 ml/r, variable motor displacement 107 ml/r.

The winch brake for winch oil circuit is constant-closed type. When operating the pilot control valve to control the main winch, the pressure oil delivered by the pilot control valve changes the flow direction of the hydraulic change valve via shuttle valve and causes the pressure oil (3 MPa) delivered by pilot pump to open the winch brake via hydraulic change valve to realize winding and unwinding the hoist wire rope. When positioning the pilot control valve in neutral, the pressure oil in the circuit is returned from the pilot control valve into oil tank, the hydraulic change valve is reset to its original state by the action of returning spring, causing the pressure oil



in winch brake to return to oil tank via hydraulic change valve, the brake is activated by the applied spring.

b. Swing circuit

Maximum pump displacement 40 ml/r, constant piston motor displacement 28 ml/r.

The opening of the swing brake is controlled by a solenoid valve. If the solenoid valve has no power, the brake is closed; if the solenoid valve has power, the brake opens by the action of pressure oil. So when operator swings the crane, switch S11 (total three switches) on the pilot control handle must be pressed to control the swing movement. The swing main oil circuit has free swing function. During lifting operation when the boom is under lateral force, press any one of switches S13, S17, the swing table can align automatically to swing the boom to the center of gravity over the load in prevention of boom deflection or damage due to lateral force.

c. Elevating circuit

Maximum pump displacement 80 ml/r.

The system maximum setting pressure is 8 MPa during boom lowering. In order to lower the boom smoothly or stop lowering reliably, a counterbalance valve is fitted in the circuit. A rod-side relief circuit is designed in the change valve in order to supply a stable pressure signal to the moment limiter.

d. Telescoping circuit

Maximum pump displacement 80 ml/r.

The crane telescoping system contains five boom sections and two telescoping cylinders. When extending, the 1st-stage cylinder drives the 2nd, 3rd, 4th and 5th boom sections extending synchronously, then presses boom cylinder exchange switch S10, the 2nd-stage cylinder drives the 3rd, 4th and 5th boom sections extending synchronously. When retracting, the 2nd-stage cylinder drives the 3rd, 4th and 5th boom sections retracting synchronously, then presses boom cylinder exchange switch S10, the 1st-stage cylinder drives the 2nd, 3rd, 4th and 5th boom sections retracting synchronously. A pressure limit valve with setting pressure 14MPa is fitted to prevent piston rod from deflection due to high pressure while boom extending. Also a counterbalance valve is fitted in the telescoping system for boom stable retraction and reliable stopping.

e. Control circuit

The pressure in pilot control circuit is provided by a gear pump of displacement 10 ml/r, the setting pressure of relief valve is 3 MPa.

A solenoid valve for pilot control of the oil flow is fitted in the circuit. Only an electric current



is passed through the solenoid can various mechanism of the crane be actuated.

A safety relief solenoid valve is fitted in the circuit and controlled by load moment indicator. When load moment reaches or exceeds the nominal load capacity, the solenoid valve is activated to cut out all the crane motions which increase load moment.

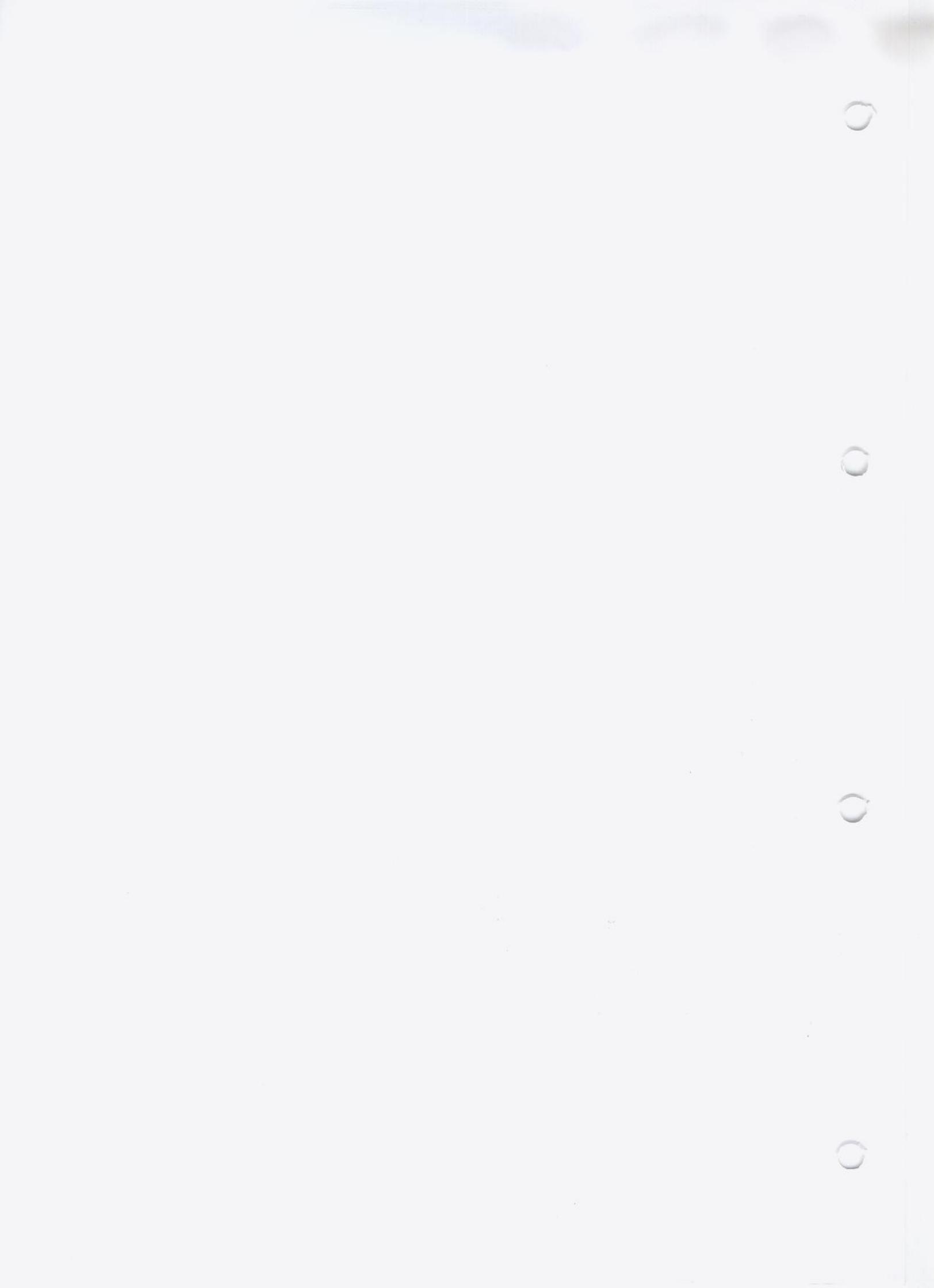
A rope-end limit solenoid valve is fitted to keep 3~5 turns of wire rope on main and auxiliary winch drums. When only 3~5 turns of wire rope left on main and auxiliary winch drums, the solenoid valve is activated to stop the drum releasing wire rope.

The swing system and auxiliary winch use same one pilot control joystick (located on left armrest). Push forward the handle to lower auxiliary hook block and pull backward the handle to raise auxiliary hook block. Move the handle left to swing the turntable to the left and move the handle right to swings the turntable to the right.

The telescoping (elevating) system and main winch use same one pilot control joystick (located on right armrest). Push forward the handle to lower main hook block and pull backward the handle to raise main hook block. Move the handle left to retract (raise) the boom and move the handle right to extend (lower) the boom.

(3). Specifications

Main circuit working pressure	21 MPa (setting pressure for various relief valves refer to "Hydraulic system diagram")
Oil tank capacity	658 L
Oil suction filter accuracy	180 μ
Oil return filter accuracy	20 μ
Control oil circuit filter accuracy	10 μ
Hydraulic oil brand	Ambient temperature above 5°C: L-HM46 Ambient temperature -15°C~5°C: L-HM32 Ambient temperature -15°C~-30°C: L-HV22 Ambient temperature below -30°C: No.10 aviation hydraulic oil



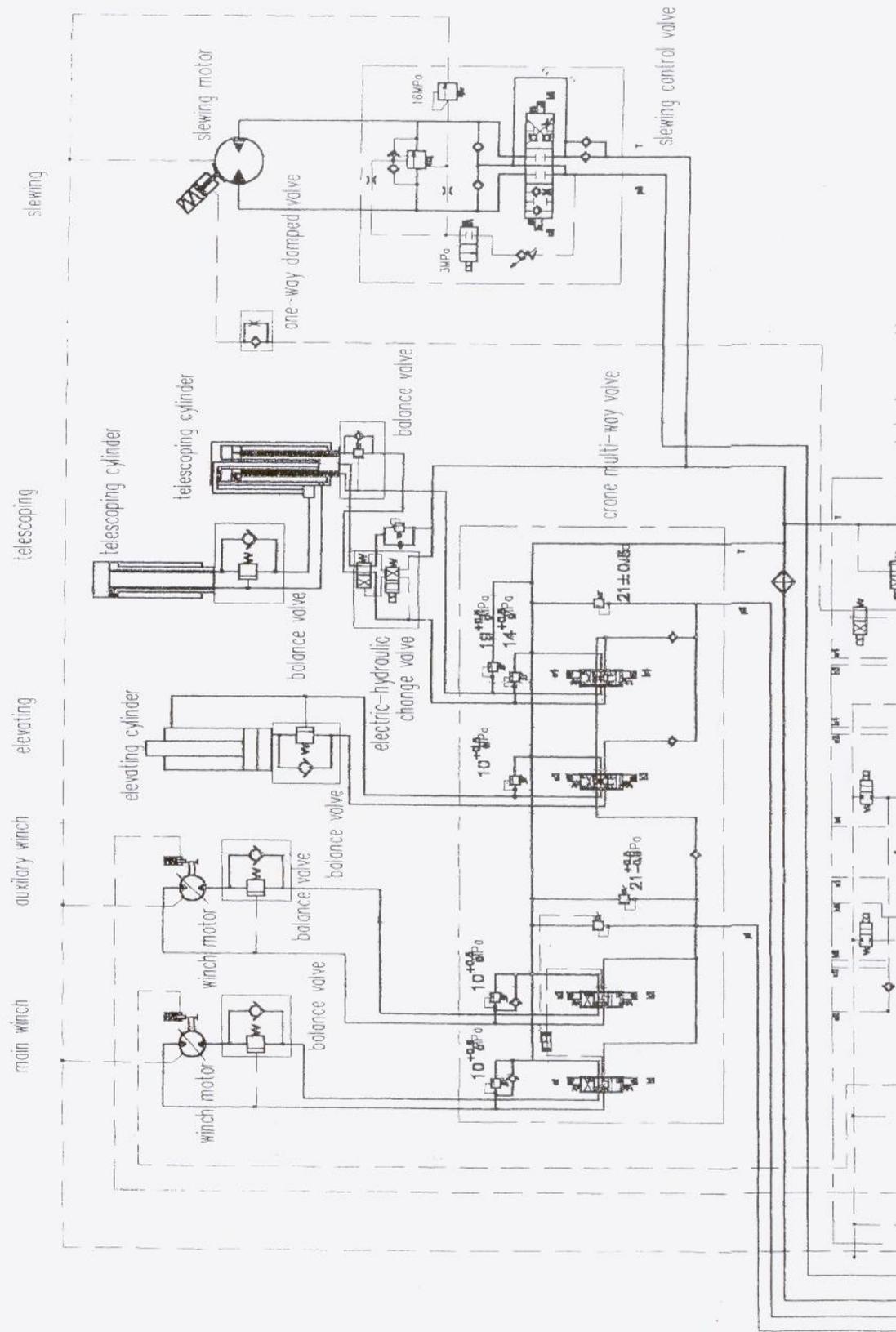
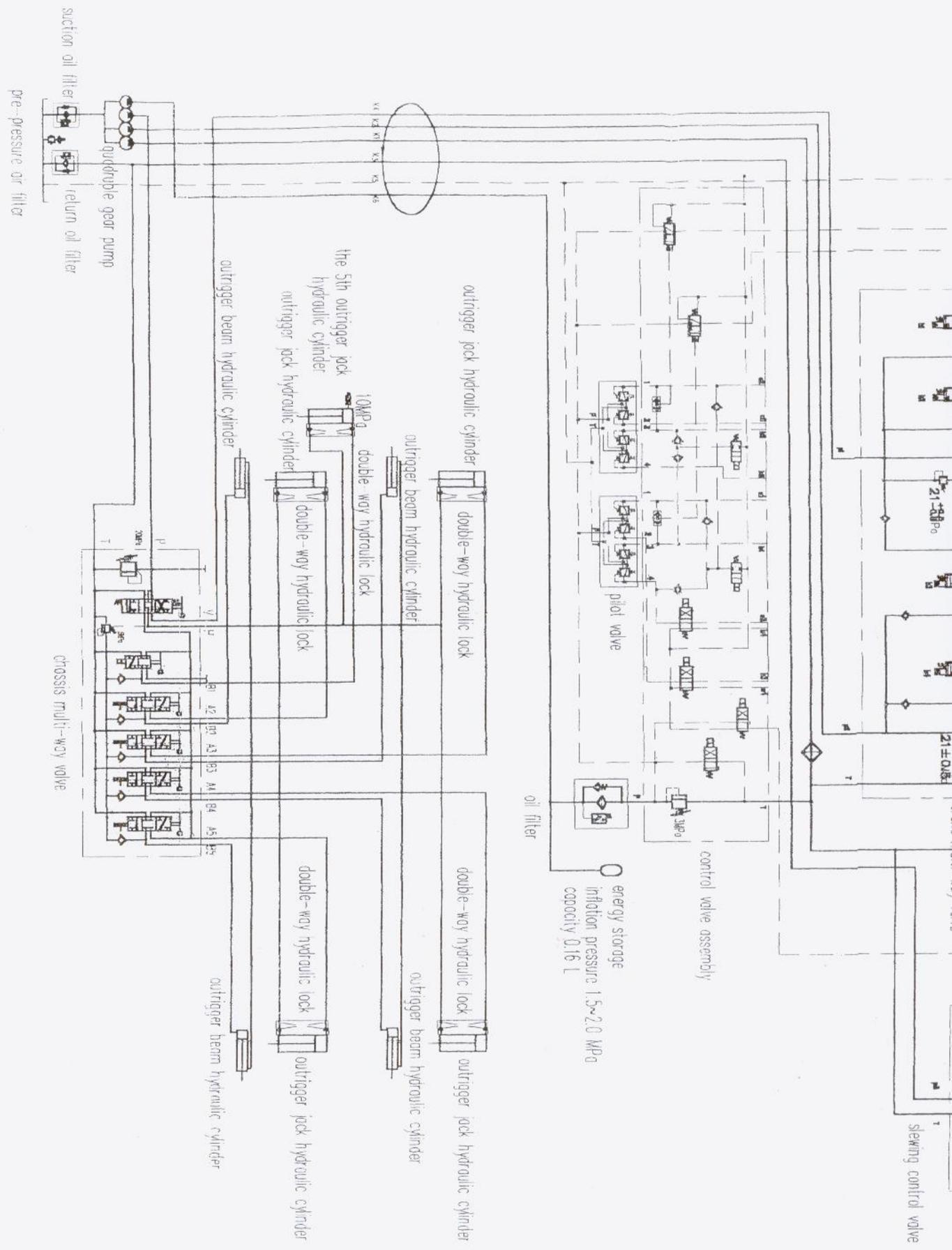


Fig. 4-7 Hydraulic system

Fig. 4-7 Hydraulic system principle diagram



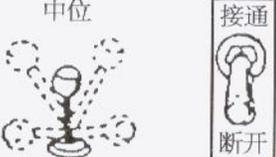


4.3. Starting Engine and Operating PTO

(1). Notes on operation

Before engaging the PTO, make sure that the control levers in operator's cab are in neutral positions.

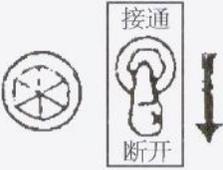
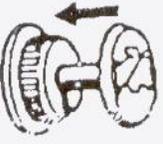
(2). See the following table for engaging PTO

No.	Illustration	Engaging PTO
1		Engaging PTO
2		Make sure that the gear shift lever and PTO switch are in the NEUTRAL or OFF position.
3		Start the engine by using the carrier starter switch. Preheat the engine if not warm.
4		Fully depress the clutch pedal.
5		Engage the transmission PTO.
6		Release the clutch pedal slowly.

This completes preparations for operating the crane. In winter, after starting the engine, let the engine run idle for 15~20 minutes for warming up.



(3). See the following table for disengaging the PTO

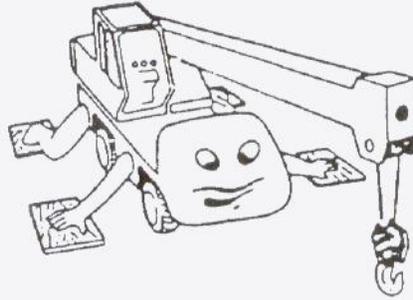
No.	Illustration	Disengaging PTO
1		Fully depress the clutch pedal.
2		Disengage the transmission PTO.
3		Release the clutch pedal.
4		Stop the engine.
5		Turn off the carrier starter switch.

Now, the crane can not be operated.

Note: After engaging the PTO, start the engine with the starter switch in operator's cab and stop the engine with the engine stop switch.



4.4. Operating Outriggers



Notes on operation

- ① Pull out outrigger beam lock pins before extending the outrigger beam.
- ② Set up the crane level by using wood blocks suited to the ground conditions.
- ③ Keep the tires off the ground.
- ④ Set up the crane on level and firm ground. In case of setting up the crane with outrigger on soft and slant ground, set up the crane level by using wood blocks suited to the ground conditions .
- ⑤ After setting up the crane, make sure that all the outrigger floats are in complete contact with the ground and no the risk of ground.
- ⑥ Do not set up the crane without extending the outrigger beam fully.
- ⑦ After setting and stowing the outriggers, make sure that the outrigger beam lock pins are completely inserted.
- ⑧ Outrigger span 5.65m × 6.6m.

(1). Names of outrigger parts

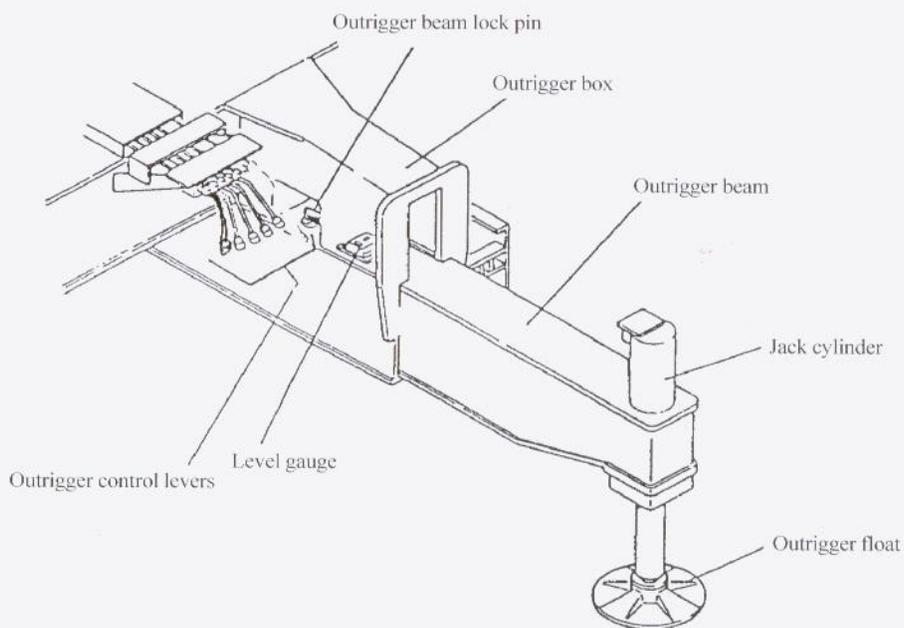


Fig. 4—8



(2). Outrigger control levers

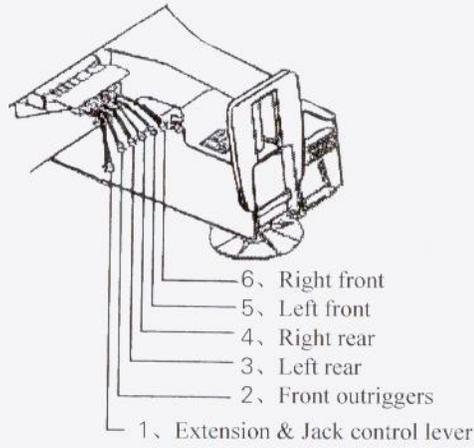
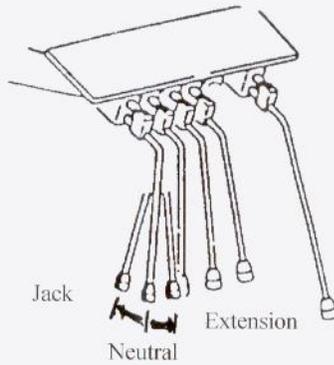


Fig. 4-9

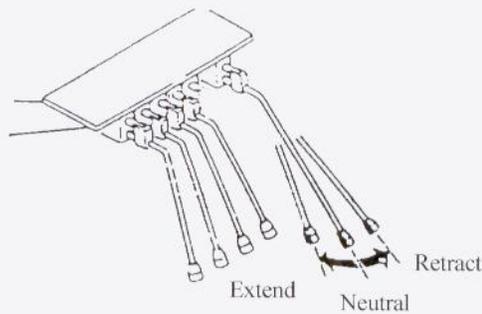
Note:

a. Select the extension circuit or jack circuit by the select levers.



Return the select levers to NEUTRAL immediately after finishing operation.

b. Outrigger beams or jacks will extend or retract when the EXTENSION & JACK control lever 1 is moved.





(3). Extend and retract outrigger beam

Position the select levers 3, 4, 5, 6 to EXTENSION, and then push the select lever 1 to EXTEND, the four outrigger beams extend synchronously. After the outrigger beams being extended fully, return all control levers to NEUTRAL. The outrigger beam extending has been finished. Preparations of retracting the outrigger beam are the same as above except pulling the select lever 1 to RETRACT.

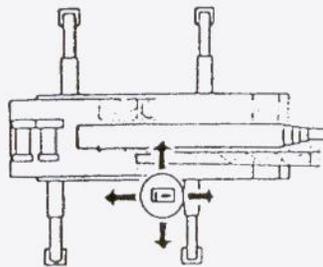
(4). Extend and retract outrigger jack

Position the select levers 3, 4, 5, 6 to JACK, and then push the select lever 1 to EXTEND, the four outrigger jacks extend synchronously. After the tires off the ground, return all control levers to NEUTRAL. The outrigger beam extending has been finished. Preparations of retracting the outrigger jack are the same as above except pulling the select lever 1 to RETRACT.

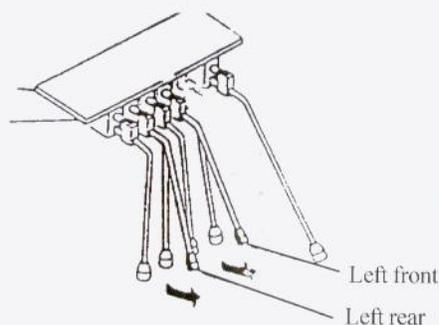
(5). How to level the crane

If the crane is not level with the jacks extended, level it as follows.

Example: When the right side is higher.



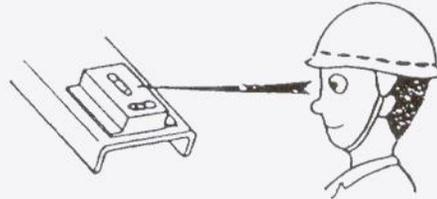
a. Return the LEFT FRONT 5 and LEFT REAR 3 select levers to NEUTRAL.



Note: be careful not to move the select levers over to EXTENSION.



b. While observing the level gauge, inch the EXTENSION & JACK control lever 1 to RETRACT.



c. After the crane is leveled, return the remaining select levers to NEUTRAL.

Note: make sure that all outrigger floats are in complete contact with the ground after crane tires clear of the ground.

4.5 Acceleration

Depress the accelerator pedal, and the speed will be increased in swing operation, boom telescoping, boom elevation and winch.

The accelerator pedal is at the right of operator's cab floor (see Fig. 4-10).

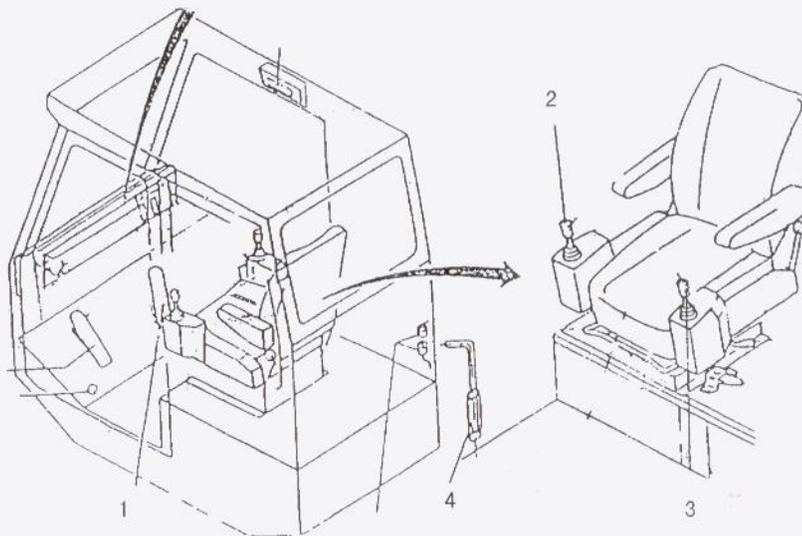


Fig. 4-10



4.6 Operating Winches



Notes on operation

① Lift up loads in the vertical direction only. Avoid side-loading or dragging loads on the ground.

② Do not abruptly move the winch control lever.

③ Before operating, apply the winch brake, lock the winch control lever.

(1).Main winch control handle (2)

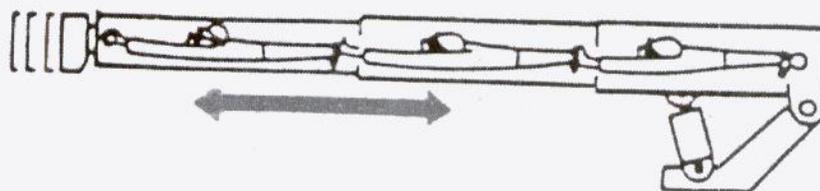
Push forward control handle (2), the hook block will lower; pull backward, the hook block will raise. The raising and lowering speeds are adjusted by control handle (2) and accelerator.

(2).Auxiliary winch control handle (3)

Push forward control handle (3), the hook block will lower; pull backward, the hook block will raise. The raising and lowering speeds are adjusted by control handle (3) and accelerator.

Note: In order to avoid lateral force during lifting operation, when moving the main winch control handle, press and hold the switch (S17) for free swing, the turntable can align automatically to swing the boom to the center of gravity over the load, and release the switch (S17) after the load lifted off the ground.

4.7 Boom Telescoping Operation



Notes on operation

① The hook block will rise or lower when the boom is telescoped. Compensate for this by simultaneously letting out or taking in the winch rope.

② An extended boom can change its length as time passes. This is mainly because the volume of oil in the telescoping cylinder expands or contracts when temperature changes. If oil temperature lowers 10°C, for instance, a boom extended by 5m will retract approx. 40mm. The



extent of length change also depends on the boom length, elevation angle, lubrication condition, etc. To prevent boom retraction, observe the following:

- a. Do not raise the oil temperature excessively.
- b. When boom retract, compensate it by telescoping boom.

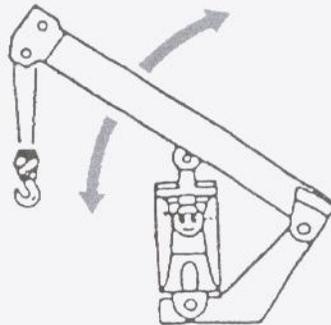
③ Telescoping with a load on boom head is permissible, but don't exceed 25% of rated load.

④ When extending boom, first extend 2nd section, press switch S10 (shown in Fig. 4-3), then extend 3rd, 4th and 5th sections to specified boom length. When retracting boom, operate boom in reverse order, otherwise damage will occur to telescoping cylinder and deflection to boom sections.

(1). Telescoping control handle (2)

Move the control handle to the left, the boom will retract; move to the right, the boom will extend. The telescoping speed is adjusted by the control handle (2) and accelerator. When telescoping boom, the boom angle should not be beyond the data in the Table 2-3, Table 2-3a, Table 2-4, Table 2-4a, otherwise tipping will occur to the crane.

4.8 Boom Elevating Operation



Notes on operation

① Lift up loads in the vertical direction only. Avoid side-loading or dragging loads on the ground.

② Observe the boom angle limit.

③ Move the elevating control lever slowly when starting and stopping boom motions.

(1). Boom elevating control handle (2)

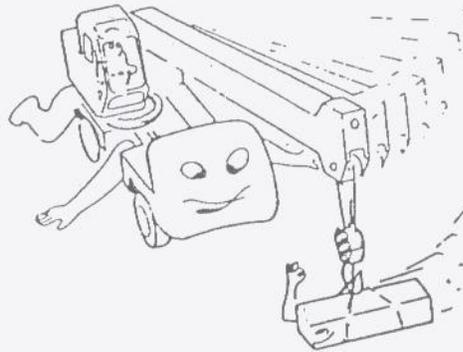
Press switch (S18), move elevating control handle (2) to the right, the boom will lower; move elevating control handle (2) to the left, the boom will raise. The elevating speed is adjusted by the control handle and accelerator.

(2). Relationship among boom angle, total rated load and working radius



When the boom is lowered, the working radius increases and the value of the total rated load decreases; when the boom is raised, the working radius decreases and the value of the total rated load increases.

4.9 Swing Operation



Notes on operation

- ① Lift up loads in the vertical direction only. Avoid side-loading or dragging loads on the ground.
- ② Before swing operation, check outrigger extension width.
- ③ Make sure that there is enough operating space.
- ④ Move the swing control lever slowly when starting and stopping swing.
- ⑤ Apply the swing brake when the boom is not swung.
- ⑥ Check the position of the SWING FREE/LOCK select switch before starting to swing.

(1). Swing control handle (3)

Before swing operation, first release mechanical lock (4), and press switch (S11), move the control handle (3) to the right, the turning table will turn right; move the control handle (3) to the left, the turning table will turn left.

4.10 Indication Plates

(1). Nameplate

The nameplate is located outside operator's cab door (Fig. 4-11). The crane type, model, total rated lifting load, VIN, manufacture date, manufacturer, etc. are shown on the nameplate.

(2). Lifting performance indication plate

The lifting performance indication plate is located inside operator's cab (Fig. 4-11).

Lifting performance indication plate contains:

QY50K Truck Crane Rated Lifting Load Table

QY50K Truck Crane Lifting Height Chart

In the total rated lifting load table, each working radius has a corresponding lifting load and



lifting height. Before lifting operation, crane operator must know the weight of the load and working area, then choose an appropriate working mode for crane operation, and do not exceed the total rated load in the table.

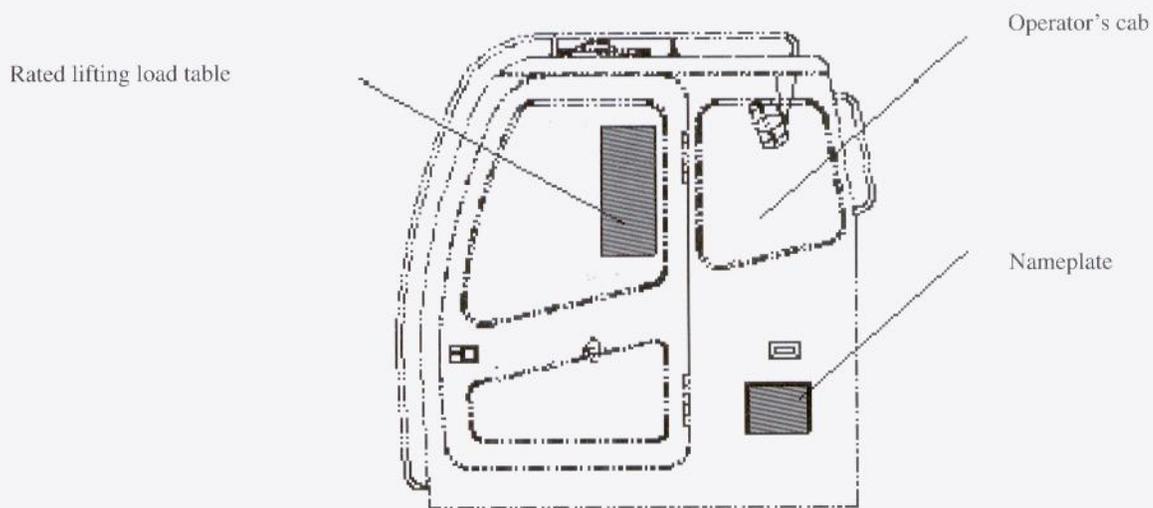
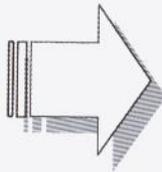
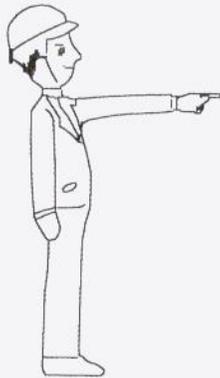
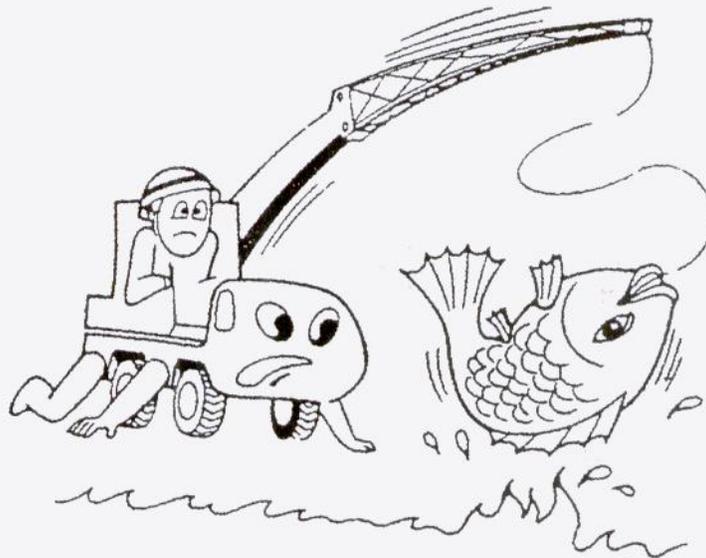


Fig. 4—11

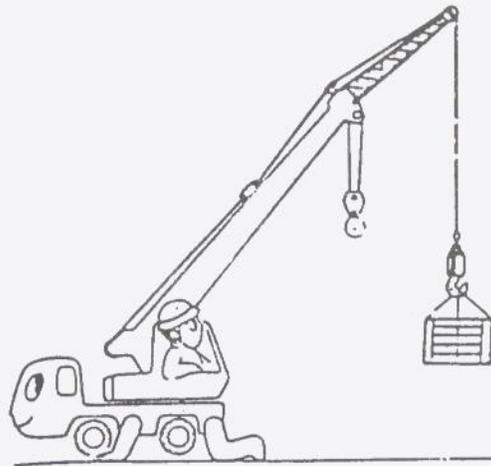


5. ACCESSORIES





5.1. Jib



Notes on operation

- ① Extend the outriggers fully and set them.
- ② When erecting the jib, no person is permitted under the jib.
- ③ Before erecting and stowing the jib, make sure that there are enough space for the operation.
- ④ To erect and stow the jib, be sure to follow the procedure given in this manual. Observe the following, otherwise the jib or other parts can be damaged.
 - a. Do not lower the boom with the auxiliary hook block in contact with the jib head.
 - b. Do not operate the crane or drive the carrier with the jib stowing pin extracted.
 - c. To fold and unfold the jib, move it slowly.
- ⑤ To climb to a high position use a ladder for safety.

Jib Erecting

The jib is quadrangular lattice type, simple structure, light weight and easy erecting.

(1) Operate the jib with outriggers fully extended.

(2) Erecting procedure:

- a. Retract the boom fully, and swing the boom over side or rear and lower it to the ground.
- b. Extend the jib support 3 in Fig. 5—1.
- c. Use the 1st section of the jib and jib length 8.5m:

Remove pin shaft 1 and pin shaft 4 on the jib to disconnect two sections, swing the jib around pin shaft 6 to align the jib pin hole with the boom pin hole, insert pin shaft A.

Remove pin shaft 6, swing the jib around pin shaft A to align the other side jib pin hole with the other side boom pin hole, and insert another pin shaft A.



d. Use the 1st and 2nd sections of the jib and jib length 15m:

Remove pin shaft 2 and pin shaft 4, 5 on the jib to disconnect the jib, swing the jib around pin shaft 6 to align the jib pin hole with the boom pin hole, insert pin shaft A.

Remove pin shaft 6, swing the jib around pin shaft A to align the other side jib pin hole with the other side boom pin hole, and insert another pin shaft A.

Unfold the two jib sections, align the pin holes on the 1st and 2nd sections, and insert pin shaft 1.

e. Reeve the wire rope over the sheave bracket and jib head sheave.

f. Turn on the jib hoist limiter switch, connect the switch leads at the jib end with the cord reel leads at the boom head, then attach the hoist limiter weight.

g. Take out the auxiliary hook block and fit it to the jib.

(3) 15° or 30° offset

First erect the jib at offset 0° , then lower the boom until the jib head touch the ground, remove pin shaft B, raise the boom slowly, insert the pin shaft into 15° hole or 30° hole (refer to Fig. 5-4, Fig. 5-5) and fix it. Now the jib can be used for lifting.

(4) Jib Stowing

After use of the jib, remove the jib in reverse order of erecting, and fix the jib at the right side of base boom (refer to Fig. 5-6). Thus the jib is in a stowing state.

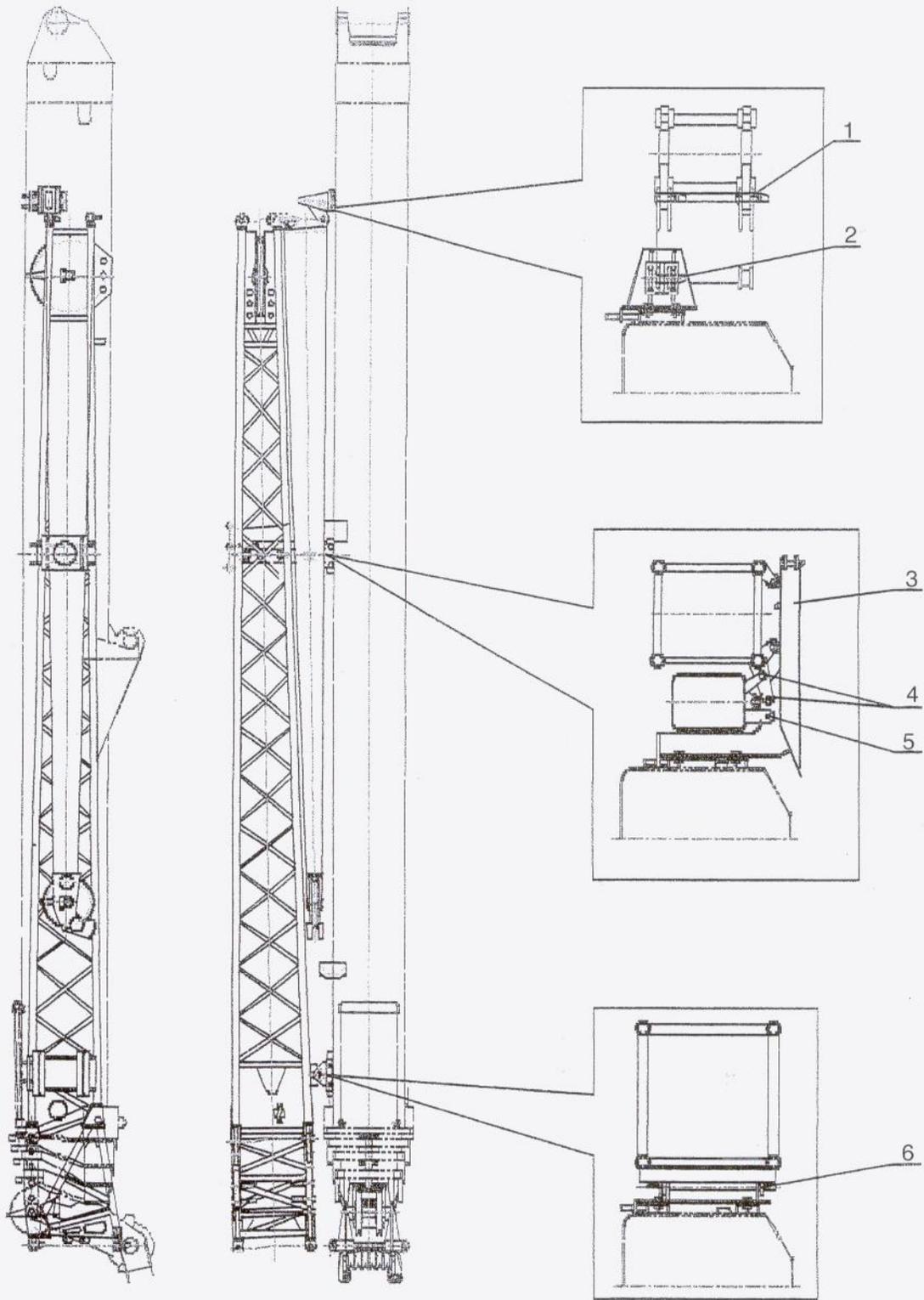


Fig. 5-1

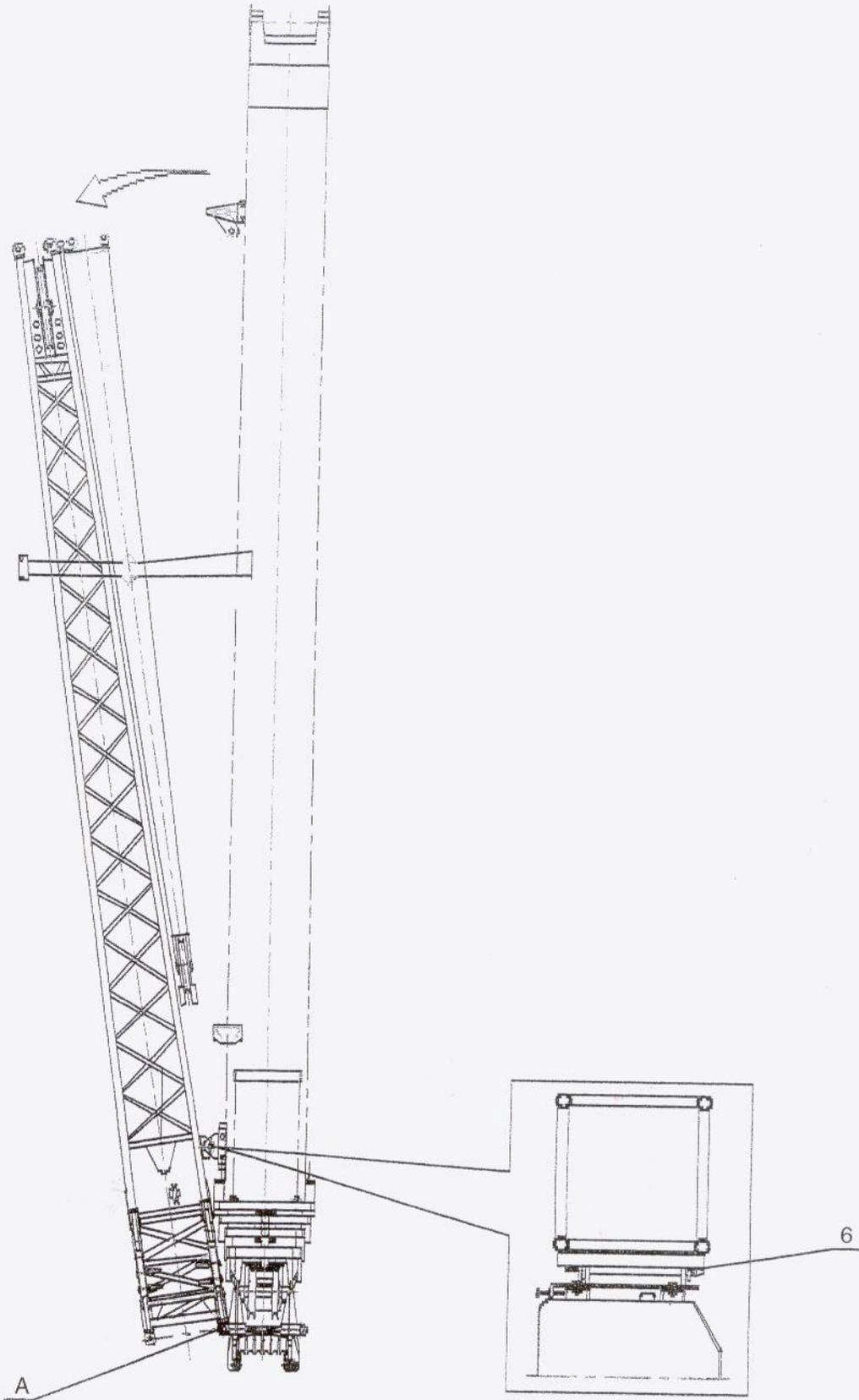
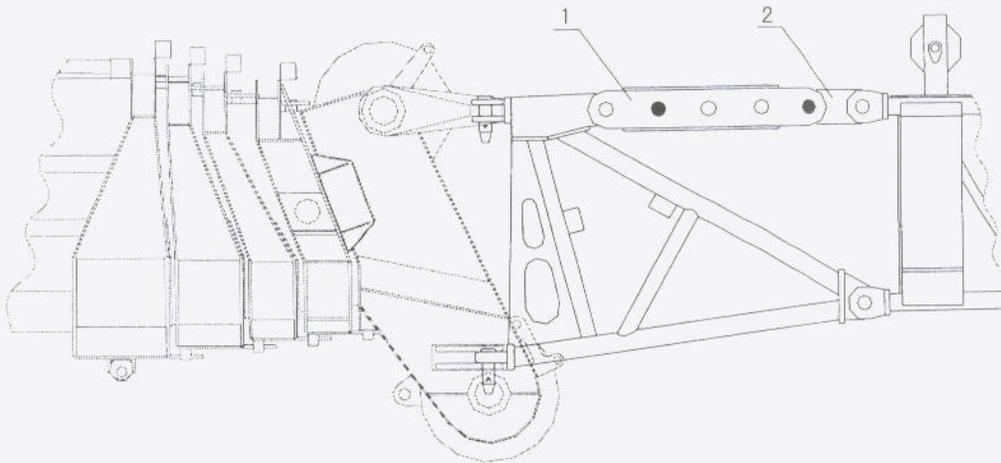
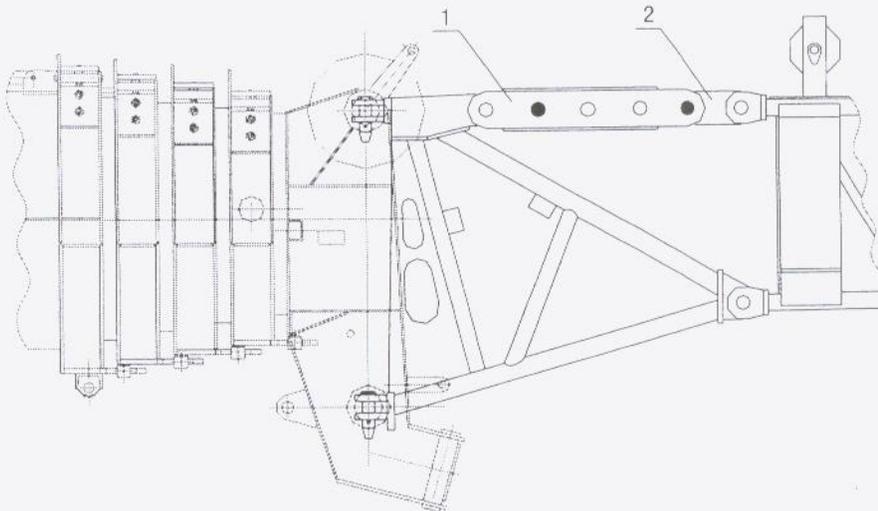


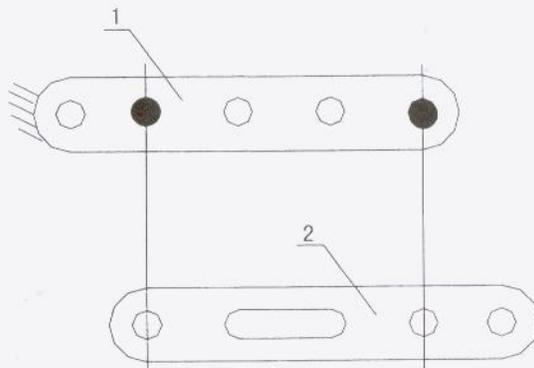
Fig.5-2



For XZJ5372JQZ50K, XZJ5393JQZ50K, XZJ5394JQZ50K

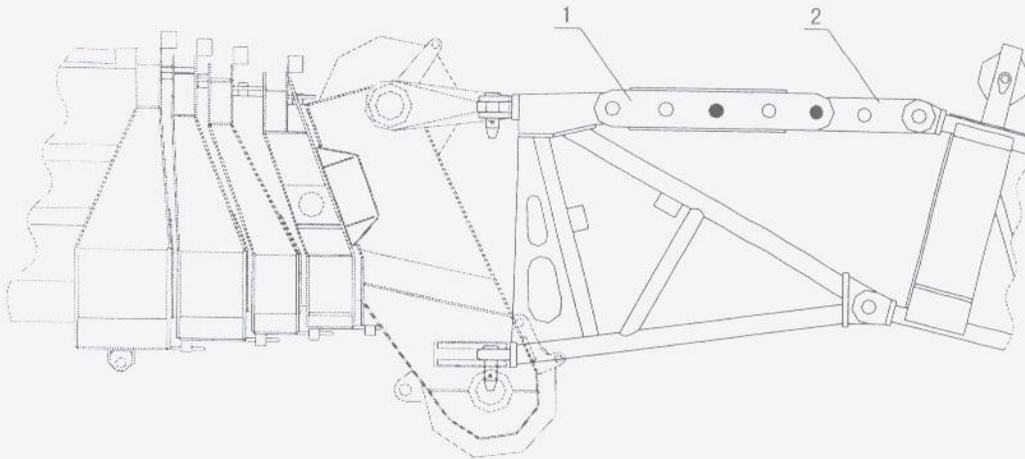


For XZJ5407JQZ50K, XZJ5408JQZ50K

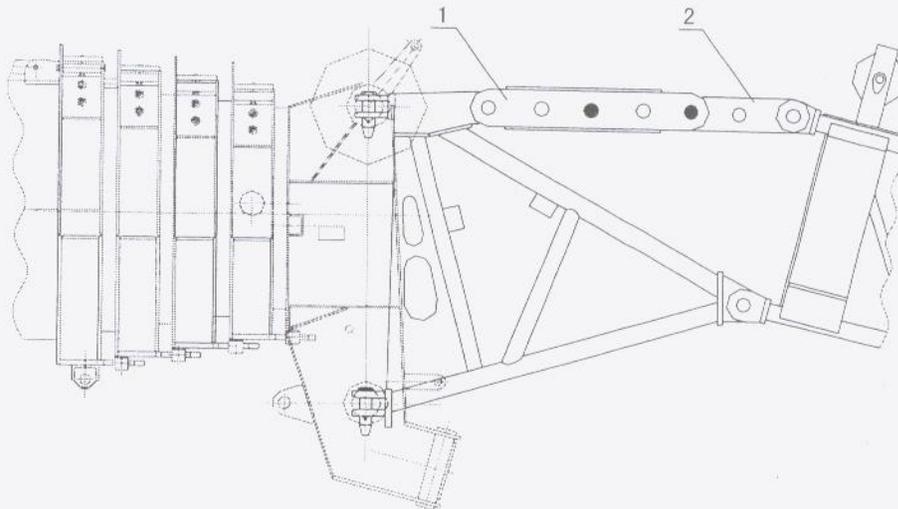


Jib offset 0°

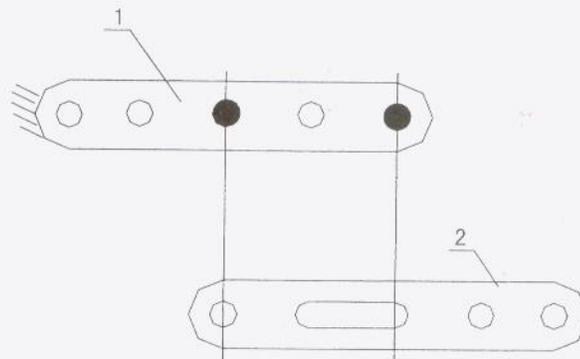
Fig. 5-3



For XZJ5372JQZ50K, XZJ5393JQZ50K, XZJ5394JQZ50K

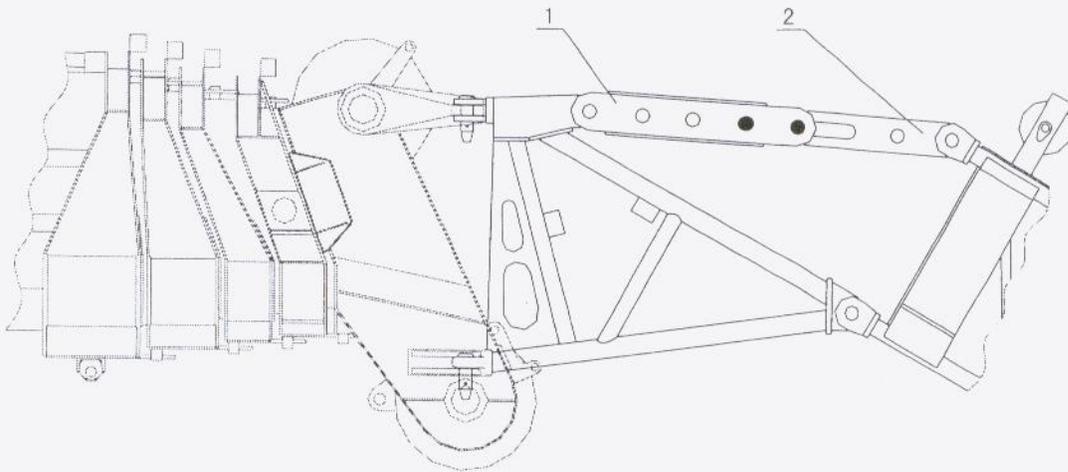


For XZJ5407JQZ50K, XZJ5408JQZ50K

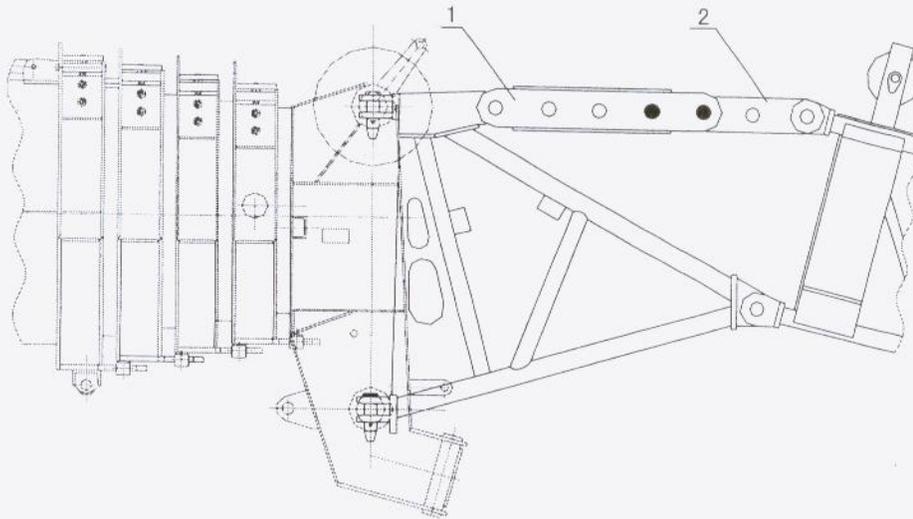


Jib offset 15°

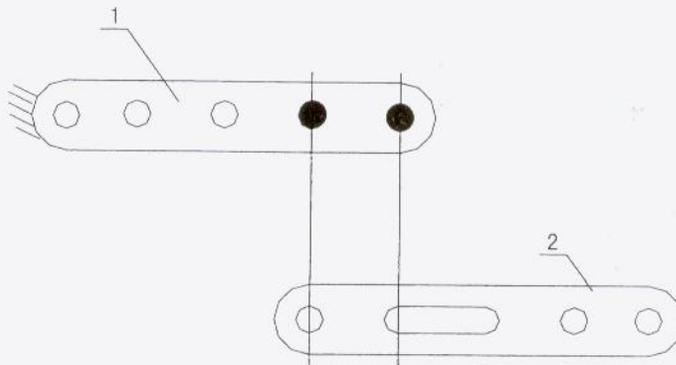
Fig. 5-4



For XZJ5372JQZ50K, XZJ5393JQZ50K, XZJ5394JQZ50K



For XZJ5407JQZ50K, XZJ5408JQZ50K



Jib offset 30°

Fig. 5—5

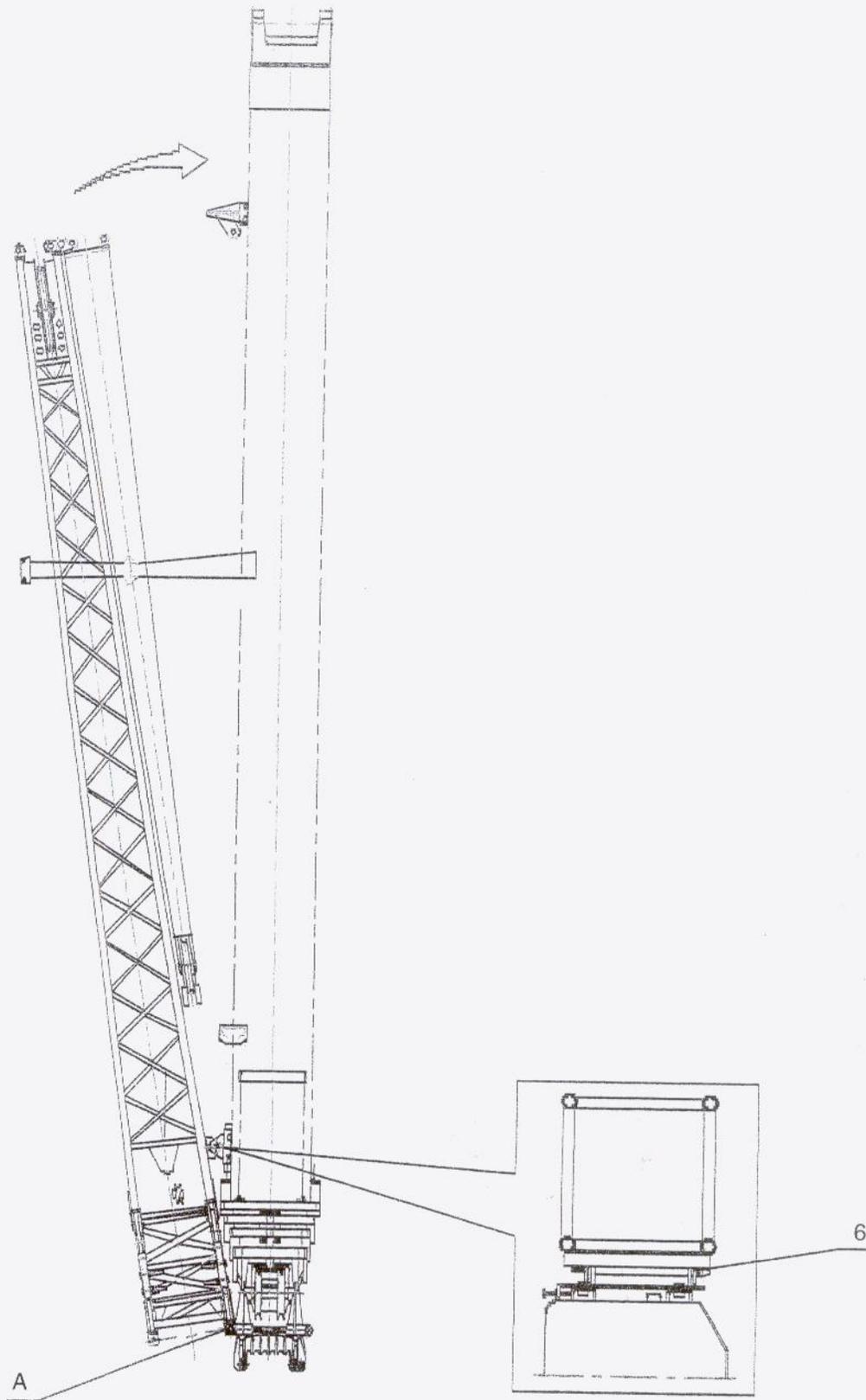


Fig. 5-6



5.2. Slewing Ring

(1) Basic structure

The structure of the slewing ring is shown as Fig.5-7. It is not only the support of the crane rotation part but also the connection of the superstructure and the carrier. The inner ring is fixed under the crane turntable by 48 pieces of M27 bolt 2 equally spaced P.C.D. The outer ring is fixed on the carrier frame by 48 pieces of M27 bolt 1 equally spaced P.C.D.

(2) Notes on use of slewing ring

a. The bolt used for connecting the slewing ring is made of 42Cr. steel material through heat treatment. Do not replace it by common bolt.

b. The pre-tightening torque of the bolt is 1150~1350 N.m. Check it after the slewing ring works 100 hours, then check it completely every 500 working hours.

c. In common case, lubricate it every 100 hours. Fill in calcium base grease (ZG-3) from oil ports. Fill enough grease into it till the grease leak from the sealing ring.

d. Pay attention to the change of noise and slewing drag torque while operating it. If abnormal case occurs, it should be stopped and inspected.

e. The tooth surface should be cleared every 10 days, and recoated with grease.

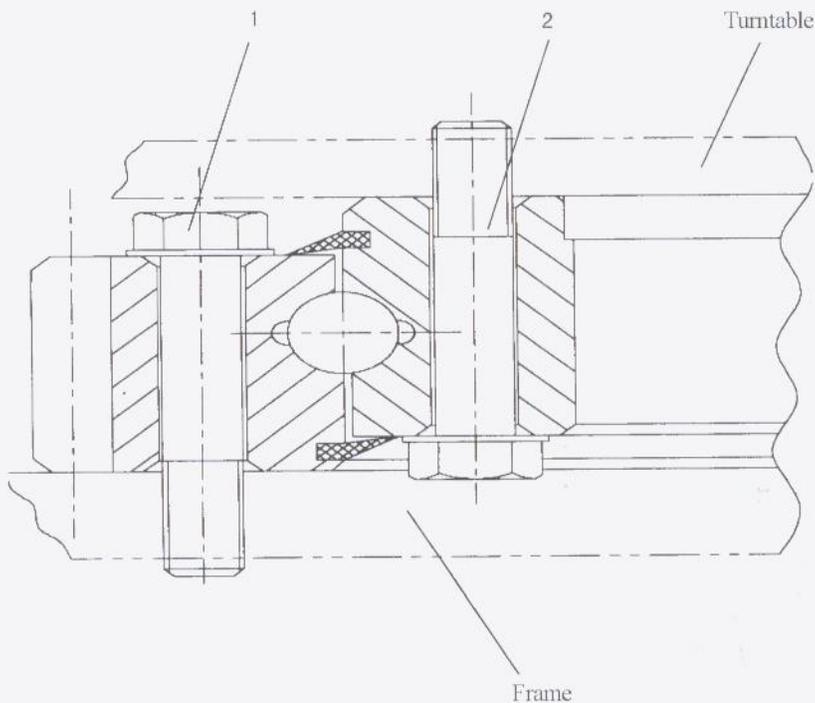


Fig. 5-7



5.3. Main and Auxiliary Hook Block

(1) The structure of main and auxiliary hook block refer to Fig. 5—8 and Fig. 5—9.

(2) inspection:

The hook block must be discarded when one of the follows occurs (welding is not allowed on hook block).

- a. Cracks and damage on hook surface.
- b. Hook opening exceeds 10% of the nominal dimension (refer to the nameplates of main and auxiliary hook block).
- c. Critical section exceeds 10% of the nominal dimension.
- d. Wear of rope touching surface exceeds 5% of the original height.
- e. Twisting deformation of hook exceeds 10° .
- f. Plastic distortion on critical section of hook tail and threads.

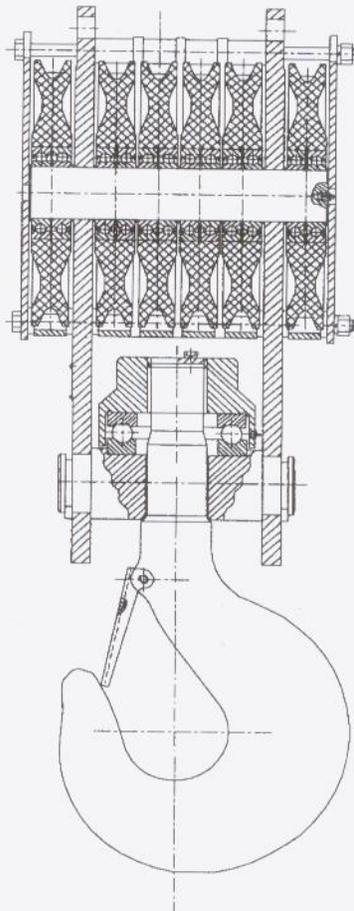


Fig. 5—8

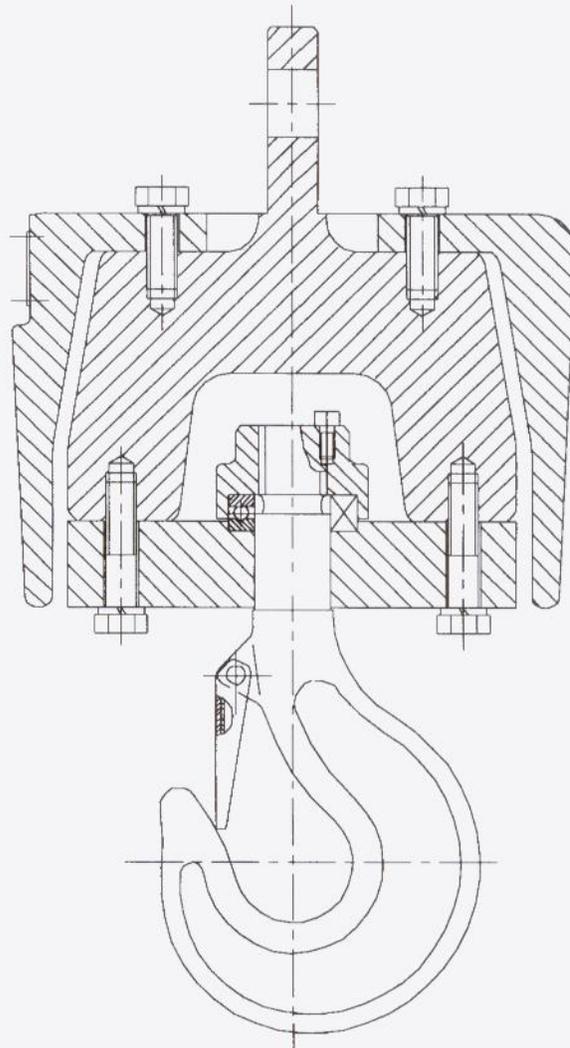
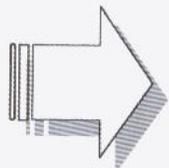
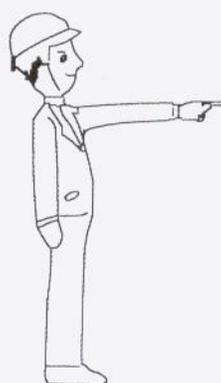
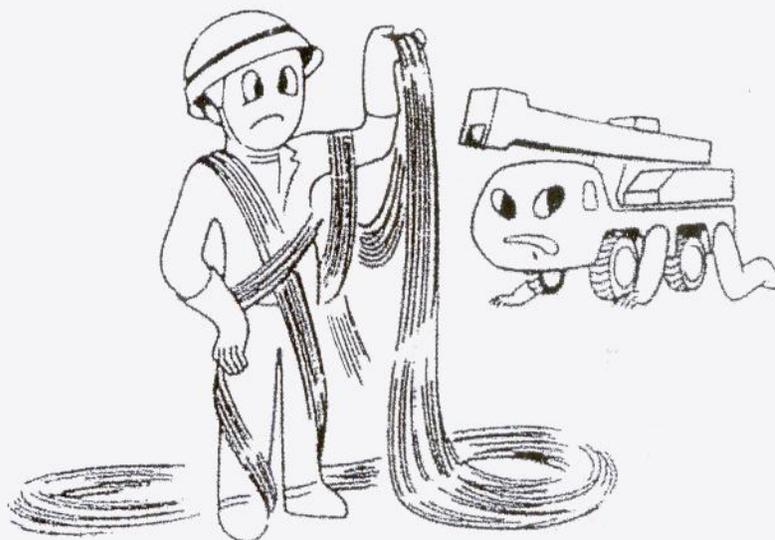


Fig. 5-9



6. RE-REEVING WINCH ROPE

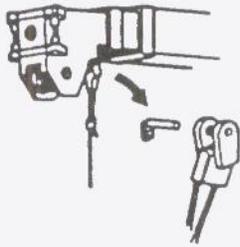




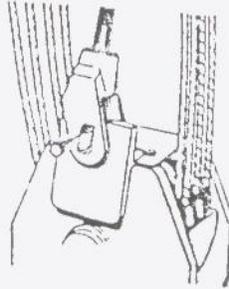
Working Conditions

(1) Extend and set the outriggers, fully retract the boom and swing it over side or rear.

- a. Place the hook block on the ground by lowering the boom.
- b. Remove the rope guard at the boom head and the rope guard on the hook block.
- c. Remove the over-wind cutout device weight from the winch rope.
- d. Disconnect the rope socket.



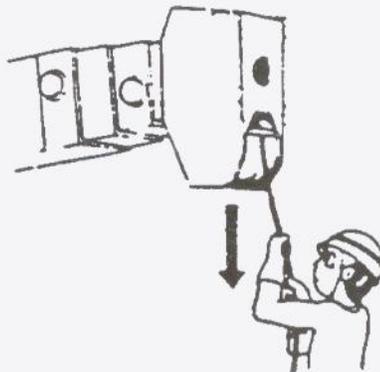
(Rope socket anchored to boom)



(Rope socket anchored to hook block)

- e. Reeve the winch rope in the desired number of parts of line.

When pulling out the winch rope, run the winch and pull the rope by hand.

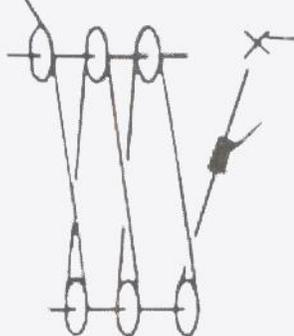


Notes:

- ① The mounting position of the over-wind cutout device weight is determined by the position in which the rope socket is attached, the anchor on the boom or that on the hook block.

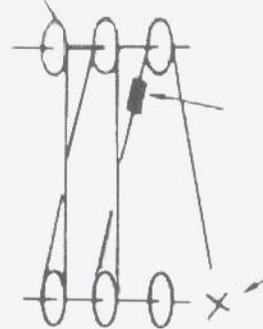


Rope socket anchored to boom



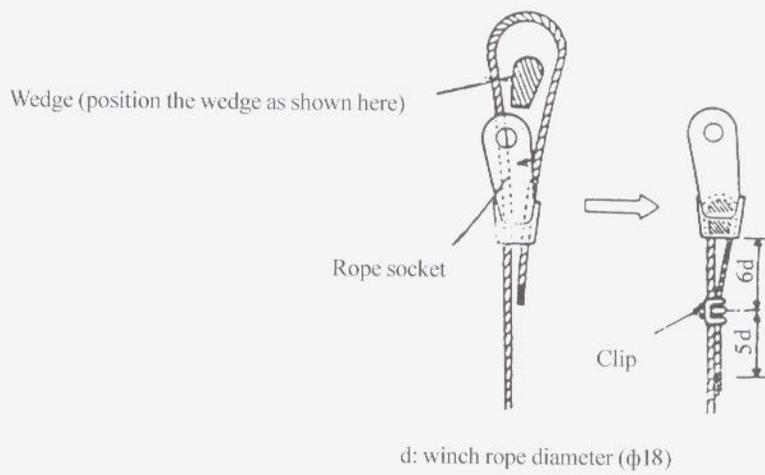
Mount the weight on the part of line with the rope socket.

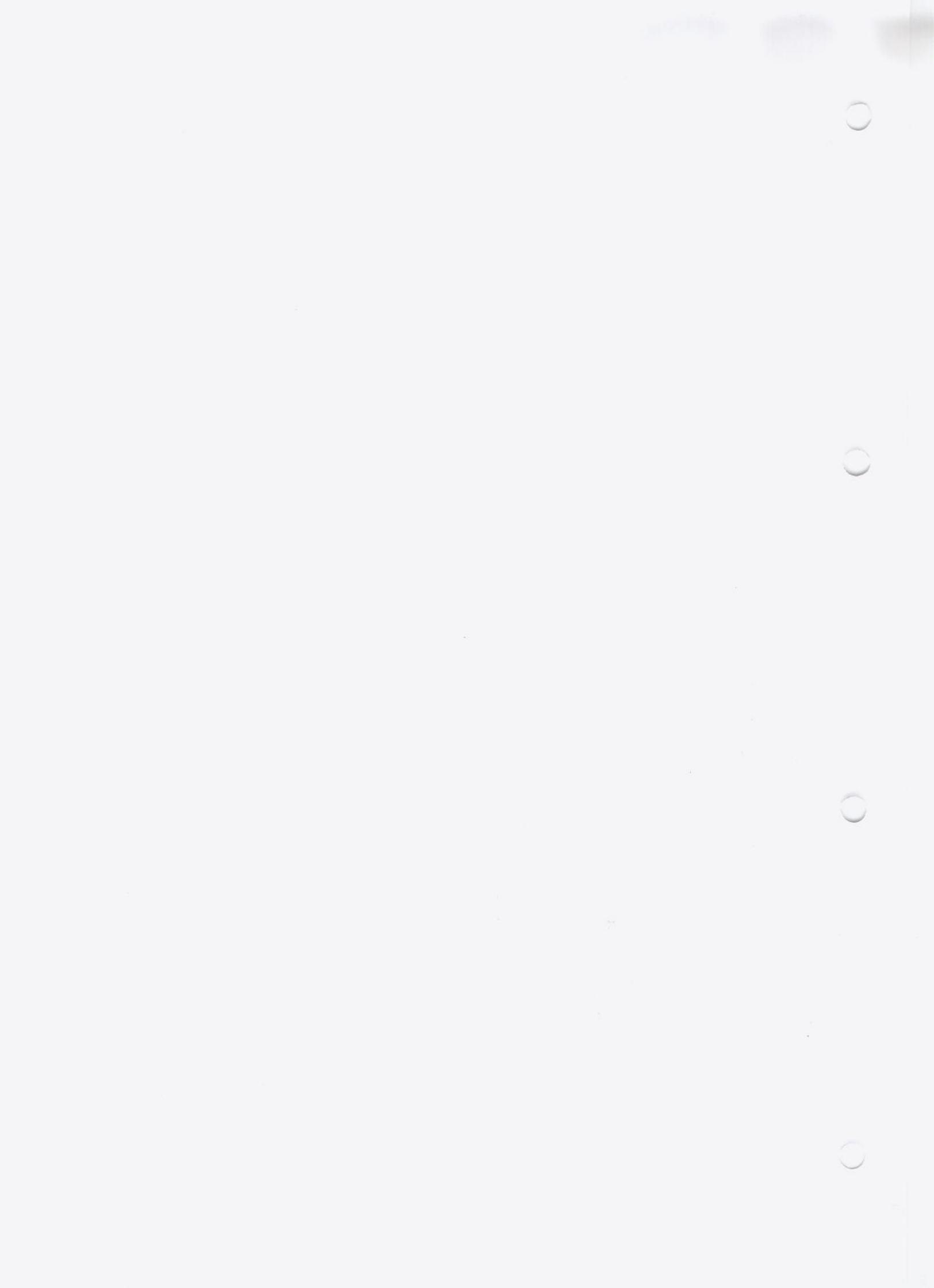
Rope socket anchored to hook block

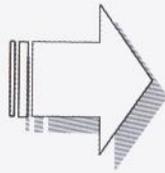
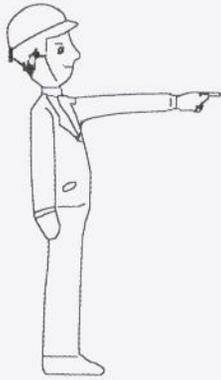


Mount the weight on the part of line that is next to the rope-socketed one.

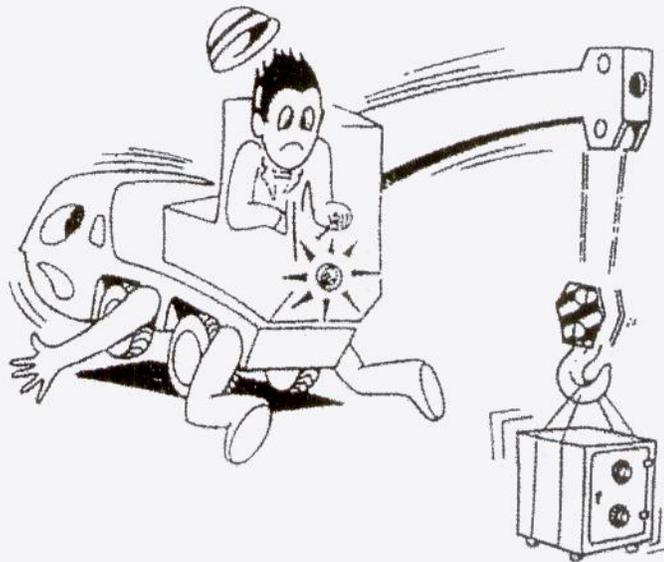
- ② Make sure that the winch rope is wound neatly.
- ③ Mount the rope socket and clip as shown below:







7. SAFETY DEVICES





7.1. Load Moment Limiter (LML)

(1) Working principle

The computer in the moment limiter will calculate the crane working radius based on the signals of boom length and boom angle input by various sensors. The computer will also calculate the loading force of the elevating cylinder based on the signal input by pressure sensor, then figure out the crane lifting load moment, and finally compare these data with the maximum value of total rated lifting capacity stored in the data base and display the corresponding information on the screen.

(2) Safety function

When an overload occurs, the moment limiter will automatically cut the crane motions which increase the load moment (boom extending, boom lowering and hoist up) and only remain those which decrease the load moment (boom retracting, boom raising and hoist down).

(3) Hoist height limit function (see Fig. 7-1)

When hook block approaches boom head sheave (aprox.750mm), the hoist limit switch will turn on to ground the 4.7k electric-resistance in boom length detector. After being "local" processed, it stops boom extending and hook block winding. At the same time the display warning lamp lights up.

(4) Notes

a. Please read carefully the load moment limiter (LML) operation instruction manual before lifting operation.

b. Although the crane is equipped with the load moment limiter, operator should still pay attention to safety. Before lifting, operator should estimate the weight of the load to be lifted, and determine if the crane can lift the load or not in comparison to the total rated load table. The load moment limiter is a very important safety device for the crane. Do not carry out the impermissible operations with the load moment limiter switched off (such as extending boom with a lifted load).

7.2. Rope-End Limiter (see Fig. 7-1)

When lifting a load below the crane level and the wire rope unwinding until three turns left on the winch drum, the rope-end limiter automatically activates to stop hook lowering, at the same time, the buzzer sounds and the over-release warning lamp lights up.(see Fig. 4-2).

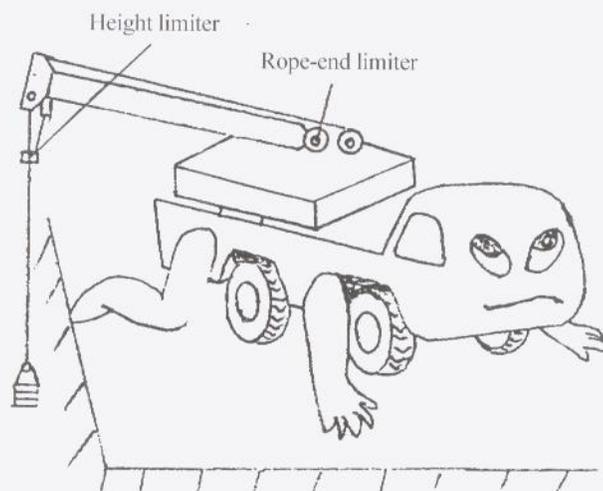


Fig. 7-1

7.3. System Pressure Switch (see Fig. 4-4)

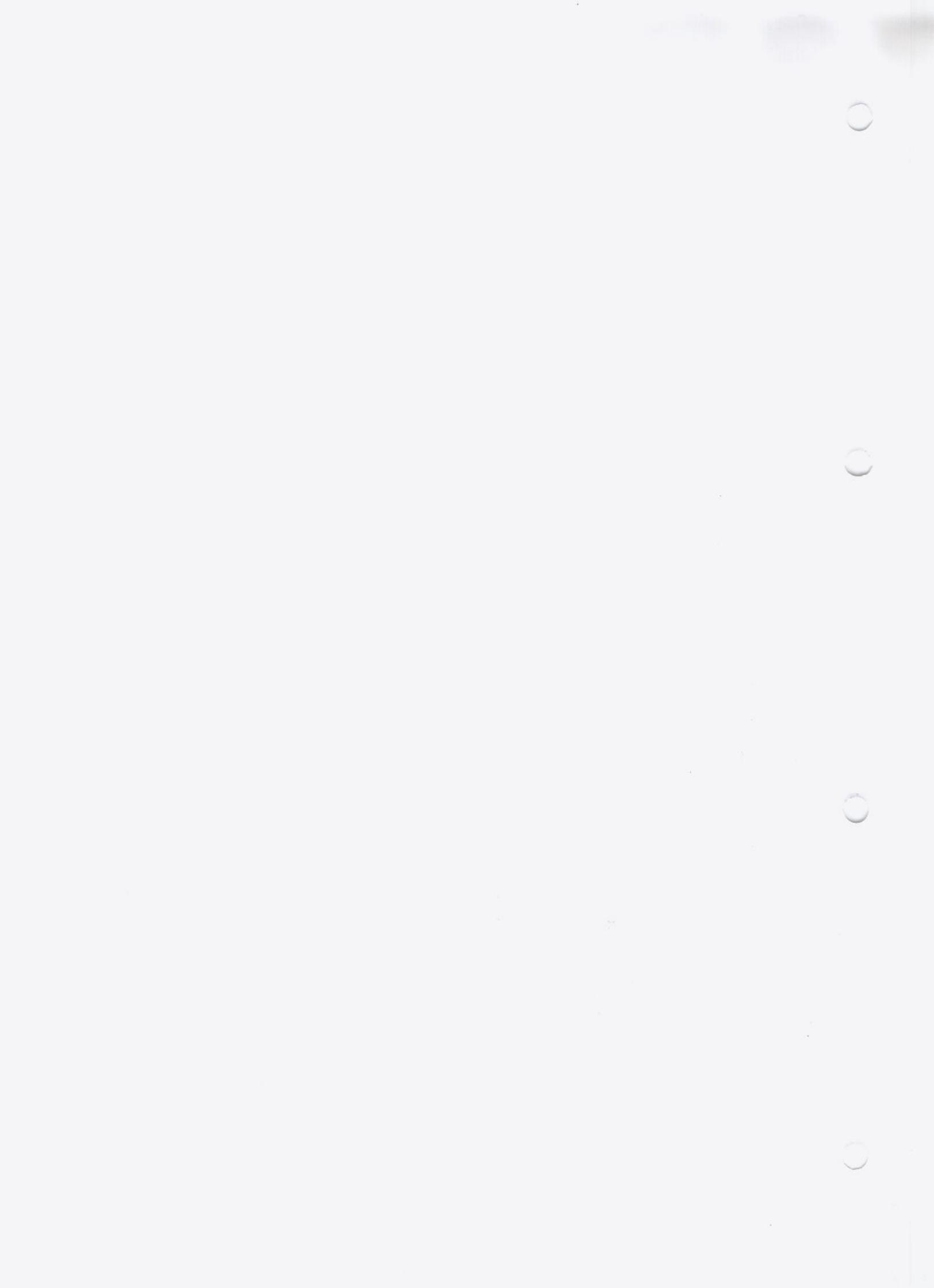
This safety device is designed to prevent accidental touch the control levers in access of operator's cab. Before operating the crane, press the switches S-15, S-16 to build up hydraulic pressure for the system.

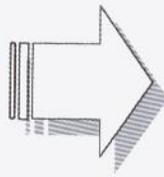
7.4. Hydraulic Safety Valve

The hydraulic safety valves are provided for preventing damage to the hydraulic system by abnormal rise of oil pressure due to overload. They can cut the crane motions which increase load moment (boom extending, boom lowering and hoist up) and remain those which decrease load moment (boom retracting, boom raising and hoist down).

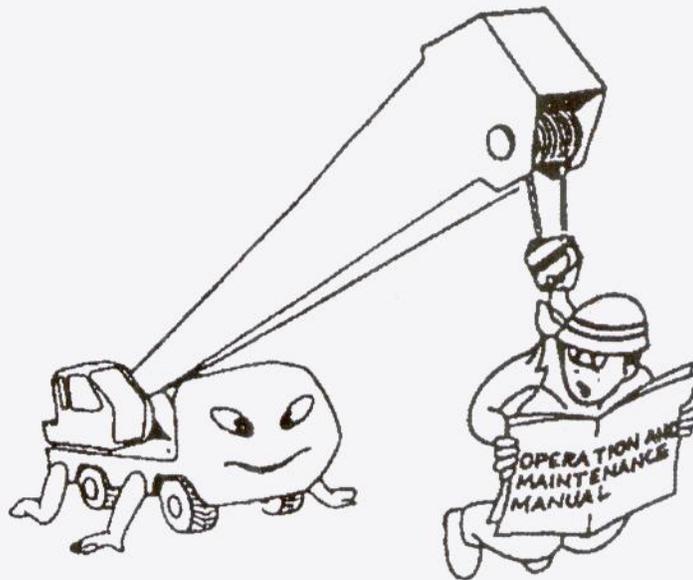
7.5. Hydraulic Oil Filter Blocked Warning Lamp

The warning lamp lights when the oil filter is blocked, at this time stop operation and replace the oil filter.



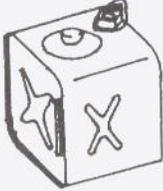


8. GENERAL CAUTIONS IN OPERATION





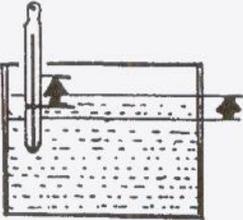
8.1. Cautions in operating the crane are summarized here. Before starting to operate your crane, carefully read and thoroughly understand them for safe operation.

No.	Illustrations	Cautions	Remarks
1		Observe the "Starting and Stopping Engine" item in the carrier instruction manual.	Preoperational checks
2		Check the hydraulic oil level with the crane in the traveling configuration, to make sure that the specified quantity is in the tank.	
3		Check all the members for defects and abnormalities.	
4		Do not check and repair the crane when it is in lifting operation.	
5		After starting the engine, run it at low speeds to warm it up sufficiently.	
6		Before operating the PTO, make sure that the various levers and switches are in their neutral or off positions.	

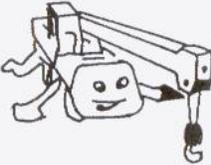
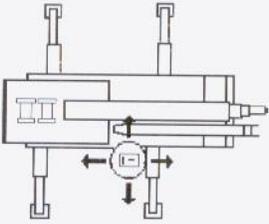
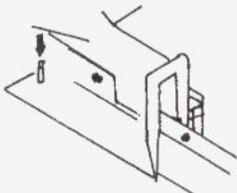


No.	Illustrations	Cautions	Remarks
7		<p>Move the control levers and switches without load to check for correct crane functions. If any crane operation is faulty, repair immediately.</p>	Preoperational checks
8		<p>Perform the specified preoperational checks of the load moment limiter (LML). (Refer to the load moment limiter instruction)</p>	
9		<p>Check all other safety devices for proper function. (e.g. pressure gauge, etc.)</p>	
10		<p>Turn on the power switch and starter switch (in the carrier cab and crane cab) before starting to operate the crane.</p>	
11		<p>Do not lift loads in excess of the total rated loads. Do not overload the crane. Avoid side-loading or dragging loads on the ground.</p>	During crane operation
12		<p>In general case, do not lift a load with two cranes at the same time. If a load must be lifted with two or more cranes, carry out the lifting operation according to the regulation 5.1.2.3 in standard GB6067-85.</p>	

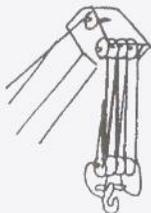
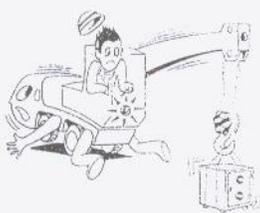
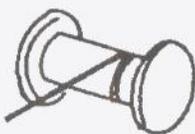


No.	Illustrations	Cautions	Remarks
13		The boom deflects under loads and the working radius increases. When calculating the total rated load, take this into consideration.	
14		Operate the crane slowly while you are familiarizing yourself with its operation.	
15		Do not look to the side when operating the crane. Do not talk with others, only respond to the one who is assigned for the lifting, but must stop operation in response to any one's dangerous signal.	
16		Check safety conditions around the crane during operation. Operator must not leave the crane with a load suspended on the boom.	
17		Pay attention to the hydraulic oil temperature, and stop operation when the temperature rises above 80°C. Note that the amount of oil in the cylinders, tanks, etc. changes when the temperature changes. Therefore, when the boom is extended with the hydraulic oil at high temperatures, the boom retracts as the oil temperature drops. Compensate the boom retraction by extending the boom further.	During crane operation



No.	Illustrations	Cautions	Remarks
18		<p>Take note of weather report</p> <p>① Where the wind velocity is over 10m/sec. do not operate the crane.</p> <p>② If it is very windy or thundering, stop operating the crane and stow the boom.</p>	During crane operation
19		<p>Avoid side loading or dragging loads on the ground.</p>	
20		<p>Set up the crane level on a firm and uniformly supporting surface (Where the ground is suspected to be soft, place strong wood blocks on the ground and set up the crane on them.)</p>	Outrigger operation
21		<p>After setting up the crane, check that all the tires are clear of the ground and that the crane is level by monitoring the level gauge.</p>	
22		<p>Extend the outriggers to the specified positions, and lock them with the lock pins.</p>	



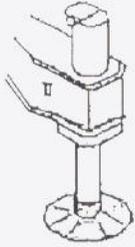
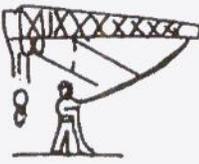
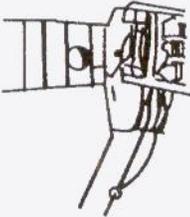
No.	Illustrations	Cautions	Remarks
23		Do not abruptly move the winch control lever.	
24		During hoisting, lift the load off the ground 150~200mm, stop winding the rope for 10 min., and ascertain safety before further hoisting the load. Do not lift a load off the ground by raising the boom or extending the boom.	
25		Reeve the winch rope in a proper number of parts of line according to the boom length.	
26		If the winch rope twines and the hook block rotates, fully untwine the rope before lifting loads.	
27		Do not lower the hook block with a lifted load, and do not apply sharp the winch brake during operation.	
28		When lowering hook block, leave at least three turns of the winch rope on the winch drum.	

Winch operation

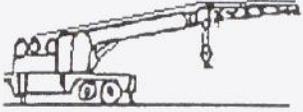
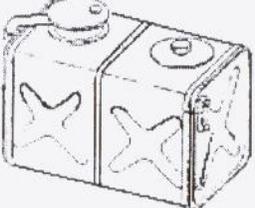


No.	Illustrations	Cautions	Remarks
29		<p>Sufficiently lower the hook block before extending the boom.</p>	
30		<p>With the boom fully retracted, check the length indication of the LML. Extend the boom only after making sure that the indication is within the specified range.</p>	<p>Boom elevating</p>
31		<p>Do not abruptly move the elevating control lever, especially with a load on the boom.</p>	
32		<p>Before swinging the boom, make sure that area in the swing path is clear of personnel and obstructions.</p>	
33		<p>Before swinging the boom, check the position of the Swing Free / Lock select switch, and do not move the Swing Free/Lock select switch during swinging.</p>	<p>Boom swinging</p>
34		<p>While the SWING FREE/LOCK select switch is in FREE, take care to prevent the boom from drifting under tilt, wind pressure, or inertia. Especially when lifting a load on tires, pay attention to the inclination of the carrier frame.</p>	

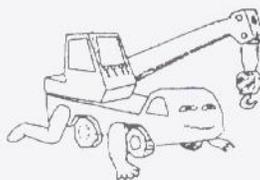
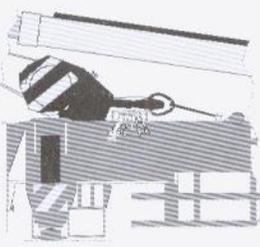
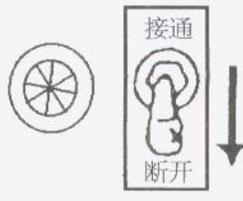
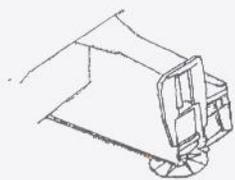


No.	Illustrations	Cautions	Remarks
35		Do not abruptly move the swing control lever.	Boom swinging
36		Keep the swing brake applied when the boom is not swung.	
37		Outrigger must be fully extended.	Jib
38		When folding and unfolding the jib, hold it by the auxiliary winch rope or the like, and swing it slowly.	
39		When the jib is erected (stowed), connect the hoist height limit switch leads to the jib (boom) side.	
40		Do not operate the crane or drive the carrier with the stowing pin extracted, otherwise the jib may drop off.	



No.	Illustrations	Cautions	Remarks
41		<p>When stowing the jib, do not over-wind the auxiliary winch rope.</p>	Jib
42		<p>Do not lower the boom immediately after changing the offset to 30° or to 15°</p>	
43		<p>Before changing the jib offset or extending, secure sufficient clearance above the ground by raising the boom.</p>	
44		<p>Once every month and every year, periodically inspect the crane.</p>	Maintenance and servicing
45		<p>Clean or replace the hydraulic oil at regular intervals to keep it always clean.</p>	
46		<p>Replace the gear oil and other lubricants regularly.</p>	

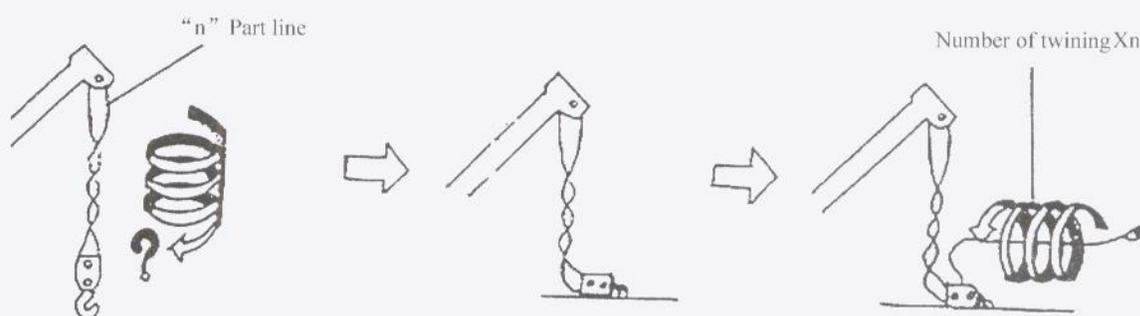


No.	Illustrations	Cautions	Remarks
47		Grease all the specified greasing points, and other rotating and sliding members regularly.	Maintenance and servicing
48		Replace the filter element regularly.	
49		Check the oil levels of the hydraulic oil, gear oil, and other lubricating oils for correct quantity, and refill as necessary.	
50		Keep all parts properly adjusted. Keep them free from deformation, damage, loose mounting, etc.	
51		Stow the hook block in the specified position and lock it.	
52		Disengage the transmission PTO.	
53		Retract the outriggers fully and lock them by the lock pins.	



8.2. Cautions In Handling Winch Rope

- (1). When winding a new wire rope on the winch drum, take care not to twine the rope.
- (2). After installing a new wire rope on the winch drum, repeat hoist up and down a load of 10 % rated load several times.
- (3). Inspect and discard wire rope according to GB5972—1986.
- (4). When the winch rope becomes twined, correct it as follows:



- a. Check the direction of the twining and count the number of twining turns.
- b. Lower the hook block to the ground. (If the hook block cannot be hoisted down, lower the boom.)
- c. Disconnect the rope socket from the hook block (or boom head). Turn the rope end in the twine direction “n” times the number of twines as counted in step a. before attaching the rope socket to the hook block (or boom head).

Note: Do not turn the rope five turns or more at a time.

- d. Fully extend the boom and raise it to the maximum angle. Repeat hoisting up and down the hook block several times.
- e. Repeat the procedure above until no twining remains.

Note: If twining still remains after the above measures, replace the rope with a new one.

- (5). Wind the first layer of wire rope on the winch drum uniformly and with proper tension applied to it.
- (6). It is recommended that the hook end and the drum end of the winch rope be periodically reversed to extend the rope life.
- (7). Check the winch rope every working day to find the conditions of damage and deformation. Especially pay attention to fixing position of the winch rope. Inspected the positions as follows:

- a. Common positions

Pay attention to following positions:

The beginning and the end of the winch rope.



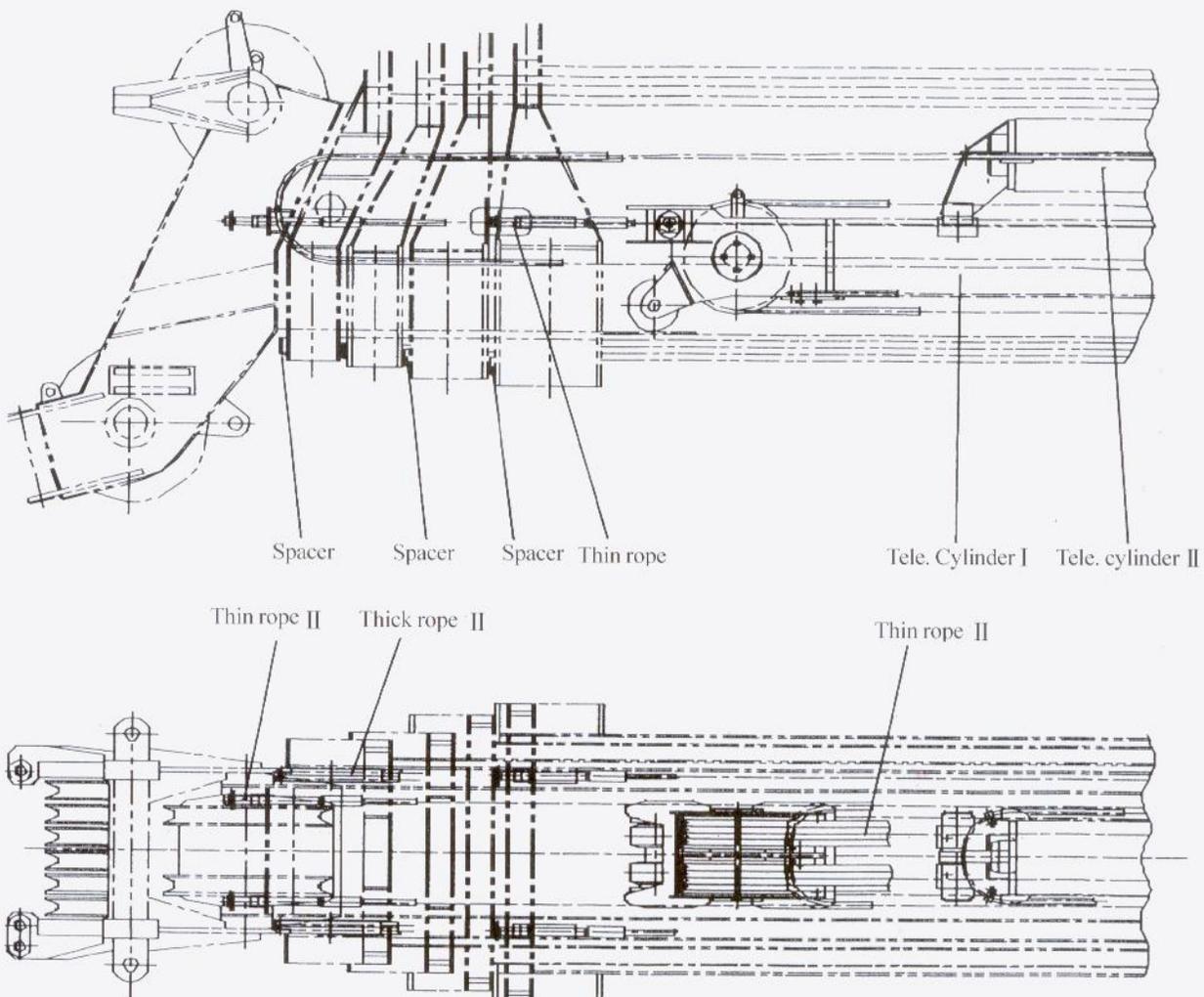
The rope section reeved through sheaves.

b. Rope end

Check the inner of wedge, broken wire and rusty to ensure the tightness for the wedge and rope clips.

8.3 Rope Adjustment

During lifting operation, the length of tension ropes will change due to pulling force. So check and adjust the ropes monthly. If asynchronous telescoping or shaking occurs to the ropes, adjust them in time. Otherwise the ropes will disengage from sheave grooves and breaking will happen, and cause serious result. Please regularly adjust the ropes for the vehicle running well. Adjustment method is as the follows:



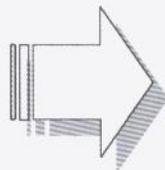
Raise the boom to 60°, extend fully all boom sections, then retract them fully, repeat the operations several times. Extend 3rd, 4th and 5th sections a little, then lower the boom down.



Adjust synchronously the nuts for thin ropes II on 5th section as well as the nuts for thin ropes I on 4th section respectively until 3rd, 4th and 5th sections can telescope synchronously and no shaking, then tighten the nuts for thin ropes. With all boom sections retracted, if there is a clearance more than 1~2mm between sections on boom heads, please weld the spacers in front of boom head, otherwise the load-bearing force of oil cylinders and tension ropes will be affected.

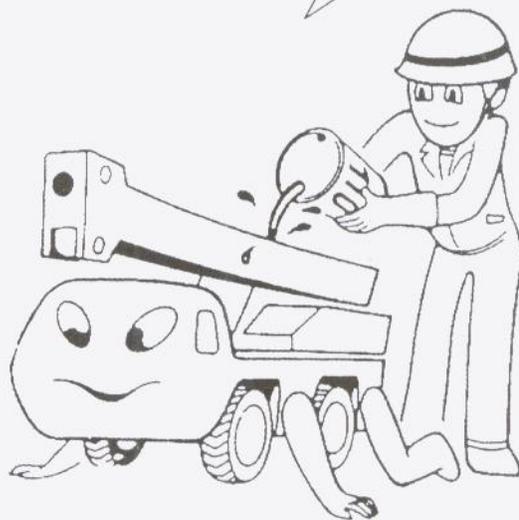
Note: 1. When adjusting, if boom shakes, coat slider contact surface with grease.

2. When coating, do not lower boom with all sections extended, only extend two sections for grease coating.



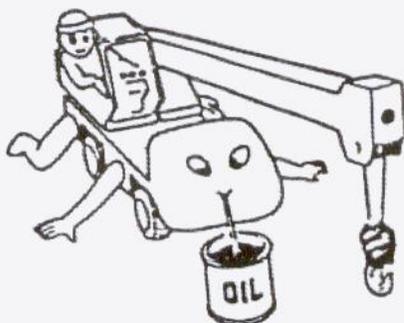
9. LUBRICATING OIL

Different brands of hydraulic oil, gear oil and grease should not be mixed.

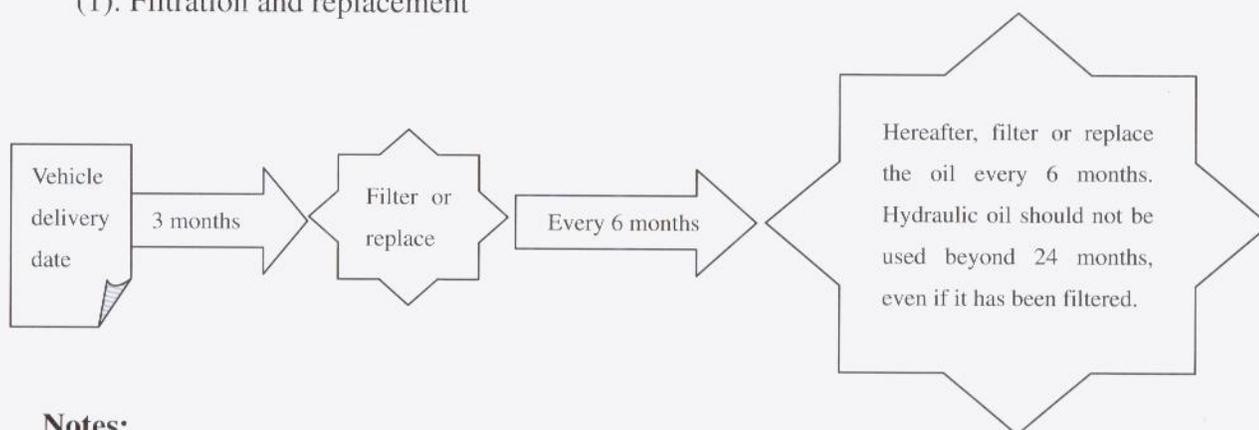




9.1 Hydraulic Oil



(1). Filtration and replacement



Notes:

① Whenever oil becomes excessively contaminated, filter or replace it even before the scheduled filtration or replacement time. Hydraulic oil is replaced according to the standard JB/T9737.3-2000.

② Use suitable oil depending on the environment temperature (see 4.2).

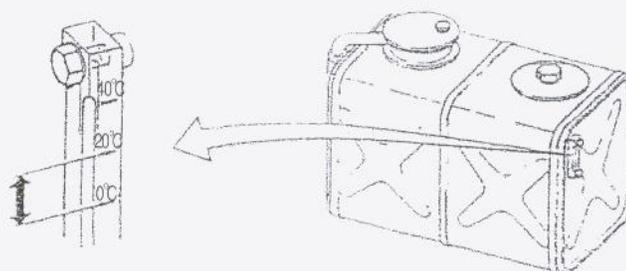
(2). Hydraulic oil temperature

The oil temperature should always be below 80°C.

(3). Quantity of hydraulic oil

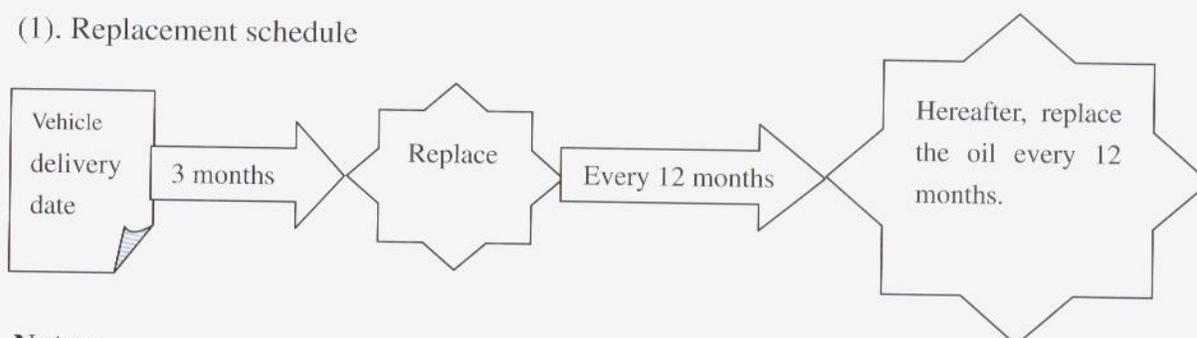
Required quantity of hydraulic oil is 658L.

Checking hydraulic oil level: Check the oil level with the crane put in the road travel condition. The oil level gauge is provided with graduations showing the approximate thermal expansion range of the hydraulic oil at various temperatures. When checking the oil level, make sure that the oil level is above the middle mark, and add hydraulic oil when the oil level becomes below the lower mark.



9.2 Gear Oil

(1). Replacement schedule



Notes:

- ① Whenever oil becomes excessively contaminated, replace it even before the scheduled time of replacement.
- ② Frequently check the oil level, and refill if the level is lower than the specified level.

(2). Winch

The filling amount is about 20L. Mobil SHC220 gear oil is for winter, and L-CKD220~320 gear oil is for summer. Expose the drum bottom by removing winch rope, remove the filling plug, refill required quantity of oil.

(3). Swing system

The filling amount is about 1.5L. Mobil SHC220 gear oil is for winter, and L-CKD220~320 gear oil is for summer. Remove the filling plug, refill required quantity of oil according to indication plate and oil dipstick on the swing system.



9.3 Grease

No.	Greasing Points	Greasing interval	Methods
1.	Main hook block sheaves	Weekly	Grease pump
2.	Boom winch sheaves	Weekly	Grease pump
3.	Slides between 2nd, 3rd, 4th, and 5th boom sections	Weekly	Coat, grease pump
4.	Sliding surfaces between 2nd, 3rd, 4th, and 5th boom section	Weekly	Coat
5.	Elevating cylinder upper and lower pivot shaft	Weekly	Grease pump
6.	Jib sheave	Before use	Grease pump
7.	Boom rear pivot shaft	Weekly	Coat, grease pump
8.	Slewing ring	Acc. to item 5.2	Grease pump
9.	Swing bearing and swing gear	Weekly	Coat
10.	Auxiliary hook block	Before use	Coat
11.	Winch rope	Weekly	Coat
12.	Telescoping wire rope	Weekly	Coat
13.	Outrigger jack float	Weekly	Grease pump
14.	Winch bearing seat	Weekly	Grease pump

Notes:

- ① Clean the grease nipples and the surface to be coated with grease before greasing.
- ② The sliding surfaces which are not indicated in the above list also require periodic greasing.
- ③ Monthly apply a thin coat of grease to the exposed portion of the elevating cylinder piston rod with the boom placed on the boom rest.

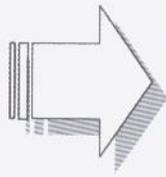
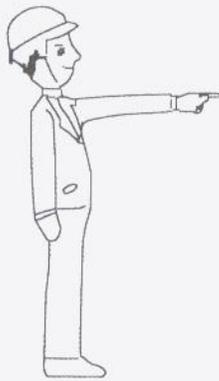
9.4 Hydrostatic Pressure Oil

The filling amount of hydrostatic pressure oil is approx. 2.5 kg.

The crane is filled with the hydrostatic pressure oil when it is delivered. If it is needed to replenish oil, replenish KF-01 brake fluid (made by Xuzhou Automobile Chemicals Factory).

Notes:

- ① Different brands of brake fluid should not be mixed.
- ② Use the brake fluid for crane accelerator specified by our company. Do not replace it with other brands, otherwise the operating cylinder and the rotary joint oil seals will be damaged.



**10. COMMON TROUBLES
AND TROUBLESHOOTING**



**10.1 Troubles and Troubleshooting**

Section	Trouble	Cause	Remedy
Pump system	Noise	<ol style="list-style-type: none"> 1. Insufficient oil. 2. Air entering through suction line. 3. Mounting bolt loose. 4. Contaminated hydraulic oil. 5. Propeller shaft vibration. 6. Universal joint worn. 7. Pump faulty. 	<p>Add oil.</p> <p>Repair and bleed air.</p> <p>Tighten.</p> <p>Replace or filter.</p> <p>Repair.</p> <p>Replace.</p> <p>Repair or replace.</p>
Outrigger system	Outriggers inoperative.	<ol style="list-style-type: none"> 1. Relief valve in carrier multi-way valve pressure setting faulty. 2. Relief valve element blocked by dirty. 3. Control valve faulty. 	<p>Adjust.</p> <p>Disassembly and clean.</p> <p>Repair.</p>
	Movement is sluggish.	<ol style="list-style-type: none"> 1. Inner of control valve faulty. 2. Relief valve pressure setting too low. 	<p>Repair.</p> <p>Adjust.</p>
	Jack automatically retracts during lifting operation or extends during rode travel.	<ol style="list-style-type: none"> 1. Double-way hydraulic lock faulty. 2. Internal leakage in cylinder. 3. External leakage in cylinder. 	<p>Repair.</p> <p>Repair.</p> <p>Repair.</p>
Swing system	Swing brake ineffective.	<ol style="list-style-type: none"> 1. Brake lining worn or oil on brake lining. 2. Air entered brake oil circuit. 3. Brake cylinder faulty. 	<p>Repair or replace.</p> <p>Bleed air.</p> <p>Repair.</p>
	Boom will not swing.	<ol style="list-style-type: none"> 1. Relief valve in main valve pressure setting too low or leakage with sticking. 2. Main valve faulty. 3. Motor faulty. 4. Speed reducer faulty. 5. Pilot control valve faulty. 6. Pressure-relief valve in pilot oil circuit faulty. 7. Relief valve in pilot oil circuit faulty. 8. Pilot oil circuit stuck. 	<p>Repair and adjust.</p> <p>Repair.</p> <p>Repair or replace.</p> <p>Repair.</p> <p>Repair.</p> <p>Adjust after repair.</p> <p>Adjust after repair.</p> <p>Check oil circuit.</p>



Section	Trouble	Cause	Remedy
Swing system	Sluggish swing.	<ol style="list-style-type: none"> 1. Relief valve in main valve pressure setting too low. 2. Motor leakage 3. Control oil circuit pressure too low or pilot valve faulty. 4. Internal leakage in main valve or change faulty. 	<p>Repair.</p> <p>Repair or replace. Check and repair.</p> <p>Check and replace sealing.</p>
	Big starting shock	<ol style="list-style-type: none"> 1. Pilot valve faulty. 2. Air reservoir inflation too high. 	<p>Check and repair. Adjust.</p>
	Unsteady swing brake	<ol style="list-style-type: none"> 1. Swing brake faulty. 2. Foot pedal valve faulty. 	<p>Check and repair. Check and repair.</p>
	Free/lock change system inoperative.	<ol style="list-style-type: none"> 1. Free/lock solenoid valve stuck or solenoid valve circuit faulty. 2. Foot valve internal oil circuit blocked or change faulty 3. Brake oil inlet circuit pressure insufficient. 	<p>Check and repair.</p> <p>Check and repair.</p> <p>Adjust pressure-relief valve and pilot oil circuit relief valve.</p>
Elevating system	Boom elevation cylinder will not extend.	<ol style="list-style-type: none"> 1. Relief valve in crane multi-way valve pressure setting too low. 2. Internal leakage in control valve. 3. Internal leakage in cylinder. 4. Master pump pressure too low. 5. No pressure in pilot oil circuit. 6. Pilot valve faulty. 7. Relief solenoid valve faulty, and in constant relief state. 8. LML faulty, relief signal not released. 	<p>Adjust.</p> <p>Check and repair. Check and repair. Check and repair. Check and repair. Check and repair. Check and repair.</p> <p>Check and repair.</p>
	Boom elevation cylinder will not retract.	<ol style="list-style-type: none"> 1. It is the same as items 5, 6, 7, 8 in boom elevation cylinder will not extend. 2. Elevating counterbalance valve faulty. 3. Back pressure of main return oil circuit too high. 4. Blocked control oil circuit of counterbalance valve. 	<p>Check and repair.</p> <p>Check and repair.</p> <p>Check and repair.</p> <p>Check and repair.</p>
	Cylinder retracts during operation.	<ol style="list-style-type: none"> 1. Internal leakage in cylinder. 2. Counterbalance valve faulty. 	<p>Repair or replace. Repair or replace.</p>



Section	Trouble	Cause	Remedy
Telescoping system	Boom will not extend.	<ol style="list-style-type: none"> 1. Relief valve in telescoping control valve pressure setting too low. 2. Same as items 2, 3, 4, 5, 6, 7, 8 in "boom elevation cylinder will not extend". 	<p>Adjust.</p> <p>Check and adjust.</p>
	Boom will not retract	<ol style="list-style-type: none"> 1. Relief valve pressure setting too low. 2. Counterbalance valve faulty. 3. Same as items 2, 4, 5, 6 in "boom elevation cylinder will not extend". 	<p>Adjust.</p> <p>Check or replace.</p> <p>Check and adjust.</p>
	Boom retracts during operation.	<ol style="list-style-type: none"> 1. Counterbalance valve faulty. 2. Internal leakage in cylinder. 3. External leakage in cylinder valve or piping joints. 	<p>Repair.</p> <p>Repair.</p> <p>Repair.</p>
Winch system	Winch will not hoist up loads.	<ol style="list-style-type: none"> 1. Relief valve in crane multi-way valve pressure setting 1 too low. 2. Hydraulic motor faulty. 3. Internal leakage in main control valve. 4. Main pump pressure too low. 5. No pressure in pilot oil circuit. 6. Pilot valve faulty. 7. Relief solenoid valve faulty, in constant released state. 8. LML faulty, relief signal not released. 9. Winch brake faulty, do not open. 	<p>Adjust.</p> <p>Check and repair.</p>
Winch system	Winch will not let out rope in power hoist-down mode.	<ol style="list-style-type: none"> 1. Counterbalance valve faulty. 2. Control oil circuit of counterbalance valve blocked. 3. Winch brake faulty. 4. No pressure in brake oil inlet circuit. 5. No pressure in pilot oil circuit. 6. Pilot valve faulty. 7. Leakage in winch motor. 	<p>Check and repair.</p> <p>Check and repair.</p> <p>Check and repair.</p> <p>Check change valve.</p> <p>Check and repair.</p> <p>Check and repair.</p> <p>Repair or replace.</p>



Section	Trouble	Cause	Remedy
Winch system	Brake is ineffective.	<ol style="list-style-type: none"> 1. Oil on brake friction disc. 2. Brake friction disc worn. 3. Air entered. 4. Master cylinder faulty. 	<p>Clean. Adjust or replace. Bleed the air. Repair.</p>
Functional parts	Fine motion control, controllable and proportional functions are ineffective.	<ol style="list-style-type: none"> 1. Control oil circuit pressure too lower 2. Pilot pressure relief valve faulty. 3. Main valve faulty. 	<p>Adjust. Check and repair. Check and repair.</p>
Hydraulic system	Hydraulic oil over-heat and functional parts low speed.	<ol style="list-style-type: none"> 1. Internal leakage in main pump. 2. Relief valve in multi-way valve faulty. 3. Counterbalance valve opening pressure too high. 4. Leakage in winch motor. 5. Main pump relief valve pressure setting too low. 	<p>Check and repair. Check and repair. Check and repair. Check and repair. Check and repair.</p>
Electrical system	<ol style="list-style-type: none"> 1. Work lamps will not light. 2. Boom lamp will not light. 3. Room lamp will not light. 	<ol style="list-style-type: none"> 1. Bulb burned out. 2. Fuse blown. 3. Earthing faulty. 4. Wire broken. 5. Switch faulty. 	<p>Replace. Replace. Repair. Repair. Repair or replace.</p>
	Wipers inoperative.	<ol style="list-style-type: none"> 1. Fuse blown. 2. Switch faulty. 3. Motor faulty. 4. Earthing faulty. 5. Wire broken. 	<p>Replace Replace. Replace. Repair. Repair.</p>
	Buzzer will not sound	<ol style="list-style-type: none"> 1. Earthing faulty. 2. Switch faulty. 3. Relay faulty. 4. Wire broken. 5. Buzzer faulty. 6. LML faulty. 	<p>Repair Replace. Replace. Repair Repair or replace. Contact our service station.</p>



Section	Trouble	Cause	Remedy
Electrical system	Starter will not be operated from crane operator's cab.	<ol style="list-style-type: none">1. Main fuse blown or loose.2. Wire broken, switch faulty.	<p>Repair or replace. Repair or replace.</p>
	Load moment limiter (LML) faulty.	<ol style="list-style-type: none">1. Fuse blown.2. Relay faulty.3. Solenoid valve faulty.4. Solenoid valve earthing faulty.5. Others.	<p>Replace. Replace. Repair or replace. Repair. Contact our service station</p>
	Hoist limit switch inoperative.	<ol style="list-style-type: none">1. Fuse blown.2. Cord reel faulty.3. Wire broken.4. Limit switch faulty.5. Weight rope broken.6. Solenoid valve faulty.7. Solenoid valve earthing faulty.8. Limit switch earthing faulty.9. AML faulty.	<p>Replace. Repair or replace. Repair. Replace. Replace Repair or replace. Repair. Repair. Contact our service station.</p>



10.2 Replacing Wire Ropes

Wire ropes are fatigued with use, and to continue to use them without paying attention to fatigue is very dangerous. Inspect and replace wire rope according to GB5972—1986 《Wire Ropes for Lifting Devices-Standard of Check and Discard》 .

(1). Wire rope replacement standard

a. Wire ropes of which 10 percent or more of all the wires (excluding filled wires) are broken in one rope lay.

b. Reduction in diameter exceeds 7 percent of the nominal diameter.

c. Kinked wire ropes.

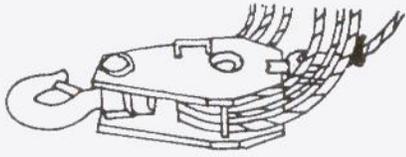
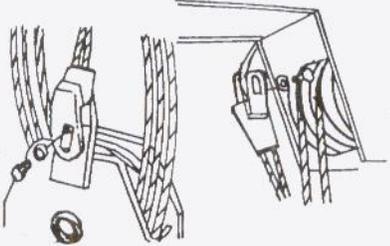
d. Excessively deformed (indented strand, protrusion of wires, bird-caging) or corrode wire ropes.

e. Wire ropes with an abnormal rope end.

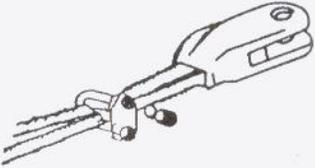
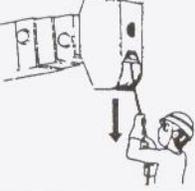
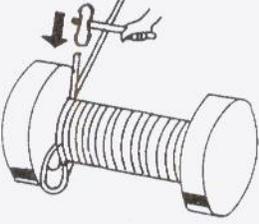
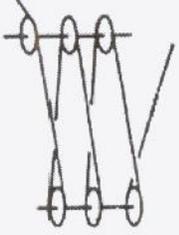
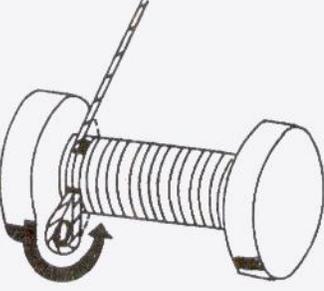
(2). Working conditions of replacing main winch rope:

a. Set up the crane on firm, level ground.

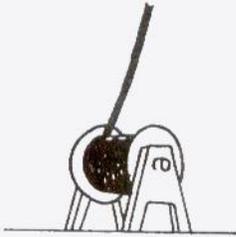
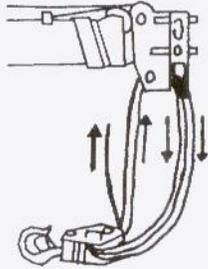
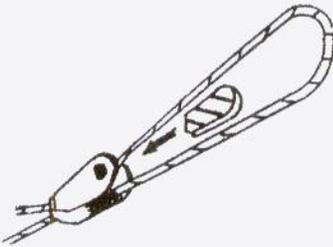
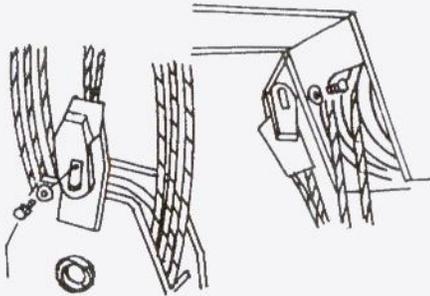
b. Fully retract the boom.

No.	Procedure	Note	Tools
1	Place the main hook block on the ground. 	Avoid disorderly rope winding on the drum.	
2	Disconnect the rope socket from the boom head or main hook block. 	Keep the parts carefully so as not to lose them.	Wrench

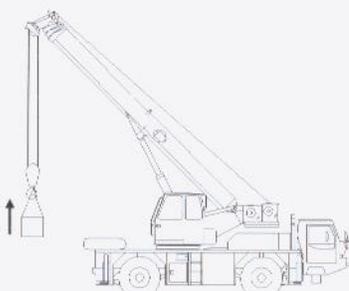


No.	Procedure	Note	Tools
3	Remove the rope from the rope socket. 	Keep the parts carefully so as not to lose them.	Bar Hammer Wrench
4	Let out the rope by turning the winch under power. 	Pull the rope.	
5	Remove the rope end from the winch drum. 	Keep the wedge. 	Bar Hammer
6	Reeve the new rope over all the sheaves. 	Through the correct route. Bind the rope end with a wire or vinyl tape.	Wire or vinyl tape
7	Install the rope end to the winch drum. 	1. Put the wedge in the correct orientation. 2. The rope end must not protrude from the external periphery of the drum. 	Hammer



No.	Procedure	Note	Tools
8	<p>Wind the rope on the drum.</p> 	<p>1. Avoid disorderly rope winding on the drum. 2. Bind the rope end with a wire or vinyl tape.</p> 	<p>Wire or vinyl tape</p>
9	<p>Reeve the rope over the sheaves at the boom head and the hook block.</p> 	<p>Exercise care to route the rope correctly.</p>	<p>Bar Hammer</p>
10	<p>Attach the rope socket and rope clamp to the rope.</p> 	<p>Put the wedge in the correct orientation.</p>	<p>Hammer Wrench</p>
11	<p>Attach the rope socket to the boom head or the hook block depending on the number of parts of line.</p> 		<p>Wrench</p>



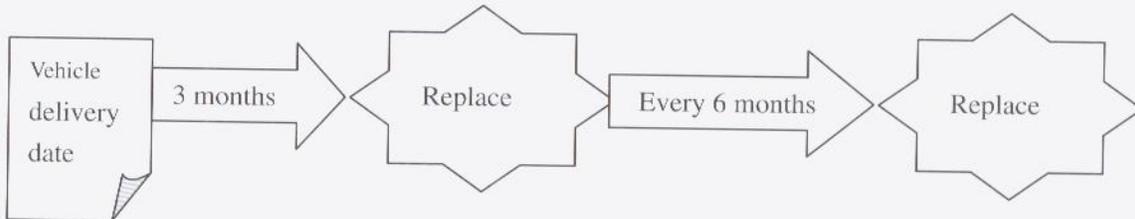
No.	Procedure	Note	Tools
12	<p>Raise and extend the boom, then lower the hook block until no turn of the rope remains on the winch drum.</p> 	<p>Exercise care not to excessively lower the hook block. Otherwise the rope may be damaged.</p>	<p>Bar Hammer</p>
13	<p>Wind the rope on the drum while hoisting a weight which applies approx. 30 % of the “maximum permissible load for winch rope” to the rope.</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p>Weight $W=0.3P \times N$</p> </div> <p style="text-align: center;">No. of parts of line: N</p>  <p>Maximum permissible load for winch rope: P</p>	<p>Do not exceed the total rated load limit for winch rope, the max. permissible load for wire rope is 47040N.</p>	<p>Hammer Wrench</p>
14	<p>Remove the weight from the hook.</p>		



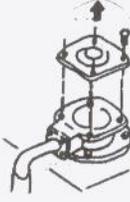
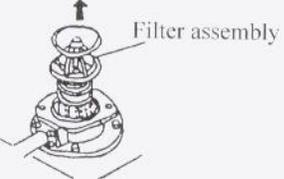
10.3 Return Filter (replace the element)

(1). Notes on operation

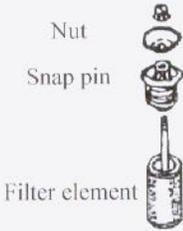
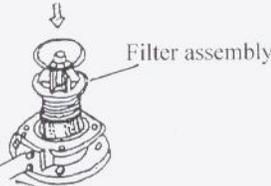
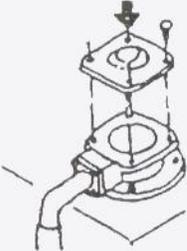
- a. Stow the boom.
- b. Stop the pump.
- c. Replace the filter element at the intervals shown below.



(2). Hydraulic Oil Tank

No.	Procedure	Notes	Tools
1	Remove the cover. 		Wrench
2	Remove the filter assembly. 		
3	Remove the snap pin, loose the nut and remove the filter element. 		Wrench.



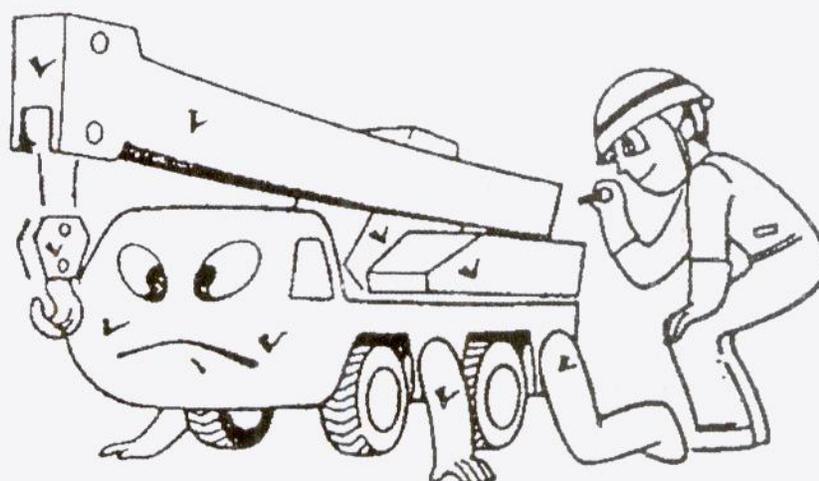
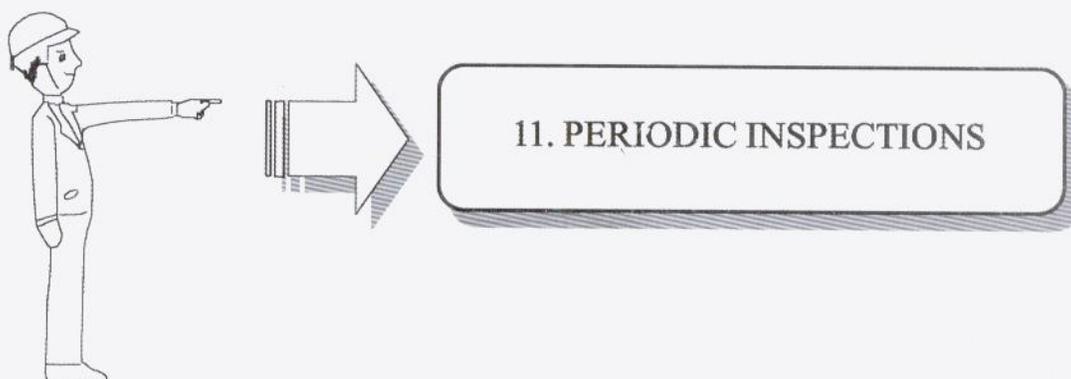
No.	Procedure	Notes	Tools
4	Replace the filter element and assemble the filter. 	Tighten the nut gradually. After the sealing surface makes contact with the element evenly, further tighten the nut within one turn and insert the snap pin.	Wrench
5	Install the filter assembly. 		
6	Install the cover. 		Wrench

10.4 Line Filters (replace the element)

(1). Notes on operation:

- a. Stow the boom.
- b. Stop the pump.
- c. Replace the filter element at intervals shown below.







The crane should be kept in such a condition as will assure the full performance of each crane function. This is essential for both the assurance of safety and high work efficiency. Inspection items are described below.

Make repairs immediately when unusual conditions are found during periodic inspections. Be sure to perform the preoperational inspections of:

- (1) Outriggers.
- (2) Crane mechanisms: boom swinging, elevation and telescoping and rope winding.
- (3) Brake systems.
- (4) Electrical system.
- (5) Safety devices.

Inspection items	
Pump drive System	Control levers and switches 1. Operating condition.
	PTO (power take off) 1. Loose installation and leakage. 2. Abnormal noise and heating.
Hydraulic system	Hydraulic oil tank 1. Loose installation and damage. 2. Cracks and leakage. 3. Oil level, contamination and viscosity.
	Hydraulic pump 1. Loose installation and damage. 2. Abnormal noise, vibration and heating. 3. Leakage. 4. Suction line condition (air entry.) 5. Delivery pressure. 6. Loose and leaking piping joints.
Boom swing system	Brake 1. Braking performance. 2. Deformations and wear of links. 3. Lubrication.



Inspection items	
Boom swing system	Rotary joint 1. Leakage. 2. Turning condition, noise, vibration and heating. 3. Electrical conductivity between carbon brush and slip ring.
	Speed reducer and swing bearing. 1. Oil level and contamination. 2. Cracks, deformations of gearbox and oil leakage from it. 3. Abnormal noise and vibration. 4. Loose installation. 5. Hydraulic motor operating pressure. 6. Loose and leaking piping joints
Boom elevating system	Elevating cylinder 1. Wear and damage of pivot pins. 2. Tightness of bolts for pivot pin retaining plate. 3. Leakage. 4. Vibration and noise. 5. Erratic cylinder retraction during load lifting. 6. Deterioration, twisting and deformation of hoses.
	Counterbalance valve 1. Leakage. 2. Pulsation. 3. Loose and leaking piping joints.
Boom telescoping system	Boom 1. Cracks, damage and deformation. 2. Tightness of bolts for boom pivot pin retaining plate. 3. Scratches on sliding surfaces. 4. Wear and damage of pivot pin bosses. 5. Lubrication of sliding surfaces. 6. Deformations and cracks of boom rest.
	Telescoping cylinders 1. Pulsations and noise. 2. Operational sequence. 3. Leakage. 4. Function of counterbalance valve. 5. Loose piping joints.



Inspection items	
Boom telescoping system	Jib 1. Cracks and deformations. 2. Lubrication of connecting pins and bosses.
	Winch rope 1. Diameter. 2. Wire breakage. 3. Kinks. 4. Deformation. 5. Corrosion. 6. Lubrication. 7. Tightness.
Winches	Speed reducer 1. Tightness of mounting bolts. 2. Noise. 3. Crack and deformation of gearbox. 4. Wear of bearings. 5. Lubrication. 6. Leakage.
	Brakes 1. Wear of brake disc and lining. 2. Loose and leaking piping joints. 3. Deformations of spring.
	Counterbalance valve 1. Leakage. 2. Loose and leaking piping joints. 3. Pulsations.
	Drums 1. Cracks. 2. Disorderly rope winding.
	Hooks and sheaves 1. Rotation of hook. 2. Deformation. 3. Movement of trunnion. 4. Connections between trunnion and hook. 5. Deformation of hook safety latch. 6. Rotation of sheave (abnormal noise) 7. Cracks and wear of sheaves. 8. Deformation and damage of sheave support and protecting pieces. 9. Lubrication.



Inspection items	
Winches	<p>Winch rope</p> <ol style="list-style-type: none"> 1. Diameter. 2. Wire breakage. 3. Kinks. 4. Deformation. 5. Corrosion. 6. Is the rope socket, wedge in place. 7. Connection of the rope and rope socket. 8. Wear and cracks of rope socket boss and pin. 9. Reeved through correct sheaves.
Hydraulic devices	<p>Relief valves</p> <ol style="list-style-type: none"> 1. Pressure setting.
	<p>Control valves</p> <ol style="list-style-type: none"> 1. Operating conditions. 2. Leakage. 3. Tightness of mounting bolts.
	<p>Master cylinder</p> <ol style="list-style-type: none"> 1. Operating conditions. 2. Leakage. 3. Brake fluid level. 4. Deterioration, twisting and damage of hoses.
Crane controls, instruments and safety devices	<p>Piping</p> <ol style="list-style-type: none"> 1. Tightness of connections. 2. Leakage. 3. Looseness and cracks of clips. 4. Deterioration, twisting and damage of hoses.
	<p>Starter switch</p> <ol style="list-style-type: none"> 1. Function. 2. Installation. 3. Lighting of pilot lamp.
	<p>Wipers (Windshield, roof window)</p> <ol style="list-style-type: none"> 1. Function. 2. Wear and damage of blade.
	<p>Room lamp</p> <ol style="list-style-type: none"> 1. Lighting.
	<p>Buzzer</p> <ol style="list-style-type: none"> 1. Function.



Inspection items	
Crane controls, instruments and safety devices	<p>Load moment limiter</p> <ol style="list-style-type: none"> 1. Operation. 2. Accuracy.
	<p>Over-wind cutout device (hoist height limiter)</p> <ol style="list-style-type: none"> 1. Function. 2. Damage of wire rope for weight. 3. Installation. 4. Operation of solenoid valve.
	<p>Cab</p> <ol style="list-style-type: none"> 1. Tightness of nuts and bolts. 2. Function of window and door locks.
	<p>Pressure gauges</p> <ol style="list-style-type: none"> 1. Smooth movement of needle. 2. Tightness of connections.
	<p>Control levers and pedals</p> <ol style="list-style-type: none"> 1. Function. 2. Play.
	<p>Work lamps</p> <ol style="list-style-type: none"> 1. Lighting. 2. Damage. 3. Installation
	<p>Boom head lamp</p> <ol style="list-style-type: none"> 1. Lighting. 2. Installation
	Outrigger system
<p>Outrigger box, outrigger beam, extension cylinder</p> <ol style="list-style-type: none"> 1. Deformation and damage. 2. Tightness of beam lock pins and bosses. 3. Deformation and cracks of bracket. 4. Noise and vibration. 5. Loose piping and loose connections, and deteriorated hose. 6. Leakage. 	



Inspection items	
Outrigger system	Control valve 1. Operating conditions. 2. Tightness of piping joints. 3. Tightness of mounting bolts. 4. Leakage.
	Level gauge 1. Scratches and deformation. 2. Installation. 3. Bubble conditions.
Miscellaneous	Accessories 1. Damaged or missing.
Note	Re-tightening of slewing ring mounting bolts: during monthly periodic inspection, when loose slewing ring mounting bolts are found, the bolts should be re-tightened in service station. Moreover, recommend to inspect and confirm once a year the tightness of slewing ring mounting bolts according to the specified tightening torque. The tightening torque of the mounting bolts is 1150~1350 N.m.

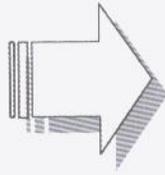
Notes:

1) The interval for regular inspection should be based on working conditions and working environment, but should not less than once a month.

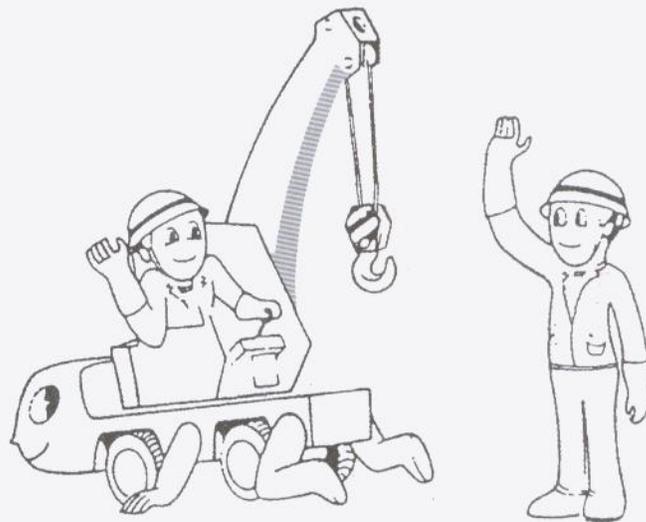
2) The interval for periodic inspection should be based on working conditions and working environment, but should not less than once a year.

3) The inspection and testing on following cranes should be carried out according to the relevant standards:

- ◇ The crane in normal operation, once every two years.
- ◇ The crane overhauled, newly assembled and modified, before delivery;
- ◇ The crane has lain idle over one year, before reuse.
- ◇ The crane whose structural parts and mechanisms are damaged in strength, rigid and stability due to storm, earthquake and accident, before reuse.

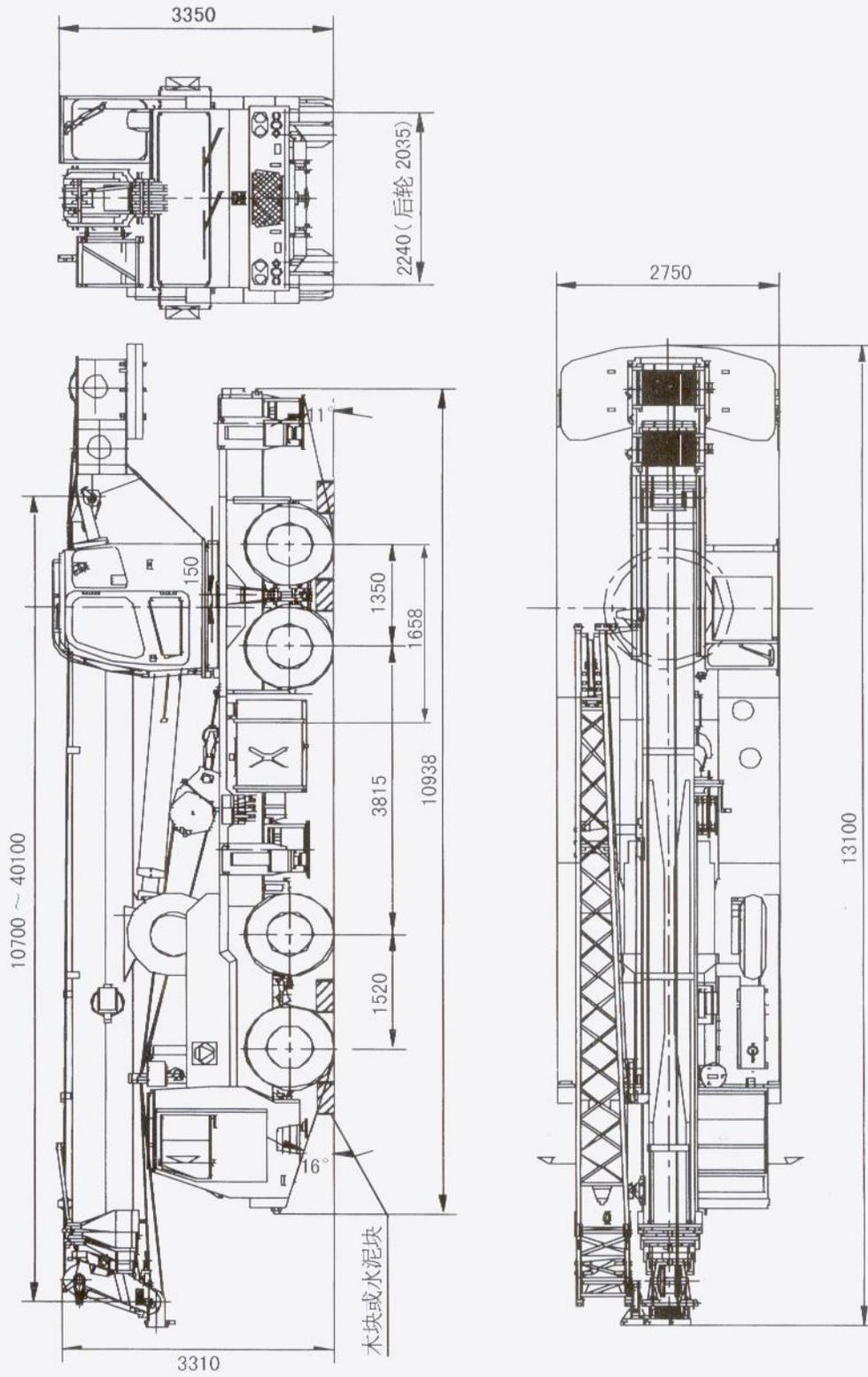


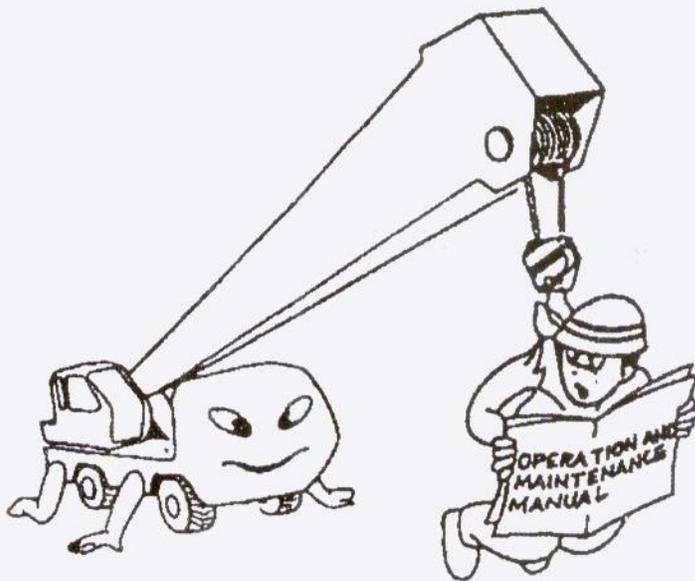
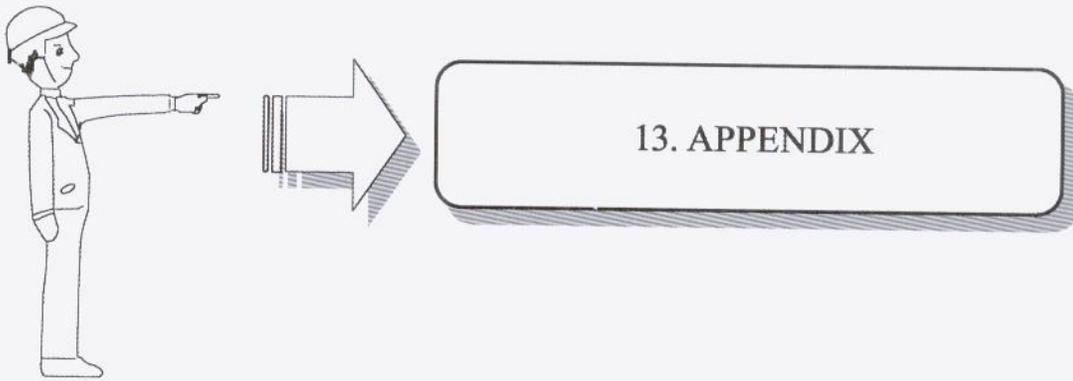
12. RAILROAD TRANSPORTATION





- (1) When transporting the crane by railroad, put it on a flatbed.
- (2) The crane wheels must be blocked with wood blocks or cement blocks.
- (3) Bind the crane to the flatbed tightly with ropes.
- (4) The gravity center of the vehicle lies in the front of the rear axle. The distance between the gravity center and the center of rear axle is 1658mm. (see the figure below)
- (5) The crane control levers and switches are at NEUTRAL and OFF positions.
- (6) After packing the crane, lock all the doors and windows to prevent opening during transport.





**13.1 Main Parts List****13.2 Easy Wear Parts List****13.3 Supplied Spare Parts and Tools List****13.1 Main Parts List**

No.	Name	Model	Q'ty	Assembled Position
1.	Crane carrier	XZ50K	1	
2.	Slewing ring	QWA1487 * 60 (131.25.1480)	1	Turntable-frame
3.	Swing reducer	GJB17T3-104	1	Slewing system
4.	Swing motor	A2F28W6.1	1	Slewing system
5.	Winch reducer	GJT26W2-51	2	Winch (main, auxiliary)
6.	Winch motor	A6V107HA	2	Winch main, auxiliary)
7.	Master valve	FYZ-37	1	Crane hydraulic system
8.	Wire rope	18NAT 4VX39S+5FC-1870	180m	Main winch
			125m	Auxiliary winch



13.2 Easy Wear Parts List (hexagonal boom profile)

No.	Drawing No.	Name	Material	Q'ty	Assembled Position
1	QY16K.02.1-5	Slide	804 Plastics	2	2nd boom section head (upper)
2	QY50K.02.1-8	Slide	804 Plastics	2	1st boom section head (lower)
3	QY16K.02.2-2	Slide	804 Plastics	2	1st, 3rd boom section heads (upper)
4	QY16K.02.1.6-3	Rubber pad	804 Plastics	2	Head of 1st boom section
5	QY25K.02.3-2	Slide	804 Plastics	2	4th boom section head (upper)
6	QY50K.02.2-2	Slide	804 Plastics	2	2nd boom section tail (upper)
7	QY16K.02.3-9	Slide	804 Plastics	2	5th boom section tail (lower)
8	QY16K.02.3-15	Slide	804 Plastics	2	5th boom section tail (upper)
9	QY50K.02.2-8	Slide	804 Plastics	2	2nd boom section head (lower)
10	QY35K.02.2-2	Slide	804 Plastics	2	3rd boom section tail
11	QY50K.02.3-6	Slide	804 Plastics	2	3rd boom section head (lower)
12	QY50K.02-8	Support plate	804 Plastics	2	Upper of 1st boom section
13	QY25K.02.3-4	Slide	804 Plastics	2	4th boom section tail (upper)
14	QY16K.02.2-16	Slide	804 Plastics	2	4th boom section head (lower)

**13.2a Easy Wear Parts List (oviform boom profile)**

No.	Drawing No.	Name	Material	Q'ty	Assembled Position
1	QY25K.02 II .2-4	Slide	804 Plastics	2	1st, 3rd boom section heads (upper)
2	QY50K.02 II .1-9	Slide	804 Plastics	2	1st boom section head (lower)
3	QY50K.02 II .1-11	Slide	804 Plastics	2	1st boom section head (side)
4	QY50K.02 II .2-2	Slide	804 Plastics	2	2nd boom section head (upper)
5	QY50K.02 II .2-11	Slide	804 Plastics	2	2nd boom section head (lower)
6	QY50K.02 II .2-10	Slide	804 Plastics	2	2nd boom section head (side)
7	QY50K.02 II .2-3	Slide	804 Plastics	2	2nd boom section tail (upper)
8	QY50K.02 II .3-12	Slide	804 Plastics	2	3rd boom section head (lower)
9	QY50K.02 II .3-11	Slide	804 Plastics	2	3rd boom section head (side)
10	QY50K.02 II .3-3	Slide	804 Plastics	2	3rd boom section tail (upper)
11	QY50K.02 II .3-2	Slide	804 Plastics	2	4th boom section head (upper)
12	QY50K.02 II .4-14	Slide	804 Plastics	2	4th boom section head (lower)
13	QY50K.02 II .4-13	Slide	804 Plastics	2	4th boom section head (side)
14	QY50K.02 II .3-4	Slide	804 Plastics	2	4th boom section tail (upper)
15	QY50K.02 II .4-24	Slide	804 Plastics	2	5th boom section tail (upper)

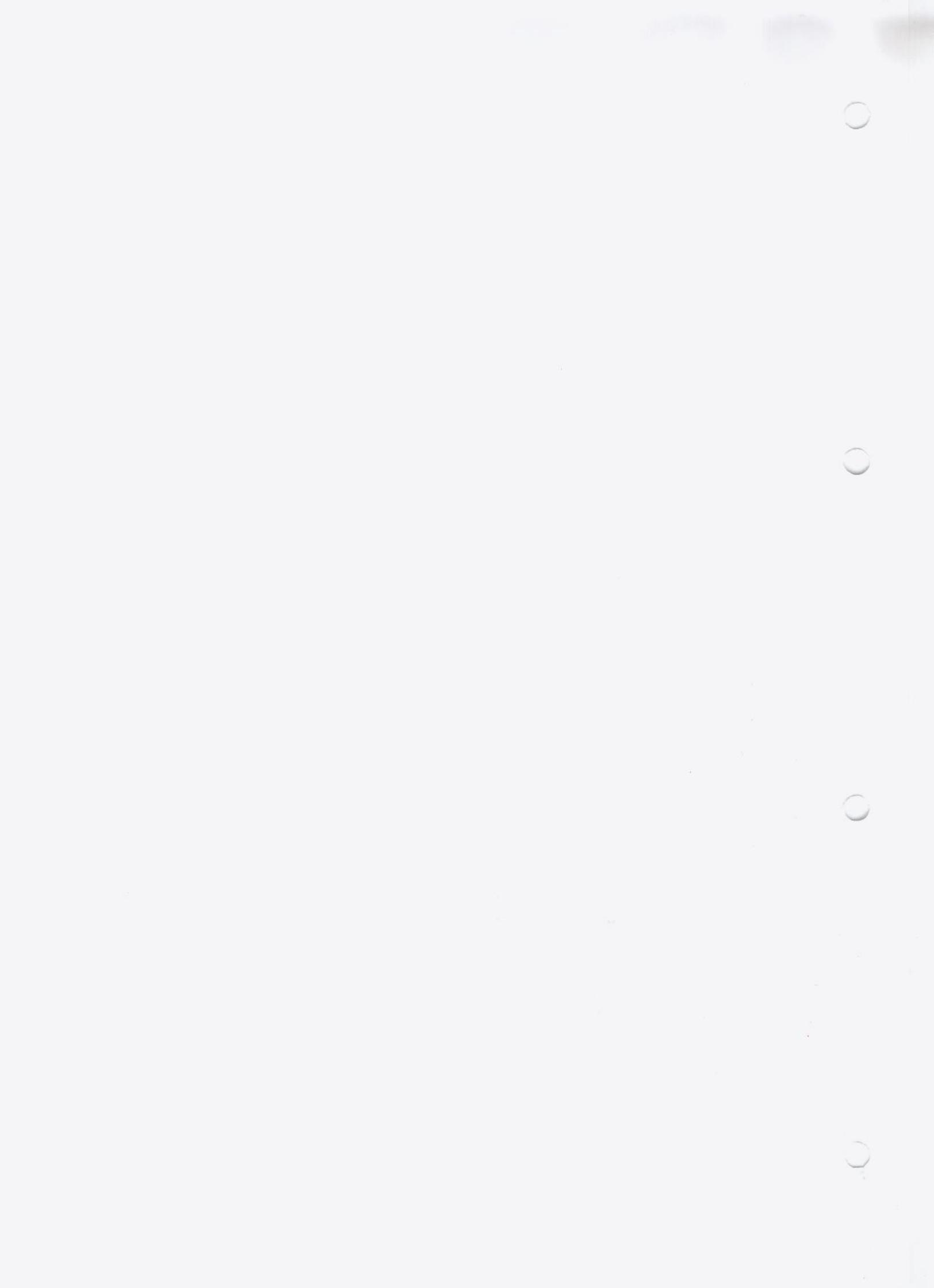


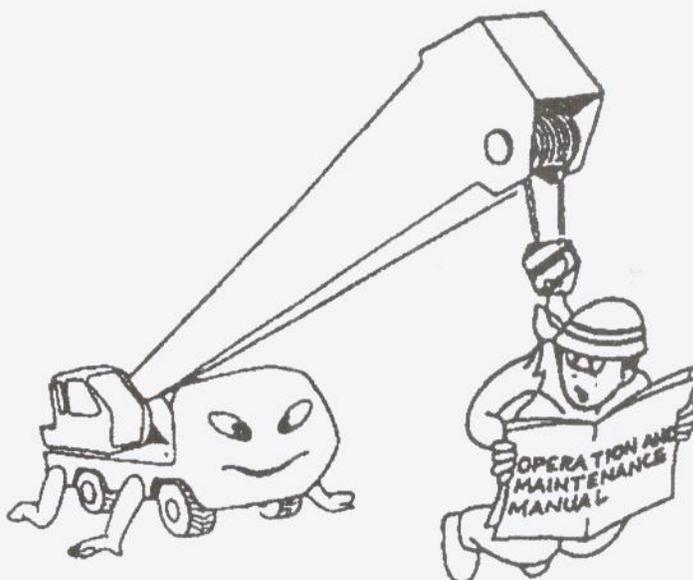
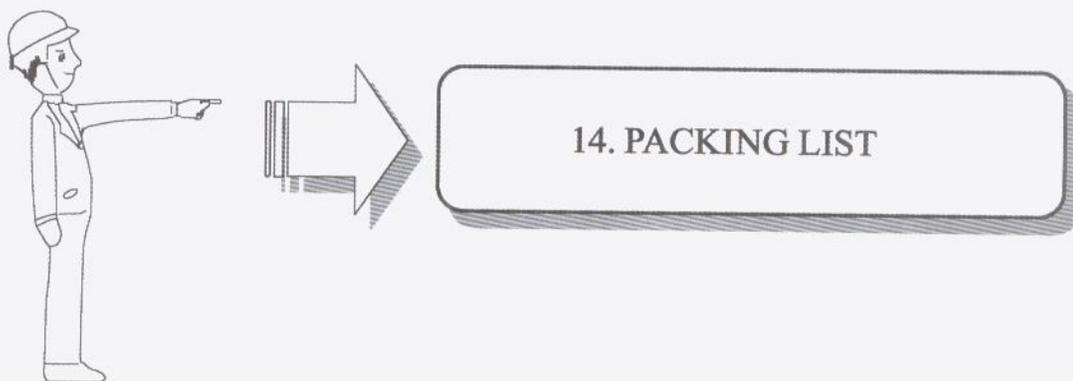
13.3 Supplied Spare Parts and Tools List

(1) QY50K Truck Crane supplied tools are in accordance with XZ50K supplied tools

(2) Supplied Spare Parts List

No.	Model	Name	Q'ty	Remark
1.	PGB.0631.060	Pressure measuring device	1	
2.	PGB.0631.400—1000	Pressure measuring device	1	
3.	DJ7011—6.3—10	Single-core combined plug	1	
4.	JB982—77	Washer 14	1	
5.	JB982—77	Washer 33	1	
6.	GB3452.1—92	“O” ring 7×1.8G	1	
7.	GB3452.1—92	“O” ring 9.5×1.8G	1	
8.	GB3452.1—92	“O” ring 16×2.65G	1	
9.	GB3452.1—92	“O” ring 22.4×2.65G	1	
10.	GB3452.1—92	“O” ring 26.5×2.65G	1	
11.	JK932—006	Toggle switch	1	
12.	JQ202S-KLO (24V)	Relay	1	
13.	JS157	Flashing relay	1	
14.	DJ7011-6.3—20	Single-core combined plug	1	
15.	KF-01	Braking fluid	2kg	Xuzhou Automobile Chemicals Factory







QY50K TRUCK CRANE PACKING LIST

1. QY50k Truck Crane

2. Supplied Technical Documents

- 2.1 QY50K Truck Crane Product Certificate
- 2.2 QY50K Truck Crane Operation and Maintenance Manual
- 2.3 XZ50K Truck Crane Special Chassis Operation Manual
- 2.4 Load Moment Limiter (LML) Operation Instructions
- 2.5 Main Parts list
- 2.6 Supplied Spare Parts List and Easy Wear Parts List
- 2.7 Supplied Tools List (refer to XZ50K Supplied Tools List)
- 2.8 QY50K Truck Crane Parts Category
- 2.9 QY50K Truck Crane Packing List

3. Supplied Tools

4. Supplied Spare Parts