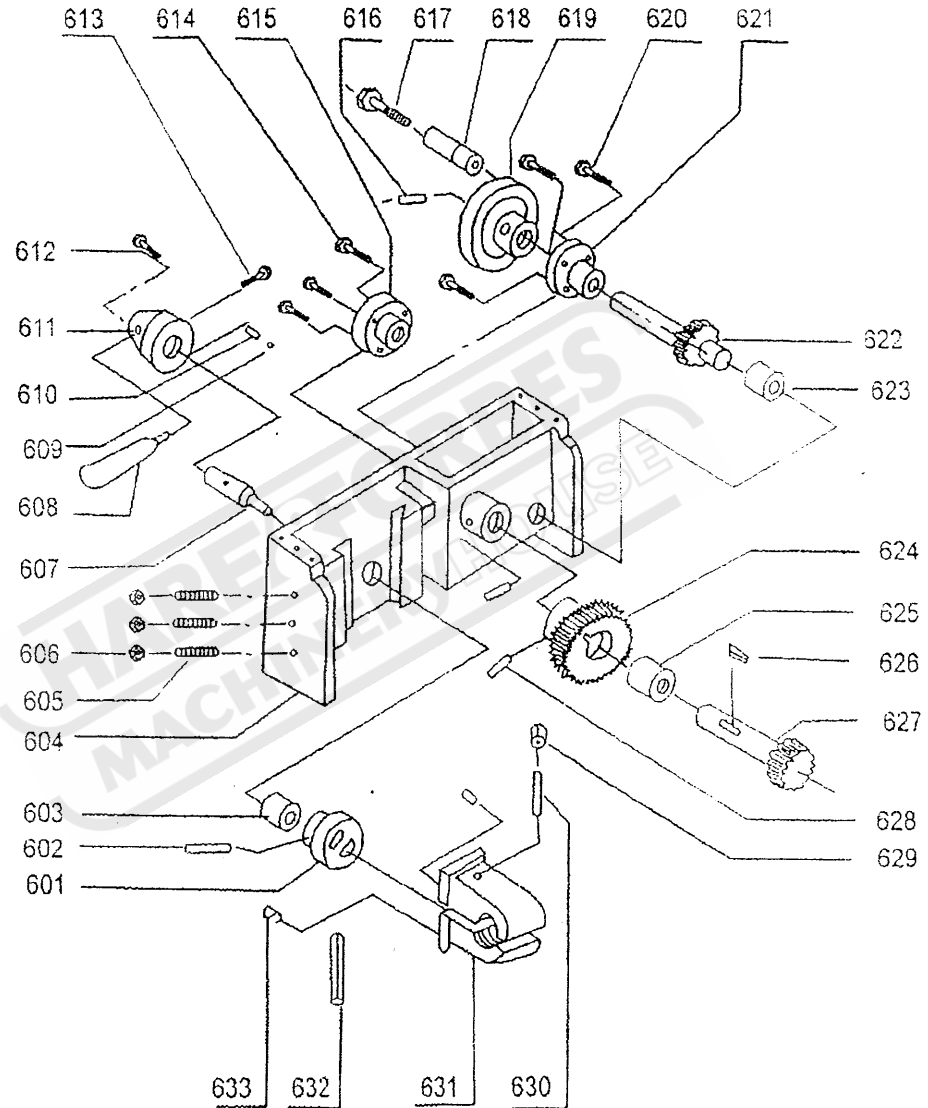


guide and half nut is a must .The nethod is to loosen 606 nut, adjust 605 nut to proper position, that is, not too loose and not too tight without getting stuck, then tighten the nut.

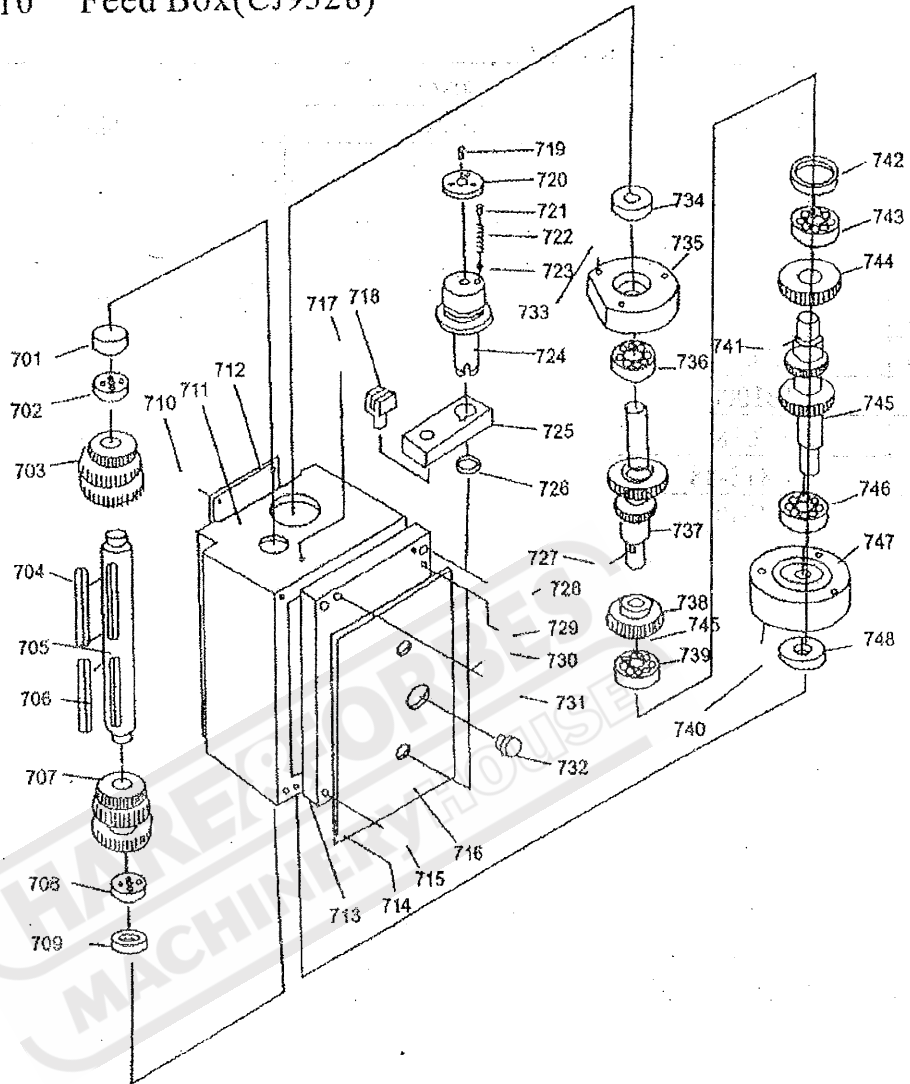
Fig.9-1 Apron



Form 12 Apron(Fig9-1)

No.	Excused standard no.	Name	Qty	Notes
601	06020	Notched joint	1	
602	GB117-76	Circular cone pin	1	
603	06012	Shaft,quill	1	
604	06011	Apron base	1	
605	GB75-76	Screw	3	
606	GB54-76	Nut	3	
607	06021	Rotation shaft	1	
608	03022	Handle	1	
609	GB308-77	Steel ball	1	
610	Q81-76	Spring	1	
611	06026	Fixed handle	1	
612	GB73-76	Screw	1	
613	GB73-76	Screw	1	
614	GB70-76	Screw	3	
615	06024	Quill	1	
616	GB117-76	Circular cone pin	1	
617	06027A	Bolt	1	
618	06027	Handle casing	1	
619	03018	Hand wheel	1	
620	GB70-76	Screw	3	
621	06025	Quill	1	
622	06013	Gear shaft	1	
623	06012	Quill	1	
624	06016	Gear	1	
625	06015	Quill	1	
626	GB1096-79	Key	1	
627	06014	Gear shaft	1	
628	GB71-76	Screw	2	
629	GB54-76	Nut	1	
630	GB73-76	Screw	1	
631	06017	Half nut	1组	
632	06019	Adjustable	1	
633	GB119-76	Cylinder pin	2	

Fig.10 Feed Box(CJ9528)

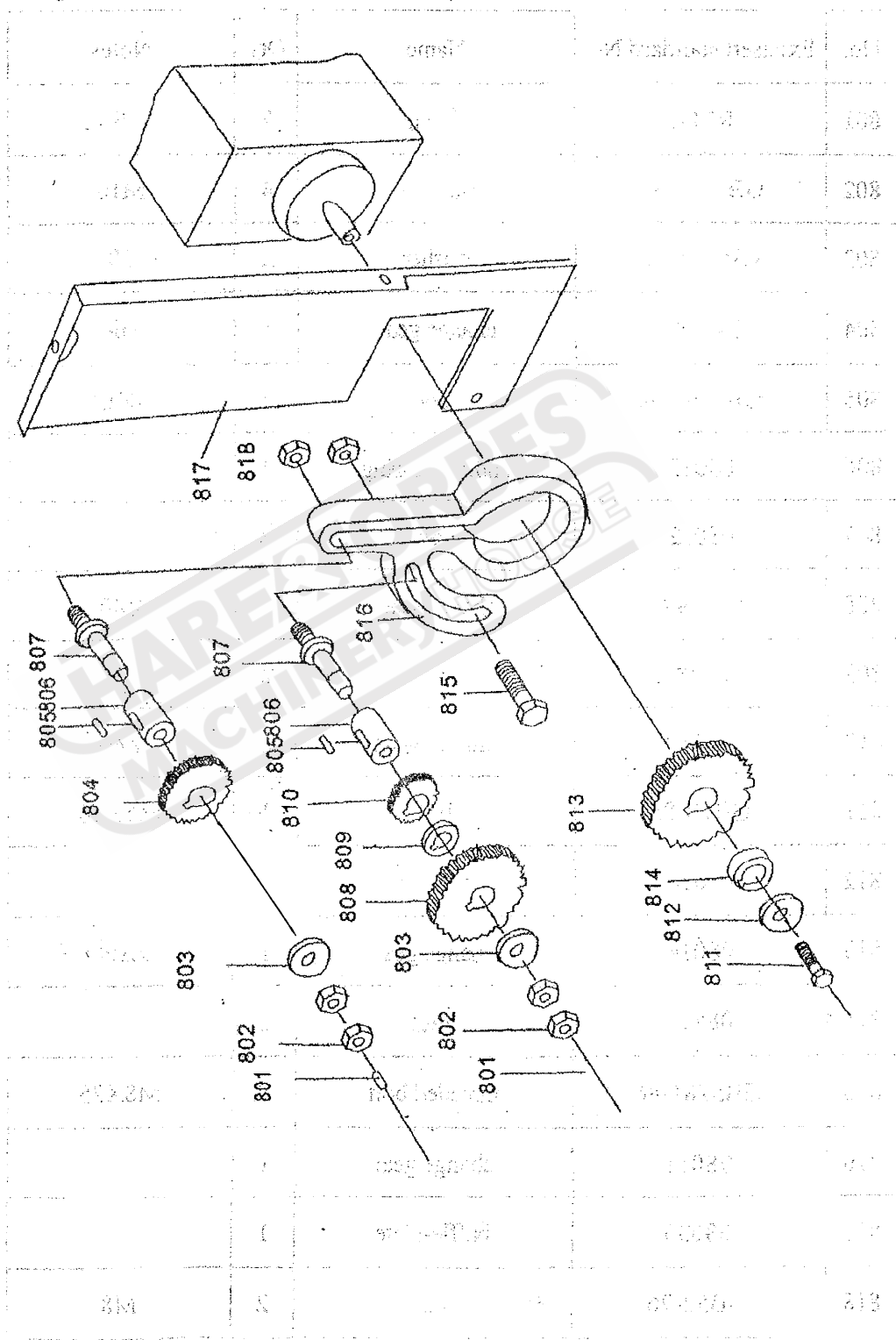


Form 14 Feed box(Fig10)

No.	Excused standard no.	Name	Qty	Specification
701	07023	cover	1	
702	GB276-86	Bearing	1	1000802
703	07026	Gear	1	
704	GB1096-86	Key	1	4×55
705	07024	Shaft	1	
706	GB1096-86	Key	1	4×55
707	07025	Gear	1	
708	GB276-86	Bearing	1	1000802

709	07023	Cover	1	
710	GB68-86	Screw	4	M5×8
711	07011	Feed box	1	
712	07027	Back cover	1	
713	07012	Face plate	1	
714	GB818-88	Screw	4	M3×6
715	GB70-85	Screw	4	M5×18
716	07029	Plate	1	
717	JB1000	Oil plug	1	M10×1
718	07018	Shift fork	2	
719	GB818-88	Screw	2	M3×6
720	07030	Plate	2	
721	GB73-85	Spring	4	M6×8
722	GB2089	Steel ball	4	0.7×5×19
723	GB308-85	Steel ball	4	
724	07017	Handle	2	
725	02016	Con nection block	2	
726	GB894.2-86	Spacer	2	
727	GB1096-86	Key	3	4×8
728	GB70-85	Threaded bolt	2	M8×90
729	GB118-89	Circular cone pin	2	
730	JB1000	Oil plug	1	M10×1
731	GB70-85	Screw	2	M6×90
732	GB1160.1-79	Oil window	1	
733	GB70-85	Screw	3	M5×20
734	HG4-691	Oil seal	1	15×30×10
735	070156	Cover	1	
736	GB276-89	Bearing	1	202
737	07022	Gear shaft	1	
738	07020	Gear	1	
739	GB276-89	Bearing	1	202
740	GB70-85	Screw	1	M5×25
741	GB1096-86	Key	1	4×8
742	07021	Spacer	1	
743	GB076-89	Bearing	1	202
744	07020	Gear	1	
745	07019	Gear shaft	1	
746	GB276-89	Bearing	1	103
747	07014	Cover	1	
748	HG4-691	Oil seal	1	

Fig.11-2 Change Gear(CJ9528)



(081210) (mm) (gsm) 11 g15

Form 16 CHANGE GEAR WHEEL BOX (Fig11-2)

No.	Excused standard No.	Name	Qty	Notes
801	R71-1	oil cup	2	6
802	GB6172-86	thin nut	4	M10
803	GB97.1-86	washer	2	10
804	08018A	change gear	1	Z60
805	GB1096-86	key	2	4X12
806	08013	sliding bearing	2	
807	08012	bolt	2	
808	08019A	change gear	1	Z100
809	08038A	spare	2	
810	08017	change gear	1	Z30
811	GB70-85	bolt	1	M5X16
812	01020	washer	1	
813	08014	change gear	1	Z96
814	08019	quill	1	
815	GB5781-86	threaded bolt	1	M8X25
816	08011	change gear	1	
817	08035	baffle-plate	1	
818	GB52-76	nut	2	M8

10、 FOLLOW REST & STEADY REST

See Fig 12, Fig 13.

The follow rest is used to process slender shafts, use 10-27 screw to fix is on the saddle when operating, turn 10-02 adjustable bolt to make 10-03 supports touch the work piece with proper gyration and move with the cutter. It can ensure the workpiece. Procession to bear the cutting force without bending and deformation. It can abate vibration and ameliorate the surface of the work piece inelegance level.

The steady rest is basically same as the follow rest in use and function principle. The difference is that its fixed on the lead screw and can't move with cutter. It has three support feet, just like one more pivot for the work piece, so its used more frequently than follow rest. Such as when processing the medium length shafts it can be used as the positioning support.

Fig.12 Follow Rest

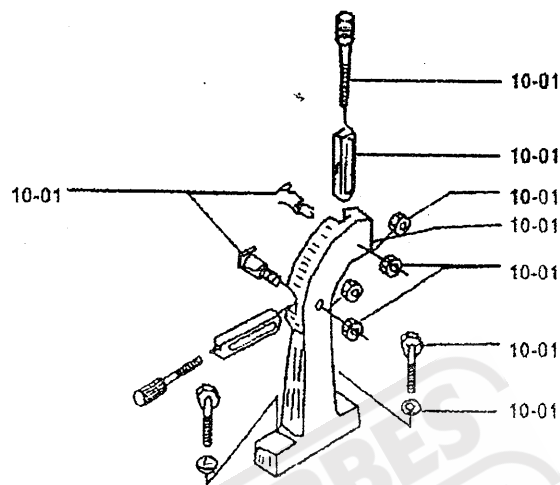
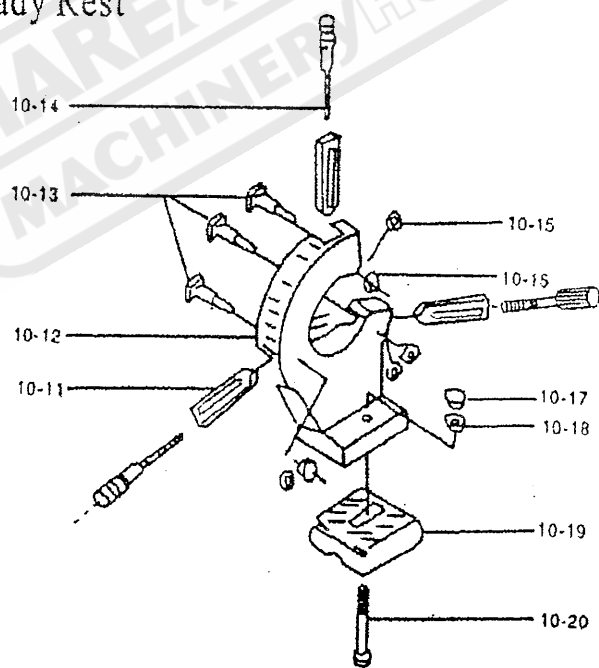


Fig.13 Steady Rest



Form 17 FOLLOW REST (Fig. 12)

No.	Excused standard No.	Name	Qty	Notes
1001	11014	screw	2	take to use
1002	11012	adjustable threaded bolt	2	take to use
1003	12012	support	2	
1004	GB97-76	washer	2	10
1005	12011	follow rest base	1	
1006	GB52-76	nut	2	M10
1007	GB30-76	threaded bolt	2	M8X30
1008	GB97-76	washer	2	8

Form 18 STEADY REST (Fig. 13)

No.	Excused standard No.	Name	Qty	Notes
1011	11013	support	3	
1012	11011	steady rest base	1	
1013	11014	screw	3	
1014	11012	adjustable	3	
1015	GB97-76	washer	3	10
1016	GB6170-86	nut	3	M10
1017	GB41-86	nut	1	M12
1018	GB97-76	washer	1	12
1019	03014	clip	1	
1020	GB8-76	threaded bolt	1	M12×70

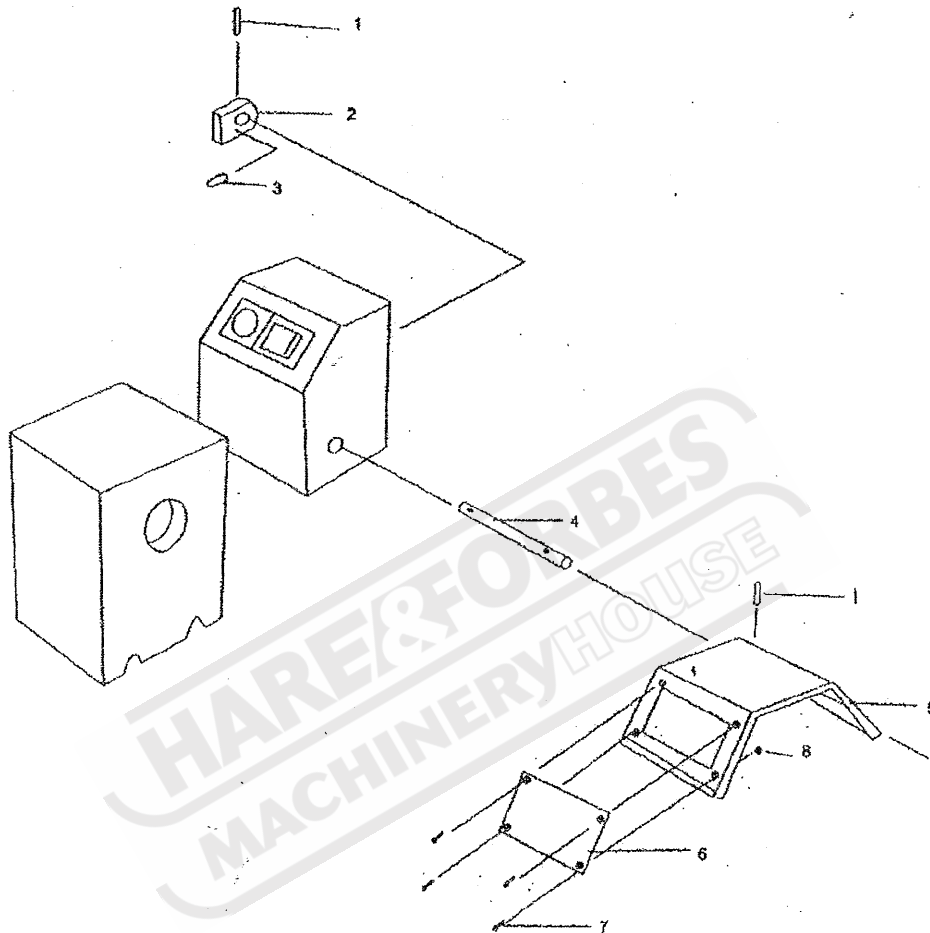
11. PROTECTION OF THE LATHE

In order to ensure the security, and avoid unexpected hurt, we supply many kinds of safety devices for customers to order properly.

11.1 Chuck protection

There are two kinds of chuck protection devices. See Fig

Fig.14-2 Chuck Cover(With cutting power device)



Form 20 Chuck cover (With cutting power device) (Fig. 14-2)

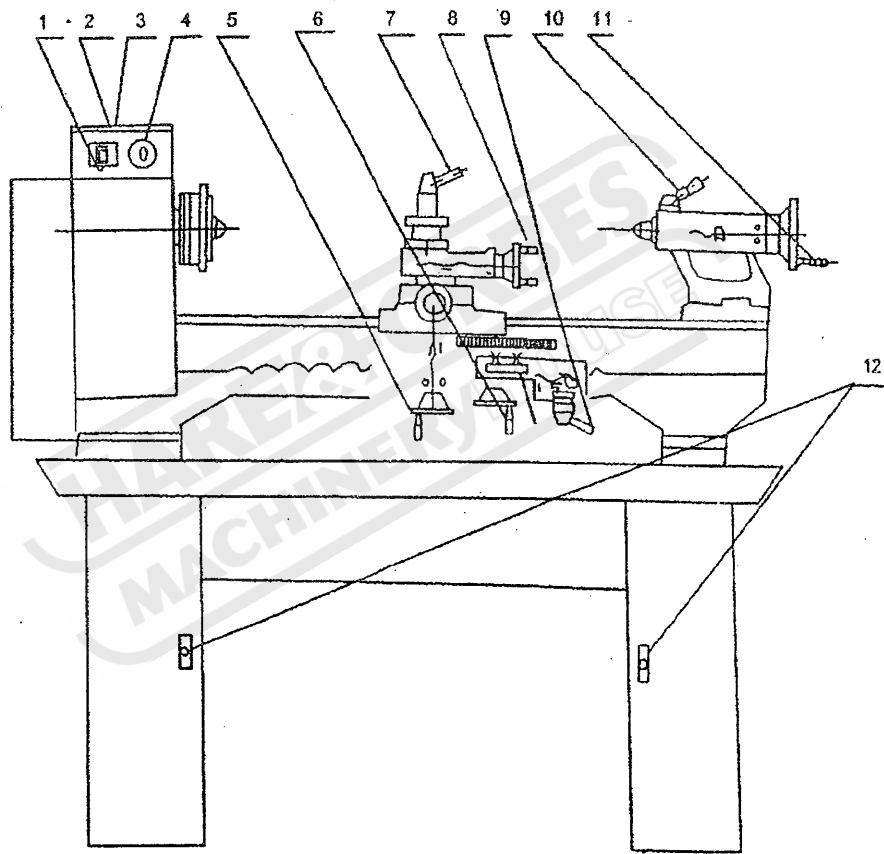
No.	Excused standard No.	Name	Qty	Notes
1	GB79-86	Elastic pin	2	4x20
2	02029	Switch block	1	
3	GB79-86	Elastic pin	1	4x10
4	02031A/2	Shaft	1	
5	02031A	Chuck cover	1	
6	02031A/3	Glass	1	
7	GB818-86	Screw	4	M3X6
8	GB6170-86	Nut	4	M3

13. TEST RUN, OPERATION & MAINTENANCE

Fig. 17, (From 23)

- 13.1 Read the operation manual carefully when operating the lathe at the beginning, try to know the functions of the operating handles.
- 13.2 Before starting, clean the lathe & refer to the lubrication fig. to fill the lubrication oil.
- 13.3 Check whether the transmission belt & the selection of the feed amount is rational or not, whether the gear collocation of the change gear system can meet the requirement or not.
- 13.4 Close the safety cover when the lathe is running, forbid opening the safety cover to use the belt, changing speeds and collocate the change gears.
- 13.5 Starting the motor's push button, pay attention to the above reminding. If you want to make the motor turn clockwise and counterclockwise quickly, pause for at least 3 seconds in order not to damage the electric elements.
- 13.6 Whenever the malfunction happens, stop using it immediately and check it.
- 13.7 Keep the lathe clean, clear away the iron flakes, clean the surfaces of the lead screw and sliding part, and smear oil to prevent from rusting.

Fig.17 Controlling part



Form 23 Controlling part (Fig 17)

No. sin fig	Name	Uses	Notes
1	Switch	To vary spindle to turn clock wise & counter-clock wise	Head stock
2	Green button	To control the connection and	Head stock
3	Red button	To control the connection of relay	Head stock
4	Main switch	To control connection and disconnection of the lathe	Head stock
5	Handle	To control the saddle to move forward and backward longitudinally	Head stock
6	Handle	To control the apron to move forward and backward longitudinally	Apron
7	Handle	To fix and loosen the tool post	Tool post
8	Handle	To control the slide to move forward & backward	Tool post
9	Handle	To control the half nut to connect & disconnect	Feed box
10	Handle	To lock & loosen the quill	Tail stock
11	Handle	To control the quill to move forward & backward longitudinally	Tail stock
12	Handle	To open and close tool box	Support

14. LUBRICATION SYSTEM

See Fig 18 (Form 24)

To keep regular running, the operators are required to use appointed machine oil stipulated in the lubrication fig, fill it periodically to reduce the abrasion, and elongate its working life.

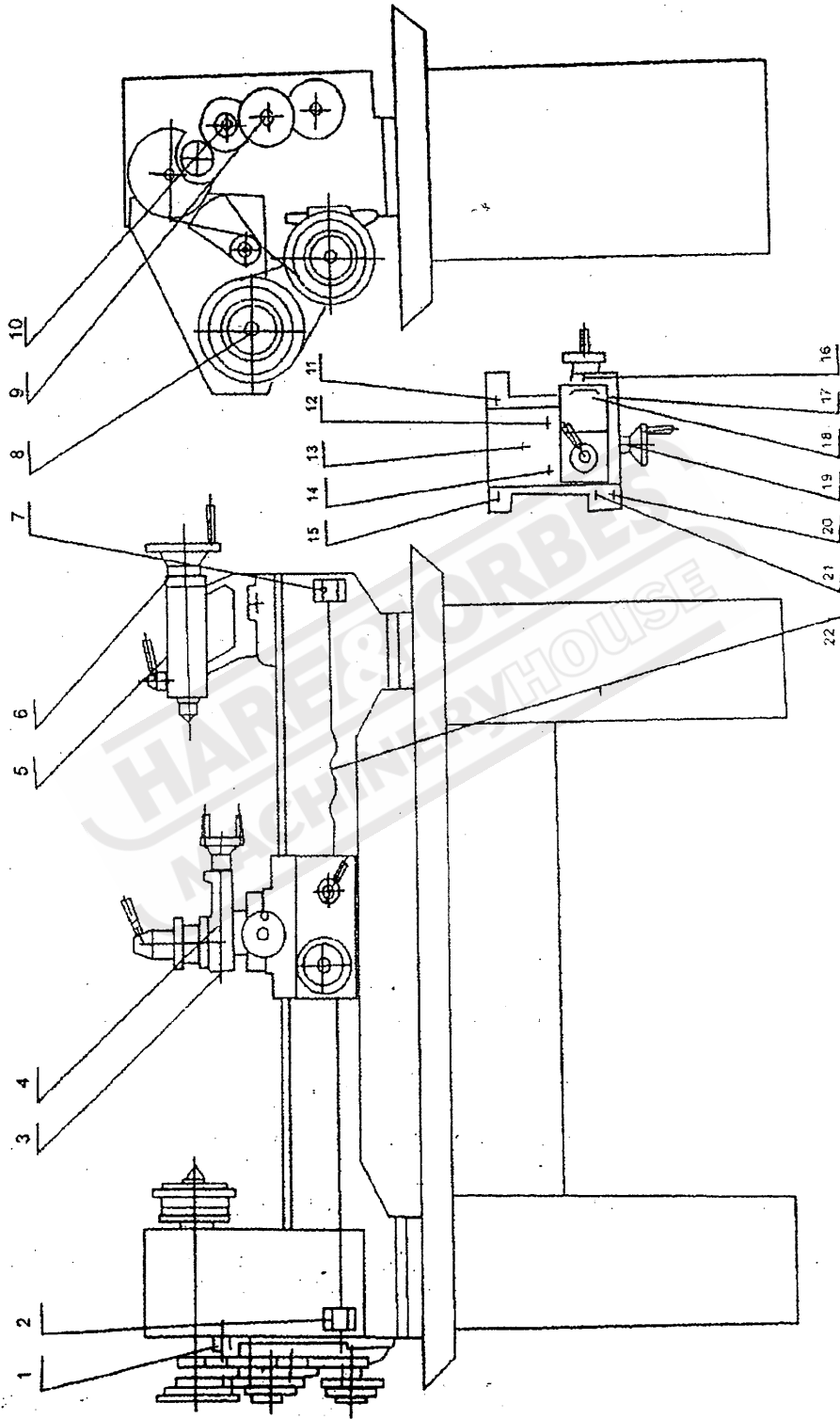


Fig.18 The Distribution Of The Lubrication Position

Form 24 Lubrication points (Fig 18)

No. in fig	Name of lubrication position	Name of lubrication part	Period	Type of oil	Injection tool
1	Fixed bolt of transition gear	Oil cup	Once per shift	203 machine oil	Oiler
2	Support	Oil cup	Once per shift	203 machine oil	Oiler
3	Screw post	Oil cup	Once per shift	203 machine oil	Oiler
4	Tool post slide	Oil cup	Once per shift	203 machine oil	Oiler
5	Quill	Oil cup	Once per shift	203 machine oil	Oiler
6	Screw post	Oil cup	Once per shift	203 machine oil	Oiler
7	Support	Oil cup	Once per shift	203 machine oil	Oiler
8	Mid pulley shaft	Oil cup	Once per shift	203 machine oil	Oiler
9	Change gear	Oil cup	Once per shift	203 machine oil	Oiler
10	Change gear bolt	Oil cup	Once per shift	203 machine oil	Oiler
11	Guiding rail	Oil cup	Once per shift	203 machine oil	Oiler
12	Slip board	Oil cup	Once per shift	203 machine oil	Oiler
13	Screw post	Oil cup	Once per shift	203 machine oil	Oiler
14	Slip board	Oil cup	Once per shift	203 machine oil	Oiler
15	Guiding rail	Oil cup	Once per shift	203 machine oil	Oiler
16	Screw bolt support	Oil cup	Once per shift	203 machine oil	Oiler
17	Feed box	Oil cup	Once per shift	203 machine oil	Oiler
18	Guiding rail	Oil cup	Once per shift	203 machine oil	Oiler
19	Support	Oil cup	Once per shift	203 machine oil	Oiler
20	Feed box	Oil cup	Once per shift	203 machine oil	Oiler
21	Guiding rail	Oil cup	Once per shift	203 machine oil	Oiler
22	Screw post	Direct injection	Once per shift	203 machine oil	Oiler

15. THE PROCEDURE OF PROCESSING THE COMMON PARTS

15.1. Preparations

15.1.1 Set the work piece on the chuck, check the excircle.

15.1.2 Select and fix the cutter on the tool post.

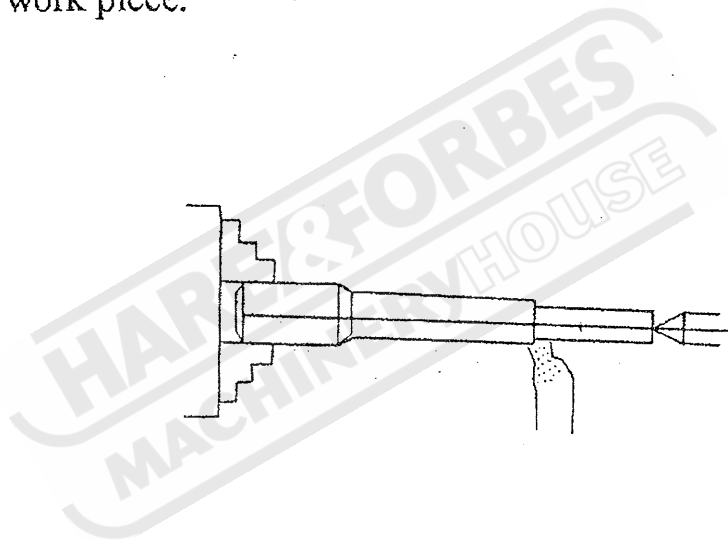
15.1.3 In the light of the size and material of the work piece to select the running speed and feed amount properly.

15.1.4 Adjust the belt, change gear base to collocate the change gears.

15.1.5 Switch on the starting button to check weather the cutting

end and the feed amount are correct or not.

- 15.2. The procedure to process the circular column parts. Firstly finish the above steps, move the hand wheel of the apron to the right end of the work piece, turn the handle of the saddle to have the cutting end touch the work piece, push the half nut handle to get automatic feed, repeat the cutting and measuring until reaching the right size of the work piece.



- 15.3. The procedure to process the circular cone parts.

The operation is similar as processing the circular column part with the difference of taper, the taper is divided into outer cone and inner cone, there're two ways to process it.

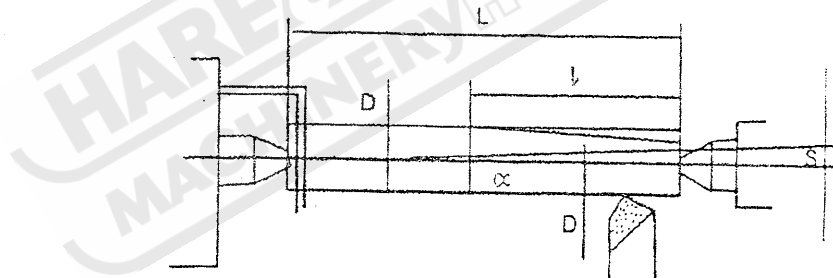
15.3.1 Manual operation

According to the required taper of the work piece, turn the tool post to the right angularity of the work piece and fix

it, repeat the cutting to get the needed shape.

15.3.2 Automatic feed.

Processing the taper automatically is to use the characteristic which the tail stock can be moved and adjust the feed. To process the long circular cone part with small angularity, adopt the way of clamping within the two top centers, make the center of the tail stock sleeve offset the main shaft center to keep the same angularity as the work piece, repeat the automatic feed till completion of cutting.



$$S = L \times \sin \alpha$$

$$S = \frac{D-d}{2} \times \frac{L}{l}$$

15.4. Procedure of processing threads.

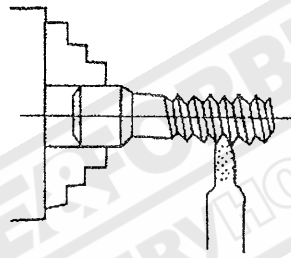
15.4.1 Before the threads cutting, get the tools ready first.

The ordinary specifications of the threads are 60°, 55°, and 30°

trapezoid threads, etc.

15.4.2 Check the table plate on the change gear base, in the light of the direction of 800 part to collocate change gears.

15.4.3 Get the needed size for the outer diameter of the threads cutting, check the right thread pitch to make sure it's no error, then repeat the cutting till the nut can be screwed up.



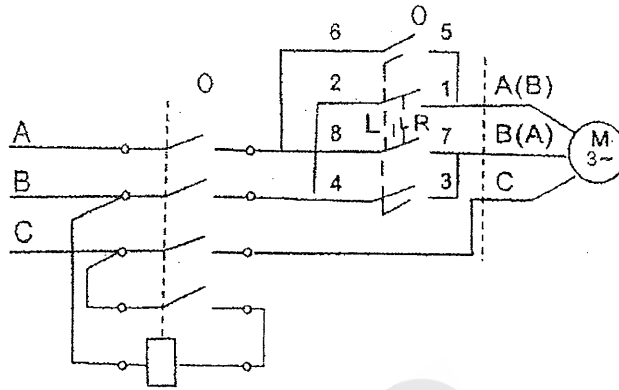
16. TRANSPORTATION & INSTALLATION

16.1. Transportation

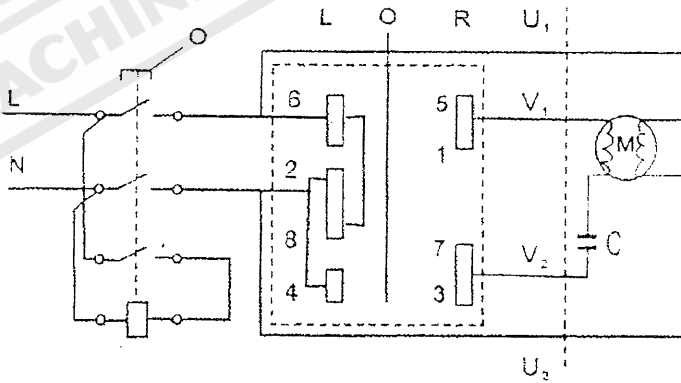
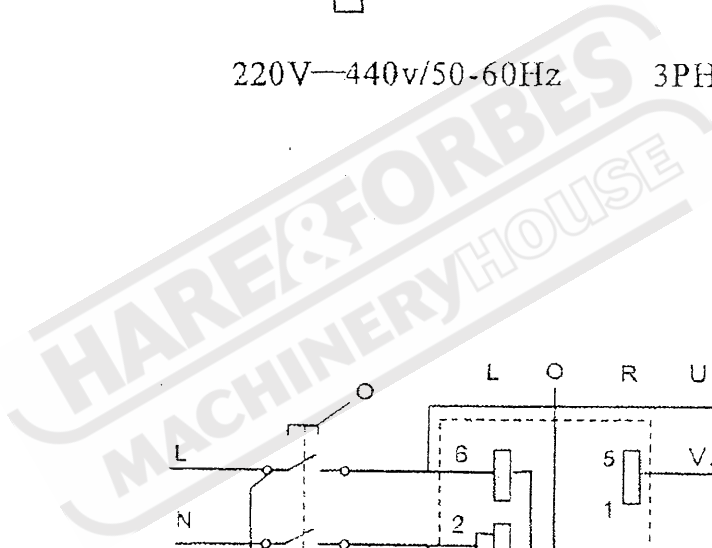
Avoid violent collision and fluctuation during loading, unloading and carrying, try to keep balance when hoisting, watch the cord or other things will not scrape the lead screw, spindle, hand wheels and other machine parts, the painted surfaces can't be scraped, for it will effect the outlook of the lathes.

17. ELECTRICAL PART

17.1 To open without cutting power device

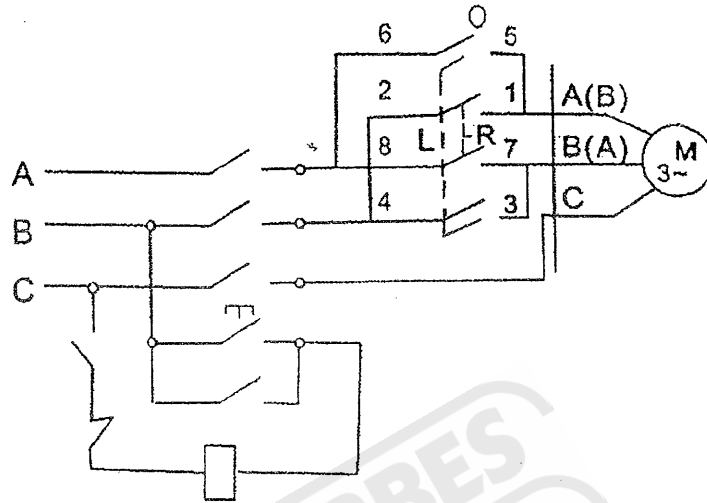


220V—440v/50-60Hz 3PH

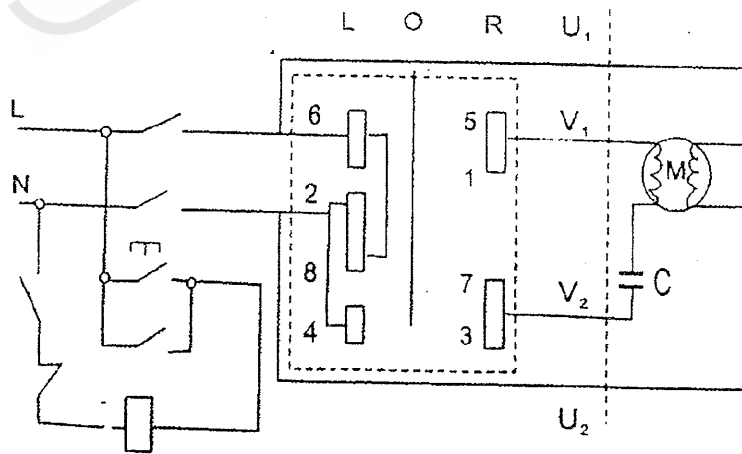
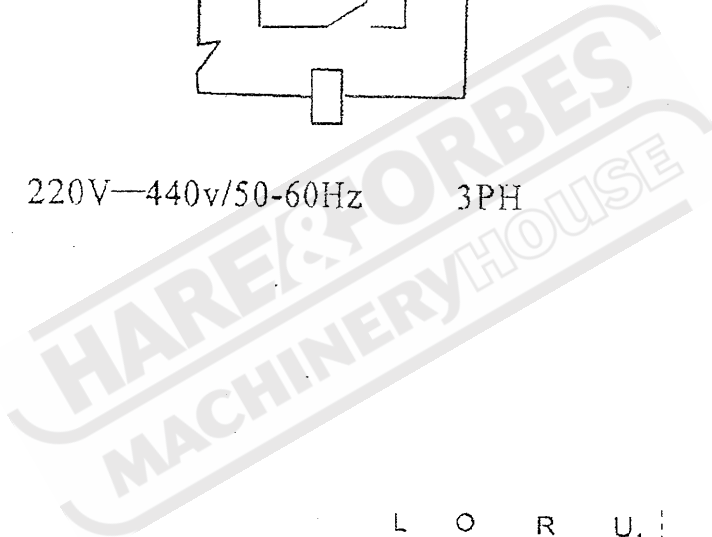


110V—240v/50-60Hz 1PH

17.2 To open with cutting power device



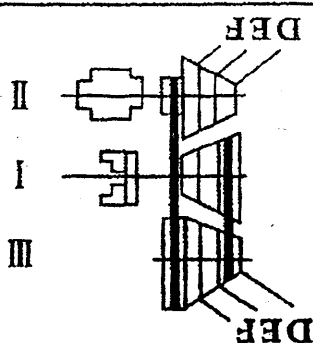
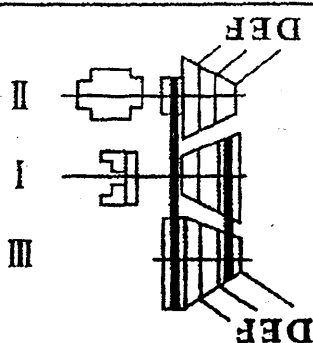
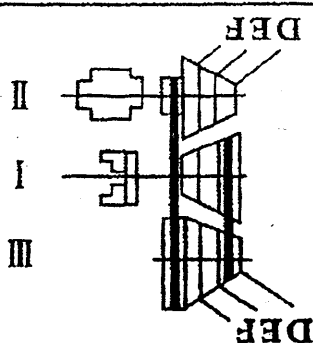
220V—440v/50-60Hz 3PH



110V—240v/50-60Hz 1PH

41


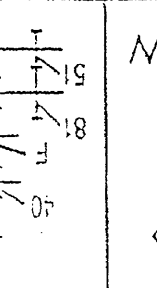
HARE & FORBES
MACHINERY HOUSE

	III-I	125	210	420
	II-I	620	1000	2000
	D	E	F	
				
				

18.2 Cj9528 Spindle Speeds Table

42

Threading Table for METRIC Leadscrew									
mm									
D	E	AI	AII	AIII	BI	BIII	CII	CIII	
30	30	0.175	0.1	0.25			0.125		
54	54		0.6		1.5		0.3	0.75	
63	63			0.8		2	0.4	1	
70	70	0.7	0.4	1	1.75	2.5	0.5	1.25	56
1/n									
F	90		80						
G	40	45	50	55	60	70			
BII	8	9	10	11	12	14			
CII	16	18	20	22	24	28			
AII	25		35						

Cj9528 Threading Table For Metric Leadscrew