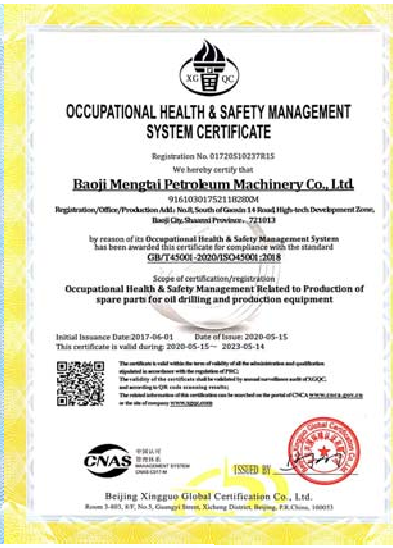
User Manualv1

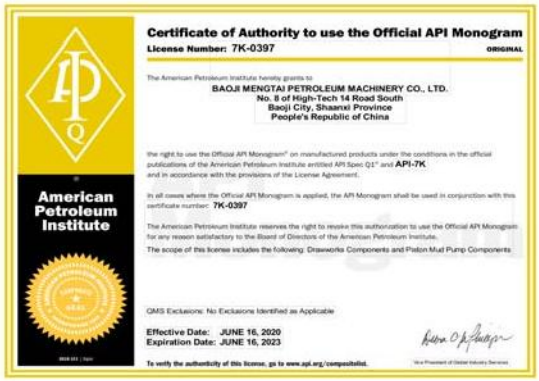
NJ Series Agitator

COMPANY AND WARRANTY

BAOJI MENGTAI PETROLEUM MACHINERY CO.,LTD(Short for MTPM) ,MTPM has been dedicating himself to serve drilling contractors since its establishment in year 2003, who specializes in fluid end expendables and mud pump spare parts used in oil well drilling, work-over, water well drilling and HDD industries. All products supplied are machined by China both API and ISO certified workshop.

MTPM products have strict quality control systems which guarantee our products are produced under hightest industry standards. Additionally, our products in quality are equivalent and interchangeable with those of OEM mud pumps including BOMCO,EMSCO, Gardner-Denver, National, and drilling rig spare parts such as Solid Control system and Downhole Tools ,which are not limited within those categories.





Baoji Mengtai Petroleum Machinery Co., Ltd. is willing to provide customers at domestic and abroad with high quality products and satisfactory services.

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A. Foreword

A1. Statements

Thank you for selecting the products made by Baoji Mengtai Petroleum Machinery Co.,Ltd.

Please learn your national and local environment protecting policy before using the product. Baoji Mengtai Petroleum Machinery Co.,Ltd. will not take any obligations caused by improper use of the equipment.

People in charge of the transportation, installation, operation, adjustment and maintenance of the equipment should read the instruction manual carefully. We strongly recommend the user to keep one copy of the manual in worksite for reference.

It is not permitted to make any alteration of this equipment unless you get written approval of Baoji Mengtai Petroleum Machinery Co.,Ltd.. We strongly recommend you to use replacement parts or components of our company if necessary.

A2. Warning Information

The important information for the safety and efficiency of the operation is marked with special symbols.

1. Safety Warning

Safety message or items requiring special attention

People in charge of the transportation, installation, operation, adjustment and maintenance of the equipment should pay special attention to the safety warning message. Please read and understand these warnings carefully before carrying out the work. Baoji Mengtai Petroleum Machinery Co.,Ltd will not take any obligation on personnel injury and property damage caused by improper practice. The equipment must work in safe condition!

2. Ordinary Warning

Ordinary reminding message or items requiring attention

If you do not well understand the information marked with this symbol, it may not cause safety problem to the person or the equipment. However, it will bring

you some inconvenience to your operation. It is suggested that the personnel who is concerned read and understand this kind of information carefully.

A3. Revision of the Technical Documents

The information included in the manual is subject to change, and by no means has the manual included all of the detailed information of the products made by Baoji Mengtai Petroleum Machinery Co.,Ltd In case of any extra information needed, please contact the service department of Baoji Mengtai Petroleum Machinery Co.,Ltd.

A4. Contact Information

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Please visit our website for more information

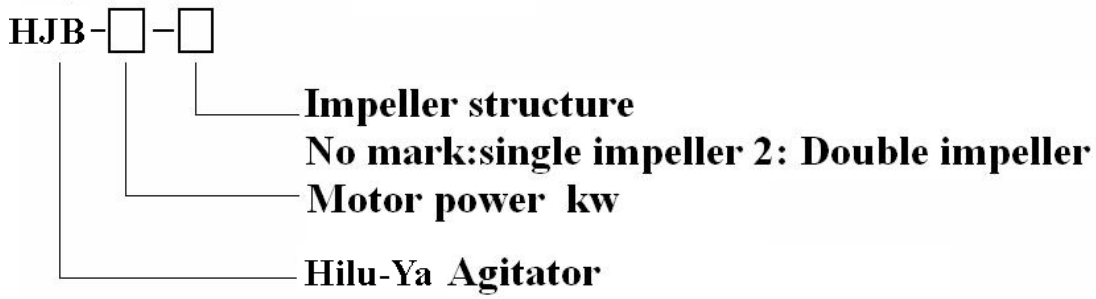
B. Introduction of the Product

The agitator is one of the important solids control equipment in drilling fluid system. It is mounted on the circulating tank surface, and the impeller of the agitator dips into a certain depth of the drilling fluid to agitate the mud uniformly. It is mainly used to continuously stir the drilling fluid composed of powdered bentonite and barite powder to make solid particles uniformly mixed with the drilling fluid. Furthermore, the stirring of the agitator can prevent the drilling fluid depositing and maintain the stable performance of the drilling fluid, which helps the desander, desilter and centrifuge achieve better results in eliminating solid particles.

The agitator is driven by a motor decelerator. The rotating impeller stirs drilling fluid and forced it downward to the bottom of the tank, and then is forced back up along the tank wall. Continuously flowing and mixing in the tank makes the drilling fluid keep uniform density.

The agitator produced by Zhengzhou Hilu-Ya Energy Technology Co., Ltd. can be applied in various drilling fluid circulation purification system with the advantage of large transmitting torque, smooth operation, and reliable working. The commonly used agitator models are MT-NJ-2.2, MT-NJ-4, MT-NJ-4-2, MT-NJ-5.5, MT-NJ-7.5, MT-NJ-7.5-2, MT-NJ-11, MT-NJ-11-2, MT-NJ-15, MT-NJ-15-2, MT-NJ-18.5, MT-NJ-18.5-2 and Etc..

Model Description:



For example:

Motor power 7.5kW, double impeller agitator is described as: MT-NJ-7.5-2.

C.Features of the Structure

The Agitator is designed with the following characteristics:

1. The agitator motor is horizontally mounted, which makes it more convenient for installation, adjustment, and replacement.
2. The material and casting of the decelerator utilizes our patented technology, and the oil seals are SKF, NSK and other international famous brands.
3. Special structure of double oil seal using imported CFW, NOK and SKF for output shaft makes the oil seal more reliable and endurable.

4. HA series drilling fluid agitator has strong stirring intensity, wide spread range and large starting torque.

D. Major Technical Parameters

The major technical parameters of agitator are shown in table D1.

Table D1 The major technical parameters of agitator

Model	Motor power (kW)	380V, 50Hz		460V, 60Hz		Impeller diameter (mm)	Required slurry density g/cm³	Dimensions (mm)	Installation size （mm）	Weight (Kg)
		motor speed (r/min)	impeller speed (r/min)	motor speed (r/min)	impeller speed (r/min)					
MT-NJ-2.2	2.2	1450	58	1750	70	300	≤2.4	860×640×548	700×550	190
MT-NJ-4	4					520		1015×740×628	855×650	350
MT-NJ-4-2	4					430/430		1015×740×628	855×650	360
MT-NJ-5.5	5.5					600		1055×740×606	935×650	530
MT-NJ-7.5	7.5					800		1340×800×648	1290×700	600
MT-NJ-7.5-2						700/400				620
MT-NJ-11	11					1000		1480×850×715	1430×750	650
MT-NJ-11-2						870/600				680
MT-NJ-15	15					1100		1530×850×715	1480×750	830
MT-NJ-15-2						870/600				860
MT-NJ-18.5	18.5					1560		1687×990×750	1598×890	880
MT-NJ-18.5-2						-----				910

E.Structure and Components

As Figure E1 shows, MT-NJ agitator is composed of base, motor, decelerator, impeller and other components.

The following figure shows the structure of the agitator.

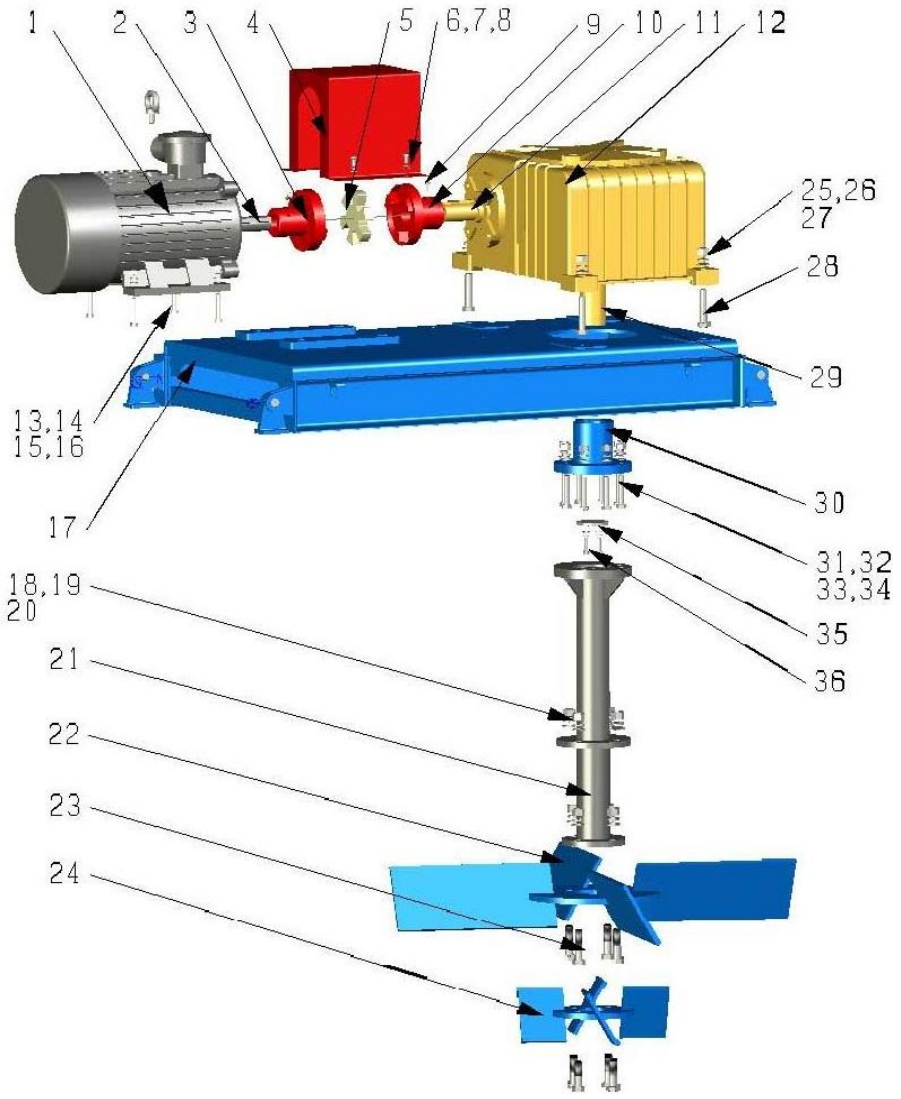


Figure E1　Structure of the agitator

Table E1 Parts list of the agitator

No	Part	Specification							Qty.
		MT-NJ-2	**MT-NJ-4**	**MT-NJ-5.5**	**MT-NJ-7.5/ MT-NJ-7.5-2**	**MT-NJ-11 MT-NJ-11-2**	**MT-NJ-15 MT-NJ-15-2**	**MT-NJ-18.5 MT-NJ-18.5-2**	
1	Explosion-proof motor	YB3-100L1-4 380V/50Hz/ 2.2KW	YB3-112M-4 380V/50Hz/ 4KW	YB3-132S-4 380V/50Hz/ 5.5KW	YB3-132M-4 380V/50Hz/ 7.5KW	YB3-160M-4 380V/50Hz/ 11KW	YB3-160L-4 380V/50Hz/ 15KW	YB3-180M-4 380V/50Hz/ 18.5KW	1
2	Flat key	C8×7	C8×7	C10×8	C10×8	C12×8	C12×8	C14×9	1
3	Motor coupling	MT-NJ2.2-01	MT-NJ4-01	MT-NJ7.5-01	MT-NJ7.5-01	MT-NJ15-01	MT-NJ15-01	MT-NJ18.5-01	1
4	shield	MT-NJ2.2-02	MT-NJ4-02	MT-NJ7.5-02	MT-NJ7.5-02	MT-NJ15-02	MT-NJ15-02	MT-NJ15-02	1
5	Flexible block	MT-NJ2.2-03	MT-NJ4-03	MT-NJ4-03	MT-NJ4-03	MT-NJ4-03	MT-NJ4-03	MT-NJ4-03	1
6	bolt	M10×16	M10×16	M10×16	M10×16	M10×16	M10×16	M10×16	4
7	Spring washer	10	10	10	10	10	10	10	4
8	Flat gasket	10	10	10	10	10	10	10	4
9	bolt	M6×12	M6×12	M6×12	M6×12	M6×12	M6×12	M6×12	2
10	Decelerator coupling	MT-NJ2.2-04	MT-NJ4-04	MT-NJ4-04	MT-NJ7.5-04	MT-NJ15-04	MT-NJ15-04	MT-NJ18.5-04	1
11	Flat key	C8×7	C12×8	C12×8	C14×9	C14×9	C14×9	C18×11	1
12	decelerator	TWPX-120	TWPX-155	TWPX-155	TWPX-175	TWPX-200	TWPX-200	TWPX-250	1
13	bolt	M10×60	M10×70	M10×60	M10×70	M12×70	M12×70	M12×70	4
14	Hexagon nut	M10	M10	M10	M10	M12	M12	M12	4
15	Spring washer	10	10	10	10	12	12	12	4
16	Flat gasket	10	10	10	10	12	12	12	4
17	base	MT-NJ2.2-05	MT-NJ4-05	MT-NJ5.5-05	MT-NJ7.5-05	MT-NJ11-05	MT-NJ15-05	MT-NJ18.5-05	1

18	Hexagon nut	M12	M20	M20	M20	M20	M20	M20	4（8）
19	Spring washer	12	20	20	20	20	20	20	4（8）
20	Flat gasket	12	20	20	20	20	20	20	4（8）
21	Shaft assembly	MT-NJ2.2-06	MT-NJ4-06	MT-NJ5.5-06	MT-NJ7.5-06	MT-NJ15-06	MT-NJ15-06	MT-NJ18.5-06	1
22	Up-impeller assembly	MT-NJ2.2-07	MT-NJ4-07	MT-NJ5.5-07	MT-NJ7.5-07	MT-NJ11-07	MT-NJ15-07	MT-NJ18.5-07	1
23	bolt	M12×55	M20×70	M12×70	M20×65	M20×70	M20×70	M20×70	4（8）
24	Down-impeller assembly				（MT-NJ7.5-07-2）	（MT-NJ15-07-2）	（MT-NJ15-07-2）		1
25	Hexagon nut	M16	M18	M18	M18	M20	M20	M20	4
26	Spring washer	16	18	18	18	20	20	20	4
27	Flat gasket	16	18	18	18	20	20	20	4
28	bolt	M16×70	M18×80	M18×80	M18×80	M20×90	M20×90	M20×90	4
29	Flat key	C14×9	C18×11	C18×11	C18×11	C20×12	C20×12	C25×14	1
30	Up-coupling	MT-NJ2.2-08	MT-NJ5.5-08	MT-NJ5.5-08	MT-NJ7.5-08	MT-NJ11-08	MT-NJ15-08	MT-NJ18.5-08	1
31	Hexagon nut	M12	M16	M16	M16	M16	M16	M20	6
32	Spring washer	12	16	16	16	16	16	20	6
33	Flat key	12	16	16	16	16	16	20	6
34	bolt	M12×65	M16×70	M16×70	M16×75	M16×75	M16×75	M20×90	6
35	Axis head plate	MT-NJ2.2-09	MT-NJ7.5-09	MT-NJ7.5-09	MT-NJ7.5-09	MT-NJ11-09	MT-NJ15-09	MT-NJ18.5-09	1
36	bolt	M10×35	M10×35	M10×35	M10×35	M10×35	M10×35	M10×35	2
36	Centralizer		MT-NJ18.5-10					MT-NJ18.5-10	1

E1. Decelerator

As shown in Figure E2, MT-NJ mud agitator composes of gear, turbine, bearings, oil seals and other components

Figure E2 shows the details of its structure

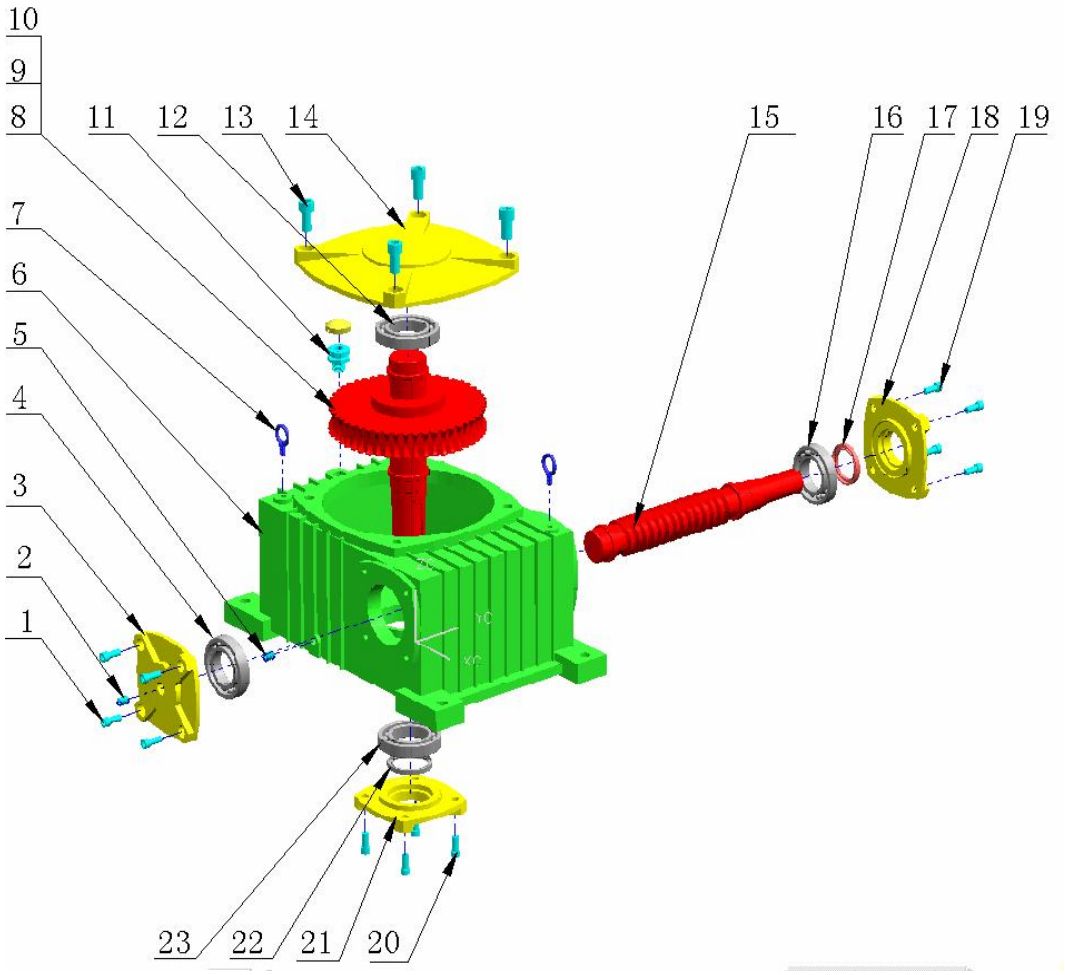


Figure E2 Decelerator structure

Table E2 Part list of decelerator

No	Part	specification					Qty.
		TWPX120	TWPX155	TWPX175	TWPX200	TWPX250	
1	Inner Hexagon nut	TWPX120-01	TWPX155-01	TWPX175-01	TWPX200-01	TWPX250-01	4
2	Inner Hexagon nut	TWPX120-02	TWPX155-02	TWPX175-02	TWPX200-02	TWPX250-02	1
3	Input shaft cover1	TWPX120-03	TWPX155-03	TWPX175-03	TWPX200-03	TWPX250-03	1
4	Input shaft bearing	30207	30210	30211	30212	30215	1
5	drain plug	RC3/8″	RC3/8″	RC3/8″	RC3/8″	RC3/8″	1
6	Box	TWPX120-06	TWPX155-06	TWPX175-06	TWPX200-06	TWPX250-06	1
7	Hoisting ring	TWPX120-07	TWPX155-07	TWPX175-07	TWPX200-07	TWPX250-07	2
8	Worm gear	TWPX120-08	TWPX155-08	TWPX175-08	TWPX200-08	TWPX250-08	1
9	bond	TWPX120-09	TWPX155-09	TWPX175-09	TWPX200-09	TWPX250-09	1
10	Output shaft	TWPX120-10	TWPX155-10	TWPX175-10	TWPX200-10	TWPX250-10	1
11	Oil leveler	TWPX120-11	TWPX155-11	TWPX175-11	TWPX200-11	TWPX250-11	1
12	Output shaft bearing	30210	30213	30214	30215	30219	2
13	Inner Hexagon nut	TWPX120-13	TWPX155-13	TWPX175-13	TWPX200-13	TWPX250-13	4
14	Output shaft cover	TWPX120-14	TWPX155-14	TWPX175-14	TWPX200-14	TWPX250-14	1
15	Worm shaft	TWPX120-15	TWPX155-15	TWPX175-15	TWPX200-15	TWPX250-15	1
16	Input shaft bearing	30207	30210	30211	30212	30215	1
17	Input shaft oil seal	35×60×12	50×80×12	55×80×12	60×90×12	75×105×12	1
18	Input shaft cover 2	TWPX120-18	TWPX155-18	TWPX175-18	TWPX200-18	TWPX250-18	1
19	Inner Hexagon nut	TWPX120-19	TWPX155-19	TWPX175-19	TWPX200-19	TWPX250-19	4
20	Inner Hexagon nut	TWPX120-20	TWPX155-20	TWPX175-20	TWPX200-20	TWPX250-20	4
21	Output shaft cover 2	TWPX120-21	TWPX155-21	TWPX175-21	TWPX200-21	TWPX250-21	1
22	Output shaft oil seal	50×80×12	65×95×12	70×100×12	75×105×12	95×130×12	1
23	Output shaft bearing	30210	30213	30214	30215	30219	1

E2. Impeller

The upper part of the impeller is a hollow shaft, the lower part is blade. Do pay attention to rotation of the impeller in the debugging process.

Figure E3 indicate the structure of the impeller and the rotating direction when it works.

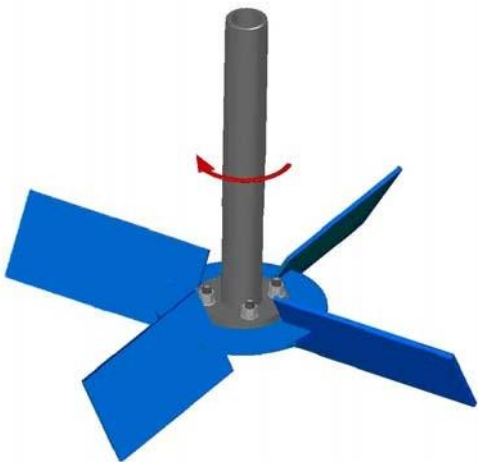
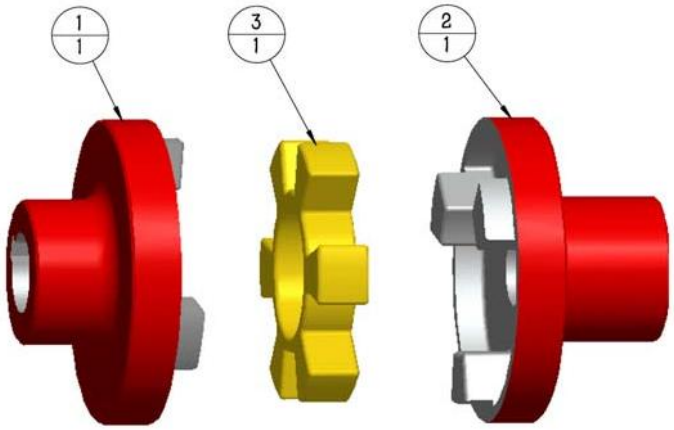


Figure E3 Impeller assembly structure and rotating direction

The right rotation is clockwise when viewed from the top of the agitator.

E3. Coupling

As shown in figure E3, The coupling is flexible clutch. It consists of motor coupling, decelerator coupling and flexible block.



1 motor coupling 2 Decelerator coupling 3 flexible block

Figure E3 Structure of the coupling

Table E3 Coupling parts list

Agitator model	Part specification		
	Motor coupling	Decelerator coupling	Flexible block
MT-NJ--2.2	MT-NJ2.2-01	MT-NJ2.2-04	MT-NJ2.2-03
MT-NJ-4 MT-NJ-4-2	MT-NJ4-01	MT-NJ4-04	MT-NJ4-03
MT-NJ-5.5	MT-NJ7.5-01	MT-NJ4-04	MT-NJ4-03
MT-NJ-7.5 MT-NJ-7.5-2	MT-NJ7.5-01	MT-NJ7.5-04	MT-NJ4-03
MT-NJ-11 MT-NJ-11-2	MT-NJ15-01	MT-NJ15-04	MT-NJ4-03
MT-NJ-15 MT-NJ-15-2	MT-NJ15-01	MT-NJ15-04	MT-NJ4-03
MT-NJ-18.5	MT-NJ18.5-01	MT-NJ18.5-04	MT-NJ4-03

1.Coupling alignment

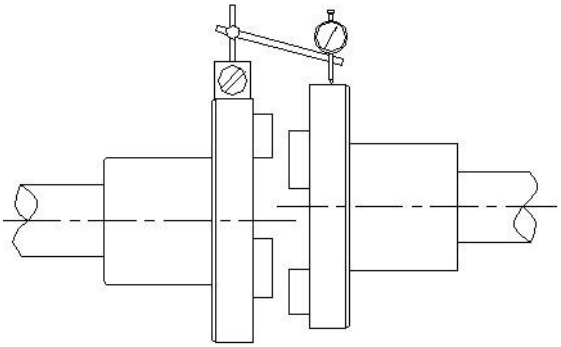
Service life of the motor and decelerator depends upon proper alignment through the use of a flexible coupling. If an electric motor was mounted at a MENGTAI recognized facility, the motor and decelerator were in aligned prior to shipping. The alignment of the coupling should be inspected after installation to ensure that the transportation or other handling did not cause misalignment of the unit.

Alignment must not be attempted until the base is in position and the mounting and flange bolts have been tightened.

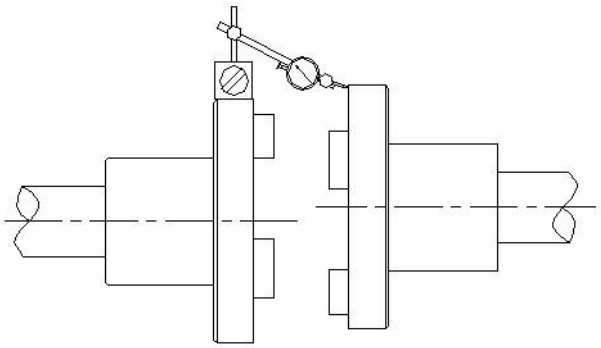
2. Coupling alignment inspection

The recommended procedure for coupling adjustment is to use a dial indicator, as illustrated. The dial indicator is attached to one coupling half with the indicator resting on the O.D. of the other coupling half to measure offset misalignment. To measure angular misalignment, the indicator is positioned so that the indicator rests on the face, near the O.D., of the other coupling half. Rotate the shaft one full revolution while the other shaft remains stationary and

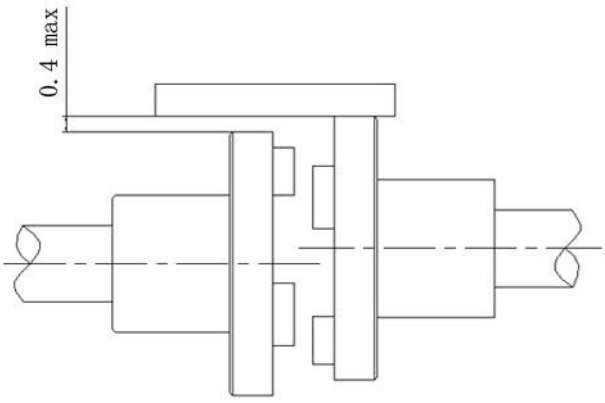
note total run out. Unless otherwise specified by the coupling manufacturer, offset misalignment should be limited to 0.010 inches T.I.R. and angular misalignment should be limited to 0.005 inches T.I.R.



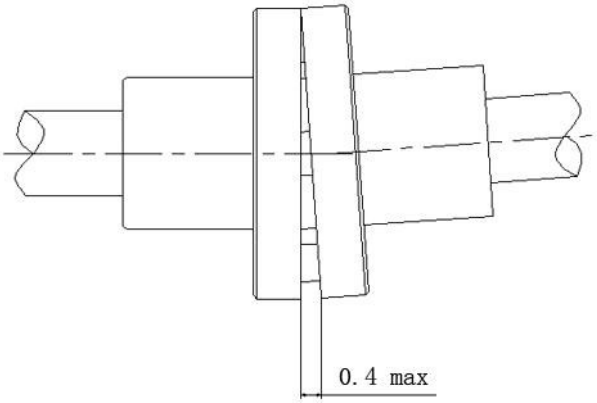
a. Measuring offset alignment using a dial indicator



b. Measuring angular alignment using a dial indicator



c. Measuring offset alignment using a ruler



d. Measuring angular alignment using a ruler

In areas where a dial indicator arrangement is not available, an adequate job of alignment can be done with a straight edge. This method is especially useful if the coupling used contains an all rubber drive element.

To check offset misalignment, lay the straight edge in line with the shafts on the O.D.'s of the coupling halves. There should be no gaps under the straight edge. Check two locations 90º apart. Angular misalignment can be checked by measuring the gap between coupling half faces. There should be no more than 1/64" gap under the straight edge or 1/64" variation in the gap between coupling halves.

3. Adjustment of coupling alignment

Adjust misalignment by loosening motor or decelerator mounting bolts and repositioning, re-tightening or shimming as required. If additional shims are required, the motor should be the piece of equipment on the skid to receive addition shims.

E4. Motor

MT-NJ series agitator is equipped with explosion-proof motors.
Explosion-proof motor is to provide power to the agitator. The parameters of the motors are shown in Table E4:

Table E4 Motor Parameters

Model / Parameter	Frame model of motor	Power kW	Rated voltage V	Hz	Speed rpm
MT-NJ-2.2	YB3-100L1-4W	2.2	380	50	1450
MT-NJ-4	YB3-112M-4	4	380	50	1450
MT-NJ-4-2	YB3-112M-4	4	380	50	1450
MT-NJ-5.5	YB3-132S-4	5.5	380	50	1450
MT-NJ-7.5	YB3-132M-4	7.5	380	50	1450
MT-NJ-7.5-2	YB3-160M-4	11	380	50	1450
MT-NJ-11					
MT-NJ-11-2	YB3-160L-4	15	380	50	1450
MT-NJ-15					
MT-NJ-15-2					

E5. Electric circuit

Electrical installation and maintenance work should only be carried out by qualified and competent persons and must be in accordance with relevant electrical regulations and standards.
Figure E6 shows the electric circuit.

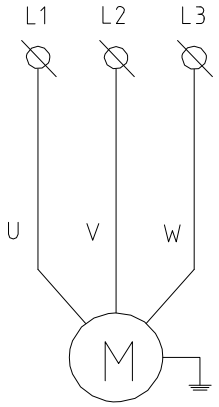


Figure E6 Electric circuit

F. Installation and Adjustment

F1. Installation

1. Installation dimensions and hoisting position

Installation dimensions and hoisting position is shown in Figure F1. Please keep enough space for installation and hoisting the equipment according to the indication shown on the following figure.

To prevent unnecessary damage to equipment and personal security incidents occurred, it is strictly prohibited to hoist other position except the indicated hoisting position.

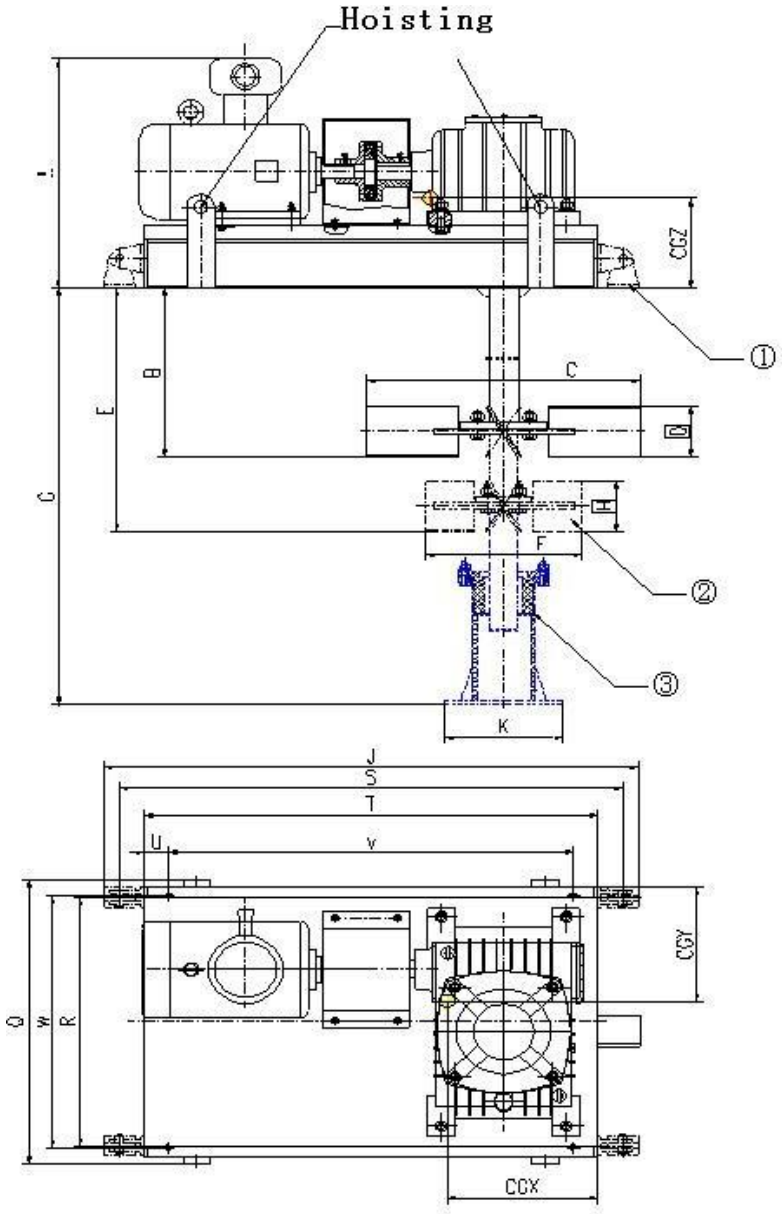


Figure F1 MT-NJ series agitator installation diagram

Table F1 Installation dimensions of the agitator

Size / Model	A	B	C	D	E	F	G	H	J	K	Q	R	S	T	U	V	W	Gravity center			remark
																		CGX	CGY	CGZ	
MT-NJ-2.2	548	660	300	143.6	---	--	---	---	---	---	640	---	---	860	80	700	550	309	250	223	Single impeller
MT-NJ-4	628	2800	520	143.6	---	--	3500	---	---	300	740	---	---	1015	80	855	650	365	289	255	Single impeller and centralizer
MT-NJ-4-2	628	2800	430	143.6	---	430	3500	---	---	300	740	---	---	1015	80	855	650	365	289	255	Double impeller and centralizer hoisting ears on both sides
MT-NJ-5.5	606	679	600	143.6	---	--	---	---	---	---	740	---	---	1055	60	935	650	380	285	246	Single impeller
MT-NJ-7.5	648	1720	800	143.6	---	--	---	---	1340	---	800	700	1290	---	---_	---	---	580	225	345.5	Single impeller, hoisting ears on both sides
MT-NJ-7.5-2	648	1695	700	143.6	1905	400	---	143.6	1340	---	800	700	1290	---	---_	---	---	580	225	345.5	double impeller, hoisting ears on both sides
MT-NJ-11	715	1358.5	1000	169.5	---	--	---	---	1480	---	850	750	1430	---	---_	---	---	676	275	345.5	Single impeller, hoisting ears on both sides
MT-NJ-11-2	715	1585	870	169.5	1805	600	---	169.5	1480	---	850	750	1430	---	---_	---	---	676	275	345.5	double impeller, hoisting ears on both sides
MT-NJ-15	715	1585	1100	169.5	---	--	---	---	1530	---	850	750	1480	---	---_	---	---	654	275	345.5	Single impeller, hoisting ears on both sides
MT-NJ-15-2	715	1585	870	169.5	1805	600	---	169.5	1530	---	850	750	1480	---	---_	---	---	654	275	345.5	double impeller, hoisting ears on both sides
MT-NJ-18.5	750	2800	1560	——	---	--	3500	---	1687	300	990	890	1598	---	---_	---	---	780	395	363	double impeller, centralizer hoisting ears on both sides

2. Installation

a. Horizontally hoist up the agitator and place it on the desired position and fixed it.

b. Submerge the impeller to the designed liquid level below.

c. If the depth of the drilling fluid tank is equal to 2.4m and more than 2.4m, or the agitator moves together with tank, it is necessary to utilize a centralizer. It is required to adjust the centralizer concentrily with the agitator shaft.

d. Connect the power circuit. This work is to be carried out by qualified personnel.

F2. Adjustment

1. First check whether the agitator is in good condition. Open the coupling shield, rotating shaft and decelerator by hand to determine if there is any body stuck or other damage.

Make sure the equipment is in good condition and reinstall the coupling shield and assemble it according to the indicated direction.

2. Check the rotation of the explosion-proof motor and decelerator. Jogging control the motor to check if the motor rotates in the direction marked on coupling shield.
3. Check if there is abnormal noise, obstacle, overheat and other abnormal phenomena during trial operation. If the abnormal phenomena occurred, stop operation and figure it out.

G. Operation

1. First complete installation and commissioning of the agitator. Before starting, add a little gear oil to clean oil chamber. Remove condensate in the oil chamber to avoid oil emulsion pollution; check whether oil level of the decelerator at the as central window position for normal refueling. The requirements gear oil shows in the following table:

Table G1 Gear oil for the decelerator

Ambient temperature	ISO VG	GB3141-82	Shell brand	Mobil	AGMA	China petroleum
-30°C～-15°C	VG-150	N150	Shell Omala150	Gear629	7	HD-150
-15°C～5°C	VG-220	N220	Shell Omala220	Gear630	7EP	HD-220
5°C～25°C	VG-320	N320	Shell Omala320	Gear632	6	HD-320
25°C～40°C	VG-460	N460	Shell Omala460	Gear634	8	HD-460
40°C～65°C	VG-680	N680	Shell Omala680	Gear636	8EP	HD-680

2. Check coupling screws of the motor and decelerator are tightened, and then check if joints of the agitator base is loosen. If there is abnormal sound or failure, make sure it figures out before using.
3. Check starting wiring is correct, starting device is flexible, the connection is good, and the metal shell of the starting device is reliably grounded.
4. After starting, gear oil should be regularly replaced. The new agitator put into use for the first time, should keep running 100 hours so that the worm gear and shaft full run-in. In the shutdown state, open oil drain plug on the bottom of the decelerator to completely drain the oil and then add new internal lubricant oil. After the first oil change, replace the oil every 3 months.
5. During operation, if there is abnormal conditions occur, please stop the equipment and examine it. You can refer to chapter H2 on trouble shooting. (The maximum oil temperature of decelerator is 95℃. The decelerator can work normally under 95℃.)
6. Check the impeller to make sure there is no winding before your operation.

H. Maintenance

Routine maintenance can keep the agitator running without trouble and extend service life. It is suggested that you keep your maintenance records carefully and make an equipment maintenance schedule accordingly. This manual may not list all the maintenance details. Please update or add contents of the schedule based on your practical operation.

H1. Daily maintenance

Each shift should at least carry out the following maintenance work.
1. Check if all connections and screws tightened; make sure no leakage on the joint and sealing.
2. Check the lubrication level of the decelerator to determine whether it is necessary to add lubrication.
3. Check the vibration and noise of the decelerator.
4. Determine the temperature of bearing. The bearing temperature cannot exceed the ambient temperature by 50℃, and the operating temperature cannot exceed 60℃.If the bearings are over heated, stop the operation and examine the equipment.
5. Determine the temperature of oil. The oil temperature cannot exceed the ambient temperature by 40℃, and the operating temperature cannot exceed 50℃.If the bearings are over heated, stop the operation and examine the equipment.

H2. Scheduled maintenance

The following component doesn’t require daily maintenance, please keep routine maintenance.

1. Bearing

Every month add lubricant grease to the main shaft bearing of the decelerator.

Fill the lubricating grease through the two straight-through pressure oil fittings on the side of the bearing base. Recommended grease in table H1 or other grease with similar performance selected by customer should be used.

2. Decelerator

For the first time decelerator works for 3-5 days, clean the internal and replace with new oil. Afterward you can change the oil every 3 months. When you change oil, remove the small cone plug on the ventilation devices. Oil should be injected to the central position of oil leveler corresponding to ambient temperature.

Table H1 lubricating grease list for the agitator

part	lubricated position	oil type	recommended grease	temperature range	brand	oil period	feeding qty
Motor and decelerator	bearing	carbamide	WTHbearing grease	-50℃～180℃	great wall	one month	150g/bearing
		hydroxyl resin	TSA-Lbearing grease	-50℃～140℃			
		Lithium complex grease	HTHSbearing grease	-40℃～180℃			

Before you do repair or maintenance, shut down the power supply to prevent injury to personnel.

H3. Trouble shooting

Table H2 Common malfunction and solution

Part	Malfunction	Cause	Solution
agitator	Shaft not rotate	Motor power supply failure	Examine the motor electric circuit
		Decelerator clogged	Repair decelerator box
	Agitating area oil sediment	Wrong rotation	Adjust rotating direction of motor according to indicated direction
	Strong vibration	Impeller shaft eccentric	Recheck the base of agitator
		The base of agitator not stably fixed	Fasten the fix screw
decelerator	Overheat	Improper connection of motor and decelerator	Adjust to suitable position and align the three shafts
		Overload running	Suitably adjust the running
		Oil seal over abraded	Add grease
		Over more or less grease	Add grease according to indication
		Poor lubrication	Replace suitable grease
	vibration	Unstable fix	Check the untightened location and fix it
		Damage to worm gear	Replace worm gear
		Abrading bearing	Replace bearing

		Bolt loosen	Tighten the bolt
	Abnormal sound	Bearings worn	Replace bearing
		teethed gear pairs not well	Repair the teeth or replace gear pairs
		Insufficient lubricant	Add lubricant to the indicated level
		Foreign body in the machine	Empty the lubrication with foreign body and add new lubrication
	Oil leakage	Oil seal lip wear	Replace oil seal
		Crankshaft oil seal wear file	Replace output shaft or input shaft
		Too much oil	Adjust the oil level according to indication
		Oil drain plug not tightened	Thread position plus sealant, tighten the plug screw
		Oil leveler broken	Replace oil leveler
	Teeth of gear pairs wear	Overload running	Adjust to suitable load level
		Unsuitable Lubricant	Replace for right lubricant
		Insufficient lubricant	Add lubricant to suitable level
		Not change the lubricant as per requirement	Change lubricant on time
		Ambient temperature too high	Take suitable measure to reduce ambient temperature

I. Replacement of spare parts

I1. Overview

During operation, some parts will gradually abrade, aging or damage due to improper operation, resulting in devices do not work properly. It is necessary and a must to replace these parts. In Appendix J we list these wearing parts and indicate their location.

If other part is damaged which is not listed in Appendix J, please contact MENGTAI technology department so as to get support in time.

You can replace the damaged parts by an experienced maintenance staff or leave it to the MENGTAI after-sales staff.

It is highly recommended that you use components provided by MENGTAI to ensure the equipment work properly. MENGTAI does not undertake any responsibility or consequences caused by substandard parts.

I2. Purchasing parts

To avoid confusion, we suggest you place your order using the following form: "part name + part number / size + quantity". Example as follows:

Table I1 Order for component

No.	Item	Specification	Qty.
1	Rotating shaft assembly	MT-NJ2.2-06	1
2	bearing	30210	1

J. Appendix

Table J1 MT-NJ agitator spare parts list

Part name	Component name	Part No./specification							Spare parts for one year	Spare parts for two years	Spare parts for three years	Location	Remarks
		MT-NJ-2.2	MT-NJ-4	MT-NJ-5.5	MT-NJ-7.5 MT-NJ7.5-2	MT-NJ--11 MT-NJ-11-2	MT-NJ--15 MT-NJ-/15-2	MT-NJ--18.5					
agitator	Rotating shaft assembly	MT-NJ2.2-06	MT-NJ4-06	MT-NJ5.5-06	MT-NJ7.5-06	MT-NJ15-06	MT-NJ15-06	MT-NJ18.5-06		1	1	figure E1（21）	(2)
	Upper impeller assembly	MT-NJ2.2-07	MT-NJ4-07	MT-NJ5.5-07	MT-NJ7.5-07	MT-NJ11-07	MT-NJ15-07	MT-NJ18.5-07		2	2	figure E1（22）	(2)
	Down impeller assembly				MT-NJ7.5-07-2	MT-NJ15-07-2	MT-NJ15-07-2			2	2	---	(2)
decelerator	Bearing of Output shaft	30210	30213	30214	30214	30215	30215	30219	2	2	2	figure E2（12）	
	Worm gear	TWPX120-08	TWPX155-08	TWPX175-08	TWPX175-08	TWPX200-08	TWPX200-08	TWPX250-08		1	1	figure E2（8）	(1)
	Worm shaft	TWPX120-15	TWPX155-15	TWPX175-15	TWPX175-15	TWPX200-15	TWPX200-15	TWPX250-15		1	1	figure E2（15）	(1)
	Bearing of input shaft	30207	30210	30211	30211	30212	30212	30215	2	2	2	figure E2（4）	
	Oil seal of output shaft	50×80×12	65×95×12	70×100×12	70×100×12	75×105×12	75×105×12	95×130×12	2	4	4	figure E2（22）	
	Oil seal of input shaft	35×60×12	50×80×12	55×80×12	55×80×12	60×90×12	60×90×12	75×105×12	2	4	4	figure E2（17）	
	Oil drain plug	RC3/8″	RC3/8″	RC3/8″	RC3/8″	RC3/8″	RC3/8″	RC3/8″		1	1	figure E2（5）	(2)

(1) The part will not be damaged in normal circumstance for three years; or it is not necessary to replace parts unit. It is necessary to replace some component.

(2) The part will not be damaged in normal circumstance for three years; it is suggested to keep some inventory for accident.