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JIE Drive established in 1988, focusing on one gear reducer for 100 years, to create the century enterprise with craftsman spirit in the gear industry.
JIE will serve the global market with; intelligent drive solution for gear reducer, motor, invert & transmission system, drive system, control system, etc.
JIE insist on "specialization, intelligence, globalization" Global Development plan and dedicated to intelligent factory, intelligent product, and intelligent service.
JIE provides excellent products and excellent customers!

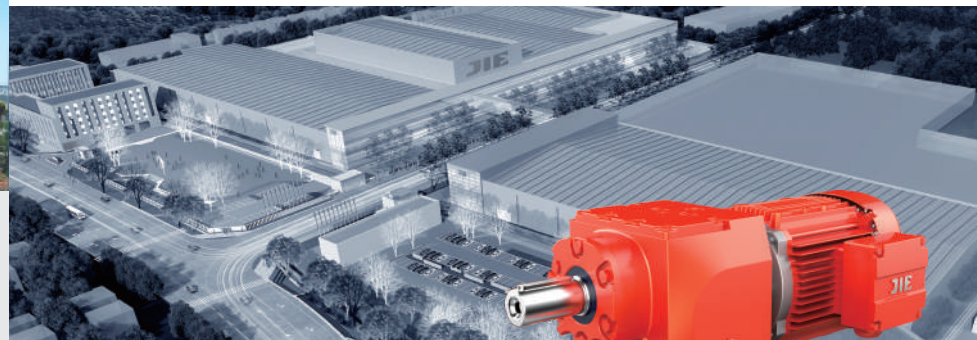


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JRP01-8 Planetary gear units Operating Instructions

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1. Overview

Thank you for choosing the products of JIE to meet the requirements of you and your customers!

1.1.How to use this manual

You can quickly and easily find what you need by looking at the catalog or tables. These chapters are organized according to a certain system, so that you can find the information easily.

1.2 This manual provides all the information that is required for a gearbox user to ensure proper installation, use, maintenance, and editing of safety restrictions in accordance with current standards.

For your better understanding, we explain the terms as follows:

Hazardous area: An area that is within or near the machine that may endanger the person on site

Field personnel: All or part of the personnel in the hazardous area

Operator: A person who specifies in installation, debug, routine maintenance, and cleaning.
Skilled technician: A person who is familiar with unconventional maintenance and operations on gearbox, safety design and related operation methods

Note: Operators should pay attention to safety.

Warning: partly or all of the machine may be damaged.

Prevention: Additional information about performing an action

If you have any questions or if the manual is missing, please contact our technical service department immediately.

1.3 The warranty terms are detailed in the attached contract.

The warranty terms are detailed in the attached contract.

1.4.Attention

Relevant personnel should be informed of the following matters concerning the safety of the machine operation:

-- Possible dangers.

-- Equipment used to ensure operator safety protection (split type protection, goggles, gloves, helmet, etc.)

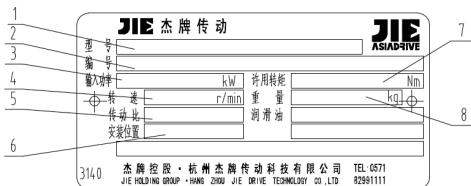
1.5Revision

Subsequent revisions will be made if machine functions are changed or replaced

2. Technical data

Each gearbox has a nameplate which contains the main technical data and functional structural characteristics of the product, so the nameplate should be placed within visual range and not be damaged.

1. Model
2. Number
3. Input power
4. Revolving speed
5. Ratio
6. Mounting position
7. Allowable torques
8. Weight



2.1. Model Description

J RP 1 N B 02-3.50-500-00

1 2 3 4 5 6 7 8 9

1 企业代码 J-杰牌企业	2 产品代码 RP-行星齿轮箱	3 行星齿轮传动级数 1,2,3,4
4 齿轮箱类型 N-标准型(同轴式) S-斜齿平行轴 L-斜齿垂直交轴 K-斜齿垂直交轴	5 输出轴型式 A-带键固定空心轴输出 B-带平键的实心轴输出 C-带齿开线花键的空心轴输出 D-带齿开线花键的实心轴输出	6 规格 {01...8}
7 公称传动比 见: P71-91	8 安装的位置 见: P109	9 附件 见: P100-107

J RP 1 N B 02-3.50-500-00

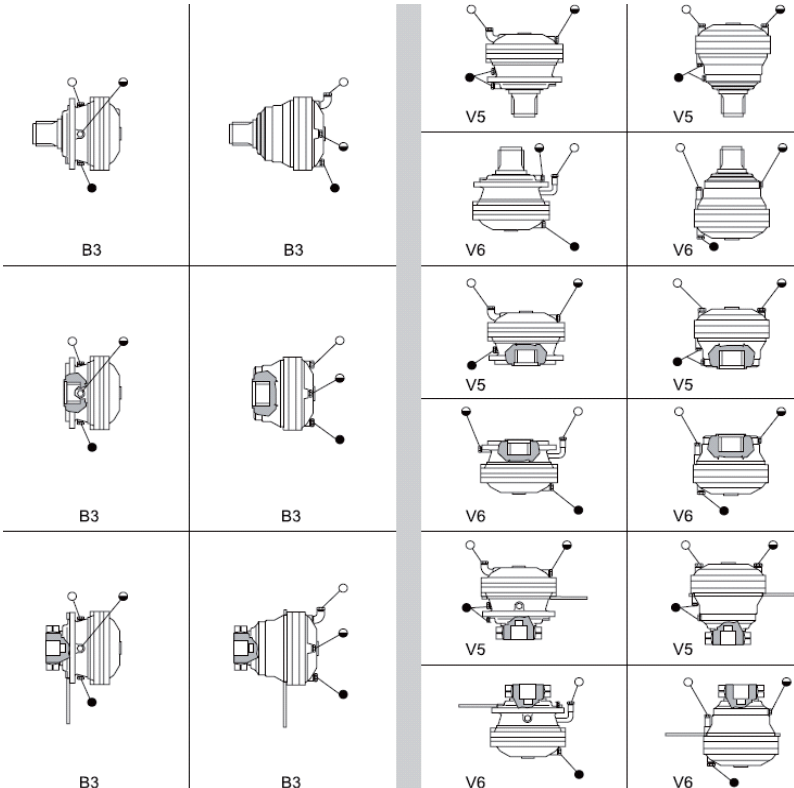
1 2 3 4 5 6 7 8 9

1 Enterprise Code J-JIE Crop	2 Product Code RP - Planetary Gear Units	3 No. of planetary gear stages 1,2,3,4
4 Type of planetary gear N-Standard(coaxial) S-Helical gear stage L-Bevel gear stage K-Bevel-helical gear stage	5 Output shaft design A-Hollow Shaft Output with Locking Plate B-Solid Shaft Output with Flat Key C-Hollow Shaft Output with Involute Spline D-Solid Shaft Output with Involute Spline	6 Size {01...8}
7 Nominal Ratios See page 71-91	8 Mounting positions See page 109	9 Add-on Pieces See page 100-107

2.2. Mounting type

01-6

7-8



● 放油螺塞

○ 视油镜

○ 通气器

3. 供货条件

The outer surface of the gear box is sprayed with artificial epoxy painting (RAL7031), except if it is specified in the contract. This kind of painting can withstand common industrial pollution, and protect the outdoor environment. If the gear box will be used in particularly harsh environment, special paint can also be applied.

The outer part of the gearbox has the outer end of the hole shaft, the non-hole shaft, the support surface, the surface of the elbow is coated with oil anti-rust oil, and the inner part of the gear box and the driving part are also coated with anti-rust oil. All gearboxes (except those specified in the contract) are supplied without lubricating oil.

4. Package

4.1.Package

The products of JIE are transported in special wooden boxes.

– All JIE products, unless specified in the contract, packed in wooden cases that can withstand normal industrial conditions.

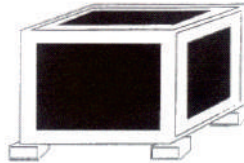
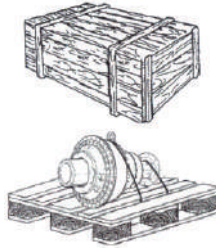
4.2.Lifting

Note: The weight shown on the nameplate does not include accessories, such as brakes, motor flange, wheel flange, etc. To find the total weight of the gearbox, add 40KG to the weight to estimate the weight of the input attachments, the weight of output parts is about 8% of the weight of the gearbox.

Choose lifting equipment that is suitable for this type of packaging and capacity.

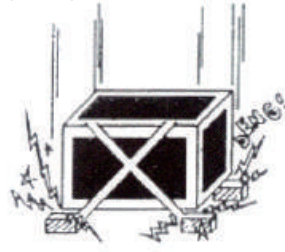
Do not tilt or invert during lifting and transportation.

If the package has not yet landed on the fork teeth of the forklift, make sure the weight of the package is balanced on the fork teeth.



If necessary, please put wooden blocks under the boxes to ensure easy lifting.

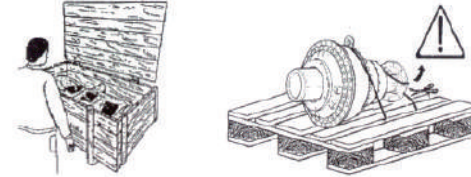
If the wooden box has not been lowered when hoisting, in any case use a hook to ensure balance and use a strap that meets requirements. For packages mounted on pallets, ensure that the lifting tool does not damage the gearbox.



When lifting and placing package, avoid any strong impact and collision

4.3.Delivery

Upon receipt of the gearbox, confirm that the goods are in conformity with the requirements of the contract. At the same time, check if the packaging are damaged during transportation.



The binding belt used fixed gear box is sharp, which may hurt the operator when cutting. In this case, you should do the following:

-- Use shears to cut the binding belt (warning: the ends of the binding belt may hurt the operator)

-- Remove the outer packing

-- Cut the inner strap (warning: the end of the wrap may injure the operator)

-- Hoist the gearbox from the pallet

If the gearbox is damaged or if there are missing accessories according to the contract, please contact JIE'S after-sales department immediately.

4.4.4.4.Hoisting unpacked gear boxes

When removing the gearbox from the package, make sure that the gearbox is firmly attached to the the sling to avoid sliding and turning. Next, remove the wooden pads that was added during the transportation for stability before hoisting the gear box. Make sure that the load is balance, and can be maintained under any circumstances when hoisting the gear box.

4.5.Storage

If the product has been stored for more than two months, please do the following:

- Protect the shaft and mounting surfaces with plastic film, grease or rust inhibitor.

-- Completely fill the inside of the gearbox with suitable lubricating oil. (reference

7.4)

-- Store the gearbox in a cool environment with a temperature that ranges from -5 c to +30 c.

-- Pay attention to dust, rust, and moisture.

Special note: If the gearboxes are stored for more than 6 months, the framework oil seal may fail. Please do regular inspection by turning the gearbox.

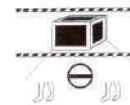
Do not pile more than two layers.

Do not walk on the packaging and pile other products.

Do not pile other materials in the package.

Please stay away from the aisle area.

If possible, please put a wooden mat between the wooden case and the floor.



5. Installation instructions

Before installation, please check the positions of oil inlet, air plug, horizontal oil plug and drain plug of the gear box. Their assembly positions determine the installation positions of the gear box (refer to figure 2.2)

– The brake must be properly connected to its control circuit. For the hydraulic circuit, please keep the circuit clear.

The gearbox usually has its own connecting flange connect to the motor, hydraulic motor or air motor.

– The user can install the coupling, pulley, etc. at the end of input of the gearbox, and shall be responsible for installing appropriate protective devices as the current local safety regulations.

– When the gearbox is installed outdoors or in an unprotected environment, please use anti-rust paint, anti-skid device for grease protection, and add rainproof cover to reduce the impact of bad weather condition on the gearbox.

Note: It is recommended not to fill the oil before installation

5.2. Installation instructions of gear box with flange

The gearbox must be mounted on a solid structure with a locating surface perpendicular to the drive shaft.

– The shaft surface of the gearbox and the inner surface of the coupling must be cleaned of dirt and ensure that the assembly surface is free of any bumps or other causes of defects. For this may affect the installation of alignment calibration, especially for the gear box that cannot bear the spline shaft in radial and axial load when output, the influence is more significant.

Oil to all shafts and mounting surfaces of gearbox.

– After the gear box is installed in place, first tap the pin and then tighten the bolt (minimum level 8.8). The required torque is listed on the table "tightening torque" in section 7.1. This table is also applicable to other fastening structures (such as nuts, etc.).

Note: 1. When there are severe impacts, frequent starts, stops, forward and reverse or over 70% of the maximum allowable torque in the application, it is required to use 10.9 or a bolt of class 12.9.

2. When installing the vertical transmission gearbox, sometimes the position of the input shaft is not right. To solve such problems, Suggestions are as follows:

– Use a coupling that is compensable for errors, first measure the error caused by installation, and then check whether the allowable compensation error range of coupling is satisfied. If it is still not enough, please add appropriate gasket to the motor to get the best installation.

If a rigid coupling cannot compensate for the error, mount the motor directly with appropriate shims for optimum mounting.

5.3. Installation instructions for foot mounted gear box

– Make sure all the feet of the machine are on a flat surface, otherwise install a gasket to adjust it to a flat surface.

– The gearbox may be damaged if the footing support is improperly installed.

– Use bolted graded 8.8 or above to fix gear boxes. The torque required for tightening bolts is listed in section 7.1 "tightening torque".

5.4. Installation instructions for shaft mounting gearbox

Please be careful when installing this type of gearbox, take, details are as follows:

5.4.1 Install the torque arm

Clean the assembly surface of the gear box and the action arm, and ensure that the assembly surface has no any bruises or defects caused by other reasons.

Oil to the assembly surface of the gearbox and the actuating arm, then apply the actuating arm to the gearbox and finally knock out the pin.

– Tightening the arm with bolts no less than grade 8.8.

10.9 or 12.9 class bolts is required when severe impact, frequent start, stop, forward and reverse turns or the maximum permissible torque exceeds 70% in the application.

Check the lever arm fastening system. Do not lock the gearbox too tightly. The gearbox must be free to rotate in a certain space to buffer the movement from the shaft.

The torque required to tighten the bolts is listed in section 7.1 "tightening torque" table, which is also applicable to other fastening structures (such as nuts, etc.).

5.4.2 Output gearbox (A) with locking disc

Note: Do not remove the locking disc before gear box is installed.

– Slightly unscrew the 3 screws distributed at 120 degrees on the locking plate,

Until the inner ring of the locking plate can rotate freely.

(too much pressure on the locking plate will deform the inner ring)

Oil the outside of the gearbox shaft and cover the locking disc.

Clean the inner hole of the output shaft and the mating surface of the machine shaft connection and keep it (no oil).

– Attach the gearbox output shaft sleeve to the shaft of the machine and vice versa. (no axial force exists)

– Align the center line of the locking disc with the center line of the machine axis.

Tighten the screws on the locking disc with a wrench along the circumference (not the radial direction) until the tightening torque meets the standard requirements and the shrinking disc is firmly installed in place.

– When fastening the locking disc, please pay attention to maintaining the concentricity and parallelism between the two side plates of the locking disc, and the maximum error range of parallelism allowed shall not exceed 0.25-0.35% of the outer diameter of the locking disc.

Note: Too much pressure on the locking plate will deform the inner ring, so please tighten the locking plate screws strictly according to the standard requirements.

5.4.3 Remove the locking plate and gear box

– Loosen the screws one by one along the circumferential direction, and loosen the screws 1/4 turn at a time, so to avoid the side plate tilting or even biting the inner ring.

In order to remove the gearbox from the input shaft of the machine, low pressure oil can be driven into the inner hole of the output shaft of the gearbox, so that can disassemble very easy.

– Remove the locking disc from the gearbox shaft.

5.5. Installation instructions for rotary gear box

The gearbox must be mounted on a solid structure with a locating surface perpendicular to the drive shaft.

The mounting surface (including the shaft sleeve) should be clean.

The above measures to ensure the correct meshing of the gears with the spare wheels.

Three of the teeth of the spare wheel are usually marked green. Points on the sector circle are used to position the gear box.

Note: If there are no marked teeth on the spare wheel, please contact the spare wheel designer directly.

If the gear box has an eccentric positioning structure for adjusting the meshing clearance, there shall be a recess on the spare wheel to indicate the maximum eccentric position corresponding to the maximum meshing position of the gear and the spare wheel. Whether the gearbox meshes internally or externally with the spare wheels. The side clearance of meshing teeth can be obtained by multiplying the gear modulus by 0.03-0.04.

The meshing side gaps on the pitch circle are detected.

After the positioning and testing of the gear box, it can be fixed use 8.8 class bolts. Please refer to the torque table in section 7.1 for the tightening torque.

5.6. Accessories installation instructions

Motor or hydraulic motor accessories:

Grease all mating surfaces (including spline bushing or coupling) when installing motor or hydraulic motor.

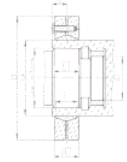
– Carefully place the motor or hydraulic motor output shaft into the coupling to ensure a good connection between the motor or hydraulic motor shaft and the gearbox input shaft.

– After adjusting the coaxiality between the motor or hydraulic motor, tighten all bolts according to the "tightening torque" table in section 7.1.

Attachment installation:

– To install the pinions, pulley or couplings, auxiliary tools or methods can be used, such as heating the small pieces to 80-100 degrees and then hot-sleeving.

– The assembly surface of the sealing ring and accessories is coated with grease before assembly. For tightening torque of bolts, please refer to the "tightening torque" table in section 7.1.



6. Oil

6.1 Oil to the gear box

When the gearbox is supplied, the gearbox is not filled with oil, so please fill in the oil according to the form.

Oil filling and oil level

-- The gear box has oil inlet, air vent plug, horizontal oil plug and drain plug, these positions determine the installation position of the gear box.

-- Please check if the positions of each port are correct according to the diagram in section 2.2.

-- Remove the oil filler plug and fill the gearbox until the oil overflows from the horizontal port and then install the oil plug

-- Turn the gearbox to eliminate air bubbles and check the indicators.

Basic requirements for oil quality:

The basic parameters of oil selection are as follows:

The basic viscosity under normal operating conditions.

--Additives.

Lubricating oils should be sufficient to lubricate all bearings and gear parts inside the gearbox, and working under all conditions and in all working conditions.

Please refer to details.

6.1.1 Viscosity

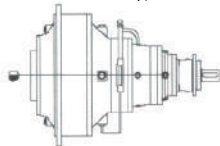
The normal viscosity is set at 40°C. As the temperature increases the viscosity of the lubricant decreases rapidly.

If the working environment is between 50 °C and 70 °C, choose suitable oil through the following table. If the temperature is higher, then higher viscosity should be selected.

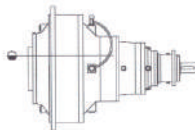
N2 (rpm)	50°C	70°C
> 20	VG150	VG220
5-20	VG220	VG320
< 5	Vg320	Vg460

Check the oil level, without running.

If the gearbox is mounted horizontally, the oil level should be on the center line.

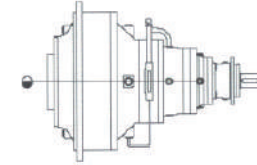


For the output speed less than 5rpm, the recommended oil level should be 50-100 mm higher than the center line. To confirm the oil level, please use a plastic tube, please refer to the figure below.



If the output speed is less than 2rpm, or the gearbox has not been used for a long time, please fill the gearbox with oil. In this case, it is recommended to use the compensation tank.

If the oil level gauge is installed, see figure below, the connection pip connecting the upper and lower oil holes should be higher than the highest oil level, and lower than the position of the breathable cap that can be reached inside to prevent overflowing.



6.2 Oil compensating tank

Note: Make sure the compensation tank is mounted above the top of the gearbox.

When applying the compensation tank, please do as following:
(refer to figure 3)

-- Remove the vent cap labeled "A" on the top of the compensation tank.

Remove the oil plug from the top of the gearbox to enhance the air permeability (only in the oil filling state)

-- When the oil level rises to the "min" position shown in FIG. 3,
(please do not let the oil higher than the "min" position).

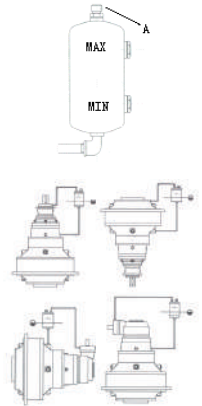
Because the space above "min" is left for volume expansion when the oil heats up.

-- Screw on the vent cap "A".

-- Keep the gearbox running at a stable temperature, and keep the oil cannot exceed "Max"

Position when expansion.

Run the gearbox for a while, to eliminate air bubbles, and check the indicators.



6.3 Fatty acid type: Stearate, hydroxide, lithium 12 or equivalent

Consistency: NLGI No.2

Base oil: mineral oil with a viscosity range of 100 to 320cST at 40°C.

Additive: rust inhibitor

Freezing point: min. -10°C.

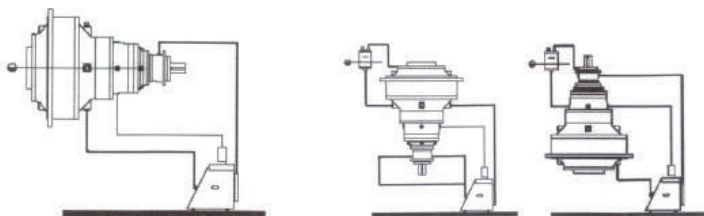
6.4 Oil list

Oil	Mineral oil			PAO-oil			PG-Oil		
	VG150	VG220	VG320	VG150	VG220	VG320	VG150	VG220	VG320
BP	Energol GR-XP 150	Energol GR-XP 220	Energol GR-XP 320	Enersyn EPX 150	Enersyn EPX 220	Enersyn EPX 320	Enersyn SG 150	ENERSYN SG -XP 220	Enersyn SG -XP 320
Castrol	Alpha SP 150	Alpha SP 220	Alpha SP 320	Alphasyn EP 150	Alphasyn EP 220	Alphasyn EP 320	Alphasyn PG 150	ALPHASYN PG 220	Alphasyn PG 320
Fuchs	Renolin CKC 150	Renolin CKC 220	Renolin CKC 320	RenolinUnisyn CKC 150	Renolin Unisyn CKC 220	Renolin Unisyn CKC 320	Renolin PG 150	RENOLIN PG 220	Renolin PG 320
Kluber	Kluberoil GEM 1-150	Kluberoil GEM 1-220	Kluberoil GEM 1-320	Klubersynth EG 4-150	Klubersynth EG 4-220	Klubersynth EG 4-320	Klubersynth GH 6-150	KLUBERSYNTH GH 6-220	Klubersynth GH 6-320
Mobil	Mobilgear XMP 150	Mobilgear XMP 220	Mobilgear XMP 320	Mobilgear SHC XMP 150	Mobilgear SHC XMP 220	Mobilgear SHC XMP 320	Glygoyle 22	GLYGOYLE 30	Glygoyle HE320
Shell	Omala 150	Omala 220	Omala 320	Omala HD 150	Omala HD 220	Omala HD 320	Tivela S 150	TIVELA S 220	Tivela S 320
Total	Carter EP 150	Carter EP 220	Carter EP 320	Carter SH 150	Carter SH 220	Carter SH 320	Carter SY 150	CARTER SY 220	Carter SY 320
Great Wall		CKD220	CKD320						
Kunlun		CKD220	CKD320						

6.5 Oil inspection chart of auxiliary cooling system

Install the gearbox horizontally, refer to the oil level standard of 7.1

Install the gearbox vertically, refer to oil level standard of 7.2 right-angle gear box



7.Check

7.1 First startup

Please check the following items before starting:

- Check that all oil vents are in the correct position. (see section 2.2)
- Check if the oil level is correct.
- Check if all oil cups have oil.

Note: The gearbox is supplied without lubricating oil. Please oil it by yourself (please refer to section 6 for lubrication)

Check if all metric bolts are properly tightened. (refer to the "tightening torque" table)

List of pre-tightening bolts

d x p mm	4.8 Class		5.8 Class		8.8 Class		10.9 Class		12.9 Class	
	kN	Nm	kN	Nm	kN	Nm	kN	Nm	kN	Nm
3x0.5	1.2	0.9	1.5	1.1	2.3	1.8	3.4	2.6	4.0	3
4x0.7	2.1	1.6	2.7	2	4.1	3.1	6	4.5	7	5.3
5x0.8	3.5	3.2	4.4	4	6.7	6.1	9.8	8.9	11.5	10.4
6x1	4.9	5.5	6.1	6.8	9.4	10.4	13.8	15.3	16.1	17.9
7x1	7.3	9.3	9.0	11.5	13.7	17.2	20.2	25	23.6	30
9x1.25	9.3	13.6	11.5	16.8	17.2	25	25	37	30	44
8x1	9.9	14.5	12.2	18	18.9	27	28	40	32	47
10x1.5	14.5	26.6	18	33	27	50	40	73	47	86
10x1.25	15.8	28	19.5	35	30	53	43	78	51	91
12x1.75	21.3	46	26	56	40	86	50	127	69	148
12x1.25	23.8	50	29	62	45	95	65	139	77	163
14x2	29	73	36	90	55	137	80	201	94	235
14x1.5	32	79	40	96	61	150	90	220	105	257

d x p mm	4.8 Class		5.8 Class		8.8 Class		10.9 Class		12.9 Class	
	kN	Nm	kN	Nm	kN	Nm	kN	Nm	kN	Nm
16x2	40	113	50	141	76	214	111	314	130	369
16x1.5	43	121	54	150	82	229	121	336	141	393
10x2.5	49	157	60	194	95	306	135	435	158	509
18x1.5	57	178	70	220	110	345	157	491	184	575
20x2.5	63	222	77	275	122	432	173	615	203	719
20x1.5	72	248	89	307	140	482	199	687	233	804
22x2.5	78	305	97	376	152	502	216	843	253	987
22x1.5	88	337	109	416	172	654	245	932	266	1090
24x3	90	383	112	474	175	744	250	1080	292	1240
24x2	101	420	125	519	196	814	280	1160	327	1360
27x3	119	568	147	703	230	1100	328	1570	384	1840
27x2	131	615	162	760	225	1200	363	1700	425	1990
30x3.5	144	772	178	955	280	1500	300	2130	467	2500
30x2	165	850	204	1060	321	1670	457	2370	535	2380

D – diameter of bolt p – bolt pitch KN – pre-tightening force Nm – pre-tightening torque

7.2 No load test

Run for 5~10 minutes without load, check the oil level. If the oil level drops, please make up the oil level. Ensure that all bolts and nuts that are fitted are fully tightened

8. Maintenance

Brief introduction: Maintenance is divided into daily maintenance and irregular maintenance

Note: All maintenance operations must be performed in a secure environment.

8.1 Daily maintenance

It is the responsibility of the operator to carry out daily maintenance and complete the following operations:

- After the gearbox first runs for 100 hours (including intermittent operation), please clean the inside of the gearbox and replace the oil.
- Check the inside of the gearbox for metal chips.
- It is better to change the oil before the oil temperature cools down; this is more conducive to drain the oil in the tank.
- Please change the oil every 2000~2500 hours, and the oil change interval should not exceed one year.
- Do not mix the oil.
- Check the oil level periodically (once a month). If the oil level drops, make up the oil.

8.2 change oil

-- Please find the correct position of each oil port on the gear box according to the drawing in section 2.2.

Remove the oil plug and filling plug, drain the oil inside the gear box, and install the oil plug.

Before changing the oil, clean the inside of the gearbox, which is also required by the lubricant manufacturer.

9. Fault diagnosis

Fault	原因	解决方案
Can have inputs but no outputs	1. Incorrect motor mounting 2. Internal failure	1. Check the connection between the gearbox and the motor 2. Contact with JIE'S after-sales service department
Oil spills from venting cap during operation	1. Oil level is too high 2. The ventilation cap is not installed correctly	1. Lower the oil level 2. Check the position of the breathable cap
Seal oil leakage	1. The ventilation cap is blocked 2. Do not use for a long time, the seal ring becomes hard 3. the sealing ring is damaged	1. Conductive ventilation cap 2. Clean the leakage place and check again a few days later 3. Contact with JIE'S after-sales service department
Abnormal noise	Internal failure	ontact with JIE'S after-sales service department
Abnormal vibration	1. Incorrect mounting 2. Coupling rigidity is not hard enough 3. Internal failure	1. Check the connection and installation coaxiality 2. Increase the rigidity of the coupling 3. Contact with JIE'S after-sales service department
overheating	1. No ventilation 2. Too much thermal power	1. put in a ventilated place 2. Install oil circulation cooling system

