

Q/HG

**HARBIN HAFEI INDUSTRY CO., LTD.
REGULATION**

Q/HGC0012-2018

INSTEAD: Q/HGC0004-2016

**TSJ TYPE HIGH SPEED WIRE ROD PRODUCTION LINE
LAYING HEAD EQUIPMENT**

(Total 10 pages)

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HARBIN HAFEI INDUSTRY CO., LTD.

ISSUE

FOREWORD

This regulation is specially formulated according to the GB/T 1.1-2009 《Directives for standardization – Part 1: structure and drafting of standards》, and combined with the actual situation of the companies scientific research, production and standardized control work.

The regulation stipulates constitute, parameter, technical order, test method and inspection rule of TSJ Type High Speed Wire Rod Production Line Laying Head Equipment.

The regulation is suitable of TSJ Type High Speed Wire Rod Production Line Laying Head Equipment.

The regulation is proposed by the company' s standardization committee.

The regulation is drafted by Electromechanical Equipment Manufacturing Company.

The main drafter of the regulation is Wang Yongjiang, Shi Shaodong.

The management of the regulation is in charge of standardization administration department.

TSJ TYPE HIGH SPEED WIRE ROD PRODUCTION LINE LAYING HEAD EQUIPMENT

1 Subject content and sphere of application

The regulation stipulates constitute, parameter, technical order, test method and inspection rule of TSJ Type High Speed Wire Rod Production Line Laying Head Equipment.

The regulation is appropriate for TSJ Type High Speed Wire Rod Production Line Laying Head Equipment.

2 Reference standards

The articles of the below document becomes the articles of this regulation after cited. The cited document with date and its later amending list (exclude mistake) or the revision are not situated this standard. However, encourage all parties which come to an agreement to study if use the latest versions of all these documents. For all cited document without date, its latest versions are applicable to this document

YB/T036.1 General Technical Conditions For Metallurgical Equipment Manufacturing- Production Test

GB/T3768 Determination Of Sound Power Levels And Sound Energy Levels Of Noise Sources - Survey Method

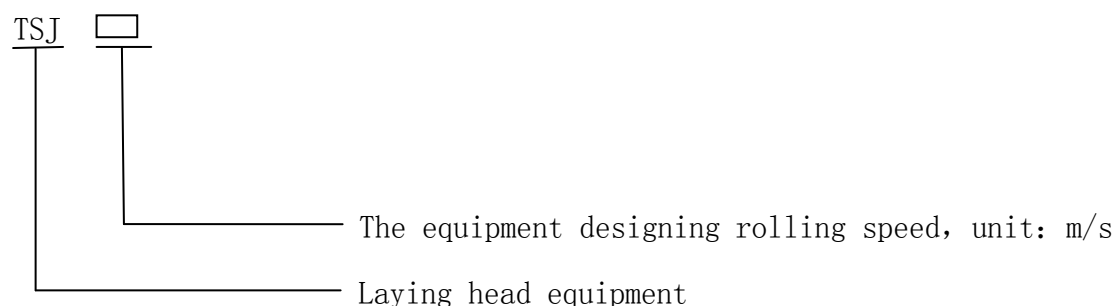
ISO10816 Standard For Evaluation Of Vibration Intensity

NAS1638\ISO4406 Hydraulic Fluid Power - Fluids - Method For Coding The Level Of Contamination By Solid Particles

3 Type, constitute and parameter

3.1 Type

Principle of type establishment:



3.2 Constitute

The basic constitute of laying head equipment is as following:

- a、laying head equipment
- b、coupling
- c、laying head protectage
- d、laying head container
- e、protectage for laying head coupling
- f、laying head motor container

3.3 Type and parameter

3.3.1 Fundamental form and specification parameter

Mill form: Horizontal type

Related productions: TSJ105、TSJ120 Type High Speed Wire Rod Production Line

Laying Head Equipment

Dip angle: 15° 、 20°

Diameter of wire: $\Phi 5.5$ - $\Phi 16$ mm

Speed increasing ratio: 1.5366、1.718

3.3.2 Performance parameter

Vibration: ≤ 4 mm/s meet the specification of ISO10816

Noise: ≤ 85 dB(1.5m away from the stand) meet the specification of GB/T3768

Temperature of the bearings: $\leq 75^{\circ}\text{C}$

4 Technical requirements

- 4.1 Laying head equipment should meet the relative standard specification of YB/T036.1, and manufacture as the drawing and technical documents approved in accordance with prescribed procedures.
- 4.2 Laying head equipment should be assembled in accordance with the corresponding standard and check. The inspection items include the gear mesh clearance, contact area, bearing radial and axial clearance, and some other data.
- 4.3 For each shaft assembly unit of the laying head equipment, they should do the dynamic balance before assembly.
- 4.4 Laying head equipment should do the cold test before delivery, and do the dynamic balance.
- 4.5 The clearness of the lubrication oil should be no less than NAS level 7, before the cold test and hot test of the laying head equipment.
- 4.6 When cold test of the laying head equipment, it should make sure that the body and all parts should be stable. The gear mesh sound is normal, no crash and other noise. The entire performance index should be in accordance with the data requirement of 3.3.2.
- 4.7 When cold test of the laying head equipment, the vibration and temperature of the bearings should be in accordance with the equipment performance index.
- 4.8 The sealed positions of the laying head equipment should not link.
- 4.9 The outer surface of the laying head equipment should not have any obvious defect. And boundary dimension should be in accordance with the requirement of the drawings.
- 4.10 After install on site, the laying head equipment should do the cold test again. Hot test should be done after cold test is eligible.
- 4.11 After cold test eligible in factory, the install on customer site of the laying head equipment should be done according to the production technical requirement.

5 Test methods

5.1 The lubrication plant oil of the laying head equipment should be sampled and checked the cleanness after cycling filtration. Check the oil temperature, oil pressure. Check all the lubrication points and oil return situation of the laying head equipment.

5.2 After slow start of the laying head equipment, when the motor speed is stable at 200r/min, check if there is any abnormal noise inside of the laying head.

5.3 When motor speed increases to 400r/min, check if there is any abnormal situation.

5.4 When confirm without any abnormal situation as 5.3, increase the motor speed and make the dynamic balance as the request of the inspection list, check the vibration and make the records (see appendix A, B and C).

6 Inspection rules

6.1 In-process inspection

The laying head equipment should be made overall quality inspection on the gear mesh clearance, contact area, bearing radial and axial clearance, according to the drawing and related technical documents' requirement. For the main part and unit inspection original record, the Quality Inspection Department should keep and make overall inspection according to the standard.

6.2 Check before delivery

The check before delivery of the laying head equipment should be checked the vibration by the Quality Inspection Department according to the regulation. The laying head equipment can be delivered to the customer after signed the certificate of qualification.

APPENDIX A

(NORMATIVE ANNEX)

TSJ105 type high speed wire rod laying head equipment test records(vibration)

Laying Head Test Records												Inspector:	
Motor speed	Rolling speed	Test item	Measured values of vibration										
			Input side			Output side (entrance)			Output side (exit)				
			Measuring point	X	Y	Z	X	Y	Z	X	Y	Z	
590r/min	50	B<4mm/s	Measured value	—	—	—	—	—	—	—	—	—	—
590r/min	60	B<4mm/s	Measured value	—	—	—	—	—	—	—	—	—	—
710r/min	70	B<4mm/s	Measured value	—	—	—	—	—	—	—	—	—	—
830r/min	80	B<4mm/s	Measured value	—	—	—	—	—	—	—	—	—	—
950r/min	90	B<4mm/s	Measured value	—	—	—	—	—	—	—	—	—	—
1070r/min	100	B<4mm/s	Measured value	—	—	—	—	—	—	—	—	—	—
1250r/min	105	B<4mm/s	Measured value	—	—	—	—	—	—	—	—	—	—
B: Vibration allowable value													

APPENDIX B

(NORMATIVE ANNEX)

TSJ120 type high speed wire rod laying head equipment test records(vibration)

Laying Head Test Records												Inspector:	
Motor speed	Rolling speed	Test item	Measured values of vibration										
			Input side				Output side (entrance)			Output side (exit)			
			Measuring point	X	Y	Z	X	Y	Z	X	Y	Z	
520r/min	50	B<4mm/s	Measured value	—	—	—	—	—	—	—	—	—	—
620r/min	60	B<4mm/s	Measured value	—	—	—	—	—	—	—	—	—	—
720r/min	70	B<4mm/s	Measured value	—	—	—	—	—	—	—	—	—	—
820r/min	80	B<4mm/s	Measured value	—	—	—	—	—	—	—	—	—	—
920r/min	90	B<4mm/s	Measured value	—	—	—	—	—	—	—	—	—	—
1030r/min	100	B<4mm/s	Measured value	—	—	—	—	—	—	—	—	—	—
1080r/min	105	B<4mm/s	Measured value	—	—	—	—	—	—	—	—	—	—
B: Vibration allowable value													

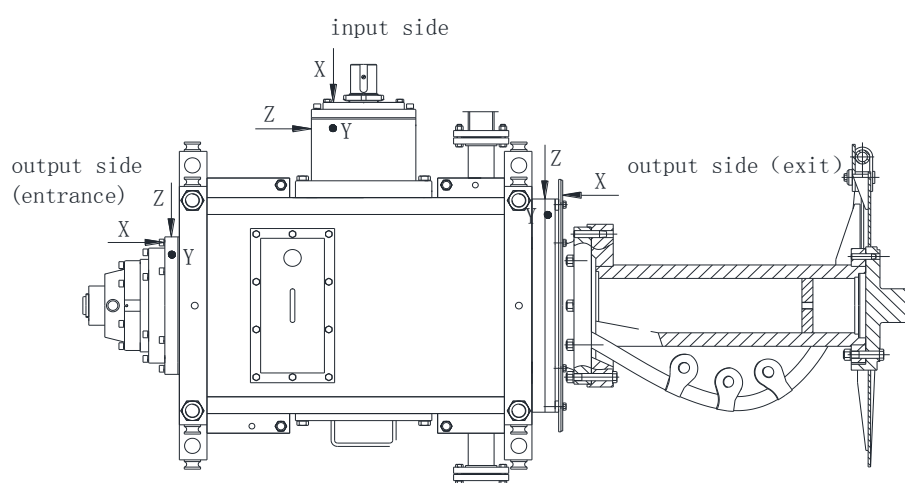
TSJ120 type high speed wire rod laying head equipment test records(vibration)

1130r/min	110	B<4mm/s	Measured value	—	—	—	—	—	—	—	—	—
1180r/min	115	B<4mm/s	Measured value	—	—	—	—	—	—	—	—	—
1230r/min	120	B<4mm/s	Measured value	—	—	—	—	—	—	—	—	—
B: Vibration allowable value												

APPENDIX C

(INFORMATIVE ANNEX)

Vibration test position and direction of tsj105 and tsj120 type high speed wire rod laying head equipment



X: AS SHOWN IN THE FIGURE (PERPENDICULAR TO PAPER)

Y: AS SHOWN IN THE FIGURE

Z: AS SHOWN IN THE FIGURE