

Q/HG

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

Q/HGC0010-2018
INSTEAD: Q/HGC0002-2016

**YJZ TYPE HIGH SPEED WIRE ROD AND BAR PRODUCTION LINE
PRE-FINISHING MILL GROUP**
(Total 13 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 YJZ Type High Speed Wire Rod And Bar Production Line Pre-Finishing Mill Group.

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.

YJZ TYPE HIGH SPEED WIRE ROD AND BAR PRODUCTION LINE

PRE-FINISHING MILL GROUP

1 Subject content and sphere of application

The regulation stipulates constitute, parameter, technical order, test method and inspection rule of YJZ Type High Speed Wire Rod And Bar Production Line Pre-Finishing Mill Group (hereafter referred to as pre-finishing mill group).

The regulation is appropriate for YJZ Type High Speed Wire Rod And Bar Production Line Pre-Finishing Mill Group.

2 Reference standard

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

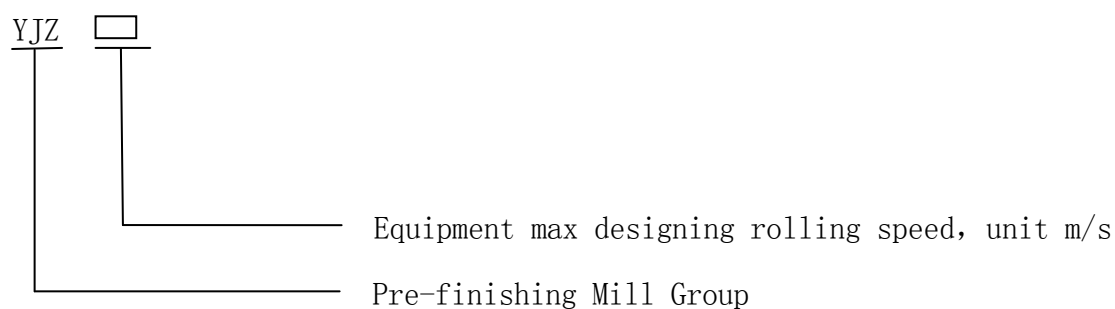
ISO10816 Standard For Evaluation Of Vibration Intensity

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 pre-finishing mill group is as following:

- a、vertical mill driving box
- b、horizontal mill driving box
- c、protectage of pre-finishing mill group
- d、285 roller case
- e、side lopper
- f、coupling
- g、coupling protectage
- h、horizontal lopper
- i、snap shear
- j、reducer

Pre-finishing mill block is consist horizontal and vertical mill stands which are horizontal-vertical alternate layout. The side loppers are installed between the stands. Through the horizontal-vertical alternate layout, to realize no torque, no tension continuous rolling, the material will be rolled to content the finishing mill block ordered dimension and precision.

3.3 Type and parameter

3.3.1 Fundamental form and specification parameter

Mode of finishing mill: cantilever roll collared finishing mill

Quantity of mill stands: according the requirement

Layout type: Horizontal-vertical alternate layout

Dimension of roll collar: $\Phi 285/\Phi 255 \times 95/70\text{mm}$

Speed ratio: According to the technical requirement

3.3.2 Performance parameter

Size of finished part: $\Phi 12-\Phi 25\text{mm}$

Vibration: $\leq 4\text{ mm/s}$ meet the specification of ISO10816

Noise: $\leq 85\text{dB}$ (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 For each stand of pre-finishing mill group, it 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 For each stand of pre-finishing mill group, it 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 All the stands of pre-finishing mill group should do the manual turning check before cold test. It is not allowed clamping stagnation phenomenon.

4.4 The finishing mill group should do the cold test before delivery.

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 finishing mill group.

4.6 When pre-finishing mill group does the cold test, the whole group should run stable and move freely. When running, the cases 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 pre-finishing mill group, the vibration and bearing temperature of each stand should be in accordance with the equipment performance index.

- 4.8 The sealed positions of the pre-finishing mill group should not link.
- 4.9 The outer surface of the pre-finishing mill group 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 pre-finishing mill group 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 pre-finishing mill group should be done according to the production technical requirement.

5 Test methods

- 5.1 The lubrication plant oil of the pre-finishing mill group 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 In the situation that lubricate and no lubrication, check if the gap of the oil film bearing is normal with the dialgage precision 0.01mm. It is used to confirm if the lubrication situation of the roller case meets the requirement.
- 5.3 Manual turns the stands with the stress application lever to check if the whole group has clamping stagnation phenomenon.
- 5.4 Severally adjust the roller gap of the horizontal stand and vertical stand to the max and min value. Slow start the stands, when rotary speed reaches to 200r/min, check if there is any un-normal noise inside of the stand.
- 5.5 When confirm the check of item 5.4 is OK, increase the rotary speed in accordance with the inspection list, and make the records on the inspection list(roller gap make the records severally, see appendix A、B、C、D).
- 5.6 When reducer adjusts well on test station, check if the oil returning is normal.

5.7 When confirm the oil returning is normal, slow start the reducer. Increase rotary speed to 200r/min, and check if there is any un-normal noise inside of the stand.

5.8 When confirm item 5.7 is normal, increase rotary speed as the inspection list, and make the records on(see appendix E、F).

6 Inspection rules

6.1 In-process inspection

The pre-finishing mill group 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 pre-finishing mill group 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)

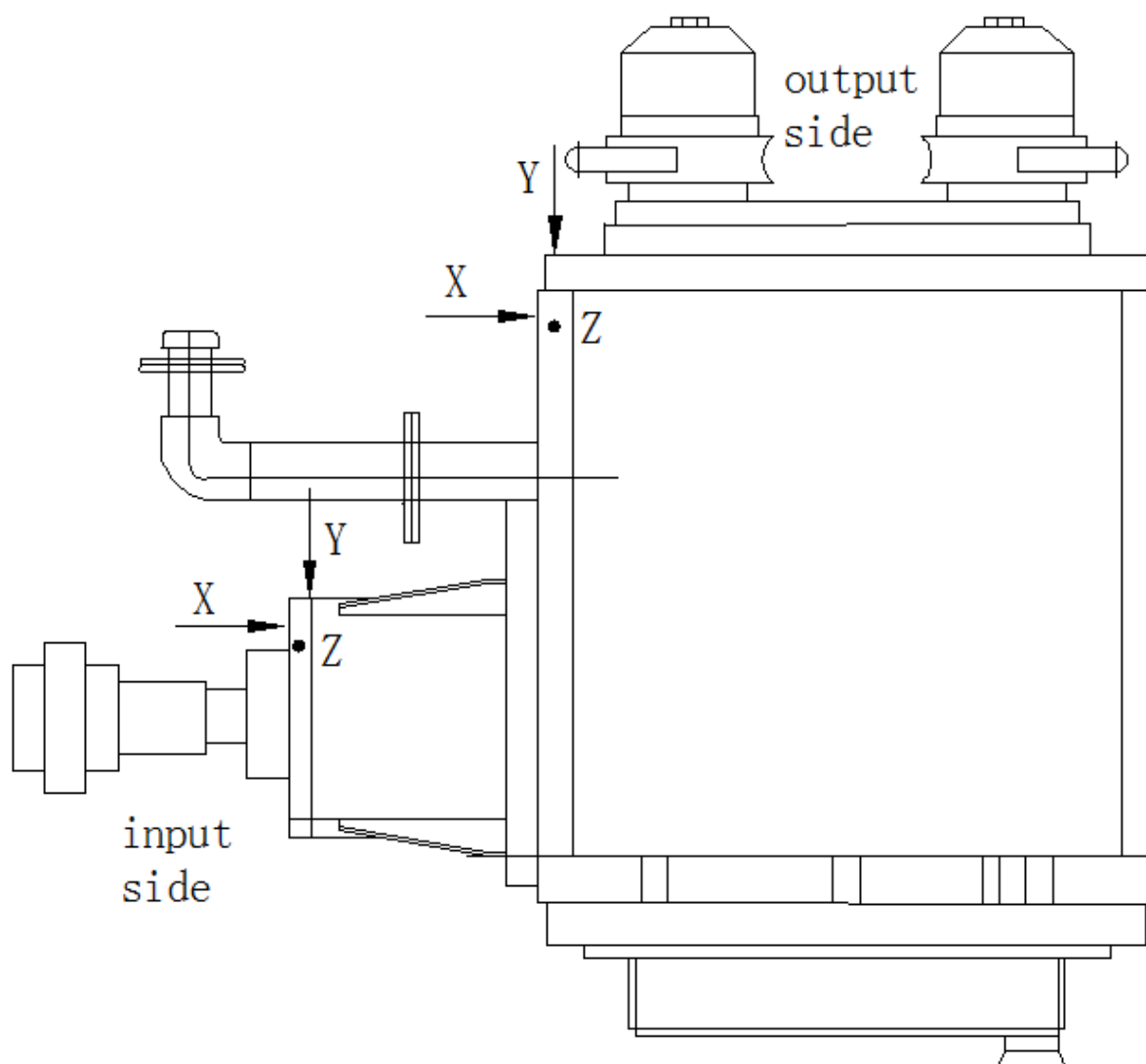
Pre-finishing mill group (vertical driving case) test record (VIBRATION)

Pre-finishing mill group vertical driving case test record									
Purchase order	Drawing no.	Vertical driving case No.			Roller case No.	Manufacturing date			
—	—	—			—	—			
Vibration value at min roller gap					Vibration value at max roller gap				
Rotary speed		X	Y	Z	Rotary speed		X	Y	Z
400r/min	Input side	-	-	-	400r/min	Input side	-	-	-
	Output side	-	-	-		Output side	-	-	-
600r/min	Input side	-	-	-	600r/min	Input side	-	-	-
	Output side	-	-	-		Output side	-	-	-
800r/min	Input side	-	-	-	800r/min	Input side	-	-	-
	Output side	-	-	-		Output side	-	-	-
1000r/min	Input side	-	-	-	1000r/min	Input side	-	-	-
	Output side	-	-	-		Output side	-	-	-
1200r/min	Input side	-	-	-	1200r/min	Input side	-	-	-
	Output side	-	-	-		Output side	-	-	-
Assembly worker		Inspector		Final customer			Note		
Driving case									
Roller case									

APPENDIX B

(INFORMATIVE ANNEX)

Pre-finishing mill group (vertical driving case)
vibration measured points and directions



X: AS SHOWN IN THE FIGURE

Y: AS SHOWN IN THE FIGURE

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

APPENDIX C

(NORMATIVE ANNEX)

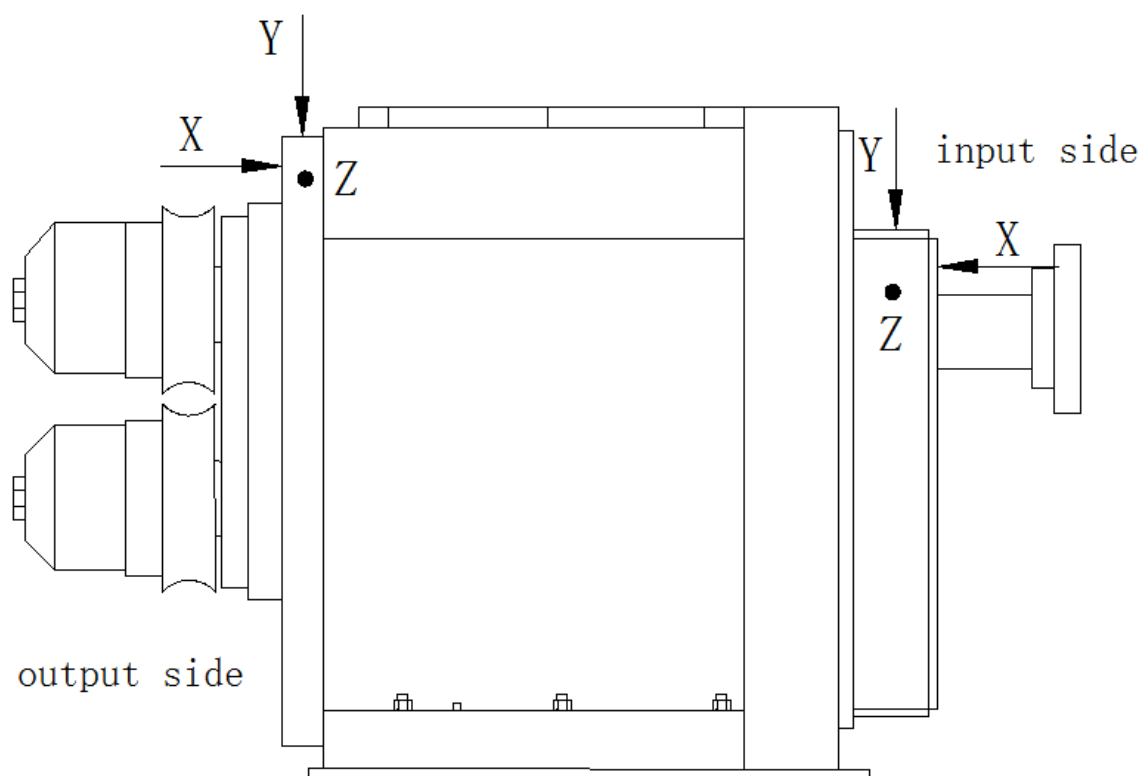
Pre-finishing mill group (horizontal driving case) test record (vibration)

Pre-finishing mill group horizontal driving case test record									
Purchase order	Drawing no.	Horizontal driving case No.			Roller case No.		Manufacturing date		
—	—	—			—		—		
Vibration value at min roller gap					Vibration value at max roller gap				
Rotary speed		X	Y	Z	Rotary speed		X	Y	Z
400r/min	Input side	-	-	-	400r/min	Input side	-	-	-
	Output side	-	-	-		Output side	-	-	-
600r/min	Input side	-	-	-	600r/min	Input side	-	-	-
	Output side	-	-	-		Output side	-	-	-
800r/min	Input side	-	-	-	800r/min	Input side	-	-	-
	Output side	-	-	-		Output side	-	-	-
Assembly worker		Inspector		Final customer			Note		
Driving case									
Roller case									

APPENDIX D

(INFORMATIVE ANNEX)

Pre-finishing mill group (horizontal driving case)
vibration measured points and directions



X: AS SHOWN IN THE FIGURE

Y: AS SHOWN IN THE FIGURE

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

APPENDIX E

(NORMATIVE ANNEX)

Pre-finishing mill group (reducer) test records (vibration)

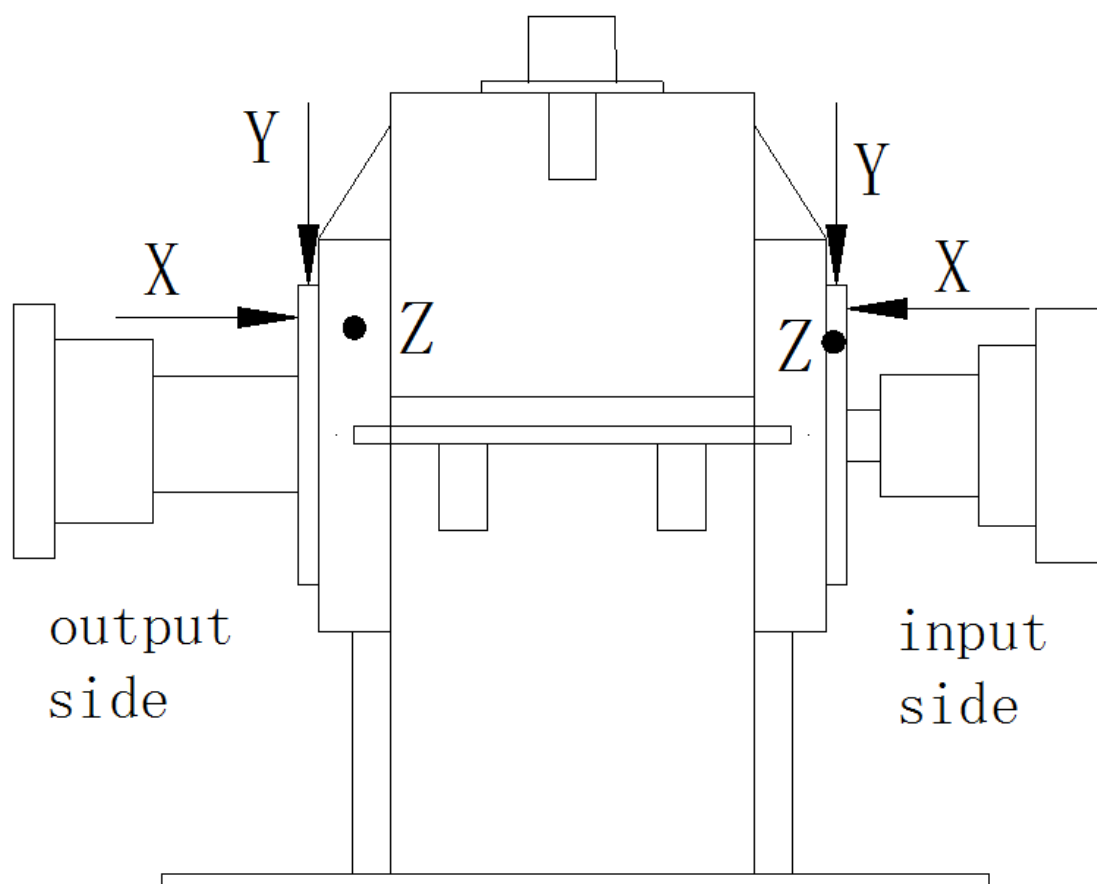
Reducer test records inspector:								
Purchase order no.:		drawing no.:		case no.:		operator:		
Motor speed	Test item	Measured point	Vibration measured value					
			Input side			Output side		
			X	Y	Z	X	Y	Z
400r/min	B<4mm/s	Measured value	—	—	—	—	—	—
600r/min	B<4mm/s	Measured value	—	—	—	—	—	—
800r/min	B<4mm/s	Measured value	—	—	—	—	—	—
1000r/min	B<4mm/s	Measured value	—	—	—	—	—	—

B: Vibration allowable value

APPENDIX F

(INFORMATIVE ANNEX)

Pre-finishing mill group (reducer)
vibration measured points and directions



X: AS SHOWN IN THE FIGURE

Y: AS SHOWN IN THE FIGURE

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