

Q/HG

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

Q/HGC0001-2017

INSTEAD:

**MFM TYPE HIGH SPEED WIRE ROD PRODUCTION LINE DOUBLE
STAND SIZING REDUCER MILL BLOCK**
(Total 12 pages)

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HARBIN HAFEI INDUSTRY CO., LTD.

Issued

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 methods and inspection rule of MFM Type High Speed Wire Rod Production Line Double Stand Sizing Reducer Mill Block (hereafter referred to as Sizing Reducer Mill Block).

The regulation is appropriate for MFM Type High Speed Wire Rod Production Line Double Stand Sizing Reducer Mill Block.

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, Wang Yangang, Gao Song.

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

MFM TYPE HIGH SPEED WIRE ROD PRODUCTION LINE

DOUBLE STAND SIZING REDUCER MILL BLOCK

1 Subject content and sphere of application

The regulation stipulates constitute, parameter, technical order, test method and inspection rule of MFM Type High Speed Wire Rod Production Line Double Stand Sizing Reducer Mill Block (hereafter referred to as Sizing Reducer Mill Block).

The regulation is appropriate for MFM Type High Speed Wire Rod Production Line Double Stand Sizing Reducer Mill Block.

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

3 Sizing reducer mill Block working conditions

Size of incoming material: $\Phi 7\text{--}\Phi 20.5\text{ mm}$

Temperature of incoming material: $\geq 780^{\circ}\text{C}$

Lubrication form of the whole block: thin oil centralized lubrication

Lubrication system oil pressure: $\geq 0.6\text{MPa}$

The temperature of supplied oil for equipment: $\leq 42^{\circ}\text{C}$

Lubrication system consume: 764L/min

Oil type: Mobil 525

Clearness: NAS level 7

Lubrication system pressure of the protectage: $\geq 10.5\text{MPa}$

Hydraulic system flow: 35 L/min

Driving dynamo: AC synchronized conversion motor

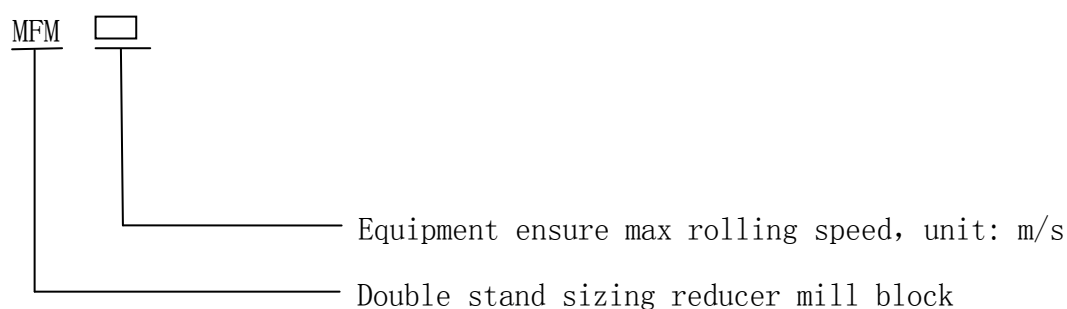
power: No less than 2500KW

Rotary speed: 100-1700 r/min

4 Type、constitute、parameter

4.1 Type

Principle of type establishment:



4.2 Constitute

The basic constitute of double stand sizing reducer mill block is as following:

- a) Driving case
- b) Shifting acceleration case
- c) Roller case
- d) Baffle plate
- e) Protectage
- f) Coupling between driving case and shifting acceleration case
- g) Coupling between driving case and motor

- h) Coupling protectage between driving case and shifting acceleration case
- i) Scrap shear

Double stand sizing reducer mill block is behind the finishing mill block and in front of pinch roll and laying head. Its function is through the continuous micro tension rolling of the double stand sizing reducer mill block(2 stands), rolling the rolled piece $\Phi 7 \sim \Phi 20.5\text{mm}$ delivered from the front rolling stand to $\Phi 5.5 \sim \Phi 20\text{mm}$ final wire.

4.3 Type and parameter

4.3.1 Fundamental form and specification parameter

Mode of mill: cantilever roll collared

Quantity of mill stands: $2 \times \Phi 230$ stands

Form of layout: 45° top crossing

Dimension of roll collar: : $\Phi 230$ rolling mill: nominal diameter $\Phi 228.3\text{mm}$, thickness: 71.7mm or nominal diameter $\Phi 228.3\text{mm}$, thickness 59mm ;

4.3.2 Performance index

Finished product size: $\Phi 5.5 - \Phi 20\text{mm}$

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: $\leq 80^\circ\text{C}$

5 Technical requirements

5.1 For Double stand sizing reducer mill block, 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.

5.2 For double stand sizing reducer mill block, 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.

5.3 Double stand sizing reducer mill block should do the manual turning check before linkage cold test. It is not allowed clamping stagnation phenomenon.

5.4 Double stand sizing reducer mill block should do the linkage cold test without load before delivery.

5.5 The clearness of the lubrication oil should be no less than NAS level 7, before the cold test and hot test of the double stand sizing reducer mill block.

5.6 When double stand sizing reducer mill block does the linkage 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 4.3.2.

5.7 When double stand sizing reducer mill block does the linkage cold test without load, the vibration and bearing temperature of each stand should be in accordance with the equipment performance index.

5.8 The sealed positions of the double stand sizing reducer mill block should not link. If link, find the place and deal with it.

5.9 The outer surface of the double stand sizing reducer mill block should not have any obvious defect. And boundary dimension should be in accordance with the requirement of the drawings.

5.10 After install on site, the double stand sizing reducer mill block should do the cold test without load again. Hot test should be done after cold test is eligible.

5.11 After cold test eligible in factory, the install on customer site of the double stand sizing reducer mill block should be done according to the production technical requirement.

6 Test methods

6.1 The lubrication plant oil of the double stand sizing reducer mill block should be sampled after cycling filtration, and send it to the qualified testing department to check the cleanness. The cleanness should be no lower than NAS level

7. Start the lubrication station to check the oil temperature and pressure through the oil temperature gauge and oil pressure gauge. Check all the lubrication points and oil returning situation.

6.2 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.

6.3 Manual turns the input shaft with the stress application lever to check if the whole group has clamping stagnation phenomenon.

6.4 After slow start the group, when the rolling speed is stable at 30m/s, check if there is any un-normal noise.

6.5 Increase the rolling speed to 50m/s, to check if there is any un-normal noise. If have, stop the turning and check.

6.6 Severally increase the rolling speed to 70m/s、80m/s、90m/s、100m/s、105m/s、110m/s、115m/s、120m/s、125m/s, turning 5 minutes, check the vibration (see appendix A、B)、check the temperature (see appendix C、D) and make the records.

7 Inspection rules

7.1 In-process inspection

Double stand sizing reducer mill block 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

7.2 Check before delivery

The check before delivery of the double stand sizing reducer mill block should be checked the vibration by the Quality Inspection Department according to the

regulation. The double stand sizing reducer mill block can be delivered to the customer after signed the certificate of qualification.

APPENDIX A
(NORMATIVE ANNEX)

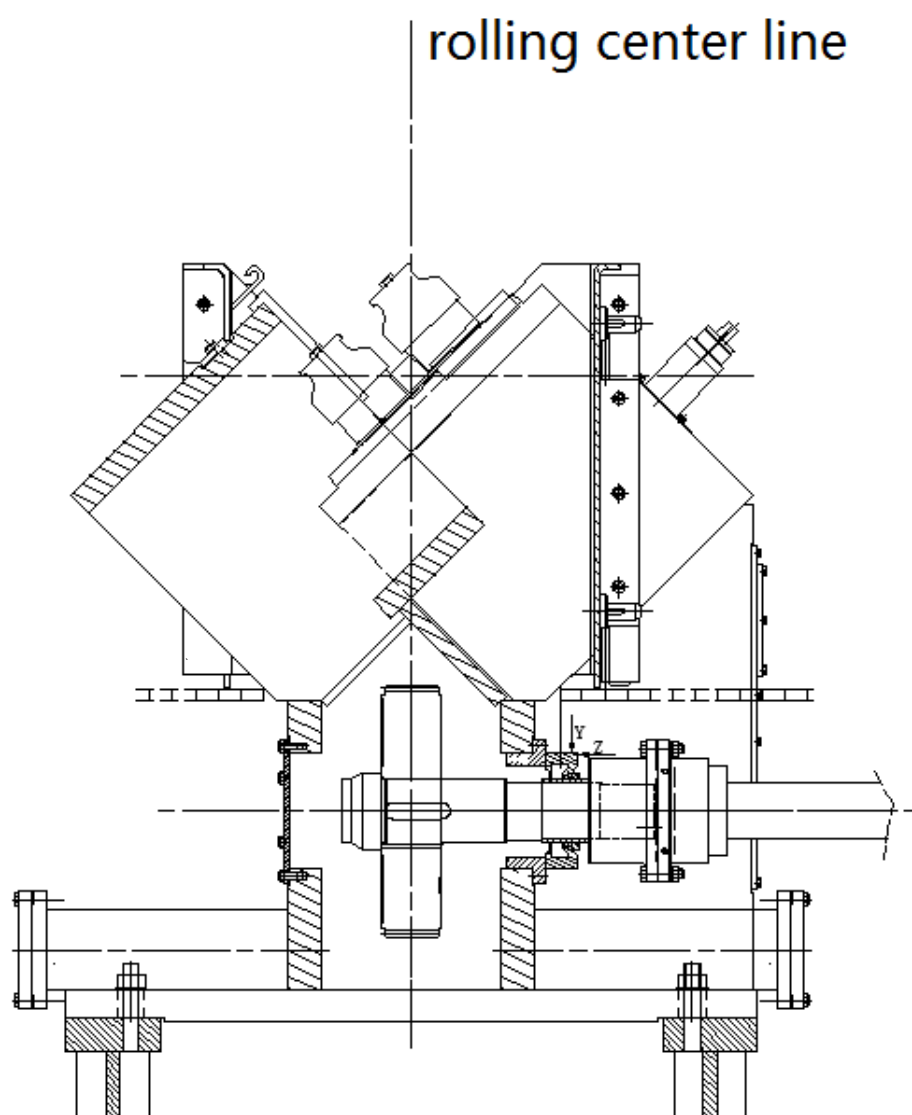
Double stand sizing reducer mill block test records (vibration)

TABLE I DOUBLE STAND SIZING REDUCER TEST RECORDS INSPECTOR:									
rolling speed	test item	MEASURED VALUE							
70m/s	B<4mm/s	measured point	NO. 1 STAND	NO. 2 STAND	INPUT SHAFT	ROLLER CASE 1	ADJUST 1	ROLLER CASE 2	ADJUST 2
		X	—	—	—	—	—	—	—
		Y	—	—	—	—	—	—	—
		Z	—	—	—	—	—	—	—
80m/s	B<4mm/s	X	—	—	—	—	—	—	—
		Y	—	—	—	—	—	—	—
		Z	—	—	—	—	—	—	—
90m/s	B<4mm/s	X	—	—	—	—	—	—	—
		Y	—	—	—	—	—	—	—
		Z	—	—	—	—	—	—	—
100m/s	B<4mm/s	X	—	—	—	—	—	—	—
		Y	—	—	—	—	—	—	—
		Z	—	—	—	—	—	—	—
105m/s	B<4mm/s	X	—	—	—	—	—	—	—
		Y	—	—	—	—	—	—	—
		Z	—	—	—	—	—	—	—
110m/s	B<4mm/s	X	—	—	—	—	—	—	—
		Y	—	—	—	—	—	—	—
		Z	—	—	—	—	—	—	—
115m/s	B<4mm/s	X	—	—	—	—	—	—	—
		Y	—	—	—	—	—	—	—
		Z	—	—	—	—	—	—	—
120m/s	B<4mm/s	X	—	—	—	—	—	—	—
		Y	—	—	—	—	—	—	—
		Z	—	—	—	—	—	—	—
125m/s	B<4mm/s	X	—	—	—	—	—	—	—
		Y	—	—	—	—	—	—	—
		Z	—	—	—	—	—	—	—
NOTE: 1.Measured positions as shown in the figure I 2.B:Vabrification allowed value									

APPENDIX B

(INFORMATIVE ANNEX)

Double stand sizing reducer mill block vibration measured positions and
directions



X:ALONG ROLLING DIRECTION (PERPENDICULAR TO PAPER)

Y: AS SHOWN IN THE FIGURE

Z: AS SHOWN IN THE FIGURE

A: ADJSUTING UNIT MEASURED POSITION

B: ROLLER CASE MEASURED POSITION

APPENDIX C
(NORMATIVE ANNEX)

Double stand sizing reducer mill block test records (temperature)

Double stand sizing reducer mill block (Temperature)									
rolling speed	test item	measured value							
70m/s	C<50℃	measure d point	1	2	3	4	5	6	7
		—	—	—	—	—	—	—	—
80m/s	C<55℃	measure d point	1	2	3	4	5	6	7
		—	—	—	—	—	—	—	—
90m/s	C<65℃	measure d point	1	2	3	4	5	6	7
		—	—	—	—	—	—	—	—
100m/s	C<70℃	measure d point	1	2	3	4	5	6	7
		—	—	—	—	—	—	—	—
105m/s	C<75℃	measure d point	1	2	3	4	5	6	7
		—	—	—	—	—	—	—	—
110m/s	C<80℃	measure d point	1	2	3	4	5	6	7
		—	—	—	—	—	—	—	—
115m/s	C<80℃	measure d point	1	2	3	4	5	6	7
		—	—	—	—	—	—	—	—
120m/s	C<80℃	measure d point	1	2	3	4	5	6	7
		—	—	—	—	—	—	—	—
125m/s	C<80℃	measure d point	1	2	3	4	5	6	7
		—	—	—	—	—	—	—	—
Note:1. temperature measured positions see appendix D; 2.C:Temperature allowed value									

APPENDIX D

(INFORMATIVE ANNEX)

Double stand sizing reducer mill block temperature measured positions drawing

