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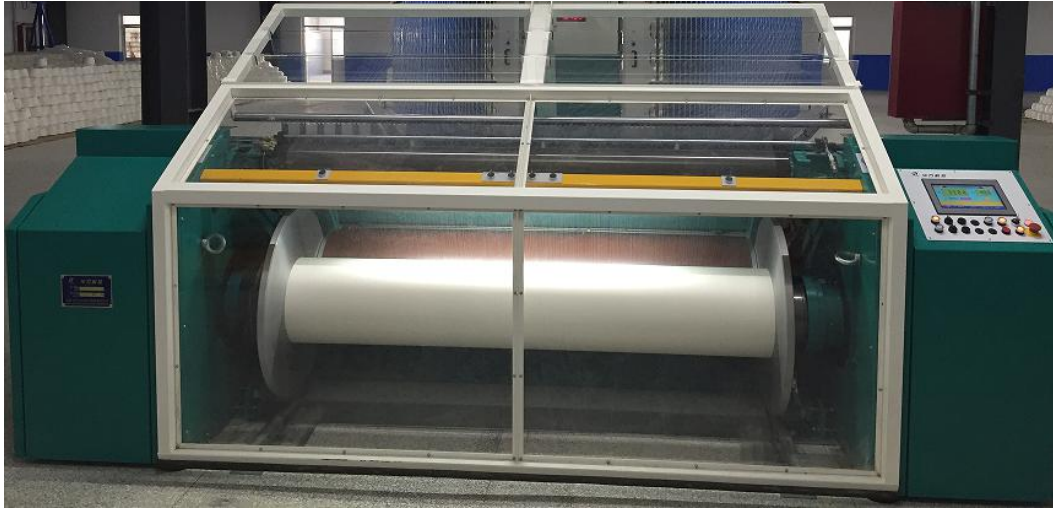
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## Technical Files

### HFGA158 direct warping machine





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## 一) HFGA158 Direct Warping Machine technical parameters:

### 1) Machine control device

HFGA158 Direct Warping Machine is equipped with modular control device. Also it can fully use the existing components. By comparing, electronic device not only control the simple winding, but also can provide below functions:

- Input and amend process data manually
- Monitor process data, start-end stop motion, forbid machine start in malfunction.
- Detect incident data of type, quantity and time
- Selectively output all data about beam, warping coat or yarn layer
- Monitor maintain intervals
- Connection ability with superior data control system

### 2) Three phases AC driving device

Driving device power is 22KW. Warping speed is designed to be 300-1200m/min, which is kept constantly by electronic device. It is absolutely essential precondition of constant tension of yarn. HFGA158 Direct Warping Machine can achieve a big driving torque even at low revolving speed range by installed advanced three AC driving device and using efficient convert. The three AC driving device is very simple and runs safely, no need of maintain, external ventilation or replace carbon brush.

### 3) Beam centering and chucks

As standard specification, beam is connected without tenon, 40° inner cone engaged, maximum diameter is  $\Phi 1250\text{mm}$ . The engagement ensures centering device run normally, precise circle run-out at high speed and chucks rotate safely and beam brake.

### 4) Thread guider

The shorter distance between different single yarn guide points, the more accurate yarn guider will be. HFGA158 Direct Warping Machine construction is very compact, making distance between expansion reed - guide roller - yarn winding very small, which ensures a very precise winding construction.

### 5) Yarn intertwined removal device

Assembled between steel reed and guide roller. Moving up and down in condition of machine's starting period, automatically prevent and remove yarns interlacing, to ensure yarn can be unwind sequentially on yarn roller. If necessary, this device can be operated by specified button on working station when machine is working.

### 6) Pressure system

Pressure roller is made by fiberglass, installed with aluminum supporting ring. Pressure can be chosen from 20daN(dyed beam), 200daN(standard beam) to maximum 600daN at



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central control panel. The constant is fixed during the whole winding process. Rigid torsional wiggle frame can ensure even pressure in working width. Growing winding yarn on beam resists the adjusted force moving back to pressure roller. By using hydraulic control pressure device, it can achieve cylindrical winded yarn.

#### 7) Pressure roller reverse

Above-mentioned pressure system has one reverse pressure roller which responses rapidly. By this instant hydraulic control ascend, friction between pressure roller and winded yarn can be avoided.

#### 8) Disc brake device

Disc brake device is used on beam, pressure roller and guide roller. Its brake distance is very short, which can avoid broken ends involving, meanwhile it can avoid winded yarn on beam rotating when winded yarn diameter is too big. Better warp quality, less broken ends shooting time is corresponding adjusted by direction, beam, pressure roller and guide roller brake distance.

#### 9) Yarn tension

Constant thread speed ensures thread tension on creel be constant. As three phases AC driving device start time and brake distance are short, minimum tension fluctuation can be limited.

#### 10) Electronic length counting device

Through the encoder fixed on the pressure roller, the yarn length can be calculated precisely, and ensure the same length of each batch.

#### 11) X-Y axis expansion reeds movement

Expansion reeds move along X axis ensures thread even doff, stepless chose between 0-40mm.Expansion reed blowing device efficiently blows the whole work width intermittently, which prevents fluff gathering in expansion reed and winding on beam. Blow interval and blowing intensity are adjustable. And move long Y axis prevents yarn being cut off, and increase the service life of expansion reed.

#### 12) Movable motor driving and adjustable expansion reed

Sideways adjustment of reed on beam and warping width adjustment are driven by motor. To simplify thread insert, adjacent reeds can be separated.

#### 13) Indoor automatic wind proof and twining proof equipment

Organic glass shield can prevent workers from flying during machine width and grabbing winding thread in running condition. When machine starts, the shield is lower than yarn package. When machine stops, in order to enter thread area, the shield goes up.



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14) Beam automatically ascend and descend

Side single rail makes beam roll easily, button in middle of operation panel can center and tension beam. 1250mm&1000mm diameter beam can be directly lifting height from the ground along with the rolling of sided Tailstock sleeve.For smaller diameter beam,machine is assembled with loading & doffing device.

15) Operation parts

Operation panel, all important adjustment and control parts are all shown in the touch screen, input data easily through operation manual. Low speed process can be made by pressing the button on safety bar. Use the button in middle of operation panel can achieve full speed. Inching the button, machine can forward one centimeter by one centimeter.

16) Safety bar

Safety bar is mounted same height with guide roller, coated with yellow line, avoids winding yarn when prevent against wind device and snarling device are open. Function “Low speed/ storage device” rotating swift and a bush of fixed yarn sheet(used when change batch) are also equipped on the safety bar.

17) Physical protection

When machine start, prevent against wind and snarling device automatic descend in front of winding yarn on thread guider beam guide roller. So enter in the yarn area when machine is running is available, especially the area between guide roller and beam side flange.If shield waggle badly or beam tension was not right, machine can not be started.

18) Operation security

- Design idea of HFGA158 Direct Warping Machine is to ensure machine run safe.

Machine is very solid, special subgrade is not required.

- Three AC driving device is simple, no maintenance at all.

- Machine side rack can prevent X axis force. All the Y axis loading parts use ball bearing which lubrication is good and life is long.

- Electronic devices are protected according IP 54.

- Parts without paint are galvanized or bluing.

19) Steel material roller on main machine to eliminate static.

20) Technical specification:

1)Machine information		
Machine name:		HFGA158 Direct Warping Machine
Working width :		1600 mm as request
Machine dimension :	- Width (mm)	= 3500 mm(working width+1900mm)
	- Depth (mm)	= 2120 mm



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	- Height (mm)	= 1800 mm (including wind shield)
Machine weight :		4500 KG
Electric data :		Driving power 22Kw
Machine data :	- Running speed	300m/min to 1200m/min
	- Inching speed	Max. 20m/min
	- Entire yarn tension	Max. 450N
	- Beam weight	Max. 1250KG
	-Max. beam flange dia.	Φ1250mm(40°)
	- Brake torque	Max. 16000Nm(p=120MPa, μ=1.45)
	- Pressure roller device	
	Standard beam	2000-6000N
	Dyed beam	200-6000N
	Sound radiation pressure	
	- Normal operation	< 80Db(A)
	Brake operation ( temporary)	> 80Db(A)
2) Yarn data		
HFGA158 Direct Warping Machine Suitable for:		
- Natural fibers	cotton, wool, jute, linen fabric	
- Synthetic yarns	rayon stable, polyester	
- Composite yarns		
Standard beam winding density	0.52 raw cotton	0.65Kg/dm <sup>3</sup> (rayon stable)
- Dyed beam winging density	0.35 raw cotton	0.6Kg/dm <sup>3</sup> (rayon stable)
Not suitable for :		
Asbestos fiber, Carbon fiber, Glass fiber		

## 二) HFGA158 H type GT600 creel with non-pillar positive tensioner tech. parameter

Technical description of H type turnover creel with non-pillar positive tensioner:  
Ensure constant tension on full length and width of yarn sheet -- Automatic Blowing and sucking device for both creel sides

### Advantages:

- 1, Suitable for all types of yarns
- 2, Suitable for wide range of yarn counts
- 3, Central adjustment on yarn tension
- 4, Automatic tension adjustment
- 5, High speed yarn drawing
- 6, Clean disc surface by electrical disc driving





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7,Internal individual blowing device

8,Simplified and convenient operation

**Reliable tension applying:**Tension is achieved by applying pressure on the upper disc of the second set of discs.The first set of braking discs ensures stable movement o yarns and makes it possible to apply proper tension afterwards.

**Yarn tensioner with central adjusting/regulating:**With central controlling table,the pressure parts of tensioners on one side or the whole creel are moved to the proper place.The value is displayed on the screen.

**Synchronize the status of disc driving device by dust-proof device:**Dust-proof design for pressure-applying parts and disc-driving devices ensures its proper function even when processing staple yarns.

### HFGA158 Direct Warping Machine main components configuration table

No.	Product name	Model Spec	Qty	Brand/ Origin	Note
1	Inverter	A1000serial	1PC	YASKAWA	
2	PLC	S7 200	1Set	Siemens	
3	Touch screen	GC-4501W	1 PC	Proface	
4	Encoder	BHF16_24K500-L2-A	2 PC	BAUMER	
5	Precise switch	MY-COML75N80/L	1 PC	BAUMER	
6	Breaker	DZ47serial	1 Set	CHINT	
7	Contacto	LC1 serial	1 Set	Schneider	
8	Relay	HH62P DC24V	1 Set	Shanghai Legong	
9	Motor breaker	GV2 serial	1 Set	Schneider	
10	terminal blocks	DZT-WJ serial	1 Set	WJ	
11	Phase interruption program protection relay	XJ3-G	1 PC	CHINT	
12	Bearing	6208-2RS	2	NSK	
13	Angular contact ball bearing	7208	4	NSK	
14	Angular contact ball bearing	7304	2	NSK	
15	Angular contact ball bearing	7307	2	NSK	



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16	Tapered roller bearing	32215	4	NSK	
17	Brake	DBM1603	5	Shanghai Stekitw	
18	Toothed V belt	XPA3000	5	Optibelt	
19	Motor	1LE0002-1DB43-3FA4 -ZF70	1	Siemens2	
20	Hydro-cylinder	CDT3MP5/32/14/160F 1X/B11HHUMWW	2	Rexroth	
21	Brake	ZS10373A00	1	Brembo Italy	
22	Worm reducer	RV030-25B3	1	Wuxi Lianghao	
23	Worm reducer	RV040-60V6	1	Wuxi Lianghao	
24	Worm reducer	RV030-15V6	1	Wuxi Lianghao	
25	Cylinder	DNC-63-160-PPV-A- 58K2-M16K5-102K8	1	FESTO	
26	Speed control valve	ASP530F-03-08S	1	FESTO	
27	Three-position five-path magnetic valve	PU530X-02D-9	1	SHAKO	
28	Two-position five-path magnetic valve	PU520-02S-9	1	SHAKO	
29	Pressure regulating valve	R200-02	1	Airtac	
30	triplet	UFR/L-04	1	SHAKO	
31	Switching valve	MS-33MF	1	SUN RISE	
32	Hydraulic control system		1	Rexroth	

**Spare parts of HFGA158 direct warping machine + GT600 creel with  
non-pillar positive tensioner**

1	J.0010	Hydraulic oil	KG	5
2	F.A.05.GFM-3236-26	Flange bearings	pc	2
3	F.A.05.GFM-3539-26	Flange bearings	pc	4
4	F.A.05.GFM-3842-22	Flange bearings	pc	2
5	F.G.01.DBM1603_1	Brakes	pc	8
6	H.014.HQ.YW1L-MF2E10Q4W	Ø22 full protect cover lighted button	pc	1
7	H.013.SHLG.HH62PJQX-13F	Relay(LeGong-Shanghai)	pc	1
8	F.J.02.880522-DC24V-2_5W	Solenoid coil	pc	1



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9	H.015.XC.ZCE02	Schneider limit switch unit	pc	1
10	F.D.01.XPA3550	Powerful V - belt (toothed)	pc	5
11	L.B.0021	Mechanical installation tool	set	1
12	E.C.TZ.HFGT600.0100-6L	Gearbox combined element (left)	set	10
13	E.C.TZ.HFGT600.0100-6R	Gearbox combined element (right)	set	10
14	E.C.TZ.HFGT600.0100-1L	Tensioner combined element (left)	set	50
15	E.C.TZ.HFGT600.0100-1R	Tensioner combined element (right)	set	50
16	F.M.HFGT600.0129	Regulating nut	pc	50
17	F.M.HFGT600.0140	Blow pipe joint	pc	10
18	F.M.HFGT600.0141	Blow pipe bulkhead	pc	10
19	F.M.HFGT600.0142	Bevel gear	pc	50
20	F.M.HFGT600.0202	Yarn spacer base	pc	20
21	F.I.01.0013	Rexroth solenoid coil	pc	2
22	F.I.01.0025	Pressure sensors pressure hoses	pc	1
23	F.I.01.0026	Pressure relays Pressure Hose	pc	1

**Remark: No.1-11 are spare parts of main machine, No.12-20 are for creel  
and No.21-23 are for hydraulic station**