

## W11s Rolling Machine





This machine used to make the steel plate into barrel shape、 Circular shape、 Conical sharp, etc. The upper roller can move vertically as well as horizontally, it can finish the pre-bending work and coiling work at the same machine.

The upper roller is drum-type design, so it has the anti-deformation function. There is equipped the support rollers under the lower rollers it can help to coil the high precision products.

The lower rollers are fixed symmetrically deployed relatively to upper roller; mechanical drive is employed for driving lower rollers. Upper roller ascends or descends at the central symmetric location of the lower rollers; the ascending and descending are hydraulic driven. Upper roller moves to the left or right position to prepare for pre-bending work. The limited switches control the shift position. The upper roller movement is PLC controlled and LCD display is employed for displacement.

Hydraulic drive is employed for dumping and resetting of the reverse head unit.

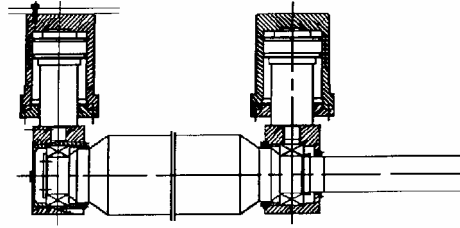
Moving control is employed for the control system; you can operation the machine at any position around the machine.

Main structure

The equipment composed of upper rollers, lower rollers and horizontally move device, support

roller device, main drive device, reversal device, right and left side frame and bottom plate.

### Upper rollers device

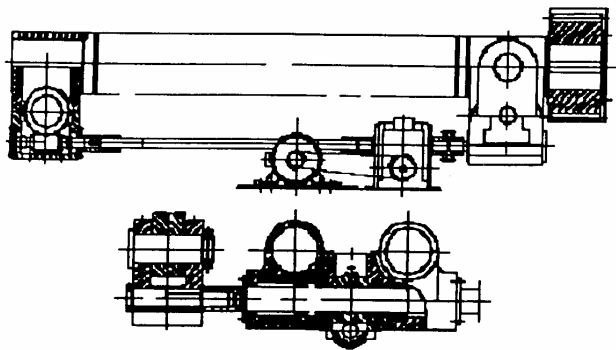


( upper roller )

Upper device composed of main cylinder, upper bearing base, upper roller, double centre adjust bearing.

The upper roller is drum-type design, so it has the anti-deformation function, upper roller material is 42CrMo , hardness HB 240-280 , surface IF quenching HRC45-50.

### Lower rollers and Level movement device



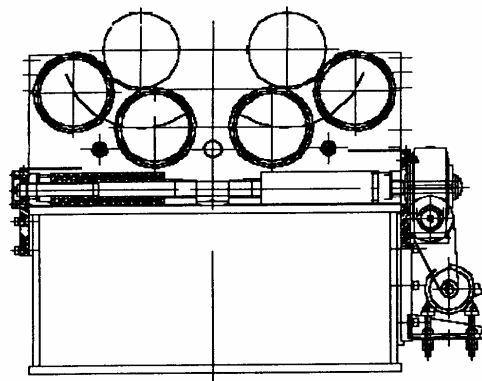
( lower roller and the level movement device )

Lower roller device composed of lower rollers, lower roller bearing base, lower input gear, and lower roller sliding bearing. Main drive supplies the main power through output gear, down roller input gear, opening drive torque to lower rollers.

Lower roller material is 45#, hardness HB240-280 , surface IF quenching HRC45-50.

Level movement device composed of level movement motor, worm wheel worm pole box; worm wheel worm pole. Level movement device power supplied by level movement motor. Through worm wheel worm pole box, screw pole drive to move in level and bending in symmetry.

### Support rollers



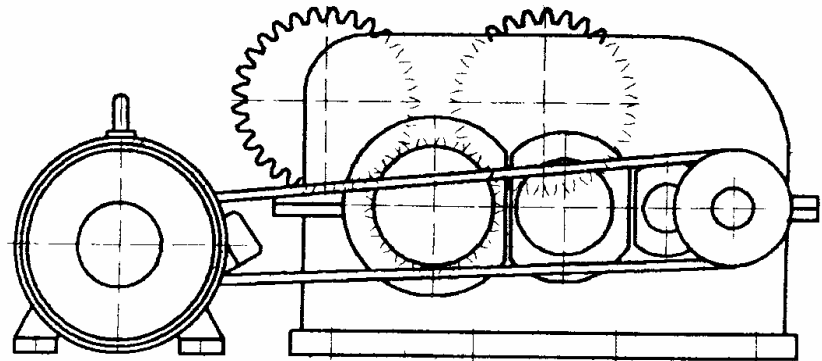
( support roller )

Composed of screw pole device, leaning device and support rollers

Support can adjust up/down according to the different of coil plate specification.

The material is 45#,

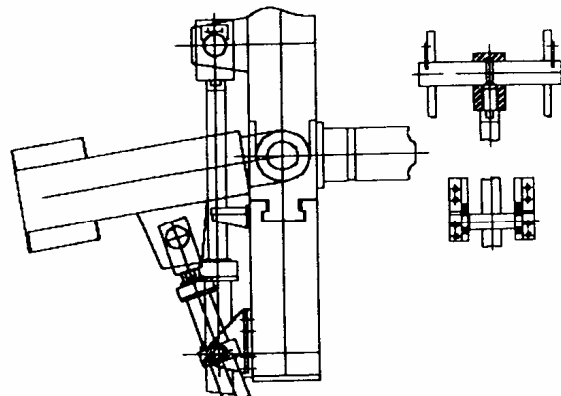
### 3-4 Main drive device



( main drive )

It's composed of main motor, belt, gear reducer box, electricity and hydraulic drive device.

### Reversal devices



( reversing device )

It's composed of sliding pillow and reversal cylinder.

### Balance devices

It's composed of balance press block, screw.

### Hydraulic system

It's composed of gear pump, valve group, and pipes. The system is composed by pressure adjusting circuit, synchrony circuit and speed circuit.

The pressure adjusting circuit adjusts the working pressure through the overflow valve, the Max pressure is 19.5Mpa; the synchrony circuit separates roughly the hydraulic oil to the ascending and descending of the upper roller through the by-pass valve, the restrictor valve adjust the upper roller ascending and descending; The displacement transducer detect the displacement, the synchronization precision is  $\pm 0.15$  mm; The speed circuit control the dumping and resetting of the reverse device through adjusting the restricting speed by restrictor valve.

### Electricity system

## General summary

Electric control system consists of controlling table, hand button box. Motivate power is three-phase four lines 380V/50Hz.

Controlling circuit adopts PLC programming control system with less relay and reliable actions. It can be used for long time.

Control box is equipped with all controlling buttons and direction lights during bending so as to monitor the whole machine's working status and control the operation.

the touching screen displays: reverse fixing and horizontal moving position and can set the upper roller descending position and the upper roller horizontal moving position. Once you press the setting display area, the numerical functional key appears. After inputting the setting value, press the "ENT". Before the horizontal moving setting, there is "+" or "-" by which we can let the upper roller move forward or backward. When the upper roller is in the center, the button is "0".

Whatever the screen is, press the button "system running", it displays the position of circum encoder and we can set the position of the upper roller. According to the displacement settled, pressing the button "upper roller running" enables the reverse side and the stable side to synchronously reach the required position; once press the button "upper roller reposition" the reversal and the stable size will be back to zero and to the initial position(upper top). When the upper roller is on the topest end or when the upper roller press the plate and contact the lower roller, horizontal moving doesn't act.

## Protections

All motors have corresponding breaker to protect for short circuit caused by over electricity

All motors have corresponding heat relay as protection against overload.

Horizontal moving of the upper roller, ascending and descending of the supporting roller have their corresponding limit location switch as terminal protection.

Reverse of the reversal crock and reposition are set respectively the upper and lower limit switch as terminal protection.

The main power switch has shunt release, and both the working table and the bracket have "emergent stop" button so as to cut main power remotely.

## all kinds of interlock

After the reversal frame completely repositioned, all the actions such as ascending /descending of upper roller and moving forward/backward, positive and negative circum of the lower roller, ascending /descending of the support roller, can proceed (take the "reversal frame reposition" limit location switch as the examination);

When the upper roller is on the upper location, the horizontal moving of upper roller and the independent descending of reversal side cannot proceed ("upper roller up position" limit location switch as examination);

When the working pressure of the upper roller pressure relay is over 1/3P, the upper roller cannot move forward or backward, and the support roller cannot ascend or descend (pressure relay as examination)

## Failure directions

When the lower roller motor, horizontal moving motor and support roller motor is over-load, the failure direction light gives direction.

When there is wrong with the PLC, the failure direction light gives direction.

### Technical features

Drum-type upper roller, the lower part of the lower roller and the support roller are in coordinate with the adjustment as well as the products' line degree with high precision.

Drum-type upper roller is adopted, and the pre-settled amount of the drum-type is generally 70% of the average load of the rollers. The lower roller with smaller diameter is supported by support roller which can be adjusted up and down. According to the load of the roll-bending goods, adjust the support roller beneath the lower roller, which greatly improve the line degree of the products.

### Backside bending

This machine adopts backside bending (the direction of material delivery and the upper roller moving is opposite), once the upper roller presses down, the lower rollers circumscribe, continuous bending. The ends of the plate are directly pre-bending, which avoid the back angle caused by front bending and it also can control the width and the shape of the rest ends.



N	Model	Upper Roller Pressure ( Tons )	Bending thickness		Length mm	Up-roller $\phi$ (mm)	lower roller $\phi$ (mm)	Cent. distane (mm)	Motor (Kw)		
			Asymmetry (mm)	Symmetry (mm)					drive	hydraulic	shift
1	W11S-15×2000	75	12	15	2000	255	150	245	7.5	4	1.1
2	W11S-14×2500	75	10	14	2500	270	150	245	7.5	4	1.1
3	W11S-13×3000	75	9	13	3000	290	150	245	7.5	4	1.1
4	W11S-17×2500	100	13	17	2500	300	165	270	15	5.5	1.5
5	W11S-15×3000	100	11	15	3000	325	165	270	15	5.5	1.5
6	W11S-20×2500	130	16	20	2500	330	180	300	15	5.5	2.2
7	W11S-18×3000	130	14	18	3000	350	180	300	15	5.5	2.2
8	W11S-22×2500	160	18	22	2500	360	200	330	18.5	7.5	2.2
9	W11S-20×3000	160	16	20	3000	375	200	330	18.5	7.5	2.2
10	W11S-18×3500	160	14	18	3500	390	200	330	18.5	7.5	2.2
11	W11S-25×2500	190	21	25	2500	380	220	360	22	7.5	4
12	W11S-22×3000	190	19	22	3000	400	220	360	22	7.5	4
13	W11S-20×3500	190	16	20	3500	410	220	360	22	7.5	4
14	W11S-30×2500	230	25	30	2500	410	235	380	30	11	4
15	W11S-27×3000	230	22	27	3000	425	235	380	30	11	4
16	W11S-25×3500	230	21	25	3500	440	235	380	30	11	4
17	W11S-33×2500	270	28	33	2500	430	250	400	37	11	4
18	W11S-30×3000	270	25	30	3000	450	250	400	37	11	4
19	W11S-28×3500	270	23	28	3500	470	250	400	30	11	4
20	W11S-25×4000	270	20	25	4000	490	250	400	30	11	4
21	W11S-36×2500	320	30	36	2500	460	260	420	37	15	5.5
22	W11S-32×3000	320	28	32	3000	480	260	420	37	15	5.5
23	W11S-28×3500	320	25	28	3500	500	260	420	37	15	5.5
24	W11S-26×4000	320	22	26	4000	520	260	420	37	15	5.5
25	W11S-40×2500	380	35	39	2500	500	275	460	45	22	5.5
26	W11S-35×3000	380	32	35	3000	510	275	460	45	22	5.5
27	W11S-32×3500	380	28	32	3500	530	275	460	45	22	5.5
28	W11S-30×4000	380	25	30	4000	550	275	460	45	22	5.5
29	W11S-45×2500	430	40	43	2500	520	290	500	55	22	7.5
30	W11S-38×3000	430	35	38	3000	540	290	500	55	22	7.5
31	W11S-36×3500	430	30	36	3500	560	290	500	55	22	7.5
32	W11S-32×4000	430	28	32	4000	580	290	500	55	22	7.5