

TECHNOLOGICAL

CAPABILITIES



TMP TJAZHMEKHPRESS

CASTING production

Voronezh company JSC "Tjzhmekhpress" is the only factory in Russia which manufactures heavy mechanical presses with capacity up to 16 500 tf. Company has a closed production cycle – from casting of billets to manufacturing of finished products. Composition of the plant includes initial stock, machining, assembling and auxiliary productions. Casting, manufacturing of forgings and welding are the main activities of initial stock production.

Foundry capacity allows manufacture cast iron castings with weights up to 30 t and overall dimensions of 3500x2000x2000 mm as well as bronze castings with weights up to 5 t and overall dimensions of 1600x1600x600 mm. The centrifugal technology method and casting into a metal mold are used for bronze castings. Production volume of cast iron castings is up to 1000 t per month, and for bronze castings up to 30 t per month. The range of manufactured constitutes over 1000 items. The need in modeling equipment made of wood and metal is met by own capabilities.



CASTING production

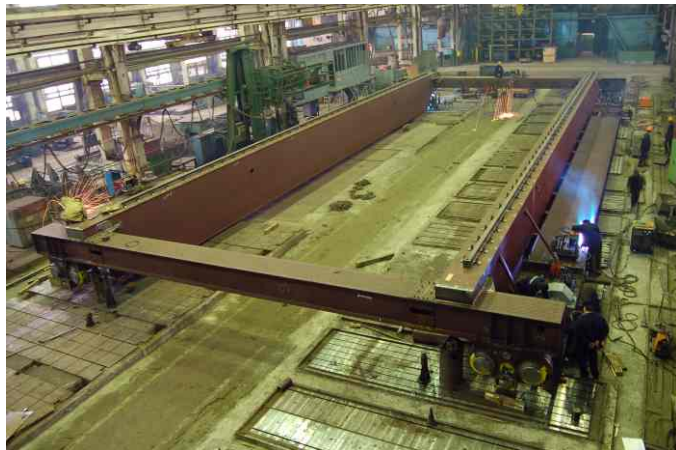


Casting

Type	Grade	Weight of castings	Dimensions of castings
Cast-iron, chill mold, soil	Gray cast iron under ГOCT 1412-85 C4 20; C4 25; C4 25 alloy	Up to 30000 kg	Up to 3500x2000x2000 mm
Bronze	Bronze 010, Ф1 ГOCT 613-79 Bronze 05 Л5 С5 ГOCT 613-79 Bronze A9 Ж3 X ГOCT 493-79	Up to 2500 kg	Up to Ø 1600 mm, H=600 mm

WELDING production

Welding production allows to provide manufacturing of lengthy lifting, construction and any other metal frameworks with length up to 35 meters and weight up to 60 tons as well as tank equipment with length up to 20 meters and diameter up to 5 meters and pressurized containers. Gas cutting of sheet metal made of carbon and low-alloyed steel with thickness from 4 up to 260 mm is carried out by means of CNC machines in initial stock area. Along with above mentioned operations here are carried out plasma cutting of sheet metal made of low-alloyed steel with thickness from 0,5 up to 38 mm, cutting of metal with thickness from 1 up to 14 mm and length up to 3100 mm by guillotine shears, cutting of profile roll by means of band-saw machine «DOALL», as well as bending, rolling and straightening. Rolling of shells with large thickness and diameter is carried out by means of sheet bending machine «DAVI». Assembling, semiautomatic welding in carbonic environment, automatic welding of structures with weight up to 160 tons under layer of flux, electroslag welding of welded joints with thickness up to 400 mm, annealing of welded structures for relieving of inner tensions, vibrostabilization for lengthy details with weight up to 25 tons, shot blast cleaning of welded structures from rust and scale are also carried out in assembly-welding area.



Cutting of billets

Type	Thickness of metal	Overall dimension
Flame cutting - on CNC gas cutting machines - on semiautomatic of bilateral chamfers - by manual pipe cutter	4-250 mm	Up to 7 meters
Plasma	4 mm	
Mechanical - cutting of billets by guillotine shears - blanking of billets on vibroshears	0,5 - 38 mm	2 500 x 8 000 mm
	1,2 - 14 mm 1 - 4 mm	3150 mm Ø 80- Ø 1200 mm



Rolling of billets

Type	Dimensions			
Made of sheet	Sheet thickness dimensions:			
	1-16 mm: length of shells up to 2000 mm	More than 16 mm: in accordance with table of technological capabilities.	Up to 3 mm: $\varnothing_{\min}=120$ mm , L=900 mm	5-16 mm: $\varnothing_{\min}=400$ mm , L=2000 mm
Made of corner inward and outward flange	28x28, $R_{\min}=350$ mm		70x70, $R_{\min}=500$ mm	
Made of channel	N14, $R_{\min}=380$ mm			

Ultrasonic cleaning of pipes

\varnothing	From 300 mm
Length of pipes	Up to 2500 mm
Weight of pipes	Up to 500 kg

Etching parts made of pipes

Bath dimensions	700x1000x2900 mm
Electrolyte height	600 mm

Electroplating

Type	Dimensions of part	Weight of part
Oxidation	max 1800x600x600 mm	-
Chromium-plating - external surface	max \varnothing 130 mm x 2000 mm \varnothing 450 mm x 415 mm	-
- internal surfaces	from \varnothing 50 mm x 600 mm up to \varnothing 800 mm x 270 mm	
Cadmium plating (bell bath)	-	Up to 0,1 kg
Tinning (bell bath)	-	Up to 0,1 kg

FORGING production

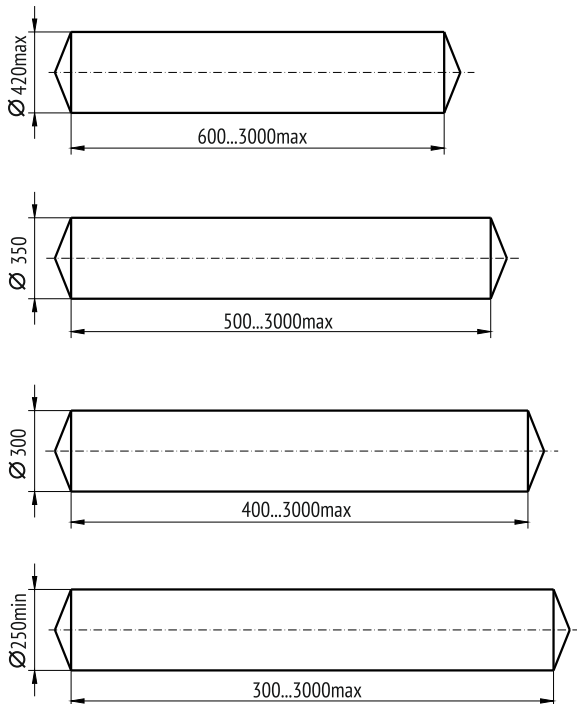
Forging production allows to provide manufacturing of forgings made of carbon and alloy steel with weight up to 100 kg for forgings made of roll and up to 3000 kg for forgings made of ingots. Types of forgings are as follows: shafts, axles, rods, beams, plates, bands, bushes, gears, cylinders, disks etc. TMP provides heat treatment of parts: annealing, normalization, martempering, quenching, nitration. Press forging equipment also has a capability to perform coiling of springs made of wire with a diameter up to 28 mm.



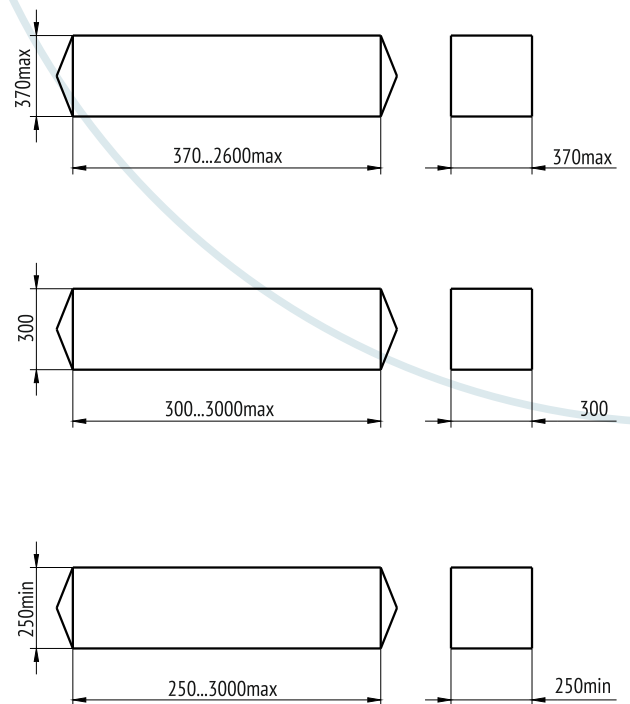
Manufacturing of forgings made of roll (up to 100 kg) and ingots

Type of forging	Weight of forging	Steel grade
Shafts, axles, rods	Up to 3000 kg	Ct20; Ct35; Ct.45; Ct.40X; Ct.40XH
Bars	Up to 3000 kg	Ct20; Ct35; Ct.45; Ct.40X; Ct.40XH
Plates	Up to 3000 kg	Ct20; Ct35; Ct.45; Ct.40X; Ct.40XH; Ct.5XHM
Rims, bushes		Ct20; Ct35; Ct.45; Ct.40X; Ct.40XH
Gears, bushes, cylinders	Up to 1200 kg	Ct20; Ct35; Ct.45; Ct.40X; Ct.40XH
Gearing shaft	Up to 2850 kg	Ct20; Ct35; Ct.45; Ct.40X; Ct.40XH
Cylinders	Up to 1200 kg	Ct20; Ct35; Ct.45; Ct.40X; Ct.40XH
Discs	Up to 1200 kg	Ct20; Ct35; Ct.45; Ct.40X; Ct.40XH; Ct.5XHM

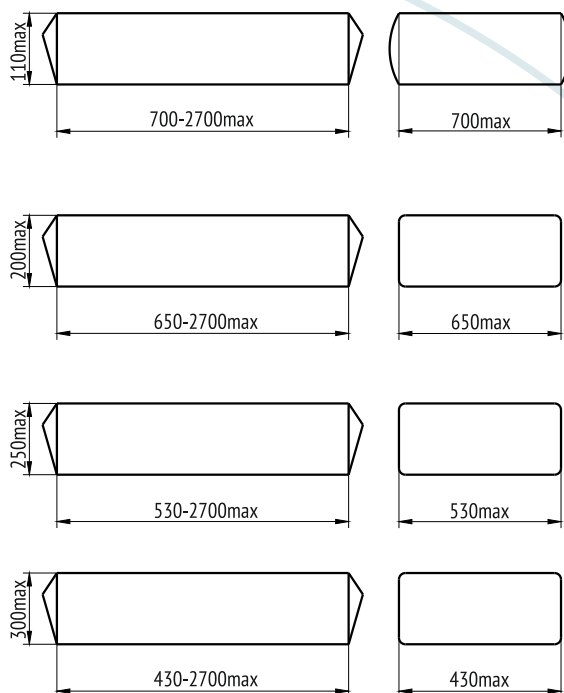
SHAFTS, AXLES, RODS
STEEL: 20; 35; 45; 40X; 40XH
Max weight of forging 3000 kg



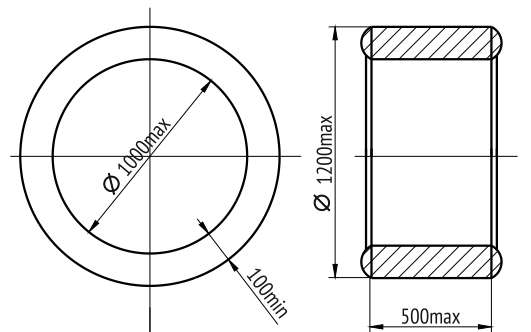
BARS
STEEL: 20; 35; 45; 40X; 40XH
Max weight of forging 3000 kg



PLATES
STEEL: 20; 35; 45; 40X; 40XH; 5XHM
Max weight of forging 3000 kg

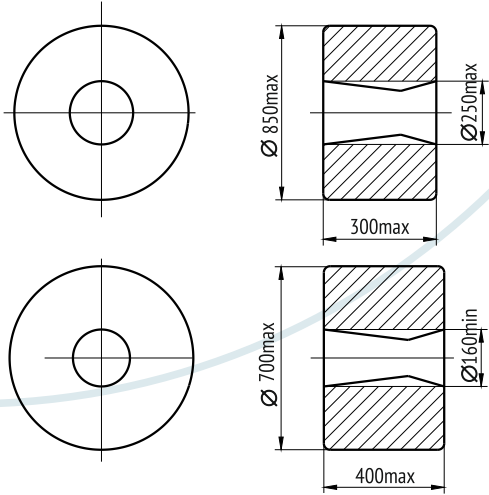


RIMS, BUSHES
STEEL: 20; 35; 45; 40X; 40XH

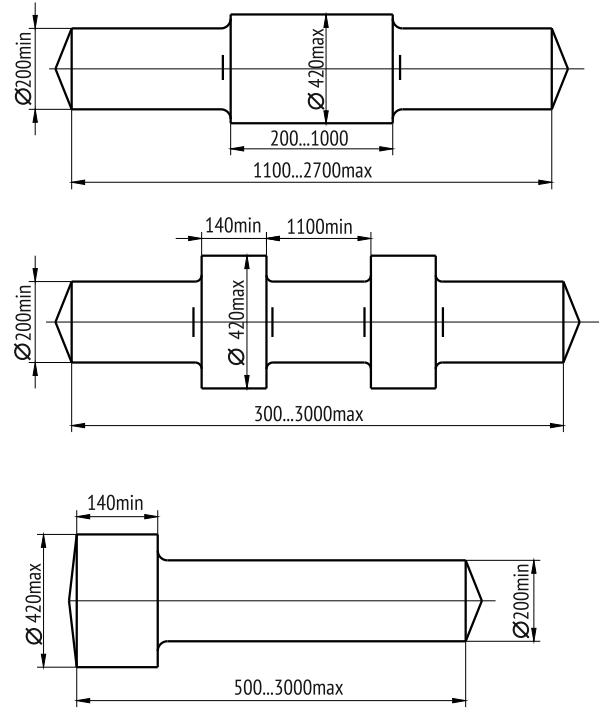


FORGING production

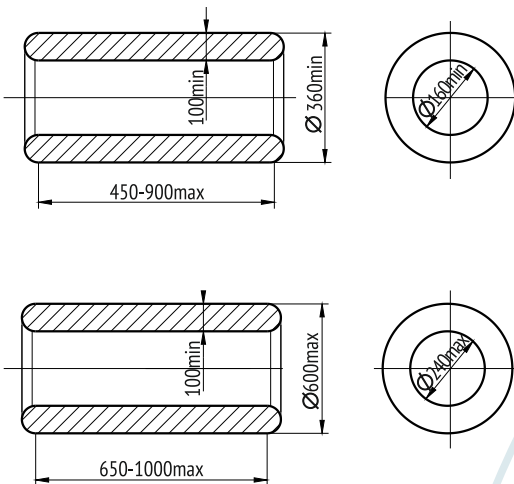
GEARS, BUSHES, CYLINDERS
Max weight of forging 1200 kg



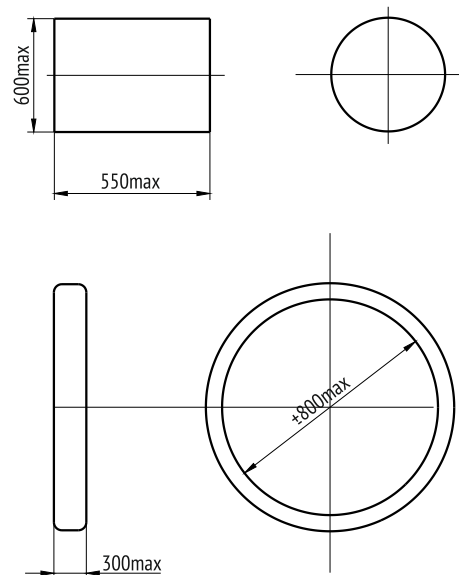
GEARING SHAFT
STEEL: 20; 35; 45; 40X; 40XH
Max weight of forging 2850 kg



CYLINDERS
STEEL: 20; 35; 45; 40X; 40XH
Max weight of forging 1200 kg



DISCS
STEELS: 20; 35; 45; 40X; 40XH; 5XHM
Max weight of forging 1200 kg



MACHINING production

Machining production is equipped with unique machinery which allows to provide high-precise tooling of large dimension multi-ton parts (up to 200 tons). Primarily there are: SKODA horizontal-boring machines with spindle diameters from 160 up to 320 mm; LINE longitudinal milling-boring machines with dimensions of table up to 4500x16000 mm; COBURG longitudinal grinding machines with table dimensions up to 2200x6000 mm; Machines of "tooling center" type with table dimensions up to 4200x16000 mm; Circular grinding machines with table dimensions up to 1300x6000 mm; MAAG high-precision tooth-cutting equipment with further tooth quenching by means of high frequency currents (HFC); BERTHIEZ numerically controlled (N/C) machine with chuck diameter from 2500 up to 4000 mm which intended for machining of eccentric wheels. LAMBDA coordinate-measuring machine which provides high precise measurements of the primary parts.



Parts	Weight	Part dimensions	Machines
Small, medium and heavy welded housing	Up to 120 tons	16000x4200x 4000mm	Horizontal-boring machines: SKODA (HC-157Φ2); Novosibirsk Machine Tools plant with spindle diameter 320 mm (HC-61 and 2A680).; longitudinal milling-boring machines LINE (SL-250; SL-236; SV-236); longitudinal grinding machines COBURG (40-15S); Machines of "tooling center" type.
Rotating body	Up to 160 tons	Ø 2500x16000 mm Ø 1250x16000 mm	Screw cutting lathe machine (KXK 16.136.02Φ2); Cylindrical grinding machine with diameter dimensions 1100x6000 mm (XLW 130).
Type of rotating body: eccentric wheels, flywheels, discs	Up to 20 tons	Up to Ø 6300 mm	TAM-400; 1540; BM 3888 etc.
Grinding of inner openings of cylinders	-	Ø from 300 to 900 mm length up to 1500 mm	
Gears	-	-	High precise tooth cutting equipment MAAG.

MACHINING production



List of work pieces

Parts	Dimensions
Gearing shafts with straight, helical and herringbone tooth (module up to 36 mm)	Length up to 4000 mm Ø 500 mm
Wheels and gears with straight, helical and herringbone tooth (module up to 36 mm)	Ø up to 5000 mm width of rim up to 500 mm
With inner tooth (module up to 10 mm)	Length of tooth up to 160 mm Ø of crown up to 2000 mm
Slotted shafts from 6x26x30 mm to 10x145x160 mm	Length of shaft up to 3500 mm
Conical wheels and gears: - with straight tooth (module up to 10 mm) - with circular tooth (module up to 16 mm)	Ø up to 500 mm Ø up to 800 mm
Sprockets	Without step limitations
Worm-gear	

Machining of parts made of ferrous and nonferrous metals, copper and brass roll: studs, shafts, axles, screws, worms, coupling halves, cups, covers, flanges, pulleys, discs, crowns, worm - wheels, shoes, keys, housings, brackets, supports, stopping bars, guides, parts of brakes clutch, sub-plates, bolster plates.

MOUNTING

Assembling production placed at industrial premises with aisle width up to 30 m, height of crane ways up to 21 m and stand pits of 6 meter depth equipped with overhead cranes (carrying capacity up to 320 t). Following works are carried out at production: assembling and mounting of mechanical units; assembling of electric, hydraulic and pneumatic equipment; assembling of fixed joints with thermal treatment (heating-cooling); cooling of parts intended for pressing-in in liquid nitrogen environment, pressing in of parts.



**QUALITY
CONTROL**



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