دستگاه رولینگ و غلطک زنی یاتاقان های ثابت و متحرک میل لنگ جهت افزایش مقاومت مکانیکی میل لنگ

Deep rolling and roll straightening machines, types 7893R

The design of the transition curve radii on the main and pin bearings for crankshafts is a decisive factor for their service life. To increase the fatigue strength, a new technology developed by Hegenscheidt called deep rolling was successfully introduced to crankshaft production around the middle of the 1950s. Deep rolling the main and pin bearing radii enabled the introduction of higher motor outputs in the worldwide automotive industry. The deep rolling process introduced compressive residual stresses in the corner grooves of the crankshaft bearings, which lead to an increase in the fatigue strength and therefore to a significant increase in the service life. This technology was perfected innovatively by using angle-dependent deep rolling and, later on, roll-straightening processes. Roll straightening reduces the radial runout present in the crankshaft. Several patents were granted for the technologies and machine designs introduced between the early development and the levels achieved today. The progressive crankshaft machining technology applied nowadays in the automotive industry for compact motors was pivotal both in achieving material savings and in improving quality and service life.

Typ 7893R

Description of machines	**Typ 7893R-01**	**Typ 7893R-02**	**Typ 7893R-03**	**Typ 7893R-03S**
	Headstock and tailstock are manually adjustable.	Headstock can be moved automatically. Tailstock is manually adjustable.	Headstock and tailstock can be moved automatically.	As in 7893R-03, however, the number of deep rolling units is less than the number of crankshaft bearings; machining several crankshaft bearings in sequence by means of moving the crankshaft (shifting) in front of the axially fixed deep rolling units.
	Ideally suited for machining a crankshaft type with varying strokes.	Ideally suited for machining a crankshaft family with a varying number of bearings and varying strokes.	Ideally suited for machining different crankshaft families	Ideally suited for machining different crankshaft families in small quantities.
Workpiece				
Distance between bearing centre lines for the outer main bearings, max.:	920 mm	920 mm	920 mm	920 mm
				on request > 920mm
Rolling arm length, max.	195 - 270 mm	195 - 270 mm	195 - 270 mm	195 - 270 mm
(½ stroke + radius of counterweight):				on request > 270 mm
Radius of counterweight for shift operation, max.:	-	-	-	Defined acc. to particular case
Max. number of machinable bearings:	8 main bearings	8 main bearings	8 main bearings	defined acc. to particular case
	6 pin bearings	6 pin bearings	6 pin bearings	

Main bearing diameter, min / max.:	30 / 88 mm	30 / 88 mm	30 / 88 mm	30 / 88 mm
	on request > 88 mm	on request > 88 mm	on request > 88 mm	on request > 88 mm
Pin bearing diameter, min / max.:	30 / 84 mm	30 / 84 mm	30 / 84 mm	30 / 84 mm
	on request > 84 mm	on request > 84 mm	on request > 84 mm	on request > 84 mm
Bearing width, min.:	18,5 mm	18,5 mm	18,5 mm	18,5 mm
Stroke, max.:	140 mm	140 mm	140 mm	140 mm
Bearing spacing, min.:	29,5 mm	29,5 mm	29,5 mm	29,5 mm
Deep rolling units				
Max. deep rolling force:	30.000 N	30.000 N	30.000 N	30.000 N
	optionally 40.000 N	optionally 40.000 N	optionally 40.000 N	optionally 40.000 N
Headstock				
Output of main drive motor:	20 kW	20 kW	20 kW	20 kW
Speed when deep rolling:	120 rpm	120 rpm	120 rpm	120 rpm
	60 rpm	60 rpm	60 rpm	60 min-160 rpm
Speed when roll straightening:	30 rpm	30 rpm	30 rpm	30 rpm
Machine				
Weight including auxiliaries:	approx. 13.800 kg	approx. 13.800 kg	approx. 13.800 kg	approx. 13.800 kg
Dimensions including integrated electrical cabinet and hydraulic system (L/W/H)	4,5 x 2,5 x 2,2 m	4,5 x 2,5 x 2,2 m	4,5 x 2,5 x 2,2 m	4,5 x 2,5 x 2,2 m
Max. machining height:	1100 mm	1100 mm	1100 mm	1100 mm