SACMA

1939

the WINNING TECHNOLOGIES®

SACMA founded in 1939, began to design and manufacture cold forging machines just before the world war.

The increasing development and substantial growth have brought the name of **SACMA** to be well known by the world manufacturers of fasteners and special parts.
Every day more than 6500 **SACMA** machines are operative through out the world, in hundreds of factories, transforming thousands of tons into high quality fasteners and special parts, used in many different industrial applications.
For the industry that mass produces consumable items, like fasteners, the advantage of cold forging is an inevitable consequence for reasons of high strength, tight tolerances, reduction of waste material, competitiveness and productivity.

Within the strategy of supplying machines of the highest technology levels, **SACMA** continues to improve and develop new model progressive cold formers and combined bolt makers, supplying them to the ever growing market of net-shape parts.

End users have a high appreciation of **SACMA** machines, and consider them to be well designed, well manufactured, powerful, generous in making special parts, flexible for making long or short parts, fast, reliable and generating low cost production.

In order to assist all its Customers around the world, **SACMA**, has developed worldwide efficient service centres able to supply any spare part in a very short time to keep customers always running and making parts.

In the next pages we would like to give you a clear picture of what are the **Winning Technologies®** that have made **SACMA** so famous and successful in the world.

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LEGEND

MONOBLOCK MAIN FRAME


AUTOMATIC ADJUSTMENTS


PERFECT CLEARANCE HEADING SLIDE


ELECTRONIC HANDWHEEL

ULTRA PRECISION

SHORT FEED CONTROL


TRANSFER SYSTEM

SPEED CONTROL

QUICK TOOL CHANGE

FORMING LOAD MONITOR

DESMODROMIC CAMS

COMBINED MACHINES

TOOL PRESETTING

THREAD ROLL LOAD MONITOR


TRANSFER SUPPORT ASSIST PACKAGE

WARM FORMING

MOTORIZATION


HYDRAULIC CLAMPING


HYDRAULIC PLATFORM

TOOL DESIGN

SC-MATIC


AUTOMATIC ADJUSTMENTS


SERVICE EQUIPMENT

SACMAform®

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MONOBLOCK MAIN FRAME

The **main frame** is a fundamental element for performance of any machine, particularly of a cold forming machine, because it imparts rigidity, **precision and reliability in time**.

For this basic component the experience gathered over the years, the research with the most sophisticated simulation methods and the experimental analysis of deformation have been prime elements of design.

SOLID CASTING

Among the different methods of manufacture **SACMA** has chosen the **monoblock casting made of perlitic spheroidal cast iron**, normalized and stabilized by ageing in excess of 12 months, to guarantee the maximum rigidity and the highest level of stability under heavy loads.

Furthermore, the selection of the best suppliers of castings together with a constant monitoring of conformity to the **SACMA** technical specifications are the best guarantee of constant quality.

The accurate machining, the strictness in process controls, the **high degree of suppression of vibrations**, a typical characteristic of this material, make our machines perfectly capable **to produce parts** with constant standards of precision, **for many years**.

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ULTRA PRECISION

The **high degree of precision** in machining is a must for manufacturing machines that must operate with **high productivity and efficiency**.

In order to reach this objective, there must be **no compromise of quality** of any mechanical component present in machines that undergo high stresses such as cold formers.

ULTRA
PRECISION

SACMA has chosen to **manufacture, in house**, **all components** and has installed the most modern production machines available today on the market, to promote the total quality of all its products.

A systematic and rigorous inspection procedure of all manufactured parts before inventory stocking is the best **guarantee of interchange ability and availability of spares**.

The correct choice of **high tensile materials**, the proper heat treatment specifications, the accuracy of surface finish operations of grinding and lapping make a **SACMA machine the most reliable, the most productive and lowest cost machine in manufacturing**.

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QUICK TOOL CHANGE

The concept of performing **tool change in the shortest possible time** represents an undisputed necessity for modern industrial manufacturing of cold forged parts, made in smaller lots, making forming more competitive against traditional machining methods.

In developing the tool change system, **SACMA** made **no compromises of rigidity and power** of the machines; a typical characteristic of its machines.

The **CR quick tool change** system, **standard for machines series 3, 4, 5 and 6**, allows for easy removal of the die block, hydraulic clamped, and just as easy removal of the punch block bolster and the complete transfer unit.

As option, one can choose from many different accessories designed for a real **quick change of the tool holders**. An operator set up bench, a service trolley or a complete external tool alignment and set up bench are available.

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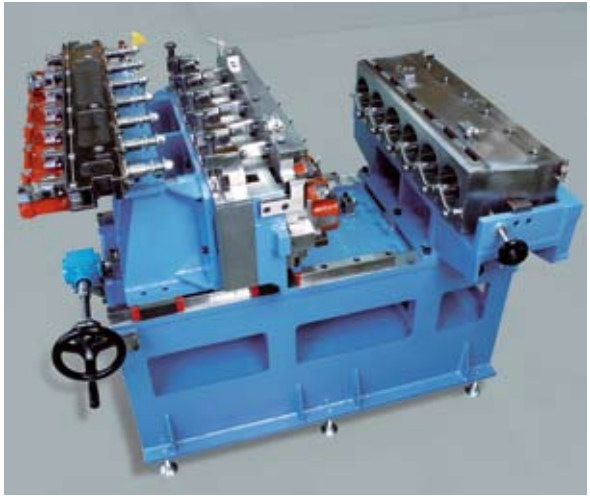
TOOL PRESETTING

The **SACMA** - CR Quick Tool Change machines, designed to perform production changes in a short time, still maintain the renowned characteristics of robustness, precision, reliability and efficiency, typical of a **SACMA** machine.

The **SACMA** machines can be equipped with an external **Presetting Bench for setting the tools**.



The Presetting Bench allows one to perform, outside of the machine, **an accurate alignment of the punches to the dies**, the correct axial position of the punches, and the perfect setting of transfer fingers. This procedure can best be performed in the tool room area, so that correct preset tools are delivered to the machine for the next job. This allows a more **rational utilization of the factory floor space** and the optimization of the company's technical resources.

MOTORIZATION

In consideration of present industrial production of small lots, **the number of tool changes increases considerably**: manufacturers are all the more forced to process **larger amounts of part numbers**, in any given time, and tool change procedures must take place in **the shortest intervals possible**.

The **M automatic motorization system** available on **SACMA** progressive and combined machines, is an important method for **reduction of machine set up time** and fine tuning of adjustments. The preset data present in the data base of parts to be manufactured will determine the automatic adjustments of feed, position of stock stop, and die kick out. The new SP 670 model 6 die cold former can be fitted with the **individual automation of adjustments of finger timing cams**.

The motorized machines utilize the **SACMA SC-MATIC** software developed on Siemens platform and operative with Windows-CE.
Data base in excess of **20.000 different part numbers** can be stored in the system which will also display **all alarm information relative to machine stoppage**.
The system also has an Ethernet port for transfer of data and a modem which can be activated for **teleservice**.

MONITORING SYSTEMS

In order to **produce constant quality, monitoring systems** are today a must on all multi station cold forging machines.

Monitoring of cut off lengths and of forging and roll forming loads, over and **above the safe guarding of the tools and of mechanical organs of machines**, is also an effective indirect control that parts are produced to print.

All **SACMA** machines can be fitted with state of the art **control and monitoring systems**, developed in conjunction with a leading manufacturer in this field.

SC10: **short feed control system**, available for all machines but fitted as standard on all CRM progressive and combined machines;

SC500: **forging load monitoring system**, calibrated to give a true reading in KN of the loads acting in the main frame of the machines, at every blow. Available on all progressive and combined machines;

SC600: **roll forming load monitor**, with sensors located directly behind the fixed roll die and complete with a discharge gate to eliminate bad parts. Available on all combined machines.

Any one machine can also be specially prepared to receive load monitoring systems of other brands.

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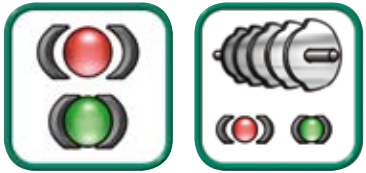
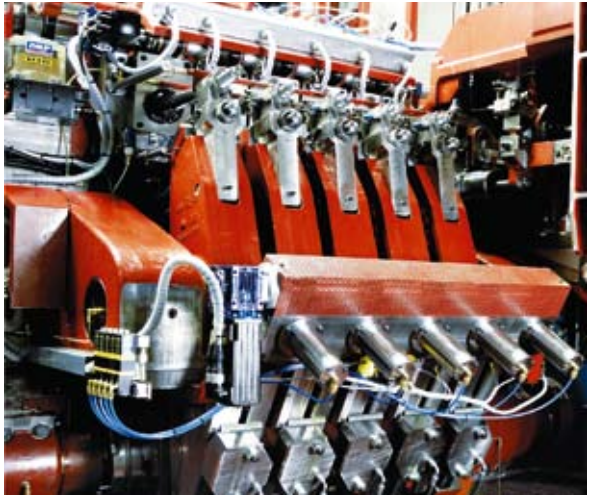
HYDRAULIC CLAMPING

Hydraulic clamping of adjustments and tools is of **great help when setting the machine** and guarantees repeatability of the adjustments.

Clamping and unclamping is easily performed by the touch of a switch, avoiding any manual work with wrenches inside the machine enclosure.





All **SACMA** machines are fitted standard with hydraulic clamping of die side adjustments of threaded sleeves, kick out levers and trim cam in the last station.
All **CR** quick tool change machines are supplied with **hydraulic clamping of the complete die box**.

On the **Series 6** machines the complete **transfer finger unit and the timing cam shaft are secured in place by hydraulic clamping**.

The new **SP 670**, large 6 die cold former, has **hydraulic unclamping of the individual finger timing cams** which can be adjusted automatically.

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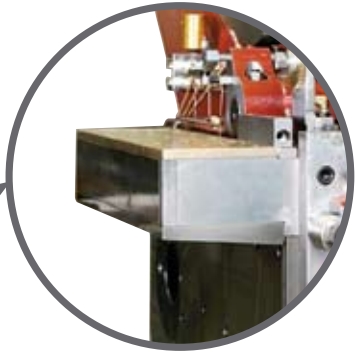
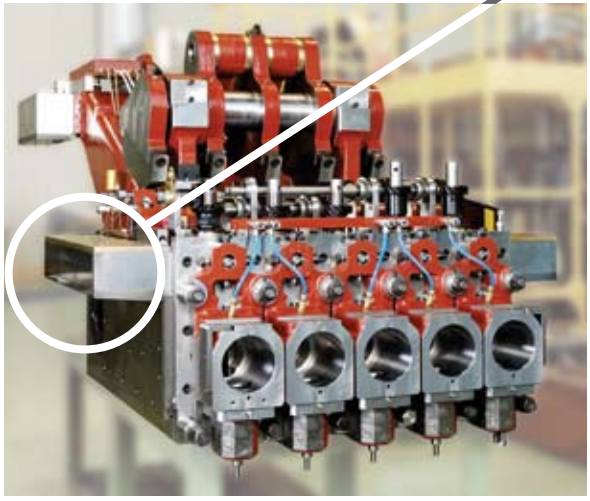
PERFECT CLEARANCE HEADING SLIDE

The main **heading slide** is the element that delivers the energy of deformation and as such it must have great **stability and robustness**. Furthermore the heading slide must run perfectly true to the dies at every stroke, with **high precision**.





All **SACMA** machines heading slides are made of **NiCrMo alloy steel** casting, heat treated and having a special geometric shape with **double slide ways** to offer **maximum stability** in delivering the forging energy to the tools.

An efficient **lubrication system** makes sure that slide ways are always well lubricated even under the worst and unbalanced forging conditions.

An exclusive taper slide way guarantees a **perfect alignment of the tools at every stroke**, permitting therefore production of all parts that require extreme tolerances.

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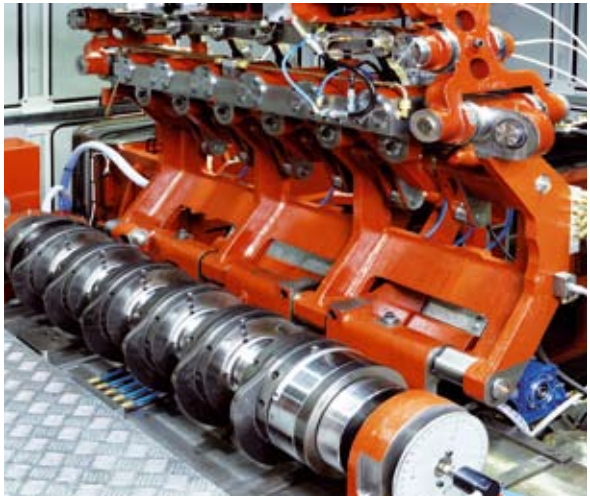
TRANSFER SYSTEM

The real heart of high speed horizontal cold formers is represented by the transfer mechanism which has to be able to bring parts from one station to the other: only with a **precise and infallible grip** can one obtain best results of **efficiency and productivity**.



The **transfer** mechanism of **SACMA** Progressive and Combined headers **is by far considered the world benchmark**, so much, that it has been subject of numerous unsuccessful imitation attempts by others. The precise movement of the transfer fingers, determined by a **smooth oscillating** mechanism **generated by perfect Desmo drive double cams** imparts to the whole system a **perfect control of position also at the maximum production speeds**.

The **multiple adjustments**, timing of the transfer phase, variation of the clamping force, variation of the opening/closing speed of the fingers, together with the absence of springs, allows the transferring of **long parts** and of the **shortest parts** to take place in **safety at maximum speeds**.

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TRANSFER SUPPORT ASSIST PACKAGE

A **good and efficient transfer system** must be able to transfer from one station to the next **any type of part**, independent of geometry and length.

For this reason a special transfer assist system has been developed to operate in perfect timing with die kick-out, **to transfer with ease all those difficult parts**.

The well known and great capability of the **SACMA transfer** to handle difficult and short parts, now becomes all the more versatile with the introduction of a **patented SACMA transfer support assist package**, that can transfer conical or shoulder parts which would tend to fall on die kick-out.

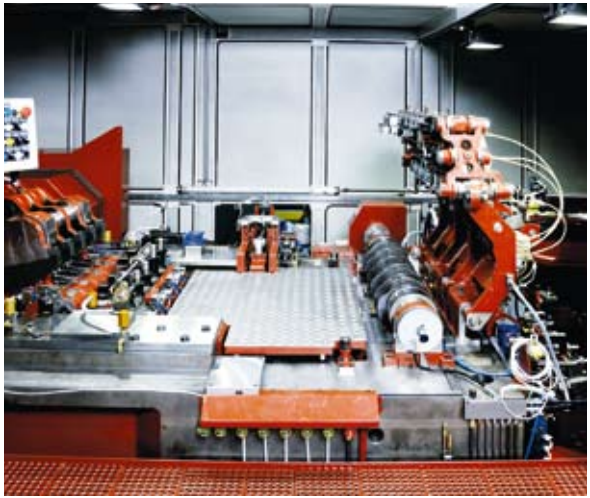
The system consists of support fingers, **perfectly timed with the motion of the transfer and of the kick-out rods**, brought about by a direct link with the rods and a **Desmo Drive system of double cams** which controls the lateral movement.

This system is now available on all machine **Series 3**, **Series 4**, **Series 5 and Series 6**.

SERVICE EQUIPMENT

Intervention of the **operator in the working area** must be performed in **absolute safety** and **comfort**.

This necessity is particularly felt when working with **large machines**, in order to facilitate tool change and maintenance procedures.



The **patented system of ergonomic platforms** and tool cradles supplied by **SACMA** on the **Series 6** machines is a very good example of assistance, **without compromise**, to the requirements of the end user. **The system consists of two hydraulic operated platforms that position themselves automatically over the work area**:

- the lower platform used for tool change, receives special tool cradles for fitting or removing dies and punches;
- the upper safety platform is used for intervention of the operator when changing or setting transfer fingers and timing cams.

Manipulation of die boxes, punch block bolsters and transfer finger units are performed by means of **special cranes** that can be fitted on Customer's request:

- **gantry portal crane** with electric hoist having three dimensional motorized movements;
- **automatic motorized portal manipulator** with preset positions for pick up and delivery of tool holders, available on Series 6 machines.

ELECTRONIC HANDWHEEL

Whenever making **final adjustments of the transfer** it is very useful to have the possibility to verify the correct timing of transfer fingers, **to avoid dangerous collisions** of the punches with the fingers, even if tools have been designed and manufactured perfectly.

With the intention of **assisting best the tool setters** in the delicate moment of tool and timing adjustments, **SACMA** has developed an **electronic handwheel** to move the whole machine at slow motion in order **to check for correct timing of the transfer fingers with respect to the heading slide**, **avoiding dangerous collisions**. The heading slide can be stopped in any position **avoiding machine jogging and damaging the main clutch/brake unit**.

This special unit is available for all **SACMA** progressive and combined machines. **Combined machines** can also be fitted with an **inverter drive to the pointing spindle motor** to optimise cutting speed to the shape of the point and type of material.

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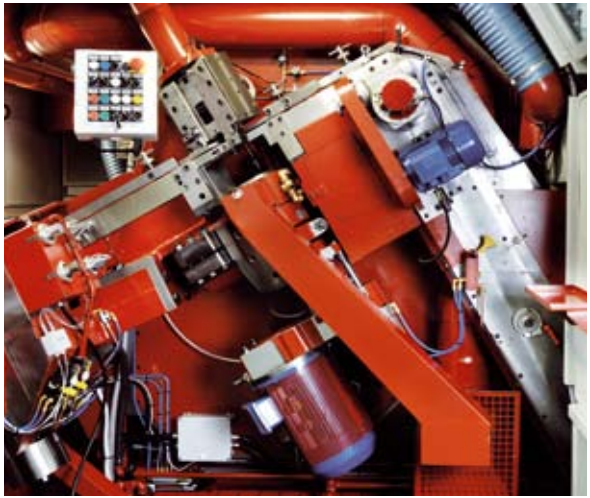
COMBINED MACHINES

The proper and best answer to high productivity requirements, rationalization of production methods, floor plan lay-out and material flow in a fastener manufacturing environment is represented by **machines that have forging, pointing and thread rolling stations**, **all in one**.



These machines will determine **maximum efficiency and quality in the manufacturing process** of standard fasteners and special automotive fasteners, because they supply the finished product.

The **SACMA** Combined headers maintain all the mechanical and performance qualities of the Progressive headers, from which they derive.

The pointing and the thread rolling units are designed and manufactured to be **user friendly and easy to set up**, to produce many different shapes of points.

When producing very short parts, head heavy parts, or parts that would have difficulty in feeding to the pointer unit using the **standard finger elevator**, **SACMA** offers the "**V**" version of combined headers which use a **vibratory feeder** to overcome all difficulties.

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WARM FORMING

The application of a warm forming system to horizontal forging machines **extends the possibility of making netshape** parts of more **complex shapes** and to work with special materials which could not be forged cold.

In order to meet these new requirements in the industry, **SACMA** has developed special machines, **incorporating induction heating units in the feeding areas**.The typical temperature range of warm forming applications is between 400°C and 900°C.

High frequency induction heating is obtained by means of special coils that can be fitted outside or inside the main frame of the machine, **between the feed rolls and the cut-off quill**.

There is a specific **cooling of the coils** and of the frame and the temperature of the wire is read by specific optical pyrometers. The WF application can then be completed with temperature control of the die box and of the coolant liquid.

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TOOL DESIGN

The constant evolution of the forging world forces tool design engineers to develop tooling technology to greater levels, in order to produce always more **special and difficult parts**.

Today, in the planning stages of new investments, it is all the more important to be able to rely on the support of a **trustworthy partner who has experience in tool design and forming progression**, to develop a suitable forging method to manufacture the parts in question.

The long term experience and know-how that **SACMA** has of analysis of forging problems and in the research of suitable technical solutions, which are then shared with the customer, makes us a valid partner to be of assistance during the critical stages of development, **to bring the project to a successful solution in the shortest possible time**. A team of project engineers, assisted by modern design and calculation software, works together with the customer to reach **the best manufacturing solutions for the industrial development of the product**.

With the co-operation of other leading companies in our industry, **SACMA** is also able to suggest **efficient turn key solutions of the projects**.

SACMAform®

Modern fastener manufacturing companies must be able to **respond promptly to the production enquiries** they receive from all potential customers. It is therefore necessary to have available a technology that can reduce time for evaluation of the capability and **development of the forging process of new parts**, to facilitate the choice of the most suitable machine for production.

SACMA, with the cooperation of the Mechanical and Application Engineering Department of Padua University, developed the **SACMAform®** application software, which gives tool designers a valid method and assistance for the initial **engineering development of a product**.

Starting from a tool progression design and the characteristics of the material, the **SACMAform®** software offers a simple and intuitive method for **calculation of volumes and forging loads**, together with other necessary data for evaluating the economics of the project.

A large and **rich library of materials**, **specific data and examples**, useful for tool design, are included in the software.

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			PROGRESSIVE																			LONG STROKE						
CHARACTERISTICS			SP 150	SP 150 U	SP 160	SP 160 U	SP 250	SP 250 U	SP 260	SP 260 U	SP 350 *	SP 360 *	SP 370 *	SP 460 *	SP 470 *	SP 560 *	SP 570 *	SP 570 C *	SP 660 A	SP 670 A *	SP 670 AS *	SP 250 EL	SP 260 EL	SP 350 EL *	SP 360 EL *	SP 441 EL	SP 660 AL	SP 670 AL *
QUICK TOOL CHANGE		**CR***																										
Heading load		KN	500	500	500	500	700	700	700	700	1.400	1.400	1.400	2.200	2.200	3.200	3.200	3.200	5.000	5.500	6.500	700	700	1.400	1.400	2.200	5.000	5.500
Number of dies			4	4	5	5	4	4	5	5	4	5	6	5	6	5	6	6	5	6	6	4	5	4	5	4	5	6
Cut-off diameter	(600 N/mm²)	mm	8	8	8	8	10,5	10,5	10,5	10,5	15	15	15	20	20	24	24	24	31	31	33	10,5	10,5	15	15	20	31	31
Cut-off length	(max)	mm	65	65	65	65	85	85	85	85	127	127	127	165	165	230	230	160	220	220	160	115	115	165	165	350	300	300
Die kick-out	(max)	mm	45	50	45	50	65	70	65	70	90	90	90	120	120	180	180	110	160	160	160	90	90	135	135	300	240	240
Punch knock-out	(max)	mm	14	14	14	14	20	20	20	20	29,3	29,3	29,3	43,5	43,5	46,5	46,5	46,5	64	64	64	20	20	29,3	29,3	43,5	64	64
Production per minute	(max)	No.	350	350	350	350	275	275	275	275	200	200	200	160	160	120	120	130	100	100	100	220	220	150	150	70	80	80
Main motor		KW	26	26	26	26	30	30	30	30	45	45	45	75	75	100	100	100	150	150	150	30	30	45	45	75	150	150
TOOL POCKET SIZES																												
Die	- ØxL	mm	45x70	42x77	45x70	42x77	54x90	50x100	54x90	50x100	75x125	75x125	75x125	100x165	100x195	110x225	110x225	110x225	150x295	150x295	165x295	54x110	54x110	75x160	75x160	100x345	150x295	150x295
Punch (fixed)	- ØxL	mm	38x85	38x85	38x85	38x85	45x100	45x100	45x100	45x100	60x125	60x125	60x125	75x170	75x170	85x170	85x170	85x170	120x235	120x235	130x235	45x100	45x100	60x125	60x125	75x170	120x235	120x235
Punch (sliding)	- ØxL	mm	32x85	32x85	32x85	32x85	38x100	38x100	38x100	38x100	52x125	52x125	52x125	75x170	75x170	85x170	85x170	85x170	120x235	120x235	120x235	38x100	38x100	52x125	52x125	75x170	120x235	120x235
Knife	- Ø	mm	20	20	20	20	29	29	29	29	38	38	38	55	55	60	60	60	70	70	70	29	29	38	38	55	70	70
Quill	- Ø	mm	21	21	21	21	30	30	30	30	39	39	39	68	68	78	78	78	100	100	100	30	30	39	39	68	100	100
WEIGHTS																												
Net mass		Kg	9.000	9.000	9.500	9.500	14.500	14.500	15.000	15.000	23.000	24.000	26.000	41.000	45.000	48.000	50.000	50.000	110.000	125.000	130.000	14.500	15.000	23.500	24.500	46.000	110.000	125.000

The above specifications are not binding as these could vary on account of technical improvements.

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			COMBINED															LONG STROKE			
CHARACTERISTICS			**SP 17**	**SP 17 V**	**SP 18**	**SP 18 V**	**SP 27**	**SP 27 V**	**SP 28**	**SP 28 V**	**SP 37 ***	**SP 37 V ***	**SP 38 ***	**SP 38 V ***	**SP 48 ***	**SP 57 ***	**SP 58 ***	**SP 27 EL**	**SP 28 EL**	**SP 37 EL ***	**SP 38 EL ***
QUICK TOOL CHANGE		**CR***																			
Heading load		KN	500	500	500	500	700	700	700	700	1.400	1.400	1.400	1.400	2.200	3.200	3.200	700	700	1.400	1.400
Number of dies			4	4	5	5	4	4	5	5	4	4	5	5	5	4	5	4	5	4	5
Cut-off diameter	(600 N/mm²)	mm	8	8	8	8	10,5	10,5	10,5	10,5	15	15	15	15	20	24	24	10,5	10,5	15	15
Cut-off length	(max)	mm	65	65	65	65	85	85	85	85	127	127	127	127	165	230	230	115	115	165	165
Die kick-out	(max)	mm	45	45	45	45	65	65	65	65	90	90	90	90	120	180	180	90	90	135	135
Punch knock-out	(max)	mm	14	14	14	14	20	20	20	20	29,3	29,3	29,3	29,3	43,5	46,5	46,5	20	20	29,3	29,3
Thread diameter	(max) 8.8/12.9	mm	M6	M6	M6	M6	M10/M8	M10/M8	M10/M8	M10/M8	M14/M12	M14/M12	M14/M12	M14/M12	M20/M18	M24/M22	M24/M22	M10/M8	M10/M8	M14/M12	M14/M12
Thread length	(max)	mm	38	38	38	38	50,8	50,8	50,8	50,8	63,5	63,5	63,5	63,5	85	85	85	50,8	50,8	63,5	63,5
Shank length	(min÷max)	mm	10÷45	10÷45	10÷45	10÷45	14÷65	14÷65	14÷65	14÷65	20÷90	20÷90	20÷90	20÷90	25÷120	35÷180	35÷180	90	90	135	135
Production per minute	(max)	No.	350	350	350	350	275	275	275	275	200	200	200	200	160	120	120	220	220	150	150
Main motor		KW	26	26	26	26	30	30	30	30	45	45	45	45	75	100	100	30	30	45	45
TOOL POCKET SIZES																					
Die	- ØxL	mm	45x70	45x70	45x70	45x70	54x90	54x90	54x90	54x90	75x125	75x125	75x125	75x125	100x165	110x225	110x225	54x110	54x110	75x160	75x160
Punch (fixed)	- ØxL	mm	38x85	38x85	38x85	38x85	45x100	45x100	45x100	45x100	60x125	60x125	60x125	60x125	75x170	85x170	85x170	45x100	45x100	60x125	60x125
Punch (sliding)	- ØxL	mm	32x85	32x85	32x85	32x85	38x100	38x100	38x100	38x100	52x125	52x125	52x125	52x125	75x170	85x170	85x170	38x100	38x100	52x125	52x125
Knife	- Ø	mm	20	20	20	20	29	29	29	29	38	38	38	38	55	60	60	29	29	38	38
Quill	- Ø	mm	21	21	21	21	30	30	30	30	39	39	39	39	68	78	78	30	30	39	39
Thread roll die moving	X Y Z	mm	106 41 13	106 41 13	106 41 13	106 41 13	146 54 16	146 54 16	146 54 16	146 54 16	216 67 21	216 67 21	216 67 21	216 67 21	254 89 22	305 89 25	305 89 25	146 54 16	146 54 16	216 67 21	216 67 21
Thread roll die stationary	X Y Z	mm	89 41 13	89 41 13	89 41 13	89 41 13	127 54 16	127 54 16	127 54 16	127 54 16	191 67 21	191 67 21	191 67 21	191 67 21	229 89 22	280 89 25	280 89 25	127 54 16	127 54 16	191 67 21	191 67 21
WEIGHTS																					
Net mass		Kg	11.000	11.000	11.500	11.500	16.000	16.000	16.500	16.500	25.000	25.000	26.500	26.500	47.000	57.000	58.500	16.000	16.500	25.500	27.000

4 5 COMBINED

The above specifications are not binding as these could vary on account of technical improvements.

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			PROGRESSIVE																			LONG STROKE						
CHARACTERISTICS			**SP 150**	**SP 150 U**	**SP 160**	**SP 160 U**	**SP 250**	**SP 250 U**	**SP 260**	**SP 260 U**	**SP 350 ***	**SP 360 ***	**SP 370 ***	**SP 460 ***	**SP 470 ***	**SP 560 ***	**SP 570 ***	**SP 570 C ***	**SP 660 A**	**SP 670 A ***	**SP 670 AS ***	**SP 250 EL**	**SP 260 EL**	**SP 350 EL ***	**SP 360 EL ***	**SP 441 EL**	**SP 660 AL**	**SP 670 AL ***
QUICK TOOL CHANGE		**CR***																										
Heading load		Tons.	50	50	50	50	70	70	70	70	140	140	140	220	220	320	320	320	500	550	650	70	70	140	140	220	500	550
Number of dies			4	4	5	5	4	4	5	5	4	5	6	5	6	5	6	6	5	6	6	4	5	4	5	4	5	6
Cut-off diameter	(85.000 psi)	inch.	0,32	0,32	0,32	0,32	0,42	0,42	0,42	0,42	0,59	0,59	0,59	0,79	0,79	0,95	0,95	0,95	1,22	1,22	1,3	0,42	0,42	0,59	0,59	0,79	1,22	1,22
Cut-off length	(max)	inch.	2,56	2,56	2,56	2,56	3,35	3,35	3,35	3,35	5	5	5	6,5	6,5	9,05	9,05	6,3	8,66	8,66	6,3	4,53	4,53	6,5	6,5	13,78	11,81	11,81
Die kick-out	(max)	inch.	1,77	1,97	1,77	1,97	2,56	2,75	2,56	2,75	3,55	3,55	3,55	4,75	4,75	7,1	7,1	4,33	6,3	6,3	6,3	3,55	3,55	5,32	5,32	11,81	9,45	9,45
Punch knock-out	(max)	inch.	0,55	0,55	0,55	0,55	0,79	0,79	0,79	0,79	1,15	1,15	1,15	1,71	1,71	1,83	1,83	1,83	2,52	2,52	2,52	0,79	0,79	1,15	1,15	1,71	2,52	2,52
Production per minute	(max)	No.	350	350	350	350	275	275	275	275	200	200	200	160	160	120	120	130	100	100	100	220	220	150	150	70	80	80
Main motor		KW	26	26	26	26	30	30	30	30	45	45	45	75	75	100	100	100	150	150	150	30	30	45	45	75	150	150
TOOL POCKET SIZES																												
Die	- ØxL	inch.	1,77x2,76	1,65x3,03	1,77x2,76	1,65x3,03	2,12x3,55	1,97x3,94	2,12x3,55	1,97x3,94	2,95x4,92	2,95x4,92	2,95x4,92	3,94x6,5	3,94x7,68	4,33x8,86	4,33x8,86	4,33x8,86	5,9x11,62	5,9x11,62	6,5x11,62	2,12x4,33	2,12x4,33	2,95x6,3	2,95x6,3	3,94x13,58	5,9x11,62	5,9x11,62
Punch (fixed)	- ØxL	inch.	1,5x3,35	1,5x3,35	1,5x3,35	1,5x3,35	1,77x3,94	1,77x3,94	1,77x3,94	1,77x3,94	2,36x4,92	2,36x4,92	2,36x4,92	2,95x6,69	2,95x6,69	3,35x6,69	3,35x6,69	3,35x6,69	4,72x9,25	4,72x9,25	5,12x9,25	1,77x3,94	1,77x3,94	2,36x4,92	2,36x4,92	2,95x6,69	4,72x9,25	4,72x9,25
Punch (sliding)	- ØxL	inch.	1,26x3,35	1,26x3,35	1,26x3,35	1,26x3,35	1,5x3,94	1,5x3,94	1,5x3,94	1,5x3,94	2,05x4,92	2,05x4,92	2,05x4,92	2,95x6,69	2,95x6,69	3,35x6,69	3,35x6,69	3,35x6,69	4,72x9,25	4,72x9,25	4,72x9,25	1,5x3,94	1,5x3,94	2,05x4,92	2,05x4,92	2,95x6,69	4,72x9,25	4,72x9,25
Knife	- Ø	inch.	0,79	0,79	0,79	0,79	1,14	1,14	1,14	1,14	1,5	1,5	1,5	2,16	2,16	2,36	2,36	2,36	2,75	2,75	2,75	1,14	1,14	1,5	1,5	2,16	2,75	2,75
Quill	- Ø	inch.	0,83	0,83	0,83	0,83	1,18	1,18	1,18	1,18	1,54	1,54	1,54	2,68	2,68	3,07	3,07	3,07	3,94	3,94	3,94	1,18	1,18	1,54	1,54	2,68	3,94	3,94
WEIGHTS																												
Net mass		lbs.	19.800	19.800	21.000	21.000	32.000	32.000	33.000	33.000	50.700	53.000	57.300	90.400	99.200	105.800	110.200	110.200	242.000	275.000	286.000	32.000	33.000	52.000	54.000	101.500	242.000	275.000

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			COMBINED															LONG STROKE			
CHARACTERISTICS			**SP 17**	**SP 17 V**	**SP 18**	**SP 18 V**	**SP 27**	**SP 27 V**	**SP 28**	**SP 28 V**	**SP 37 ***	**SP 37 V ***	**SP 38 ***	**SP 38 V ***	**SP 48 ***	**SP 57 ***	**SP 58 ***	**SP 27 EL**	**SP 28 EL**	**SP 37 EL ***	**SP 38 EL ***
QUICK TOOL CHANGE		**CR***																			
Heading load		Tons.	50	50	50	50	70	70	70	70	140	140	140	140	220	320	320	70	70	140	140
Number of dies			4	4	5	5	4	4	5	5	4	4	5	5	5	4	5	4	5	4	5
Cut-off diameter	(85.000 psi)	inch.	0,32	0,32	0,32	0,32	0,42	0,42	0,42	0,42	0,59	0,59	0,59	0,59	0,79	0,95	0,95	0,42	0,42	0,59	0,59
Cut-off length	(max)	inch.	2,56	2,56	2,56	2,56	3,35	3,35	3,35	3,35	5	5	5	5	6,5	9,05	9,05	4,53	4,53	6,5	6,5
Die kick-out	(max)	inch.	1,77	1,77	1,77	1,77	2,56	2,56	2,56	2,56	3,55	3,55	3,55	3,55	4,75	7,1	7,1	3,55	3,55	5,32	5,32
Punch knock-out	(max)	inch.	0,55	0,55	0,55	0,55	0,79	0,79	0,79	0,79	1,15	1,15	1,15	1,15	1,71	1,83	1,83	0,79	0,79	1,15	1,15
Thread diameter	(max) 8.8/12.9	inch.	M6	M6	M6	M6	M10/M8	M10/M8	M10/M8	M10/M8	M14/M12	M14/M12	M14/M12	M14/M12	M20/M18	M24/M22	M24/M22	M10/M8	M10/M8	M14/M12	M14/M12
Thread length	(max)	inch.	1,5	1,5	1,5	1,5	2	2	2	2	2,5	2,5	2,5	2,5	3,35	3,35	3,35	2	2	2,5	2,5
Shank length	(min÷max)	inch.	0,39÷1,77	0,39÷1,77	0,39÷1,77	0,39÷1,77	0,55÷2,56	0,55÷2,56	0,55÷2,56	0,55÷2,56	0,78÷3,55	0,78÷3,55	0,78÷3,55	0,78÷3,55	1÷4,75	1,35÷7,1	1,35÷7,1	1÷3,55	1÷3,55	0,75÷5,32	0,75÷5,32
Production per minute	(max)	No.	350	350	350	350	275	275	275	275	200	200	200	200	160	120	120	220	220	150	150
Main motor		KW	26	26	26	26	30	30	30	30	45	45	45	45	75	100	100	30	30	45	45
TOOL POCKET SIZES																					
Die	- ØxL	inch.	1,77x2,76	1,77x2,76	1,77x2,76	1,77x2,76	2,12x3,55	2,12x3,55	2,12x3,55	2,12x3,55	2,95x4,92	2,95x4,92	2,95x4,92	2,95x4,92	3,94x6,5	4,33x8,86	4,33x8,86	2,12x4,33	2,12x4,33	2,95x6,3	2,95x6,3
Punch (fixed)	- ØxL	inch.	1,5x3,35	1,5x3,35	1,5x3,35	1,5x3,35	1,77x3,94	1,77x3,94	1,77x3,94	1,77x3,94	2,36x4,92	2,36x4,92	2,36x4,92	2,36x4,92	2,95x6,69	3,35x6,69	3,35x6,69	1,77x3,94	1,77x3,94	2,36x4,92	2,36x4,92
Punch (sliding)	- ØxL	inch.	1,26x3,35	1,26x3,35	1,26x3,35	1,26x3,35	1,5x3,94	1,5x3,94	1,5x3,94	1,5x3,94	2,05x4,92	2,05x4,92	2,05x4,92	2,05x4,92	2,95x6,69	3,35x6,69	3,35x6,69	1,5x3,94	1,5x3,94	2,05x4,92	2,05x4,92
Knife	- Ø	inch.	0,79	0,79	0,79	0,79	1,14	1,14	1,14	1,14	1,5	1,5	1,5	1,5	2,16	2,36	2,36	1,14	1,14	1,5	1,5
Quill	- Ø	inch.	0,83	0,83	0,83	0,83	1,18	1,18	1,18	1,18	1,54	1,54	1,54	1,54	2,68	3,07	3,07	1,18	1,18	1,54	1,54
Thread roll die moving	X Y Z	inch.	4,19 1,62 0,5	4,19 1,62 0,5	4,19 1,62 0,5	4,19 1,62 0,5	5,75 2,12 0,62	5,75 2,12 0,62	5,75 2,12 0,62	5,75 2,12 0,62	8,5 2,62 0,81	8,5 2,62 0,81	8,5 2,62 0,81	8,5 2,62 0,81	10 3,5 0,87	12 3,5 1	12 3,5 1	5,75 2,12 0,62	5,75 2,12 0,62	8,5 2,62 0,81	8,5 2,62 0,81
Thread roll die stationary	X Y Z	inch.	3,5 1,62 0,5	3,5 1,62 0,5	3,5 1,62 0,5	3,5 1,62 0,5	5 2,12 0,62	5 2,12 0,62	5 2,12 0,62	5 2,12 0,62	7,5 2,62 0,81	7,5 2,62 0,81	7,5 2,62 0,81	7,5 2,62 0,81	9 3,5 0,87	11 3,5 1	11 3,5 1	5 2,12 0,62	5 2,12 0,62	7,5 2,62 0,81	7,5 2,62 0,81
WEIGHTS																					
Net mass		lbs.	24.000	24.000	25.500	25.500	35.000	35.000	36.500	36.500	55.000	55.000	58.500	58.500	104.000	125.000	129.000	35.000	36.500	56.000	59.500

4 5 COMBINED

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