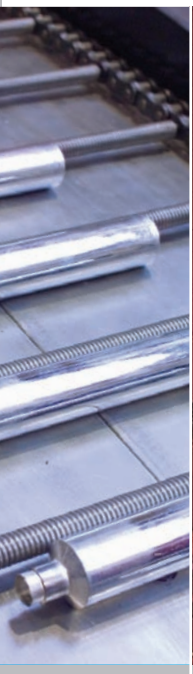
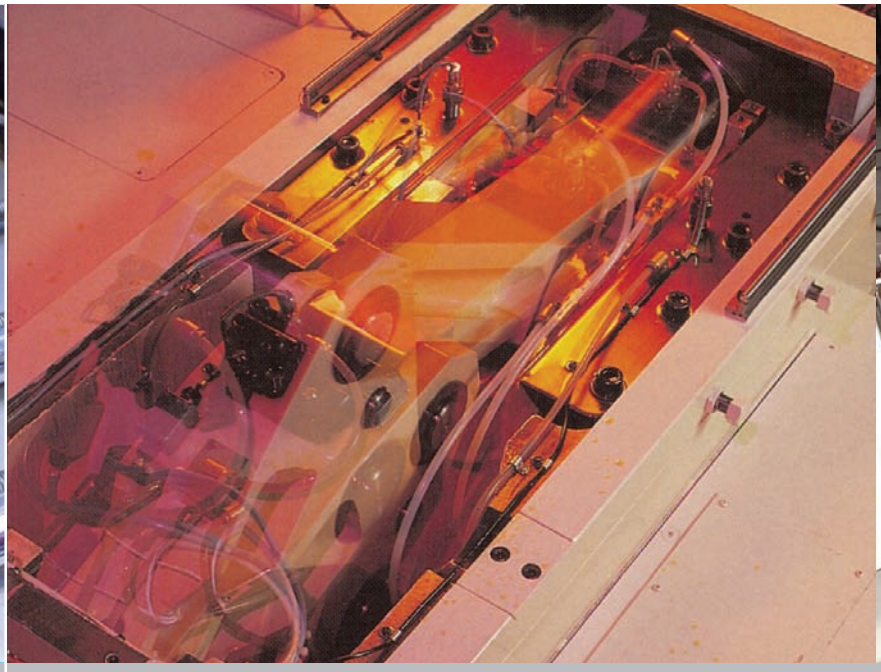
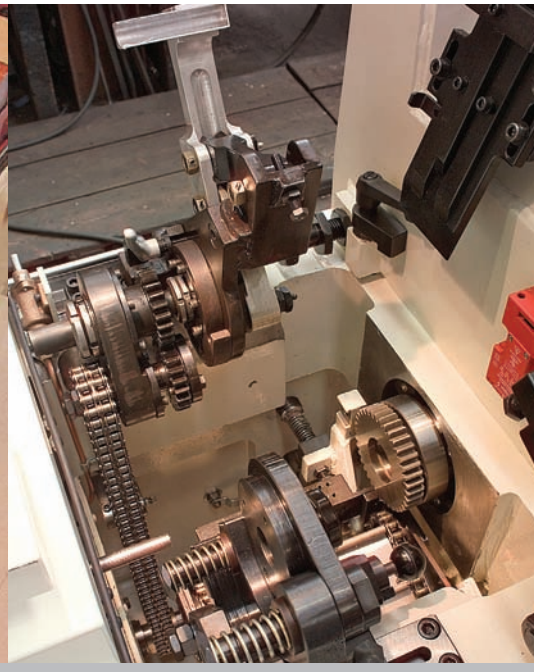






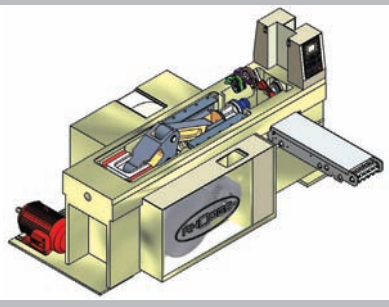
Special Purpose Machinery for Aluminium Tube and Can Manufacture

RHODES

IMPACT EXTRUSION PRESSES

Press Manufacture

We offer over 180 years of experience in the manufacture of special purpose mechanical and hydraulic presses for metalforming applications around the world.



Main (left): Aerial photograph of the Company's Wakefield site.

Top: The latest 3D CAD and Finite Stress Analysis technology is used in the design of new KJX Extrusion Presses.

Bottom: One of a line of Rhodes KJX extrusion presses in operation at a cutomer's site in Asia.

Joseph Rhodes Limited is one of Europe's leading manufacturers of CNC metalforming machinery and a specialist in the bespoke design of mechanical and hydraulic presses. A major part of the Company's product portfolio is probably the world's largest range of Horizontal Impact Extrusion Presses, with over 250 machines operating in 40 countries worldwide.

The award winning* Rhodes 'KJX' Series of extrusion presses offer machines from 5 to 1000 tonnes capacity for the high-speed production of both collapsible tubes and rigid aerosol cans, thereby enabling the correct press to be chosen for each particular application. All KJX Horizontal Extrusion Presses can be supplied with non-standard slide strokes to suit any length of tube or can being produced.

Operating from an 8-acre site in Wakefield, England, with over 15,000 sq. metres of factory space under cranage, the Company's extensive fabrication, machining and assembly departments ensure that all aspects of machine build are controlled to Joseph Rhodes quality (ISO 9001:2000), environmental (ISO14001:2004) and European (CE) Accreditations.

Joseph Rhodes design and manufacturing facilities enable the Company to offer a total service from initial concept through to site installation and commissioning. All major research and development work for the KJX range is conducted in-house and is supported by a well equipped Computer Aided Design Department covering mechanical, electrical, hydraulic and software engineering disciplines.

COMPLETE INTEGRATED SYSTEMS

To complement its range of individual extrusion presses, Rhodes has also designed and manufactured a range of integrated manufacturing systems for the blanking of aluminium and zinc slugs.

Rhodes successful high speed battery production system KJX-RT4 (Press and Trimmer) is capable of extruding, trimming and beading Zinc battery cases at a rate of up to 280 cases per minute.

BENEFITS OF RHODES IMPACT EXTRUSION PRESSES

- The latest Rhodes KJX Extrusion Presses have been specifically designed and developed for continuous high-speed operation with complete reliability.
- A new and improved linkage arrangement ensures that inertia forces within the press are reduced to a minimum.
- The AC variable speed drive motor, available as standard, makes automatic speed change quick and repeatable.

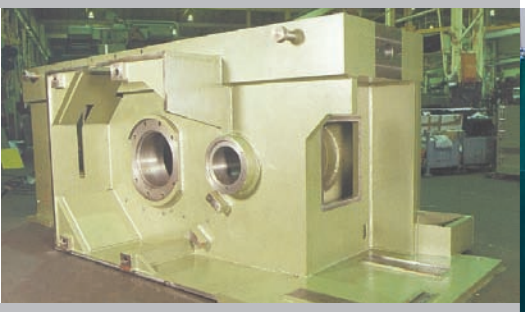
ISO 9001 amtri veritas UKAS QUALITY MANAGEMENT 042

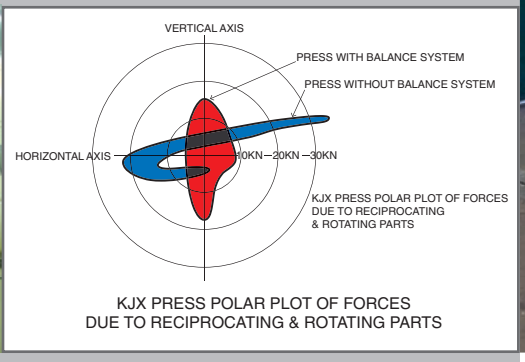
ISO 14001 amtri veritas UKAS ENVIRONMENTAL MANAGEMENT 042

CE

KJX Design Features

Utilising state of the art technology, perfected over years of in-house research and development, the award winning KJX extrusion presses have been designed to provide smooth and balanced running at high production speeds.





KJX PRESS POLAR PLOT OF FORCES
DUE TO RECIPROCATING & ROTATING PARTS

Main (right): KJX extrusion press undergoing final trials prior to dispatch.

Top: A one-piece steel fabricated frame for a KJX.63S.

Bottom: KJX press polar plot of forces due to reciprocating & rotating parts. All KJX models utilise the new Rhodes Dynamic Balancing system (plot shown in red).

- All KJX Presses (except the smaller KJX.25 model) are designed with dual balancing systems to ensure smooth vibration free running at high production speeds.
- The ergonomically redesigned toolspace area with improved accessibility makes KJX presses a popular choice with machine operatives.
- State of the art design features include PLC as standard and motorised slide adjustment as one of many options available.

PRESS CONSTRUCTION

As with all Rhodes machines, the design and strength of the main frame is an important factor in ensuring precise component production and press stability at high speeds.

All KJX Presses, up to and including the model no. KJX.63, have a rigid, one-piece steel fabricated frame which is fully stress relieved in-house. Press models KJX.75 and above are of a multi-piece frame construction, locked together by pre-stressed tie-bars, thereby reducing deflection to a minimum.

LINKAGE

Rhodes unique linkage design reduces stress and shock loads within the press. The knuckle links are manufactured from fully machined forgings of a high tensile alloy steel and are mounted in knuckle type Nickel Alloy Bronze high wear resistant bearings, with adjustable steel bearing blocks.

CRANKSHAFT

To ensure smooth running and minimum vibration, the crankshaft and knuckle linkage are dynamically balanced.

The crankshaft itself is machined from a forging of high tensile alloy steel and is supported by precision phosphor bronze bearings.

PRESS BALANCE

All high-speed extrusion presses, except the KJX.25 model, incorporate a dual balance system to reduce the forces produced by the reciprocating slide and linkage mechanism. The KJX.25 is fitted with its own unique balancing system appropriate for the pressure capacity applied.

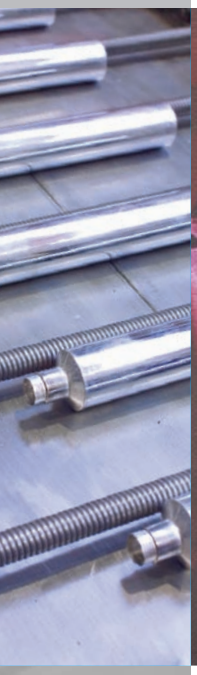
CLUTCH AND BRAKE

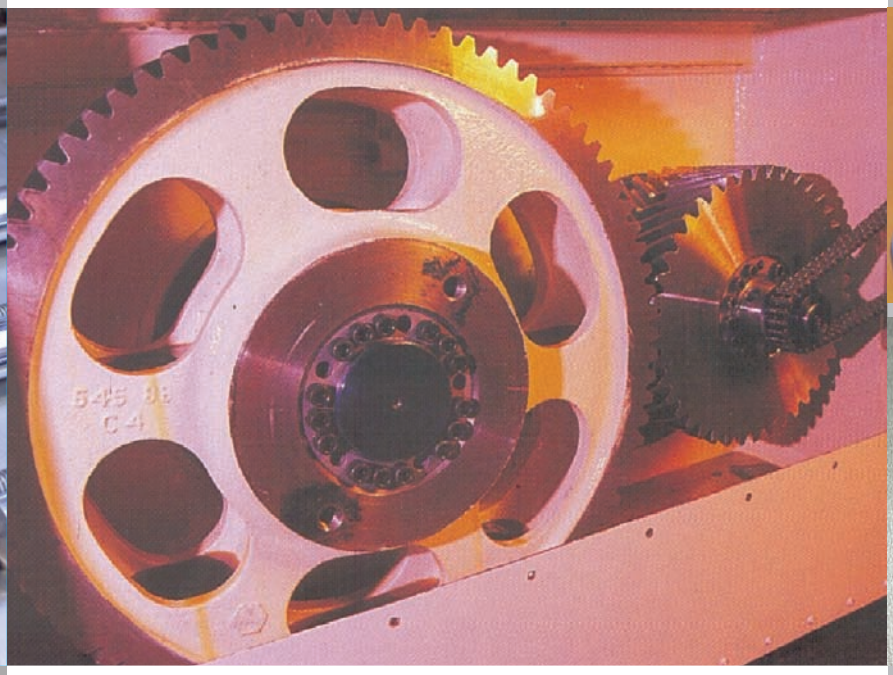
Rhodes KJX Presses are fitted with the highly successful “Ortlinghaus” combined pneumatic friction clutch and brake unit.

*“Best Metalforming Machine Tool”
MACH International Machine Tool
Awards (sponsored by MWP).

Quality Engineering

Joseph Rhodes has a reputation in the market place not only for the technical and innovative nature of its products, but also for the workmanship, longevity, service and finish of its machinery.





GEARS

Precision engineered double helical gears rotating in a sealed oil bath are used throughout, each gear being attached to its respective shaft by frictional taper locking assemblies.

CAN TAKE-OFF SYSTEM

Both the stripper bracket and the extrusion take-off system are designed to pivot clear of the toolspace area for ease of access. The component removal arm is directly driven from the press crank shaft to ensure precision timing and incorporates independent adjustment for smooth operation.

The conveyor drive is protected by an overload clutch which can, in the event of an overload, be reset by a handwheel.

LUBRICATION

The fully automatic "fullflow" recirculating oil lubrication system operates using internally machined oilways and static pipework, thereby totally eliminating the need for vulnerable flexible pipework.

The motor driven gear pump is fitted with a suction strainer and the system also incorporates a pressure regulator, pressure gauge, low pressure switch and a high pressure fine micron filter.

To eliminate contamination from extrusion lubricant or metallic particles the oil reservoir is isolated from the toolspace area.

THE DRIVE

All Rhodes KJX Presses are fitted with an AC variable drive system to facilitate speed changes. The Human Machine Interface (HMI) touch screen control displays current operating speed, and allows speed changes to be made when the press is running in 'automatic' mode.

Main (left): Double helical main drive gears.

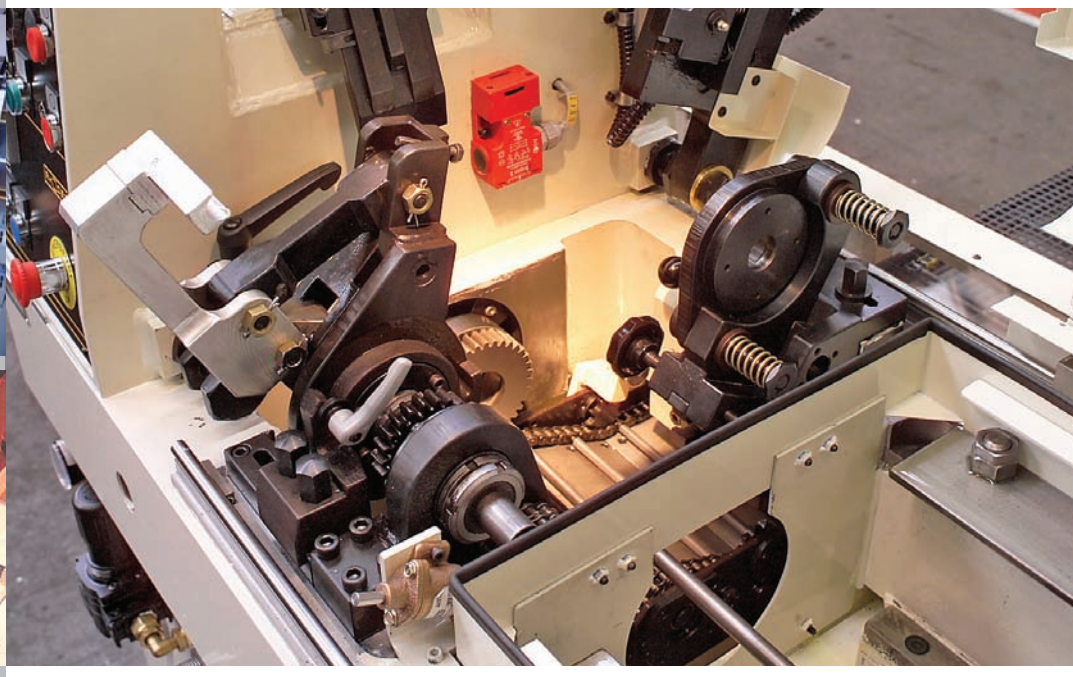
Top: Joseph Rhodes offer a comprehensive range of tooling for the KJX press range.

Bottom (left): A selection of KJX extruded components used in rigid can production.

Bottom (right): Production stages for marker pens.

Operational Efficiency

In a competitive industry, Joseph Rhodes extrusion machinery gives our customers an efficient route to improved productivity. With over 250 machines in use worldwide, KJX presses have become an industry standard in many market sectors.



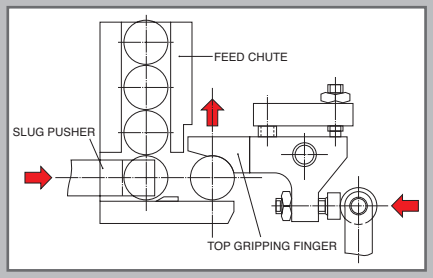
Main (right): Tool space area showing feed plate, stripper bracket and take-off system.

Top (left): Integrated PLC touch screen control.(Also available as a free standing control unit).

Top (right): AC main drive motor control.

Bottom: KJX linkage system.

Below: Slug feed arrangement.



CONTROLS

For ease of operation the main control panel is conveniently located adjacent to the tool area and allows pushbutton initiation of single, continuous or inch cycle.The sub control panel at the conveyor outlet side of the press houses duplicate pushbuttons for start/inch, 'controlled' or 'emergency' stop.

All Rhodes KJX Presses are designed to provide maximum operator safety and prevent any damage to the machine. The press will stop automatically in the event of low air or oil pressure, failure of the extrusion to eject from the die, empty slug feed chute, opening of the tool guard and faults in the main motor fan, flywheel brake, control cabinet and conveyor clutch.

The press electrical control equipment can either be mounted on the press or housed in a freestanding cabinet. (Subject to customer preference).

CONTROL TECHNOLOGY

Using Rhodes' extensive experience of PLC and CNC microprocessor technology, comprehensive systems can be offered to control the machine's major functions, thereby ensuring faster production set up times. Full diagnostics, cam settings, auto wedge positioning and main press speed are amongst the features available through the Siemens PLC based Human Machine Interface (HMI). (Other systems available upon request.)

SLUG FEED SYSTEMS AND TOOLSPACE AREA

A slug feed pusher, operated by a timed cam, moves the slug to the gripping finger(s) which open by means of a rotating cam and pivot lever. The toolspace area is designed with operator access in mind. The slug feed mechanism, the extrusion take-off system, and the extrusion stripper plate can all be swung clear of the toolspace area, providing uninterrupted access to the extrusion tools and conveyor.

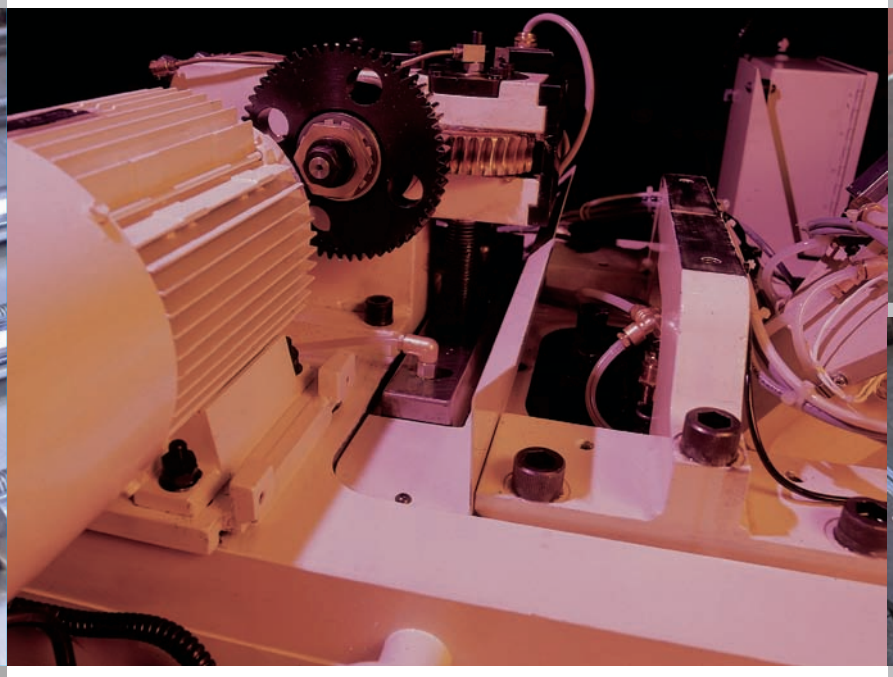
LINE SYNCHRONISATION

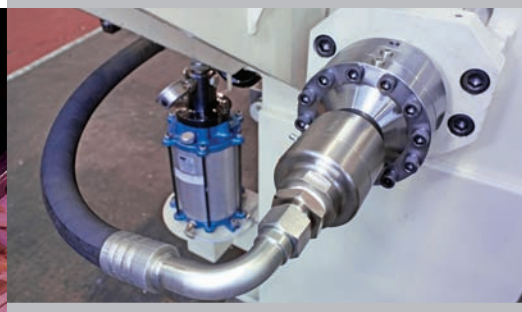
The Rhodes Extrusion Press is the first machine in a complex line of automated equipment. The KJX range has therefore been designed to fully integrate with such production lines through the provision of the necessary electrical and/or mechanical interconnection with tube lathes or can trimmers.

"Best Metalforming Machine Tool"
MACH International Machine Tool
Awards (sponsored by MWP).

Optional Extras

Joseph Rhodes takes particular pride in its ability to design and manufacture bespoke machinery and complete turnkey solutions. 'Special' extrusion presses can be manufactured to custom specification, and optional extras added where required (see below).





Main (left): Motorised slide adjustment.

Top: Hydraulic compensator (for membrane nozel tube production.)

Bottom (left): Vibratory slug bowl feeder.

Bottom (right): Sound reducing enclosure.

HOPPER ELEVATORS

For use in conjunction with slug bowl feeders, the Rhodes hopper elevators enable press operation over long periods without constant slug replenishment.

MOTORISED SLIDE ADJUSTMENT

The motorised slide adjustment provides rapid and accurate setting of the slide using a two speed motor operated from the press control panel. An electronic digital readout indicator shows the degree of slide adjustment. Fitted as standard with this system is a load measurement unit to indicate press loading and to monitor for tonnage overload on the press.

EJECTORS AND COMPENSATORS

Rhodes offers a full range of adjustable ejectors and compensators, both light and heavy duty for all types of extruded components.

BOWL FEEDERS

The Rhodes KJX range of Presses can be supplied with either vibratory or mechanical rotary bowl feeders, the choice of which depends upon the type of slug being handled.

SOUNDPROOF ENCLOSURES

The Rhodes walk-in acoustic enclosure is specifically designed to reduce noise levels to below 80 dBA. Access doors and force ventilation are provided. All panels are removable.

EXTRUSION TOOLING

Presses can be supplied complete with extrusion tooling to suit DIN standard collapsible tubes or aerosol cans. Rhodes experience in extrusion tool design and application also enables special and non-standard tooling to be quoted.

TECHNICAL EXTRUSIONS

The KJX range of extrusion presses are used extensively within the Technical Extrusion products market place.

Components manufactured on the KJX range include complex technical housings for automotive, defence and specialist packaging applications.

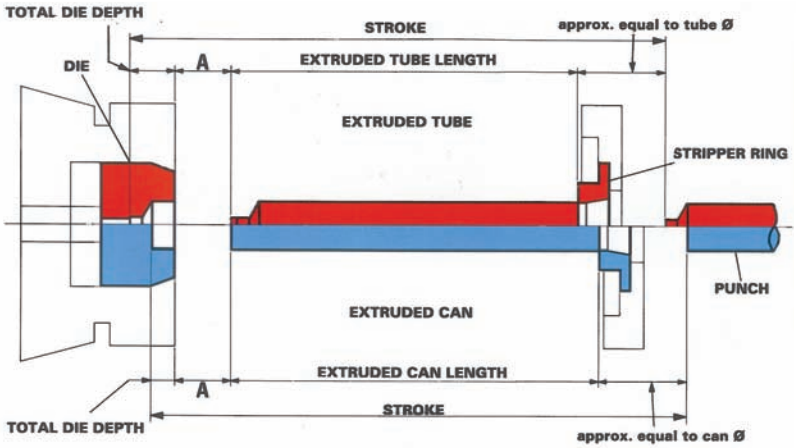
Product Specification

Top (left): Technical extrusion products.

Top (right): A selection of extruded rigid cans.

Bottom: Production process for rigid cans.

DETERMINATION OF MAXIMUM EXTRUDED LENGTHS OBTAINABLE



This calculation should be used as a guide only

Model No.	Stroke mm)	A
KJX.25	254	25
KJX.35	300	30
KJX.35S	300	30
KJX.50	330	35
KJX.50S	314	35
KJX.50L	381	35
KJX.63	381	38
KJX.63S	280	38
KJX.63L	457	38
KJX.75	457	40
KJX.90	520	45
KJX.120	585	50

EXAMPLE:-
press model No. KJX.50
40 mm Ø collapsible tube.
total die depth - 28 mm.
Maximum overall extruded length,
= 330 - (28 + 35 + 40)
= 330 - 103
= 227 mm.

		Zinc		Aluminium												
Model Ref. (Note 1)		**KJX 24**	**KJX 32**	**KJX 8**	**KJX 25**	**KJX 35**	**KJX 35S**	**KJX 50**	**KJX 50L**	**KJX 50S**	**KJX 63**	**KJX 63L**	**KJX 63S**	**KJX 75**	**KJX 90**	**KJX 120**
Pressure Capacity (Tons)		60	120	5	60	100	100	160	160	200	325	325	325	400	650	1000
Rating from B.D.C (mm) (Note 2)		5	7.0	4.5	4.5	4.5	9.7	4.5	4.5	7.0	4.5	4.5	8.0	10	25	35
Stroke (mm) (Note 1)		130	172	102	254	300	300	330	381	314	381	457	280	457	520	585
Speed (spm)		150/ 280	150/ 280	150	80/ 170	100/ 200	100/ 200	80/ 150	60/ 120	80/ 170	60/ 120	40/ 80	80/ 170	40/ 80	25/ 50	30
NB. Higher speeds may be available. Machine speed and capacity requirements vary significantly between specific applications.																
Maximum Ø with 0.12mm Wall (A1.)		-	-	8	25	35	35	50	50	50	63	63	60	75	90	110
Maximum Ø with 0.30mm Wall (A1.)		-	-	10	30	42	40	56	56	55	73	73	70	87	100	130
Maximum Ø with 0.30mm Wall (Zinc.)		24 mm	32 mm	-	-	-	-	-	-	-	-	-	-	-	-	-
Drive Motor (KW)		18.75	37	1.1	10	17.5	30	40	40	48	65	65	80	70	80	120
Press Weight (Kg)		5800	10000	1000	6000	9500	10200	9500	10000	12400	19000	21000	23000	40000	68000	85000
OVERALL SIZES (mm) (Note 3)	Length	2100	2770	1375	2870	3340	3350	3470	3760	3650	4200	4650	4000	5100	5950	6550
	Width	1380	1730	610	1310	1980	2000	2310	2310	2090	2170	2170	2610	3050	3500	3950
	Height	1300	1650	690	1520	1550	1550	1750	1780	1830	1920	1920	2170	2400	2850	2960

Notes:
1 This specification table is provided as a guide only. Machine speed and capacity requirements vary significantly between specific applications. Please contact our technical sales department for further advice on model selection.
2 Rating from Bottom Dead Centre (B.D.C) is the distance (mm) through which maximum pressure capacity can be applied.
3 Overall press sizes are approximate.

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