

DUGARD

Machine Tools Since 1939

Dugard 42mm Range of High Production,
Multi Axis CNC Turning Centres



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Fastest, strongest and most accurate lathes in their class



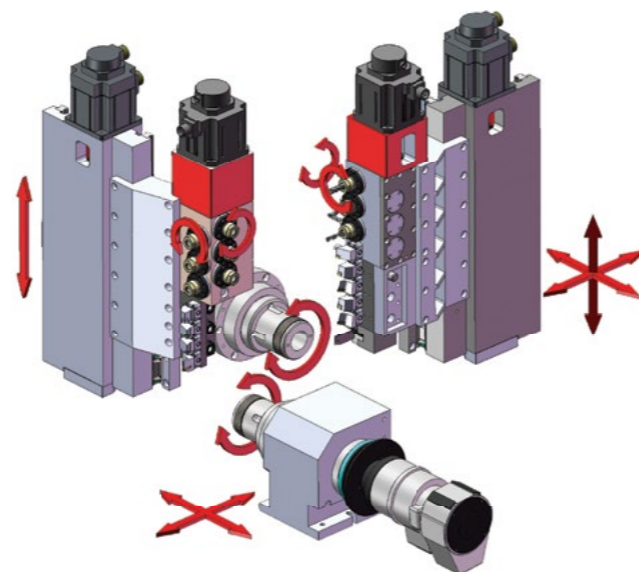
Dugard 42 TT 12 (8 + 2 + 2) axis CNC dual turning and milling complex lathe

8 axis and 2 spindles which includes a sub-spindle with both X and Z positioning.

A compact footprint, as well as impressive machining capabilities and cutting capacity. Large linear guideways are used to increase stability and accuracy. High torque Mitsubishi servo motors are directly coupled to the precision ballscrews to give heavy duty cutting with superior accuracy and repeatability.

Live tooling on both main and sub-spindle tooling blocks. There are 12 live tools for axial and radial milling, drilling and tapping operations giving a total of 31 tools for complex machining.

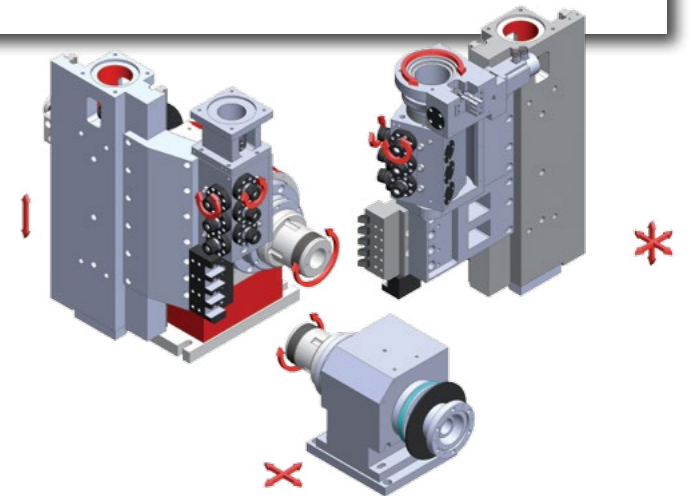
The flexible tooling system comes as standard with quick change tool holders for easy tip changing (but can be supplied with mainstream tooling systems as requested). The tooling system can easily be changed on site as the toolholders are designed to be quickly interchangeable.



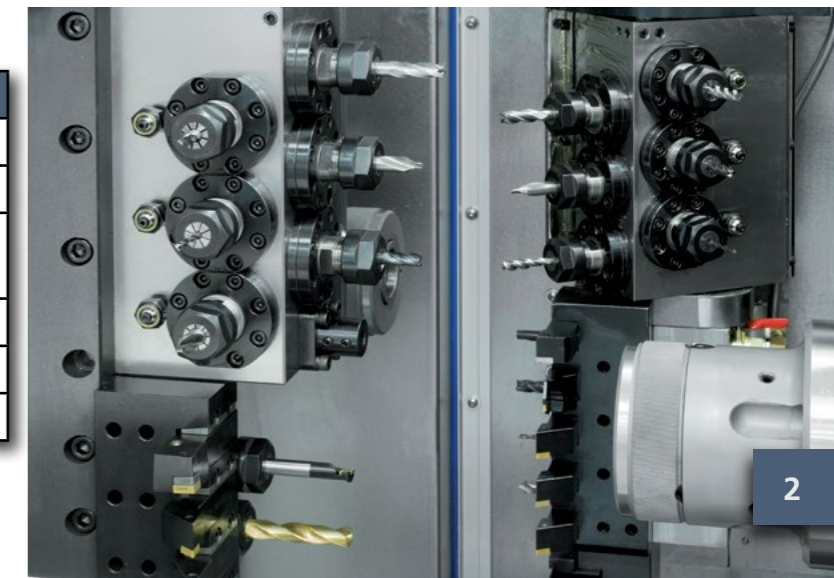
Dugard 42 TTS 13 (8 + 2 + 2 + 1) axis CNC dual turning and milling complex lathe with B axis

9 axis and 2 spindles which includes a sub-spindle with both X and Z positioning.

The B axis gives +45° to -130° continuous. This allows for more flexible tool applications and efficient mass production.



Motorised Tools	6 Tools
B axis	-45° to +130°
Tool size	ER-20
Power of motorised tools	Mitsubishi AC servo 1.5 kW
Max drilling dia	10.0mm
Max tapping capacity	M10 x P1.25
Speed	4000rpm



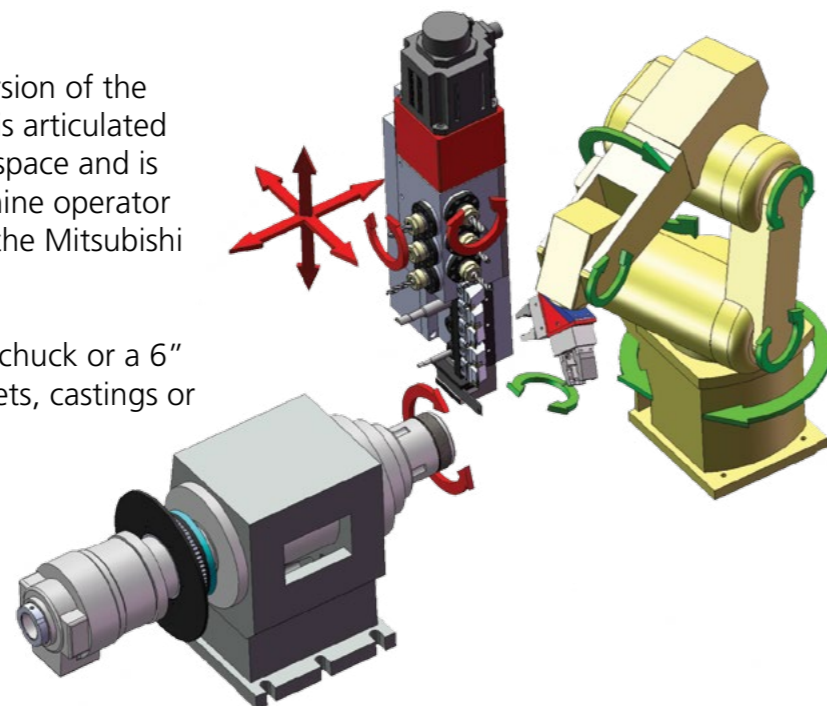
Dugard 42 IT/S Robo 6 + 6 axis CNC robot turning centre with milling function and B axis option



4 axis lathe with C axis and live tooling with the advantage of robotic loading for unmanned chucking operations.

The Dugard 42 IT Robo is a modified version of the 42 IT with an integrated Mitsubishi 6 axis articulated robot. This requires no additional floor space and is positioned so it will not hinder the machine operator while setting the machine or operating the Mitsubishi M70 control system.

It can be fitted with a 42B or 60B collet chuck or a 6" hydraulic chuck and can be used for billets, castings or processing forged parts.



Intelligent Robot

Complimenting the standard 42 IT lathe is a fully integrated, high speed, high precision 6 axis robot.

This intelligent robot has a total of 88 programmes and can easily manouver around tooling and other obstacles within the work area.

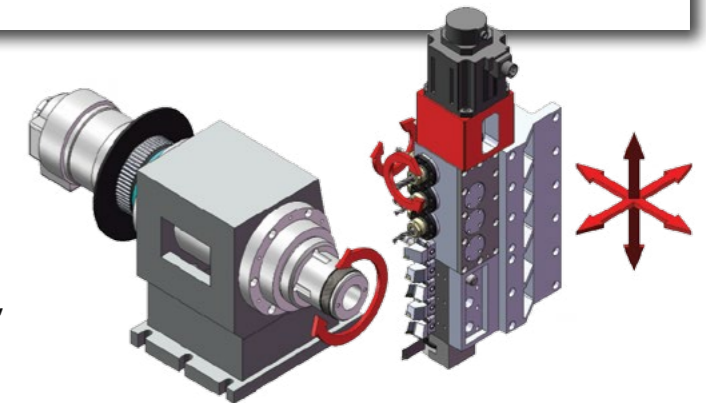
It can handle work pieces of up to 6kg and is ideal for billets, castings and forgings.



Dugard 42 IT/S 6 (4 + 2) axis CNC turning centre with milling function and B axis option

4 axis gang tooling lathe - an affordable alternative to a turret type C axis lathe.

The tooling system comprises of 6 turning, 4 boring and 6 live milling tools giving a capacity of 16 tools. Its unique design allows for rapid chip to chip times, which will generally out perform turret type machines, enabling a reduction in cycle times.



Robot Arm		42 IT Robo
Mitsubishi S series		6 axis articulated
Drive system		AC servo motor (brake provided on all axes)
Position detection method		Absolute Encoder
Load	Max	6kg
	Rating	5kg
Position repeatability		± 0.02mm
Air supply pressure		0.49 ± 10% M Pa



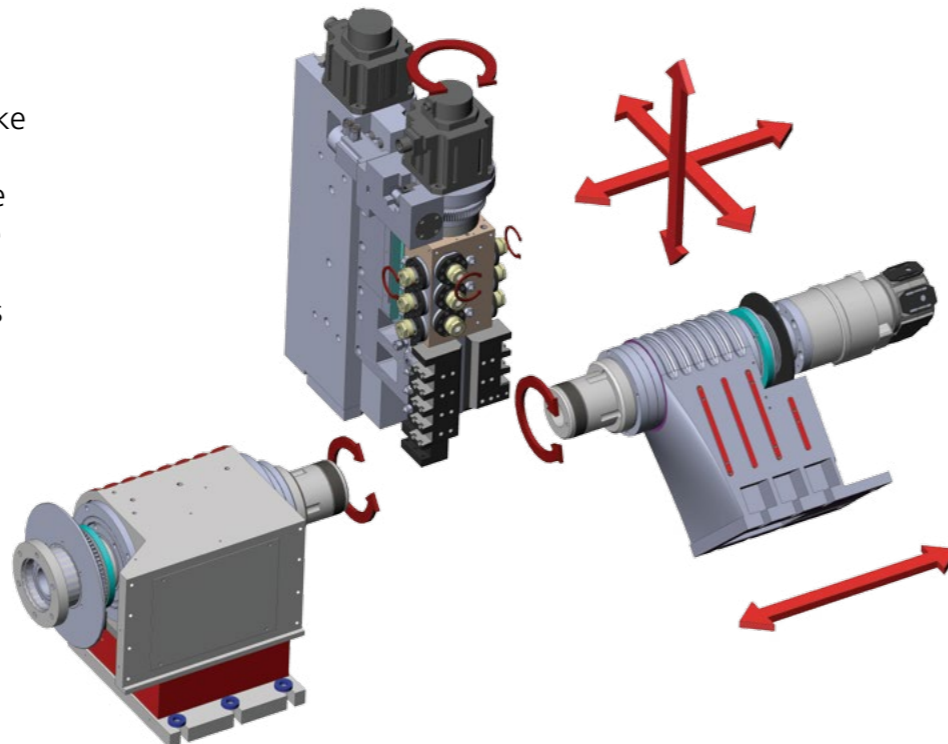
Its rigid design allows heavy duty cutting to be performed. The 6 live tooling spindles with both C axis and Y axis can complete the most complex of work pieces in one operation.

Dugard 42 XT CNC twin spindle lathe with servo control live tools



The 42 XT combines heavy duty construction with the highest quality components resulting in a versatile and robust machine. This machine gives you exceptional performance while reducing your costs.

The 27 tools in this CNC turning machine make it possible to process complex work pieces internally and externally. The opposed spindle allows machining from rear side in one simple clamping. The tooling design has almost no interference problems allowing all of the tools to be utilised. Synchronized spindles allow rapid change from main to sub spindle. Depending on the work piece, it's possible to perform simultaneous cutting on both main and sub-spindle.



Dugard 42 XTS CNC twin spindle lathe with B axis

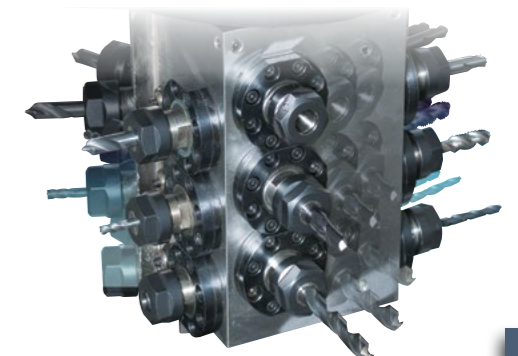
The 42 XTS is a cost effective and highly productive twin spindle CNC lathe ideal for producing complex work pieces.

25 tools make it possible to process a complex work piece internally and externally. The driven tools are integrated with powerful B- axis milling for simultaneous and efficient machining. Due to this enhancement, the application becomes faster and more flexible for the production of sophisticated parts. The impressive tool arrangement and large work area, make this an outstanding, all purpose machine.



XTS Tilting Motorised Tools (B axis)

This milling head comprises of 9 motorised tools from -45° to +45° continuous and leads to an even greater flexible tool arrangement and significantly efficient productivity for small – and medium lot sizes.

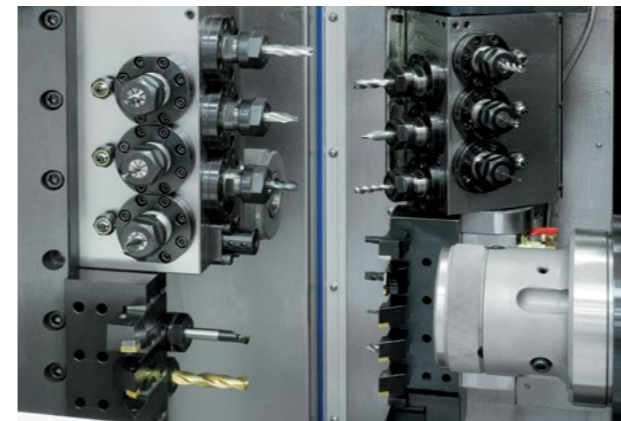




Milling Head

- Standard milling head comprises of 6 live tools, 3 radial and 3 axial
- Capacity is ER20 collet with 1.0kW gear drive
- The head may be fitted to both tooling heads giving a total of 12 live tools

Tooling Systems



42TT/42TTS

Extremely flexible and unique 3 axis gang tooling. Standard tooling system allows for 10 external tools, 9 internal and 12 live (6 axial, 6 radial). Gear driven ER20 spindles with rigid tapping as standard.

Synchronous Spindles 42TT/42TTS

- Both main and sub spindles can be synchronised for parting off operations, or for turning longer work pieces
- By synchronising, transfer of the part from main to sub spindle is precise and alignment of critical dimensions can be realised
- Synchronising can be achieved to an accuracy of 0.02° while spindles are in motion

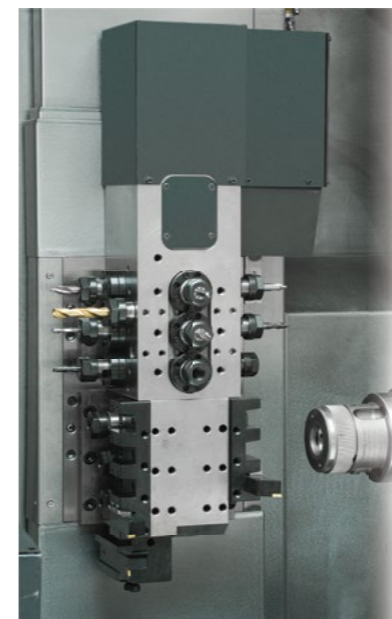
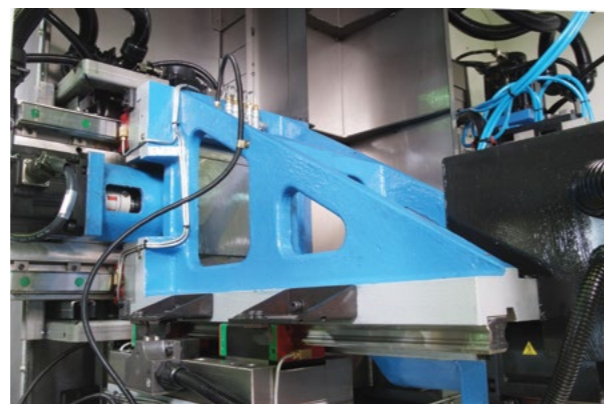


Cartridge Type Spindle 42IT/42 IT Robo

- With P4 high precision bearings giving high radial and axial stability, allowing for heavy duty cutting
- Assembled and tested in a temperature controlled clean room, sealed and requires no maintenance. The spindle housing is large and symmetrically ribbed to allow heat dissipation and thermal stability.

Linear Guideways

- Equipped with high precision HIWIN linear guideways
- 35mm rails throughout the machines increase stability and accuracy allowing heavier cutting.



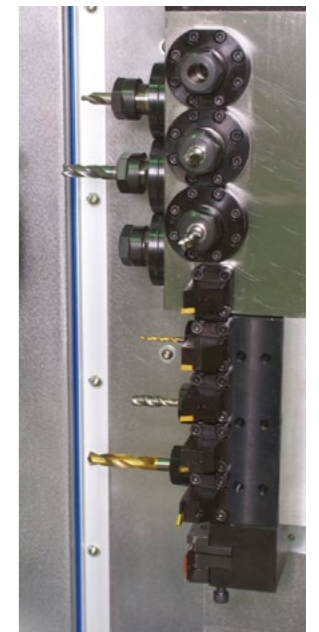
42XT

The flexible tooling system comes with 8 standard external tools, 10 internal tools and 9 live tools (Front*3, Rear*3, Radius*3).

The unique tooling system can be changed easily and saves every second on site. Its versatile tooling system allows complex components to be finished completely in one operation.

42IT/42 IT Robo

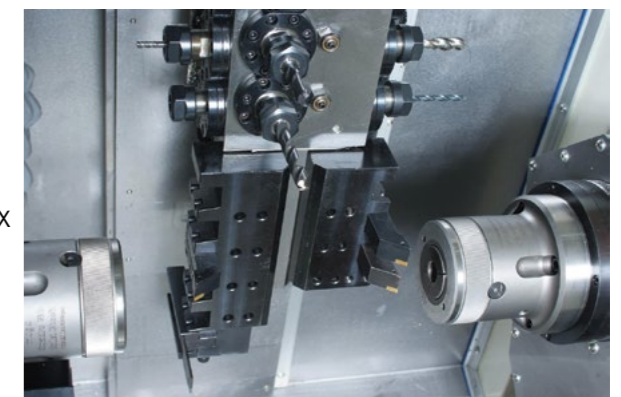
Gang tooling for fast chip to chip times. Tooling block consists of 6 turning tools, 4 boring tools and 6 live tools (16 in total). Y axis for complex and off centre milling operations, combined with full C axis control for machining complex contours.



42XTS

The flexible tooling system comes with 9 standard external tools, 7 internal tools and 9 live tools (Front*3, Rear*3, Radius*3).

The unique and versatile tooling system can be changed easily allowing complex components to be finished completely in one operation.



Dugard 42mm - High Production, Multi Axis, CNC Turning Centres



Mitsubishi M700 Control

- 64 bit high power control
- Colour graphics
- Dual channel programming



Various interfaces for programme saving, loading and software updating including:

- CF memory card
- RS-232C
- Ethernet

Standard Equipment

- 42mm capacity 3m hydrostatic magazine barfeed including interface
- 42mm capacity collet chuck
- Automatic parts catcher and conveyor
- Swarf conveyor and bin
- Coolant tank and pumps

Options

- 6000rpm spindle speed
- 60mm main spindle bar capacity including collet chuck and 11kW drive
- Oil mist removal

Robot Arm Specification		42 iT Robo
Mitsubishi S series		6 axis articulated
Drive system		AC servo motor (brake provided on all axes)
Position detection method		Absolute Encoder
Load	Max	6kg
	Rating	5kg
Position repeatability		± 0.02mm
Air supply pressure		0.49 ± 10% M Pa

Machine Type		42 TT	42 TT _S	42 IT(S)	42 IT (S) Robo	42 XT	42 XT _S
Control		Mitsubishi M700			Mitsubishi M70		
Spindle Capacity	Max bar working dia	42/60mm	42mm	42/60mm		42/60mm	42mm
	Max turning length	230mm	150mm	230mm		350mm	
	Spindle collet chuck type	KK5-173E/42B / KK6-185E/60B					
	Spindle nose	ISO (DIN) A2-5 / A2-6					
	Spindle bore	43/62mm	44/62mm	43/62mm		44/62mm	44mm
	Speed range	4000/3000rpm (6000/4000rpm opt)					
	Motor	Mitsubishi AC spindle 7.5kW (11kW opt)					
	C axis	0.001°					
Sub-Spindle Capacity	Max turning dia	100mm		-	-	100mm	
	Max bar working dia	42mm		-	-	42mm	
	Max turning length	100mm		-	-	155mm	
	Collet chuck type	KK5-173E/42B		-	-	KK5-173E/42B	
	Sub-spindle nose	ISO (DIN) A2-5		-	-	ISO (DIN) A2-5	ISO (DIN) A2-5/A2-6
	Sub-spindle bore	30mm		-	-	30mm	
	Sub-spindle speed range	4000rpm (6000rpm opt)		-	-	4000rpm (6000rpm opt)	
	Sub-spindle motor	Mitsubishi AC spindle 3.7kW		-	-	Mitsubishi AC spindle 3.7kW	
	C axis	0.001°		-	-	-	-
Travel and Feed	XY/Z axis travel	140/410/230mm			250/380/350mm		
	X-1/Y-1/Z-1 axis travel	410/410/360mm		-	-	470mm (Z-1)	
	XY/Z axis servo motor	Mitsubishi AC servo 1.0kW					
	X-1/Y-1/Z-1 axis servo motor	Mitsubishi AC servo 1.0kW		-	-	Mitsubishi AC servo 1.0kW (Z-1)	
ATC System (main)	Gang type	Servo Y axis					
	Number of tools	OD 6 tools, ID 4 tools			OD 8 tools, ID 10 tools		
	Tool shank size	20mm					
	Boring bar	ER-20/20mm					
Motorised Tool (main)	Number of tools	6 tools (3 axial, 3 radial)			9 tools (3 front, 3 rear, 3 radial)		
	B axis	-	+45° to -130° continuous	+45° to -130° continuous (S model option)		-	-45° to +45° continuous
	Power of motorised tool	Mitsubishi AC servo 1kW (1.5kW opt)				Mitsubishi AC servo 1.5kW	
	Motorised tool speed	4000rpm (max)					
	Motorised tool size	ER-20					
	Max drilling dia	-	-	12mm		10mm	
ATC System (sub)	Max tapping capacity	M10 x P1.25 rigid tapping					
	Gang type	Servo Y1 axis					
	Number of tools	OD 4 tools, ID 5 tools	OD 4 tools, ID 4 tools	-	-	-	-
	Tool shank size	20mm					
Motorised Tool (sub)	Boring bar	ER-20/20mm					
	Number of tools	6 tools (3 axial, 3 radial)			-	-	-
	Power of motorised tool	Mitsubishi AC servo 1kW (1.5kW opt)				-	-
	Motorised tool speed	4000rpm (max)					
Hydraulic System	Motorised tool size	ER-20					
	Hydraulic motor	0.75kW				1HP	
Lubrication	Max pressure	50kg/cm ²				400psi	
	Lubricant motor	25W					
Coolant System	Tank capacity	2L				200L	
	Motor type	200L		100L		100L	
Machine Size	Motor type	1/4 HP coolant; 4T2-2 high pressure coolant		4T2-2 high pressure coolant		4T3-3 high pressure coolant	
	Length x width x height	2500 x 1700 x 1900mm		2000 x 1500 x 1900mm		2800 x 1600 x 2100mm	
	Weight	4200kg		2750kg	2850kg	3800kg	

European headquarters for Dugard CNC Machine Tools

DUGARD.com

www.dugard.com email: sales@dugard.co.uk tel: +44 (0)1273 732286