

Dept.	Work Centre	M/C	Team lead	Best use	Through spindle size	Max billet size (Diameter)	Max bar length	On m/c tooling	Tail Stock	Max turn length
TURNING  Gen tol. 10-12 micron capable 50 micron position	1BAR (can be long runs)	Mori Seiki SL25 X 1	NM	2 axis lathe, 1 operation	50.8 mm	-	3000 mm	10 static (above dia 40 steel limited to 2000mm max bar length)	Y	500mm
		Takisawa TS-15	NM	2 axis lathe, 1 operation	35.0 mm	-	3000 mm	12 static	Y	450mm
		Takisawa TS-15TF	NM	2 axis lathe, 1 operation	41.275 mm	-	3000 mm	12 static	Y	450mm
	1CHUCK (no bar feed)	Takisawa TS25 X 1	NM	2 axis lathe, 1 operation, larger jobs	74.8 mm	254 mm norm 304.8 mm max	1000 mm	10 static	Y	550mm
		Mori Seiki CL25 X 1	NM	2 axis lathe, 1 operation, larger jobs	74.8 mm	254 mm norm 304.8 mm max	1000 mm	10 static	N	400mm
	1NL15	Mori Seiki NL2000 X 1	NM	6 axis lathe, mill function, 2 operation, larger jobs, but long setup	65.0 mm	203.2 mm	3200 mm	Shared tool turret 12+12 static or driven face or 12 cross driven	Sub spindle	550mm
		Mori Seiki NL1500SY X 1	NM	6 axis lathe, Mill function, 2 operation, larger jobs, but long setup	52.0 mm	152.4 mm	3200 mm	Shared tool turret 12+12 static or driven face or 12 cross driven	Sub spindle	500mm
	1CAPST	BRITAN X 2	NP	Basic small parts	31.75 mm	-	2000 mm	Toolpost / turret	Y	Limited
	1DRIVE	Mori Seiki SL15 (MF-T4)	NP	3 axis lathe, centre line driven tools	41.275 mm	152.4 mm	1000 mm	12 stations but 6 driven max (2000 rpm live tools)	Y	500mm
		Mori Seiki SL15 (MF-T6)	NP	3 axis lathe, centre line driven tools	41.275 mm	152.4 mm	1000 mm	12 stations but 6 driven max (3000 rpm live tools)	Y	500mm
	1SLIDE  +0.00 - 0.07mm on nominal stock matl. required	STAR SR20 (1)	NP	6 Axis, 2 operation, Low to high volume precision small parts, work supported nr. Tool for close tol. over whole length	20 mm	-	3200 mm	6 static turn tools, 3 cross driven tools, 3+3 drill holders Can cross tap	Sub spindle	205mm in one stroke, re stroke possible
		STAR SR20 (2)	NP	6 Axis, 2 operation, low to high volume precision small parts, work supported nr. Tool for close tol. over whole length	20 mm	-	3800 mm	6 static turn tools, 3 cross driven tools, 3+3 drill holders Can cross tap	Sub spindle	205mm in one stroke, re stroke possible
		STAR SR16 X 1	NP	6 Axis, 2 operation, low to high volume precision small parts, work supported nr. Tool for close tol. over whole length	18 mm front 16mm rear	-	3800 mm	5 static turn tools, 3 cross driven tools, 3+3 drill holders Cannot cross tap	Sub spindle	205mm in one stroke, re stroke possible
	1SV20	STAR SV20 X 1	NP	8 Axis, 2 operation, low to high volume precision small parts, work supported nr. Tool for close tol. over whole length	20 mm	-	3800 mm	Shared tool turret, 8 driven tools, 5 front turn tools, 3 rear Can cross tap	Sub spindle	205mm in one stroke, re stroke possible

Dept.	Work Centre	m/c	Team leader	Best use	Max m/c travel XYZ (Note - workholding height and tooling need to be considered!)	Normal workholder	Max component size in normal workholder	On m/c tooling
MILLING  Gen tol. 10-12 micron 30 micron position	24-AXI	HAAS VFO X 2	DT	Low to medium volume work. Quick set up vertical milling machine, small parts, all materials	400 x 510 x 430mm	1 vice plus 4 <sup>th</sup> axis	185 x 150 x 300mm (140mm radial in 4 <sup>th</sup> axis 350mm max length)	20 tools
		HAAS VF2 X 1	DT	Low to medium volume work. Quick set up vertical milling machine, small parts, all materials	760 X 410 X 500mm	2 vice plus 4 <sup>th</sup> axis	185 x 150 x 350mm (140mm radial in 4 <sup>th</sup> axis 350mm max length)	20 tools
		HAAS VF3 X 1	DT	Low to medium volume work. Quick set up vertical milling machine, larger parts, all materials Large fixture plate for quick changeover	1010 X 500 X 600mm	3 vice plus 4 <sup>th</sup> axis	185 x 150 x 450mm 260mm radial in 4 <sup>th</sup> axis	20 tools
		Mori Seiki SV50B X 1	DT	Low to medium volume work. Quick set up vertical milling machine, larger parts, all materials	1000 X 500 X 640mm	3 vice plus 4 <sup>th</sup> axis	285 x 150 x 480mm 220mm radial in 4 <sup>th</sup> axis	30 tools
	2PALLE	Mori Seiki MV40P X 1	DT	Twin pallet vertical milling machine, medium volume work	790 x 400 x 450mm	3 vices per pallet	185 x 150 x 350mm	30 tools
		Mori Seiki MV JUNIOR X 1	DT	Twin pallet vertical milling machine, medium volume work	500 x 400 x 450mm	2 vices per pallet	185 x 150 x 350mm	30 tools
		Mori Seiki MV40MP APX X 1	DT	Twin pallet vertical milling machine, medium to high volume work	500 x 400 x 500mm	4 Vices per pallet (double ended vices with central fixed jaw and 2 moving outside jaws)	85 x 100 x 350mm	30 tools
	2SIMPL	HAAS VF1 X 1	DT	Vertical mill, typically used for prototyping work / close tolerance work, low volumes	500 x 400 x 450mm	2 vices	185 x 150 x 350mm	20 tools
		Mori Seiki MV40 X 1	DT	Vertical milling machine typically used for larger parts, all materials, large fixture plate for quick change over	800 x 410 x 650mm	3 vices	285 x 150 x 450mm	30 tools
		Mori Seiki SV50A X 1	DT	Vertical milling machine typically used for larger parts, close tolerance work, all materials	800 X 500 X 640mm	3 vices	285 x 150 x 400mm	30 tools
		Mori Seiki MV40M X 1	DT	Vertical milling machine typically used for small parts, all materials, quick set up	555 X 400 X 580mm	3 vices	285 x 150 x 400mm	30 tools
		BRIDGEPORT 316	DT	Training machine, possible production use, low volume work	500 x 300 x 300mm	2 vices	220 x 150 x 250mm	16 tools

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MILLING  Gen tol. 10-12 micron 30 micron position	2HASHO	HAAS HS1RP X 1	WH	3 axis plus full 4 <sup>th</sup> axis cube rotation, twin pallet horizontal machine, most materials ok, slowest horizontal machine.	600 x 500 x 500mm	1 pallet tombstone for fixtures, 2 <sup>nd</sup> pallet baseplate for larger fixtures	400 x 400 x 200mm (450 in z for baseplate)	30 tools, thru coolant
	2HORIZ	OKK HM4 X 1	WH	3 axis plus 4 <sup>th</sup> axis cube rotation (1 degree increments) twin pallet horizontal machine, medium to high volume workload - long setup. Close tolerance work across 3 faces. Best on aluminium and plastics due to vibration on steels.	550 x 500 x 550mm	1 pallet 4 Chick vices (150mm jaws) on cube, 3 machinable faces on each one. 2 <sup>nd</sup> pallet solid cube and flat plates.	350 x 400 x 200mm	60 tools, thru coolant
		Mori Seiki SH400 X 1	WH	3 axis plus 4 <sup>th</sup> axis cube rotation (1 degree increments), twin pallet horizontal machine, medium to high volume workload - long setup. Close tolerance work across 3 faces. Small components - most materials	550 x 500 x 450mm	6 Chick vices (100mm jaws) on cube, 3 machinable faces on each one.	350 x 400 x 200mm	60 tools, tool breakage detection, thru coolant
		Mori Seiki SH40 (1)	WH	3 axis plus full 4 <sup>th</sup> axis (cube rotation), twin pallet horizontal machine, medium to high volume workload - long setup. Close tolerance work across 3 faces. Small components - most materials	560 x 510 x 510mm	4 Chick vices (150mm jaws) on cube, 3 machinable faces on each one.	350 x 400 x 200mm	30 tools, automated probe, tool breakage detection, thru tool coolant
		Mori Seiki SH40 (2)	WH	3 axis plus 4 <sup>th</sup> axis cube rotation (1 degree increments) twin pallet horizontal machine, medium to high volume workload - long setup. Close tolerance work across 3 faces. Small components - most materials	560 x 510 x 510mm	4 Chick vices (150mm jaws) on cube, 3 machinable faces on each one.	350 x 400 x 200mm	40 tools, automated probe, tool breakage detection, thru tool coolant
		Mori Seiki MH40 X 1	WH	3 axis plus full 4 <sup>th</sup> axis (cube rotation), twin pallet horizontal machine, medium to high volume workload - long setup. Close tolerance work across 3 faces. Very rigid machine - ideal for steels	550 x 500 x 350mm	4 Chick vices (150mm jaws) on cube, 3 machinable faces on each one.	350 x 400 x 200mm	60 tools, tool breakage detection, thru coolant

MILLING / TURNING GENERAL USE EQUIP.	1OTHER	Colchester triumph 2000 manual centre lathe x 1	TURN	10" chuck, gap bed, 54mm diameter through spindle, 1150mm max turning length
		Colchester student 3100 manual centre lathe x 1	TURN	8" chuck, variable speed, 41.275mm diameter through spindle, 550mm max turning length
		Small Pedestal drill x 3	TURN	
		ProPen parts marker with chuck x 1	TURN	
	2OTHER	Small Pedestal drills x 4	MILL	
		Bridgeport 2J Manual mills x 2	MILL	Variable speed manual milling machines with digital readout
		Bench drill bank x 3 drills	MILL	
		Small parts vibratory finishers x 4	MILL	
	2GRIND	Jones 1011 and Shipman surface grinder x 1	MILL	
		Jones and Shipman 1400 surface grinder x 1	MILL	

SHEET METAL	3LASER	LVD Axel laser with pallet change	2KW CO2 Laser with pallet change, 1250 x 2500mm maximum sheet size, maximum thickness cutting capacity - mild steel 12mm, stainless steel 6mm, aluminium 5mm, oxygen and nitrogen cutting gasses
	3PUNCH	Trumpf TC2020R CNC punch with pallet change	CNC punch with automatic pallet change, 1250 x 2500mm maximum sheet size, maximum punching thickness with current tooling - aluminium 3mm, mild steel 2mm, stainless steel 1.5mm
	3FOLD	Amada HFB 8025 CNC pressbrake	80 ton x 2500mm wide, 8 axis CNC back gauge sheet metal folding machine.
		Amada HFE 100/3 CNC pressbrake	100 ton x 3000mm wide, 8 axis CNC back gauge sheet metal folding machine.
		Mebusa 40-20 CNC pressbrake x 2	40 ton x 2000mm wide, 2=3 axis hurco controlled CNC sheet metal folding machine
		Mebusa 25-12 CNC pressbrake x 1	25 ton x 1200mm wide, 2=3 axis hurco controlled CNC sheet metal folding machine
	3PRESS	AIDA 1100 power press	110 ton power press incorporating 8 ton pneumatic die cushion 630mm x 520mm slide area, 1070mm x 680mm bolster area, 530mm die height, 180mm slide stroke, 90mm slide adjustment. 350mm maximum tool height.
	3BUSH	Pemsarter series 4 x 3 off	250mm gape manually operated sheet metal stud and bush insertion machine
		Sertabush 300	300mm gape manually operated sheet metal stud and bush insertion machine
		Sertabush 500	200mm gape manually operated sheet metal stud and bush insertion machine
	3SPOT	Mertius spot welder 15KVA	Electric spot welding machine
		Meritus spot welder 75KVA	Electric spot welding machine
		Peipoint spot welder 25KVA x 3 off	Electric spot welding machine
	3GRAIN	Kulmeyer pad sander twin belt	2800 x 1000mm table with 500mm adjustable height range
		Surtech L85-1500 Pad Sander x 2 off	1400 x 700mm table with 600mm height adjustment, continuous abrasive belt for cleaning and graining
		Surtech Fintec x 2 off	150mm wide abrasive continuous belt for freehand cleaning and graining
		Autopulit centre less lisher	Approx. 75mm dia. capacity
		Grindmaster	900mm wide belt with small range of height adjustment
	3OTHER	Strippit 30/30 punching machine	Very rarely used
		Safan hydraulic guillotine	2000mm wide, cuts up to 2mm thick sheet
		610 Edwards mechanical guillotine	Very rarely used
		Climavent wet extraction finishing booths 2 off	1500 x 900mm downdraught extracted table size
		Finishing booths x 3 off	900 x 900mm downdraught extracted table size with internal motor and filtration system
		Wheelabrator Vacublast	Pressure type grit and shot blasting cabinet 1500 x 1500mm internal size - currently stainless steel use only
		Vixen Aquablast	Wet blasting cabinet and demineralised water wash down facility, cabinet size 1200 x 1200mm - currently used for stainless steel only
		Vacublast	Vacuum type grit and shot blasting cabinet 750 x 750mm cabinet size, no current restrictions on use
		Flypress x 5	Various size equipment up to 6 ton inc. assembly area
		Arbour presses x 5	Various size small presses for assembly operation purposes throughout all departments
		Bench drills x 7	Various size bench drills and chuck sizes throughout sheet metal and assembly departments
		Pedestal drill	13mm chuck 750mm height capacity
		Propen parts marker	Flat table no chuck

SHEET / WELDING	4WELD	Mig welding x 2	Max operating current - 350A
		Tig welding x 6	Max operating current - 250A
	4BRAZE	Vacuum furnace - Wentgate VF 1218 X 2	Max component size 400 x 180 x 180mm, 1100 deg C, 2.5 Hour cycle time
		Vacuum furnace - Thermatec	Max component size 400 x 180 x 180mm, 1100 deg C, 2.5 Hour cycle time
	4VIBRO	Vibratory finishing machine	1350mm internal diameter
		Vibratory finishing machine	1250mm internal diameter
		Vibratory finishing machine	1000mm internal diameter
		Vibratory finishing machine	750mm internal diameter
		Vibratory finishing machine	500mm internal diameter - currently used with drying media
	4OTHER	Jetwash	Rotary washing machine, 600mm diameter internal basket x 280mm high
Elma ultrasonic cleaning bath		450 x 250 x 200mm internal tank capacity	
PAINT	7PAINT	Ion phosphate pre-treatment line	1300 litre tank capacities, 500KG overhead hoist capacity, 1550 x 600 x 730mm basket capacity
		Nordson powder booth	Nordson surecoat gun controller, booth 2500mm wide x 1600mm high
		Curing oven / driven overhead track	Continuously driven overhead track through oven. Access / egress size to suit parts of max size when hung vertically of 1500 x 600mm. Large parts can be driven into main oven on rail type trolley.
SCREEN PRINTING	7SCREEN	Silk screening table	1100 x 800mm bed
		Silk screening table	600 x 800mm bed
		Screen print curing oven - Natgraph	Natgraph IRDM2P drying oven 600mm wide belt x 220mm height capacity
ASSEMBLY	5ASSEMB	Assembly benches / modular picking racks	Fully equipped assembly department Soldering, electro-mechanical assembly Electrostatic discharge protection Presses and mechanical assembly tools Modular benches and parts picking facilities Customised racking and transportation trolleys
STORES SAWING	5SAW	Saw - Startrite Meba	Horizontal band saw - 200mm dia. Maximum capacity
		Saw - Eisels VMS II PV	Round blade - Fully automatic production saw, 50 x 50mm aluminium or 40 x 20mm stainless steel capacity
		Saw - KASTO	Horizontal bandsaw - fully automatic inc. billet feeder, 265mm dia. Maximum capacity
		Saw - Startrite SC275D	Pulldown saw - round blade, 60mm dia. Maximum capacity
		Saw - Pedrazzoli SB2000	Pulldown saw - round blade, 60mm dia. maximum capacity
		Saw - Addison Emmegi	Automatic production saw - round blade - 200 x 200mm max component size - normal use - aluminium sections / extrusion
		Saw - Startrite vertical bandsaw	100mm maximum component height
PARTS CLEANING	5CLEAN	Mechwash Midi	3 off basket capacity 560 x 360 x 120mm internal basket dimensions

QA / INSPECTION	5INSPE	Shadowgraph	
	5INSPE	Hardness tester	
	5INSPE	CMM Large Mitutoyo CRYSTA APEX 1220	
	5INSPE	CMM Medium Mitutoyo CRYSTA APEX 776	
	5INSPE	CMM Mitutoyo Manual	
	5INSPE	Mitutoyo SJ400 surface tester	

Hybrid Laser	HLT	Coherent Everlase M46 x 3 off	Twin beam 500W CO2 laser 1 Table 380 x 380mm, 2 tables 300 x 300mm but components can be repositioned outside this travel envelope. Typical laserable materials: Al2o3 ceramic, plastic, rubber, wood, metal foils, Kevlar, tufnol, piezo ceramic, glass, paper, semi precious artificial crystals. Cutting thickness limitations: Ceramic 2mm, plastic 20mm, metal foils 1mm General tolerances of +/- 25 microns achievable with +/- 5 micron repeatability
	HLT	Coherent Everlase 525 x 1 off	Twin beam 1KW CO2 laser Table travel 450 x 450mm but components can be repositioned outside this travel envelope. Typical laserable materials: Al2o3 ceramic, plastic, rubber, wood, metal foils, Kevlar, tufnol, piezo ceramic, glass, paper, semi precious artificial crystals. Cutting thickness limitations: Ceramic 2mm, plastic 20mm, metal foils 1mm General tolerances of +/- 25 microns achievable with +/- 5 micron repeatability
	HLT	Coherent Diamond 300 x 1 off	Single beam 300W CO2 laser Table travel 400 x 400mm but components can be repositioned outside this travel envelope. Typical laserable materials: Al2o3 ceramic, plastic, rubber, wood, metal foils, Kevlar, tufnol, piezo ceramic, glass, paper, semi precious artificial crystals. Cutting thickness limitations: Ceramic 3mm, plastic 20mm, metal foils 1.5mm General tolerances of +/- 25 microns achievable with +/- 5 micron repeatability
	HLT	OGP Smartscope Flash 200	Table travel x/y/z 200 x 200 x 200mm, sub micron accuracy, offline programmable

Additional information and capabilities	Software	Solidworks 3D design software
		EdgeCam Milling CAD/CAM software
		Lantek Sheet metal CAD/CAM software
		Alphacam Laser CAD/CAM software (HLT)
	Modern manufacturing philosophy	Flexible cellular based manufacture
		Flexible, clean and ESD protected assembly areas
	Service	Design for manufacture service
		Project Management service provided
		Full supply chain management (worldwide)
		Kaizen - cost down service
	Product control / tracability	Computer managed stores
		Kardex stores system
	Environment & logistics	Environmentally friendly delivery and company vehicles
	Testing	Pressure decay, flow and leak test
		Video microscopy
		Thermally accurate curing ovens
	Sub Contract process availability	General plating and surface treatments
		Technical plating
		Decorative plating
		Hardening and tempering
		Laser etching
		Wet painting
		Machining
		Glass to metal hermetic bonding / sealing