

Webster & Bennett Vertical Turning Lathes 1887 – 2014

Addendum 2 below is the installation list from 1960 to 1992 and shows the worldwide strength of W&B at that time. Please note the number in brackets after the company name is the number of installations. In 1981 Webster & Bennett became a minor part of Wickman Bennett the No. 1 UK machine tool builder.

Iain Exeter acquired Wickman Bennett in 1989 and quickly turned it round from lossmaking into a very profitable company. Unfortunately it did not survive the “machine tools for Iraq” fiasco and government minister lies.

This period saw the demise of the whole British Machine Tool industry as a major world player

From the administrators Exeter acquired the W&B name and history in 1993. His capital was destroyed in Wickman Bennetts demise so without working capital to produce large numbers of machines it was decided to target the niche market demanding the most precise, powerful and innovative vertical turning centres that could be conceived.

A new, highly advanced vertical turning centre was conceived, designed, produced and launched within two years – **the Millennium**. The list below shows the sophisticated specifications purchased by some of the world’s leading engineering companies. Venture Capitalists came in to help growth. Initially successful but when they took a majority position in 1999 it led to Exeter leaving. Three years later he came back to acquire the wreck of W&B from the VC’s, but lack of working capital was still a major problem. To raise capital a 10 year license for the Millennium was sold to a major Spanish machine tool group

Unable to build Millenniums Exeter conceived a simpler machine and ‘**The Evolution**’ was developed

While making an Evolution sale to a Belgian company discussions started that led to the sale of W&B to the Belgian Group in 2003 who promised to provide whatever capital was needed to fulfil sales potential. This was successful, but at EMO Hannover 2007 Exeter discovered that the Belgians planned to take the production to one of their loss making companies in Belgium. Exeter’s team left to start again. The Belgians put W & B into liquidation in April 2008 and took the 90% finished machines to Belgium

Exeter’s team continued its innovative VTL design and development:

- The **Aeroturn** - a linear guide machine complementing Millennium 3 and Evolution models
- The **Revelation2** - a twin gear drive machine to complement Millennium 4 models
- The **Revelation DC** and **Ringturn** - new developments for large diameter components up to 6000mm

These machines could be built in several formats:

- 2 axis turning, powerful and precise
- 2 axis turning plus table C axis positioning and rotary drive plus a live spindle for drilling, milling and grinding
- All models can have 2 rams for higher production. Additional rams can be for live spindle or static tooling.
- Currently in development are machines to provide an additional horizontal axis, a Y axis, for Total Production capability
- The flexibility and sophistication is enhanced by the use of several highly developed attachments
 - Elliptical turning
 - Y axis milling and drilling
 - CNC angular grinding ram
 - Robot loading of toolholders and tooling
 - Off machine Presetting of components onto fixtures and transfer to the machine

Sadly a very large contract with a Chinese company went very wrong in 2010 and our operations were significantly reduced. However, in 2014, we were introduced to DSK, a strong Korean company. The synergy was strong but the unexpected loss of a massive, \$20m, power station contract saw the investors in DSK withdraw their capital and eventually DSK was closed

The aborted DSK partnership was the last realistic chance we had to continue the development and build of advanced vertical turning centres.

Millennium rebuild and modernisation contracts gave us hope but despite having developed the updated specifications we have not been able to generate interest in this country to build new

Therefore our business is all about modernising and supporting machines, not only the machines we built but also creating 'new' machines out of the bodies of those 50+ year old machines listed in Addendum 2 below. Taka a look at the examples in <https://www.vtt-wb.com/manuturn/>

Addendum 1

MACHINES DESIGNED AND BUILT BY EXETER'S TEAM 1996 - 2009

WEBSTER & BENNETT MILLENNIUM INSTALLATIONS 1996 - 2002

<u>3 Series</u>		<u>4 Series</u>	
Rolls Royce, Derby	M2008	Major Machine	M2001
Vickers	M2011	Nordberg	M2002
Rolls Royce, Bristol	M2017	GEAES Wales	M2004
Rolls Royce, Bristol	M2019	GEC ALSTHOM	M2005
Le Piston	M2022	Belmar	M2003
Engine Systems	M2015	Svedala	M2010
Roll Neck Rings	M2012	Svedala	M2039
Roll Neck Rings	M2027	<u>Svedala</u>	M2040
Stainless Metalcraft	M2018	Barnes Aerospace	M2006
Grove/Rotek	M2007		
Hong Guang China	M2038		
Kaiser Rockwell Collins	M2041		
Kaiser Rockwell Collins	M2042		
GEAES Wales	M2023		
PWA Dublin	M2037		

MILLENNIUM SERIES 3 1996 - 2002

M2007 – Rotek, Ohio

2F-175/210H
Grinding Spindle 200sq x 1m
FSE Filtration unit grinding head B/T
Wheel Dresser
Fagor Control
37.5Kw
[CRANE DRIVE WHEELS AND RINGS]

M2008 – Rolls Royce, Derby

3E-120/150H
Live spindle 200sq x 1m
Fanuc 18Ti control
Static and driven tools
Tool probe renishaw
Work probe Renishaw
37.5Kw
[AERO ENGINE COMPONENTS]

M2011 – Vickers Defence Systems, Leeds (transferred to Newcastle)

3E-120/150H
Live spindle 200sq x 1m
4 jaw chuck
Tool probe – Renishaw
Static and driven tools
18 station ATC (RH)
Fanuc 18Ti control
37.5KW
[MILITARY TANK DRIVE TRAIN COMPONENTS]

M2012 – Roll Neck Rings, Sheffield

2E-175/210H
Static ram 200sq x 1m
4 jaw chuck
18 station ATC (RH)
Static tools
Fanuc 18Ti control
37.5Kw
[AERO ENGINE COMPONENTS]

M2015 – Engine Systems, Motive Power Industries, Albany, New York

3E-132/150H
Live spindle 200sq x 1m
18 station ATC (RH)
Static & driven tools
Fanuc 18TB control
Tool probe)
Work probe) Renishaw
37.5Kw
40kg Jib crane for tool loading fixture transfer system (4off pallets)
[LOCOMOTIVE TURBO CHARGERS]

M2017 & M2019 –Rolls Royce, Bristol

3E-120/150H
Live spindle 200sq x 1m
18 station ATC (RH)
18 station ATC (LH)
Static & driven tools
Tool probe)
Work probe) Renishaw
37.5Kw
Siemens 840D control
[AERO ENGINE MANUFACTURE]

M2018 – Stainless Metalcraft, Cambridge

3E-175/210H

300 column extension

Fabricated column

4 jaw chuck

37.5Kw

Siemens 840D control

Right angled milling head

18 station ATC (RH)

Static and driven tools

Live spindle 200sq x 1m

[MEDICAL - BODY SCANNERS]

M2022 – Le Piston Francais, Nr Paris, France

2F-125/180H

Static ram 200sq x 1m

45Kw

18 station ATC (RH)

Fanuc 18Ti control

Static tools

[AERO ENGINE COMPONENTS]

M2023 – GEAES (General Electric Aircraft Engine Services)

3E-150/180H

Live spindle – 250sq x 1m

25 station ATC (RH) special

Master tool block

Capto C8 Tooling

Inline grinding spindle (Boneham & Turner)

Tool setting probe

Workpiece inspection unit (Renishaw)

Oscillating head unit (BSA)

Power clamping system (3R)

Artifact Calibration unit

Fixture transfer pallet system

Special control console

Acoustic enclosures (Hydraulic & chiller)

Air conditioning unit

Live/static tooling

45Kw

Wheel dressing unit

Fanuc 18Ti control

[AERO ENGINE REPAIR]

M2027 – Roll Neck Rings, Sheffield

3E-175/210H

300 extended cutting height

4 jaw chuck

45Kw

Live spindle 200sq x 1m

Static & driven tools

18 station ATC (RH)

Fanuc 18Ti control

[RAILWAY AND AERO ENGINE COMPONENTS]

M2037 Pratt & Whitney, Airmotive

3E-183/210H

300 extended cutting height

Live spindle 25 sq x 1m

45Kw

18 station ATC (RH)

Static & driven tools

Acoustic enclosure for hydraulics and lube

Fanuc 18Ti control

Centrifugal coolant system

Overhead pendant

[AERO ENGINE COMPONENTS]

M2038 – Shaanxi Hong Guang Machinery Factory, China

3F-120/15H (X axis traverse 200 LH, 1400 RH)

Live spindle 250sq x 1m

60Kw

Siemens 840D control

Static & driven tools

24 station ATC (RH)

Adjustable angle head

Work probing – Renishaw

[AERO ENGINE MANUFACTURE]

M2041 – Kaiser Rollmet (Rockwell Defence), California

3E-122/150H

Live spindle 250sq x 1.25m

Static & driven tools

Siemens 840D control

18 station ATC (LH)

60 station vertical toolchanger (Capto C6)

High pressure coolant system (Chip blaster)

45Kw

Kelch toolsetting system

Montronix anti collision system

Balluff tool identification system

Fixture transfer system (2 pallets)

Fixtures for component manufacture (1 set)

Special Sandvik boring bars (3 off)

Master tool block (vertical) 1 off

Master tool block (horizontal) 1 off

Right angle head (heavy duty) 1 off

Universal head (2 off)

Inline head 1 off

Right angle head (light duty) 1 off

Capto C6 tooling

[ROCKET COMPONENTS]

M2042 - Kaiser Rollmet (Rockwell Defence), California

3E-122/150H

Same as above except for:

Kelch toolsetting system – delete

Column, extended height x 435 & fabricated fixtures for component manufacture

(1 set added)

[ROCKET COMPONENTS]

MILLENNIUM SERIES 4 1996 - 2002

M2001 – Major Tool & Machine, Indianapolis, USA

2E-160/220H
Live spindle 250sq x 1.5m
4 jaw chuck
18 station ATC (RH)
75Kw
Fanuc 16TB control
[AEROSPACE PRODUCTS]

M2002 – Nordberg, Johannesburg

3E-160/220H
Automatic pallet system
Live spindle 250sq x 1.5m
18 station ATC (RH)
75Kw
Fanuc 16TB Control
Angular boring/milling head & stand (LH)
Tool probe)
Work probe) Renishaw
75Kw
Siemens 840C control
[MINING EQUIPMENT]

M2003 – Belmar Petrochemical, Aberdeen

2E-200/250
Static ram 200 sq x 1.5m (60150)
18 station ATC (RH) Raise & Lower
800 column extension
75Kw
Fanuc 18TB control
Tool probe)
Work probe) Renishaw
[OILFIELD WELLHEAD EQUIPMENT]

M2004 – British Airways (GEAES)

3E-235/250H
Grinding/Live spindle 250sq x 1.5m
5° grinding spindle
Inline grinding spindle
75Kw
Fanuc 18TB control
Work probing – Renishaw
[AERO ENGINE REFURBISHMENT]

M2005 – GEC Alstom, Rugby

3E-125/220
Live spindle 250sq x 1.5m
55Kw
4 jaw hydraulic chuck (Rotormors)
18 station ATC (LH)
40 position chain type toolchanger (RH)
80kg Jib crane
Siemens 840D control
[RAILWAY HIGH SPEED TRANSMISSIONS]

M2006 – Barnes Windsor Aerospace, Connecticut

3E-213/250H

Live Spindle 250sq x 1.5m

Inline grinding spindle

Adjustable angle head (2 off)

50Kw

18 station ATC (RH)

Fanuc 16TB control

Work probing)

Tool probing) Renishaw

[AEROSPACE COMPONENTS]

M2039 – Svedala Airbro, Sweden

2E-180/220

Static ram 250sq x 1.5

75Kw

Siemens 840D control

4 station ATC (both sides)

[CIVIL ENGINEERING MACHINERY]

M2040 - Svedala Airbro, Sweden

2E-180/220

Static ram 250sq x 1.5

75Kw

Siemens 840D control

4 station ATC (both sides)

[CIVIL ENGINEERING MACHINERY]

M2010 – Svedala Airbro, Sweden

2 x 2E-200/250

Static ram 250sq x 1.5

75Kw

Siemens 840D control

4 station ATC (both sides)

[CIVIL ENGINEERING MACHINERY]

EVOLUTION SERIES 2004 - 2007

Evolution R48R series

ABC Diesels Belgium 13515
Live spindle. PCD drill
Diesel engine manufacturers

KBB Turbochargers. 13518
Germany
Live spindle. PCD drill
Turbo chargers

London Underground 13902
England
5 position turret
Train wheels

Wheels India. Chennai 13502
India
5 position turret
Wheels for Caterpillar

Weaver Mabbs. England 13530
Live spindle. PCD drill
General machining

Waukesha. Scotland 13543
Live spindle. PCD drill
Large bearings

Varco National Oil, Holland 13544
2 axis turning with fixture transfer
Oil Industry couplings

Siemens. Germany 13546
2 axis. **Robot toolchanger**
Capto auto toolchange
Power generation

Evolution R72R series

Ostlandskemettall 13529
Norway
Live spindle. PCD drill
Aluminium foundry

GE Caledonian Airmotive. Scotland 13540
Live spindle. PCD drill
Grinding
Aero engine rework

Siemens Napier Turbo 13537
Chargers. England
Live spindle. PCD drill
Turbochargers

Silcoms. England 13542
2 axis turning
Aero engine rings

Elliott Turbochargers 13555
England
2 axis turning
Turbochargers

Kownatski. Germany 13548
Live spindle. PCD drill
Large gear cutters

Egyptair. Egypt 13545
Full C axis milling & grinding
Aero engine repair

Siemens. Germany 2 axis. Robot toolchanger Capto auto tool change <i>Power generation</i>	13551	MTU Canada Full C axis milling and CNC angular grinding <i>Aero engine repair</i>	13547
Siemens. Germany Live Spindle PCD with Robot toolchanger Capto auto tool change <i>Power generation</i>	13552	Ohresser . France Full C axis <i>General Machining</i>	13549
Caterpillar India Full C axis 2+2 hydraulic chuck <i>Construction machinery</i>	13575	Kownatzki. Germany Live Spindle PCD <i>Gear Manufacturing</i>	13548
Varco National Oil Holland 2 axis power turning <i>Oil field exploration tooling</i>	13573	Corus Mannsteadt Germany Full C axis Magnetic Workholding <i>Steel Industry</i>	13550

AEROTURN MODELS DELIVERED 2010

Varco National Oil Holland
2 axis power turning
Fixture transfer System
Oil field exploration tooling

Schuf Armaturen Germany
C axis.
2 live spindle rams (1 for angular grinding)
Valve manufacture

REVELATION1 SUPER POWERFUL SERIES 2005 - 2008

Lufthansa N3. Germany

Revelation 180/200

Capto C6 integrated spindle. Full C axis and live spindle ram

Second ram with **elliptical Turning facility**

Aero Engine repair

Siemens. Germany

Revelation 150/180

High Power twin 51Kw table drive.

Robot Toolchanger. Capto C6 auto tool change

Power generation

Siemens. Germany

Revelation 180/200

High power twin 71Kw table drive. Full C axis 34K live spindle ram

Robot Toolchanger Capto C6 auto tool change

Power generation

Siemens. Germany

Revelation 150/180

High power twin 71Kw table drive. Full C axis 34K live spindle ram

Robot Toolchanger Capto C6 auto tool change

Power generation

Siemens. Germany

Revelation 220/250*

High Power twin 51Kw table drive

Robot Toolchanger Capto C6 auto tool change

Power generation

Siemens. Germany

Revelation 220/250 *

High power twin 71Kw table drive. Full C axis 34K live spindle ram

Robot Toolchanger Capto C6 auto tool change

Power generation

REVELATION 1 INSTALLATIONS 2008 – 2009

Richardson Manufacturing USA

Revelation 200/220 *** [final design and machine build by Wickman Bennett]

Twin drive Full C axis. Two live rams. Two ATC

2800mm height capacity 2000mm 2+2 hydraulic chuck

Construction machinery

Gardner Denver USA

Revelation 180/200 *** [final design and machine build by Wickman Bennett]

High power single 60Kw drive power turning

2800mm height capacity. Eccentric turning head for heavy crankshafts

Capto C6 auto tool change

Compressors and pumps

Excel Foundry USA

Revelation 220/250 *** [final design and machine build by Wickman Bennett]

High power twin 60Kw table drive. Full C axis 30Kw live spindle ram

2800mm height capacity. 1800mm ram stroke.

Right angle milling head with auto 50CAT toolchange

Y axis milling attachment with auto 50CAT toolchange

Robot auto tool changer. 2200mm 2+2 hydraulic chuck

Replacement parts crushing and mining

Excel Foundry USA

Revelation 160/200 *** [final design and machine build by Wickman Bennett]

High power twin 60Kw table drive. Full C axis 30Kw live spindle ram

2800mm height capacity. 1800mm ram stroke.

Right angle milling head with auto 50CAT toolchange

Y axis milling attachment with auto 50CAT toolchange

Robot auto tool changer. 2200mm 2+2 hydraulic chuck

Replacement parts crushing and mining

Addendum 2

Webster & Bennett installations 1960 - 1992

Aero Engine Manufacturing & Aerospace Servicing Industry

A O Henton (7)	Hong Guang China National Aircraft (1)
Airbus, Korea (1)	Ilkeston Aerospace (17)
Air carrier Engine Services USA (1)	Iberia Airlines, Spain (2)
Air India (1)	Iran Aircraft (3)
Airmotive, Ireland (3)	Israel (9)
Airite USA (1)	J S Chinn (15)
Allvac (5)	KLM (1)
Alstec (3)	Korean Airlines (1)
Australian Royal Air Force (2)	Le Piston Francais (2)
Avionics (4)	Lockheed, USA (1)
BAE Systems (6)	Lufthansa Airmotive (4)
Barnes Windsor Aerospace USA (1)	McCordle Engineers (2)
Bell Aerospace USA (1)	Major Tool & Machine USA (3)
Bombardier (1)	MBB Aerospace (6)
Bristol Aerospace Canada (1)	Newage (8)
British Airways (6)	New Zealand Airforce (1)
Callender Aeroparts (2)	Pan American USA (2)
Cromalloy (8)	Philippine Airlines (1)
Chromalloy Holland (2)	Pratt & Whitney Ireland (5)
China Airlines (5)	Pratt & Whitney, USA (1)
CUK (5)	Pratt & Whitney Canada (1)
Delta Airlines, USA (5)	Purdy Corporation USA (1)
Doncasters Bramah (11)	Roll Neck Rings (25)
Doncasters FVC (8)	Rolls Royce (UK) (244)
Doncasters Blaenavon (12)	Rolls Wood (2)
Doncasters Shrewsbury (10)	Royal Air Force (2)
Dowty Aerospace (2)	South African Airways (1)
Earby Light (2)	Sabena, Belgium (1)
Eastern Airlines USA(1)	Shannon Turbine (5)
Fairchild Svatos USA (1)	Silcoms (12)
Famat, France (1)	Simera SA (1)
Federal Mogul (6)	Smiths Aerospace (4)
Firth Rixson (21)	Smiths (Harlow) (10)
Gardner Aerospace (22)	Standard Tool (4)
GE Caledonian Airmotive (5)	Thompson Engineering (1)
GE Hungary (2)	T I Reynold Rings (14)
GEC Whetstone (4)	Tinker USA Airforce (7)
General Electric Aircraft Engine Services (8)	Trans Australian (1)
Gulf Atomics USA (1)	United Airlines USA (3)
Hammec Engineering (2)	Warner Robbins, Japan (1)
Haeco, Hong Kong (1)	Wyman Gordon (7)
HAESL Hong Kong (3)	Yewlands Engineering (2)
Harker & Sons (11)	

Bearings, Medical

Cooper Roller Bearings (5)	Rotek USA (5)
Hoyt Darchem (2)	Solent & Pratt Curtis Wright (4)
Michell Bearings (2)	Stainless Metalcraft (5)
Plenty (8)	Tomoe Tritex Valves(2)
Railko (2)	Timken (2)
Glacier Metal Waukesha (8)	

Railway Industry Manufacture & Remachining Worn Wheels

ABB, London (2)	Metro Dade Florida USA
ABB, Switzerland (4)	New Zealand Rail (2)
Alsthom (3)	Nigeria Rail (2)
Alstom Train (2)	Norwegian Rail (5)
Australian Rail (1)	Penn State USA (1)
Brazil Rail (1)	Premier SA (7)
British Rail (33)	Queensland Railways, Australia (9)
Burlington Northern Railway USA (1)	R&H Engineering SA (1)
Cameroon Rail (1)	Rapid Allweiler SA (1)
David Brown (6)	Ringrollers SA (3)
Engine Systems USA (1)	South African Railways (27)
France SNCF (3)	SP Flanges SA (5)
GEC Alstom Gears (4)	Sri Lankan Rail (2)
Ghana Railways (1)	Steel Peech Tozer (1)
Gunric Valves SA (2)	Steelwheels (4)
Hong Kong Rail (1)	Sudan Rail (6)
Howden SA (3)	Tanzanian Railways (2)
Indian Railways (64)	TOSA SA (3)
Indonesian Railways (2)	Transwerk Railways SA (42)
Iraq Rail(4)	Uganda railways (1)
London Underground Metronet (6)	Valvetech SA (2)
Malaysian rail (4)	

Electricity Power Generation Industry

Babcock & Wilcox (5)	GEC (55)
BNFL westinghouse (1)	General Electric, Brazil (2)
British Electric (4)	General Electric USA (6)
Brook Crompton Invensys (6)	GE Power (4)
Brown Bovenri, Switzerland (7)	John Brown (11)
Brush Electric Dewind (11)	Joy Manufacturing, USA (1)
Canadian General Electric (1)	Laurence Scott (1)
Canadian Westinghouse (1)	Lucas (33)
CEGB (31)	Mather & Platt (3)
CN Coal Classification USA (2)	Mitsubishi, Japan (2)
Commonwealth Edison USA (1)	NEI (34)
De Lavel Steam turbine USA (1)	S.A.M.P. France (1)
Dowding & Mills (12)	U S Elec Motors USA (2)
Electric Wheel Co, USA (6)	W H Allen (2)

Oil Industry, pumps and valves

ABB Vetco Gray (4)	Harland Engineering (1)
Aberdeen Jig & Tool (2)	Hughes christensen (2)
Allen Gwynne Pumps (2)	Hydraulic Pumps USA (2)
Arabian Gulf (1)	Jawaby Oil Libya (1)
AVK Group (10)	Johnson Pumps USA (2)
Bahrain (1)	Labour Pumps (2)
Barton Valve USA (3)	Lawrence Pumps USA (2)
Belmar (2)	M & J valve USA (1)
BP (2)	Mcevoy USA (3)
British Engines (7)	Nagle Pumps USA (1)
Bryan Donkin Valves (3)	National Iranian (3)

Burmah Oil (2)
Cameron Iron (5)
CMI USA (5)
CNV Venezuela (5)
Corby valve USA (1)
Flowserve Canada (5)
Deep Sea Seals (6)
Gulf & Western USA (5)
Hacker Pyramid USA (3)

Robert Cort (2)
Tomoe Tritex
TWR USA (2)
Union Pumps USA (3)
Vanessa Valvulas NV Brazil (6)
Welding Units (5)
Weir Pumps (12)
Worcester Control (2)
Worthington Pumps USA (2)

Defence

Egyptian Tank (2)
Indian Store (6)
Rosyth Naval Dockyard (1)
Ministry of Defence (27)
Devenport Naval dockyard (4)

Rockwell Collins Kaiser USA (2)
Palmetto Yard USA (1)
Pressure Systems USA (2)
Royal Ordnance Factories (19)
Vickers Defence (3)

Tyre Moulds

Akron (2)
Arrowsmith Tool & Die USA(2)
B F Goodrich, USA (3)
Bridgewater (3)
Dunlop (14)

Firestone USA(7)
Goodyear (1)
Martz USA (2)
Uniroyal (1)
US Rubber (3)

Machine Tool Industry

Butterley Engineering (3)
Brown & Sharpe USA (2)
Colchester Lathes (4)
Giddings & Lewis, USA (1)

King Machine Tool Co, USA (1)
Lumsden Machine Tool (1)
Mensaco Manufacturing USA (1)
Norton Manufacturing (1)

General Engineering/Marine Foundry/Forge/Automotive/Construction

ABC Diesels Belgium (2)
ABEX Corporation USA (7)
Admiral Machine Co, USA (2)
Aeroquip USA (1)
Airborne Instruments USA (1)
Airtex Dynamics USA (3)
Air Products (2)
Albion Engineering (1)
Allen Gears (4)
Alpine machine USA (1)
Aluminium Co of America (2)
American Cano USA (1)
American Standard USA (1)
Attwood & Morrill USA (3)
BICC (3)
Bingham Williamette USA (2)
Blackstone Corp USA (1)
Blansons (3)
Borg & Beck Brazil (2)
Braithwaite India (1)
Brandywine USA (1)
Brinkman USA (1)

Engine Systems (1)
English B/Colt Ind. USA (1)
Farris Engineering USA (1)
Ferguson Machinery USA (1)
Firth Brown (2)
Formosa Plastics Taiwan (1)
Gears & Sprockets USA (1)
Hydrovane (5)
Ind Maquinas Melallinquia Jarque,Brazil(3)
Industrias Romi Brazil (2)
Industries Villares Brazil (6)
Ingersoll Rand (2)
J R Bramah (8)
James Mackie Ireland (2)
Juhe USA (3)
KBB Turbo chargers Dresden (1)
K & V (6)
Kahlenberg USA (1)
Kinzig USA (1)
Ladish Corp USA (1)
Laroe Oswe Co USA (2)
Lembert France (1)

British Leyland (53)
British Steel - Corus (15)
British Timken (2)
Brown Lennox (2)
Bronzes D'industrie France (1)
Byron Jackson USA (5)
CPM (5)
California General USA (2)
Cann & Sanl USA (1)
Carborundum (4)
Caterpillar (4)
Central Engineering SA (1)
Cimba Brazil (3)
Clarke Controls USA (1)
Cleveland Hardwood USA (2)
Coles Cranes (1)
Compair (7)
Conforja/Nordest Brazil (2)
Cobrasma Brazil (3)
Continental Equipment USA (2)
Connolly USA (1)
Crofts (1)
Cummins Engine (11)
David Brown (13)
Dayton Reliable Tool USA (1)
De Beers Ireland (2)
Dedini Brazil (1)
Earle Gear & Machine USA (1)
East Dayton Tool & Die (1)
Egyptian Ministry of Agriculture (1)

Leeds & Bradford Boiler (2)
Leonard Precsion USA (1)
Macanica Jarguq Brazil (2)
Masoneilam USA (1)
Mechanical Specialities USA (1)
Millcraft USA (1)
Mirlees Blackstone (5)
Molgar Manufacturing USA (1)
Motores Bufalo Brazil (4)
Newburg (1)
Newcastle Engineering Australia (1)
New England Britt USA (1)
Newport Shipbuilders USA (3)
Nabalco Australia (1)
Nordberg South Africa (7)
Norton Manufacturing USA (2)
Ohio Machine & Mould USA (3)
Overton Gear USA (1)
Panelyte Div. Of Thiokol USA (1)
Pegson (10)
Perkins Brazil (2)
Portland Machinery USA (1)
R & W machines USA (1)
Ralls Lima USA (1)
Reed Tool USA (1)
Renold Gears (2)
Richardson Manufacturing,USA (1)
Sandvik Svedala Sweden (3)
Talleres Iruma Spain (1)
Teinbridge (1)
Thos Broadbent (2)

General Engineering/Marine
Foundry/Forge/Automotive/Construction continued.....

Troftnow USA (1)
T W Transmissions (2)
Unitech USA (1)
Valley Machine USA (1)
Varco International USA (1)
Vicete Tool & Die USA (1)

Walbar USA (2)
Warman Australia (4)
West Milton Precision USA (1)
W M Beardmore (3)
William Cook Catton (4)
Yeoman Brothers USA (1)