

BASE & HYD. POWER UNIT

Left base plate	A-97180	Washer	(8)	B-96785
Right base plate	A-97181	Front guard (base)		A-87089
Base	L-87066	F.C.V. subplate	(8)	A-92043
Guard	L-87126	Cr. Sl. & O.H.S. manifold		A-87128
Guard (3)	B-87873	Turret slide manifold		A-87129
Guard	B-87874	Socket		B-87754
Motor plate	L-87067	Check valve body	(8)	A-92041
Pump base (3)	A-87068	Piston shaft	(8)	B-87132
Rapid manifold (2)	A-87069	Spring	(8)	B-46767
Low pressure manifold	A-87070	'O' ring cap	(8)	B-87134
End cover (2)	A-87071	Piston	(8)	B-87135
Cover gasket (2)	A-87072	Piston cap	(8)	B-87136
Sump filter brkt. (4)	A-87073	Extension shaft		B-87752
Filter brkt. gasket (4)	A-87074	Shaft support		B-87753

HYDRAULIC EQUIPMENT

Continental - Press. comp. hyd. pump (3) manifold mount. - double end drive shaft & with max. vol. cont. #PVRI-6B06-RM-0-613		Double A press. comp. flow control (8) valve - No. QXA-005-54A1
Continental air pilot - 2 pos.-4 way (9) valve #VA8M-1A-A-10		Manatrol - CR-600-S-8--10 - 90 to 150 PSI - relief valve
Char-Lynn geroter orbit motor with 1/2" ports - Model #D-5-M		Manatrol - RPS 600-1 relief valve (70-1000 PSI)
Century Detroit - fluid level gauge #8575-T with Fahrenheit scale		Manatrol - N400-B10 needle valve
Continental air pilot - 3 pos.-4 way (2) valve #VABM-3L-A-10		Manatrol - CS-600-S-10 check valve
Marvel filter #33115 MI-10 Micron (2) B-85891		Manatrol - PRS-600-S-1 pressure reducing valve
Marvel filter #1510-HB-100 bonded (2) line type-100 mesh with 3 PSI by-pass		Fed. Brass - Type 700 filler breather cap assm.
Marvel sump type filter #C-1-10-100 (3) synclinal 100 mesh - 1" P.T.		Manatrol - PR-600-1 pressure reducing valve
Cylinder - 2½ bore x 18" stroke B-86944		Continental - Press. comp. hyd. pump manifold mount. - double end drive shaft & with max. vol. cont. #PVRI-6B06-RM-0-613
Cylinder - 2½ bore x 13" stroke A-86945		Hyd. cylinder - 2-1/2" bore x 4 stroke B-85775
Marsh press. gauge (0-200) B-84303		Marvel filter #C-1-10-100
Marsh press. gauge (0-600) B-84543		Marvel filter B-85891
Spray Eng. spray nozzle (79°) (2) B-85945		Manatrol flow control valve No. MTPCS-600
Manatrol N-800-B-10 needle valve (2)		Manatrol check valve - #CS-600-S-10
Manatrol MV-401-B needle valve (2)		Manatrol decel. valve #DS-600-S-10
Fluid controls - double pilot (2)		Continental air pilot - 3 pos.-4 way valve #VA8M-3L-A-10
check valve #4KK33-N4-S with 1/2" ports & delrin seat		

Bardons & Oliver, Inc. - Cleveland, Ohio U.S.A.

S A-2-P
R-310

BED, PAN & LEGS

B & O name plate	A-85059	Rear guard	A-87856
Machine size plate	A-88279	Top cover	A-87578
Bed	L-87113	Spindle guard	A-88206
R.H. leg	L-87266	Strainer	A-87469
L.H. leg	L-87267	Head guard	L-87575
Pan	L-86949	Hose guard	A-87695
Pump brkt.	A-87468	Hose manifold	A-87579
Main guard	L-90499	Bedway	(2) A-86760
Tooling guard	L-90497	Rear guard	A-87856
Rear splash guard	L-90498	Knob	(4) B-84088
Side splash guard	A-90494	Bushing	B-87518
Front splash guard	A-90493	Roller	(2) B-89384
Cover	A-90495	Spacer	(2) B-89385
Cover	A-90496	Strap	(5) B-87696
Cover	A-90465		

HEAD

Brg. closer	A-86066	A0 550 clutch hub	(2)	A-86823
Brg. closer	A-86067	Manifold plate		B-87286
Front bearing closer	A-86812	Manifold plate		B-87287
Head	L-86813	33 T gear		A-86827
Housing	L-86814	81 T gear		A-86828
Head manifold	L-87256	MRC bearing No. 213 SZ		
Shaft	A-86083	MRC bearing No. 113 KS		
60 T.gear	A-86815	MRC bearing No. 5307		
71 T gear	A-86816	MRC bearing No. 109 KRDS	(2)	
59 T.gear	A-86817	MRC bearing No. 212 S	(2)	
71 T gear	A-86818	MRC bearing No. 308 S	(2)	
98 T gear	A-86819	MRC bearing No. 112 KRDS	(2)	
49 T gear	A-86820	MRC bearing No. 5309		
29 T gear	A-86821	Cabat clutch No. A0 450 without hub	(2)	
Pinion shaft	A-86831	Cabat clutch No. A0 550 without hub	(2)	
Driving button	B-37291	Spindle		A-86844
Washer	B-69499	Rear bearing closer		A-86845
Washer (2)	B-69501	Adj. nut		A-86846
Washer	B-69502	Adj. nut		A-86847
Spacer	B-86068	63 T gear		A-86848
Brg. closer (2)	B-86073	100 T.gear		A-86849
Spacer	B-86074	Spacer		B-86850
Brg. closer (2)	B-86078	Spacer		B-86851
Spacer (2)	B-86079	Brg. closer		B-86852
Spacer	B-86082	Inner plunger (1 ea. of 4)		A-85651
Spacer	B-86131	Cabat clutch hub A0 900		A-86854
Spacer	B-86203	Cabat clutch No. A0 900 without hub		
Key (2)	B-86865	Kaydon bearing No. KG050XPO		
Spindle guard pin	B-86866	Timken bearing cone No. 64450		
Cover (2)	B-86182	Timken bearing cup No. 64700		
Cover gasket (2)	B-87177	Timken bearing cone No. 67390		
A0 450 clutch hub (2)	A-86822	Timken bearing cup No. 67320		

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COLLET CHUCK & AIR CYLINDER

Yoke bracket	A-86865	Roller pin	(2)	B-45431
Detent	B-46705	Finger roller	(2)	B-46969
Detent plug	B-46706	Adj. sleeve		A-47039
Detent spring	B-46707	Adj. ring		B-48065
Actuator	B-87321	Wedge		A-74996
Spindle guard	L-86968	Wedge shoe	(2)	B-74999
Spindle guard	L-86969	Finger holder		A-80351
Yoke pivot	A-86970	Finger weight	(2)	B-80905
Valve body	B-88334	Finger	(2)	A-80906
Spindle guard end	A-86972	Adj. sleeve exten.		A-83735
Valve closer	B-87529	Plunger		B-86853
Cylinder link	B-86975	Cylindermount. block	(2)	A-86980
Yoke link pin	B-86976	Air cylinder		A-86981
Lever	B-86977	Spring		B-52222
Washer	1072	Key		2233
Key	2296	Bunting bushing E464		
Yoke	A-86967	Bunting bushing EA839		
Wedge shoe stud	(2) B-42434	Glyd. ring S-12547-010		B-87984
Finger holder friction	B-44275	Reliance snap ring 308		B-71115
Finger pivot pin	(2) B-45414			

COLLET

Collet pad
Collet hood

A-49563
A-88235

Master collet
False jaw screw

(4)

A-44578
2231

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MOTOR DRIVE

Brg. closer
Motor shaft Fr. 286

A-86855
A-86856

Adapter plate Fr. 286

A-86857

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5A-7-P
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ELECT. EQUIPMENT

Hoffman screw cover	B-87075	Powers Reg. Model #134-1081	
Box cat. no. A-404SC		50° - 130° F thermostat range	
Top mtg. brkt.	A-87705	With closed tank connector	
Botton brkt.	A-87706	part # 134-050	
Strap	A-87707	West circuit breaker	
Brace	A-87718	Type JA 3200SW-220V	
20/10 HP motor, constant torque, two		West vari-depth	
speed, 1800/900 RPM single winding,		handle mechanism	
T.E.F.C. NEMA D flange mtg., 3 phase		373D958G05 handle mech.	
60 cycle		47A4446G21 handle	
3 HP-1800 RPM T.E.F.C., frame 182T		47A4446G16 shaft	
with double end shaft 230/460V,		West transformer, type MTA-2000 VA	
3 phase, 60 cycle		Cat. # 1F0966	
Gusher motor driven coolant pump		Hoffman box #E-2PB	
Model 6-P3 long		Hoffman A423608 control panel enclosure	
Impeller #6183		Johnson Service pressure switch #FOA-40 (5)	
1/6 HP - 3450 RPM		Vibro insulator - type 44	(2)
230/460V, 3 phase, 60 cycle		Fusetron FRN 3.2 amp fuse	(2)
A-B Bul 705 without overload		Fusetron FRN 2 amp fuse	(2)
705 DOD 23 size 3			
A-B Bul 715 open		For 220V	
715 DOD 12 size 3		Multi #2502 fuse block (2 pole)	(2)
A-B N45 & N43 @ 220V heater	(3)	Multi #2520 fuse block	(8)
A-B Bul 709 open	(2)	Fusetron FRS 15 amp fuse	(3)
709 Bod size 1		Fusetron FRS 8/10 amp fuse	(2)
A-B N30 @ 220V Heater	(3)	Fusetron FRS 12 amp fuse	(2)
A-B N4X @ 220V Heater	(3)		
A-B Bul 700-N400 control relay			
A-B Bul 800T-PB16A			
A-B Bul 800T-B6A			
GE Calrod-120V immersion	(2)		
heater, Cat. #2D356 - 500 watt			

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TURRET & SADDLE

Saddle	L-86711	Hyd. cyl. rod		A-87261
Turret	L-86735	Hyd. cyl. bracket	(2)	A-87279
Curvic coupl (Lower)	A-86517	Stem bracket		A-87547
Curvic coupl (Upper)	A-86518	Valve stem		A-87548
Pipe bracket	A-87058	Bushing		A-87549
Valve bracket	A-87090	Carbide inserts	(2)	B-86657
Stop bracket	A-87226	Binder bolt	(6)	B-34553
Hose bracket	A-87658	Gib screw	(4)	B-58815
Wiper	A-86950	Lock bolt spring		B-34179
Rear cap-left	A-86956	Valve spring	(3)	B-45759
Index cam	A-86504	Spring		B-50363
Yoke	A-86644	Hub		B-86687
Yoke plate	A-86645	Cartridge		B-86688
Seal ring	A-86682	Cover		B-86689
Chip guard	A-86683	Cam		B-86703
28 tooth gear	A-86684	Pin	(2)	B-86704
14 tooth gear	A-86685	Roller	(2)	B-86705
Center post	A-86686	Adapter		B-86706
Rear cap - right	A-86957	Coupling		B-86707
Valve block	A-87032	Cartridge		B-86708
End plate	A-87033	Shim	(2)	B-86709
76 tooth gear	A-87035	Stop screw	(6)	B-86769
38 tooth gear	A-87036	Wiper cover		B-86951
40 tooth gear	A-87037	Hannifin hyd. cyl.- series 3L		
Pipe cover	A-87082	with lip seal piston-2½" bore-		
Index cam	A-87219	18" stroke with standard rod		
Cam plate	A-87220	(1")-style KT-double end rod-		
Bijur bracket	A-87221	no cushions		B-86944
Rear cover	A-87222	Wiper cover		B-86952
Top cover	A-87224	Gib		B-86953
Valve cover	A-87225	Cap gib	(2)	B-87257
Stop screw	A-87227	Front cap	(2)	B-86955
Valve body	A-87248	Bushing		B-86996
Hyd. cyl. guard	A-87259	Bushing		B-86997
Hyd. cyl. guard	A-87260	Pin	(4)	B-87026

TURRET & SADDLE (CONT.)

20 tooth gear	B-87038	Spacer	B-78245
Gib	B-97280	Pin	B-87701
Spacer	B-87040	Spacer	B-87788
Valve disc	B-87042	Stop screw roll	A-87806
Pinion stud	B-87043	Stop screw clamp	(6) B-87807
Shaft	B-87044	Clamp nut	(6) B-87808
Key	B-87046	Dial	(6) B-87890
Key	B-87047	Brass shoe	(6) B-89011
Brg. closer	B-87216	Spring	(8) B-52222
Cam lock	(8) B-87317	McGill cam roll No. CFH-1 1/8"	(6) B-91217
Actuator	B-87250	Reliance snaprings	(8) B-71115
Bracket	B-87217	S-12547-10 glvd. ring	(8) B-87984
Feed cam	(6) B-87218	Woodruff key #3	
Bushing	B-87228	Woodruff key #15	
Bushing	B-87229	Mr. Quad ring seal	(2)
Bushing	B-87230	Minnesota rubber	
Bushing	B-87231	Torrington self-aligning ball	
Guide pin	B-87232	bush. Series SF	
Pivot pin	B-87233	Brg. No. 10SF16	
Key	B-87234	Brg. No. 17SF28	
1) Spring retainer	B-87235	Timken brg.	(2)
Spring	B-87236	Cup 2631	
Keeper	B-87237	Cone 2691	
Key	B-87238	Char-Lynn Gerotor orbit	
Valve closer	B-87249	motor-mtg. style-2 hole	
Gasket	B-88331	flange - Gerotor size -	
Gasket	B-88333	1 1/2 inches	
Valve body	B-87975	1/2 NPTF ports	
Valve closer	B-87254	No. D-5-M	
Pin	B-88619	Kaydon KDQ 42 XPO brg.	
Shim	B-87262	Clippard Minimatics MJV-3	B-94365
Actuator	(8) B-87321	N.C. valve - Purch.	
Block	B-87700	Clippard Minimatics MBA-1	B-94366
Gasket	B-88330	ball actu. - Purch.	
Bracket	B-94364		

RECIPROFEED ATT.

FEED SIGNAL BLOCK	A-87601	GASKET	B-87785
SPRING	(2) B-43713	GASKET	B-87786
STOP NUT	B-83877	BRASS SHOE	(2) 2279
PISTON ROD	B-84985	CHICAGO RAWHIDE #6145	
PISTON	B-84986	AUTO-BUTT JOINT	
CYLINDER	B-84987	DIESEL PISTON RING 1- $\frac{1}{4}$ X3/32X1/16 WALL	
PLUNGER CAP	B-87602	LINEAR O-RING 11-121	
PLUNGER	B-87603	DIECO SPRING #5-031	
CYL. CAP	B-87604	DIECO SPRING #DS-232	
ROD BUSHING	B-87605		
CYL. MOUNTING-RIGHT	B-87606		
CYL. MOUNTING-LEFT	B-87607		

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C.S. & C.

CROSS SLIDE (NARROW)	A-87293	SPACER BLOCK	B-87312
CARRIAGE	L-87294	FRONT KEY	B-87313
FRONT BRKT.	A-87295	REAR KEY	B-87314
REAR BRKT.	A-87296	CAM	(3) B-94916
VALVE BRKT.	A-87297	CAM POSITIONER	(3) B-87316
CROSS SLIDE GIB	B-87298	CAM LOCK	(3) B-87317
STUD	B-37754	CAM PLATE	A-87318
ADJ. SCREW	B-40580	COVER	B-87319
GIB SCREW (4)	B-58815	VALVE COVER	B-87320
WIPER (2)	A-86950	ACTUATOR (5)	B-87321
WIPER COVER (2)	B-86951	STOP PIN (2)	B-87974
WIPER COVER (2)	B-86952	VALVE BLOCK (2)	B-87975
FRONT CAP	B-87299	VALVE BRKT. COVER	B-87324
REAR CAP	A-87300	RETAINER	B-87325
CAP GIB (2)	B-87301	LUBR. BRKT.	A-87326
CARRIAGE GIB (2)	B-87302	CYL. COVER (FOR NARROW SLIDE ONLY)	A-87327
STOP SCREW (2)	A-87303	CRANK	A-87328
STOP (2)	B-87304	MANIFOLD	B-87728
COLLAR (2)	B-87305	SPRING (2)	B-46768
DIAL (2)	B-87306	CYLINDER	A-86945
DIAL CAP (4)	B-87307	SPRING (5)	B-52222
KEY (4)	B-87708	LEE SPRING LC-085K-1-MW (2)	
THRUST WASHER (4)	B-87308	RELIANCE SNAP RING 308 (5)	B-71115
SPRING HOUSING (2)	B-87309	GLVD. RING S-12547-10 (5)	B-87984
FRONT CYL. SUPPORT	B-87310		
REAR CYL. SUPPORT	B-87311		

CONSOLE

CONSOLE CABINET	L-86983	SET-UP PAN. GASKET	A-87240
VOLUME CHAMBER	A-86478	MAN. CONT. PAN. GASKET	A-87241
SET UP PANEL	L-87212	GUARD	A-87659
VOL. CHAMBER COVER	A-86479	SHELF	A-87727
VOL. CHAMBER GASKET	A-86480	ECP #T2 CLIP	(28)
FUNCT. SEL. MANIFOLD	(6) A-84070	FT-ECP - #S17 SIDES	(30)
FOUR PORT MANIFOLD	A-87158	FT-ECP - #C27 COVER	(14)
EIGHT CARD MANIFOLD	(4) A-87159	AIR LOGICS RESTRICTOR FCO-120	(154) B-91268
CARD MOUNTING BAR	(5) A-87160	MARSH 0-100 PSI PR. GAGE	B-88075
MAN. CONT. PANEL	A-87239	MARSH 0-15 PSI PR. GAGE	B-88074
REAR COVER - TOP	A-87161		
REAR COVER - LOWER	A-87162		

AIR CONTROL PANEL

Supply manifold Bracket	(2)	A-85301	Wilkerson air filter with auto drain & 5 micron element #1137-4F	(2) B-91241
Wilkerson #1237-2J-1/4" microalescer filter		B-91239	Wilkerson econo-mist lubricator #3002-E-4 1/2 N.P.T.	B-91242
Wilkerson #1206-4-1/2" microalescer filter		B-91240	Wilkerson pressure regulator #2001-4G 1/2 N.P.T. 3 to 125 psi	(3) B-91243

PNEUMATIC EQUIPMENT

Air Logics FMB-60 manifold card (32)
 Air Logics FLB-251 logic element (192)
 Air Logics fluidic diode #FCD-401 (120) B-91267
 Air Logics FA0-40 Low pressure fluidic electric switch (5) B-91266
 Air Logics FCO-120 (.012) orifice (154) B-91268
 Micro-switch #11 NFI-RG-fluidic indic. (6) B-91269
 Clippard man. 12-manifold (4)
 Fairchild Hiller - Model 30 1/4" midget precision regulator Cat. #30122, 0 to 10 PSI (4) B-88094
 Koby Senior King air filter B-91094
 Supply manifold A-85301
 Wilkerson #1237-2J-1/4" microaléscher filter B-91239
 Wilkerson #1206-4 - 1/2" microaléscher filter B-91240
 Wilkerson air filter with auto. drain 85 micron elem. #1137-4F (2) B-91241

Wilkerson Micro Mist lubricator B-91242 #3502-4
 Wilkerson press. regulator #2001-4
 (1/2" - 3 to 125 PSI) (3) B-91243
 Hoffman box #AHG-24x12x4 A-87166
 Supply manifold A-87167
 Mtg. bracket A-87168
 Northeast #2010 amp. valve (27) B-91244
 Hunt trimline valve, 3 way
 No. P084-2001, norm closed
 Air cyl. 6" bore x 2-5/8 str. A-86981
 3" cap. mach.
 Norgren press. gauge #18-013-101
 (0 to 30 PSI) 1/8" NPT Ctr.
 back connect.
 Norgen 1/16 tube fitt. (100)
 Norge 1/8 tube fitt. (15)
 Tube connector (210) B-85496
 Pitney Bowes 2 port conn. #505-0002 (200)
 Pitney Bowes 3 port conn. #505-0003 (10)
 Pitney Bowes 1 port conn. #505-0001
 Dwyer manometer #1220-12
 Dwyer manometer #1220-24
 Marsh - Std. Type 1 pressure gauge, 1/8 N.P.T. male bott. conn. 0-15 PSI - 2-1/2" dial (3) B-88074
 0-100 PSI - 2-1/2" dial B-88075
 Int. Cont. Corp. - 2 pos.-4 way air pilot - air valve - #010091 (2)
 base mtd. on 1/4 NPT, sub plate

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VERTICAL SLIDE

Gib	B-87517	Junction box		B-90424
Bracket	L-87362	Valve cap	(2)	B-90895
Slide	A-87363	Dog		B-84863
Valve body	A-90411	Stop pin		B-84867
Manifold	A-87364	R.H. cap		B-87368
Clamp	A-93098	Conn. strap		B-87369
Tool block	A-93132	Stop block	(2)	B-87370
L.H. cap	A-87367	Adj. screw		B-87371
Empire T-9 blade	B-93102	Stud nut		#847
Backup rod	B-97264	Adj. nut		#860
Body gasket	B-90415	Brass shoe	(2)	#2279
Adj. screw	B-84858	Washer		#2303

NEW ULM 3" BAR FEED

Arm	A-88525	Inner plunger	A-88538
Extension	A-88526	Drip trough	A-88894
Rod	B-88527	Drip trough brkt.	A-88895
Base plate	A-88528	Bushings (1 set)	A-97302