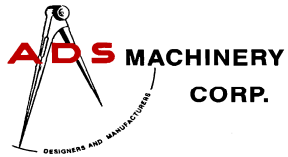


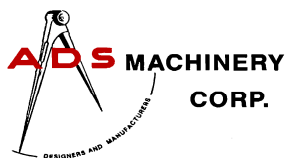
REFERENCE LIST
EXPANDING MANDRELS
 Designed and Built by
A•D•S Machinery Corp

Year	Job	Application	Type	# of Segmt	Collapse Diameter (in.)	Expand Diameter (in.)	Lagging Diameter (in.)	Face (in.)	Coil Weight (lbs.)	Expansion	Gripper	Outboard Bearing	Remarks
1958	513	Payoff	Link	4	14.5	17	20	42	6000	Powered	No	No	
1958	545	Payoff	Link	4	15.5	18.5	N/A	11	2000	Manual	No	No	
1960	771	Coiling	Link	3	15.62	16	N/A	4	3000	Powered	Yes	No	Saloon Door - Two Gripper Slots
1960	772	Both	Wedge	2	2.44	2.71	N/A	27	500	Manual	No	No	Paper Winder/Unwinder
1961	925	Both	Wedge	2	2.94	3.18	N/A	54	1000	Manual	No	No	Paper Winder/Unwinder
1961	943	Payoff	Link	4	13.5	16.5	20	35	3500	Powered	No	No	Round Post Segment Guides
1961	946	Both	Wedge	2	2.94	3.18	N/A	32.5	500	Powered	No	No	Paper Winder/Unwinder
1962	991	Payoff	Link	4	14.5	17	N/A	27.5	11,000	Powered	No	No	
1962	999	Payoff	Link	4	14.5	17	20	29	11,000	Powered	No	No	
1962	1029	Payoff	Wedge	3	14.5	17.5	N/A	36	15,000	Powered	No	No	
1962	1082	Coiling	Wedge	4	15	16	N/A	17	6600	Manual	Yes	No	
1962	1105	Payoff	Link	4	17.5	20.5	N/A	28	5000	Manual	No	No	
1963	1210	Payoff	Wedge	4	19/22.5	21.5/25	N/A	13	10,000	Powered	No	No	Double Stub Payoff Reel-Stepped for Two Diameters
1964	1240	Payoff	Link	4	15	17	N/A	5	3000	Manual	No	No	
1964	1264	Payoff	Wedge	4	3	3.25	N/A	15	2000	Manual	No	No	
1964	1264	Payoff	Wedge	4	5.88	6.18	N/A	13	4500	Manual	No	No	
1964	1290	Both	Wedge	2	3.38	3.62	N/A	54	1000	Manual	No	No	Paper Winder/Unwinder
1964	1378	Coiling	Wedge	4	7.8x4.3	8.2x4.7	N/A	12	1500	Manual	No	No	Rectangular Mandrel for Transformer Cores
1965	1040	Coiling	Wedge	3	19.25	20	N/A	54.5	35,000	Powered	Yes	No	Separate Gripper Segment on Links
1965	1341	Payoff	Link	4	18.5	24.5	N/A	60	10,000	Powered	No	No	
1965	1402	Payoff	Link	4	17	20.5	N/A	53	15,000	Powered	No	No	Saloon Door
1965	1402	Coiling	Link	4	19.5	20	N/A	53	15,000	Powered	Yes	No	Saloon Door - Double Grippers
1965	1419	Payoff	Link	4	15.5	18	N/A	15	1400	Manual	No	No	
1965	1419	Coiling	Link	4	15.5	18	N/A	15	1400	Manual	Yes	No	Manual Gripper
1965	1491	Coiling	Screw	3	15.5	16	N/A	4	3000	Manual	Yes	No	Saloon Door - Manual Gripper
1966	1454	Payoff	Link	4	14.5	17	N/A	32	13,000	Powered	No	No	3 Mandrels
1966	1454	Payoff	Link	4	14.5	17	N/A	56	22,500	Powered	No	No	2 Mandrels
1966	1454	Coiling	Link	3	15.5	16	N/A	59.5	25,000	Powered	Yes	No	5 Mandrels-Saloon Door-Double Gripper-Slots Only
1966	1461	Coiling	Link	3	15.5	16	N/A	3	1000	Manual	No	No	16 Mandrels - Saloon Door
1967	1568	Payoff	Link	4	14.25	17	N/A	20	4500	Powered	No	No	
1967	1707	Coiling	Wedge	3	9.5	10	N/A	44	10,000	Manual	Yes	No	Saloon Door - Manual Gripper
1967	1719	Coiling	Wedge	3	7.38	7.62	N/A	40.5	5500	Powered	Yes	No	Saloon Door - Rotating Gripper Segment
1967	1817	Both	Wedge	2	5.94	6.25	N/A	35	1000	Powered	No	No	4 Mandrels - Paper Winder/Unwinder



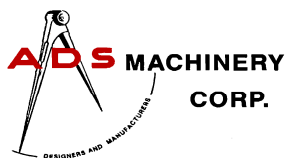
REFERENCE LIST
EXPANDING MANDRELS
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A•D•S Machinery Corp

Year	Job	Application	Type	# of Segmt	Collapse Diameter (in.)	Expand Diameter (in.)	Lagging Diameter (in.)	Face (in.)	Coil Weight (lbs.)	Expansion	Gripper	Outboard Bearing	Remarks
1968	1583	Payoff	Screw	3	18	31	N/A	52	15,000	Powered	No	No	
1968	1583	Coiling	Wedge	8	18.6	20	N/A	52	15,000	Powered	Yes	No	Double Gripper-Cam Operated-Spring Loaded
1968	1644	Payoff	Wedge	3	18.75	19.19	N/A	32.5	15,000	Manual	No	No	
1968	1644	Coiling	Wedge	3	18.75	19.19	N/A	32.5	15,000	Manual	Yes	No	
1968	1713	Payoff	Link	4	11	12.5	N/A	15	5000	Powered	No	No	
1968	1713	Coiling	Link	3	15.5	16	N/A	15	5000	Powered	No	No	Saloon Door
1968	1739	Payoff	Link	4	13	15.5	N/A	28	14,300	Powered	No	No	
1968	1739	Coiling	Wedge	6	18.75	20	N/A	35	14,300	Powered	No	No	
1968	1753	Payoff	Link	4	14.5	17	N/A	20	4,000	Powered	No	No	
1968	1753	Coiling	Link	3	15.5	16	N/A	20	4,000	Powered	No	No	Saloon Door
1968	1769	Payoff	Link	4	14.5	17	N/A	14	1,500	Manual	No	No	
1968	1769	Coiling	Wedge	3	15.62	16.12	N/A	15	1,500	Manual	No	No	Saloon Door
1969	1649	Payoff	Link	4	14.5	17	N/A	15	1500	Manual	No	No	
1969	1649	Coiling	Wedge	3	15.5	16	N/A	15	1500	Manual	Yes	No	Saloon Door - Manual Gripper
1969	1776	Payoff	Link	4	15.38	20.5	N/A	40	25,000	Powered	No	No	2 Mandrels
1969	1882	Payoff	Link	4	15	17.5	N/A	36	15,000	Powered	No	No	
1969	1895	Coiling	Link	3	15.5	16	N/A	4	1,000	Manual	No	No	Saloon Door
1970	1861	Payoff	Link	4	15.38	20.5	N/A	40	25,000	Powered	No	No	2 Mandrels - Same as 1776
1970	1871	Coiling	Link	3	21.25	22	N/A	64	30,000	Powered	Yes	No	Saloon Door - Heavy Duty Gripper
1970	1969	Coiling	Link	3	19.5	20	N/A	35	15,000	Powered	No	No	Saloon Door - Separate Gripper Segment
1970	1979	Coiling	Wedge	4	19.25	20	N/A	60.5	20,000	Powered	Yes	Yes	Rectangular Shaft-Separate Gripper Segment
1970	1995	Payoff	Link	4	14	16.5	20	33	15,000	Powered	No	No	2 Mandrels
1970	1995	Coiling	Wedge	6	15.62	16	18 and 20	35	15,000	Powered	No	No	
1970	2002	Payoff	Link	4	18	20.5	N/A	48	25,000	Powered	No	No	
1970	2002	Coiling	Link	3	19.5	20	N/A	50	25,000	Powered	Yes	No	Saloon Door - Gripper Slot Only
1970	2034	Coiling	Screw	3	15.5	16	N/A	4	1000	Manual	Yes	No	Saloon Door - Manual Gripper
1970	2056	Payoff	Link	4	15.5	18.5	N/A	13	3000	Powered	No	No	
1970	2056	Coiling	Wedge	3	6.18	6.94	N/A	10	1,500	Powered	Yes	No	
1970	2062	Turnstile	Link	3	19.25	20.1	N/A	15	1,000	Manual	No	No	2 Mandrels - Mounted on Turnstile
1971	1897	Coiling	Wedge	3	19.38	20	N/A	36	15,000	Powered	No	No	
1971	1997	Payoff	Link	4	14	16.5	20	33	15,000	Powered	No	No	
1971	1997	Coiling	Wedge	3	19.38	20	N/A	36	15,000	Powered	No	No	
1971	2044	Payoff	Link	4	16	18.5	20	29.6	15,000	Powered	No	No	2 Mandrels - Elastomer Sleeve



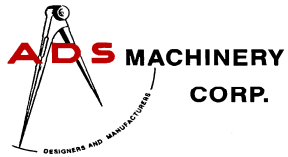
REFERENCE LIST
EXPANDING MANDRELS
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Year	Job	Application	Type	# of Segmt	Collapse Diameter (in.)	Expand Diameter (in.)	Lagging Diameter (in.)	Face (in.)	Coil Weight (lbs.)	Expansion	Gripper	Outboard Bearing	Remarks
1971	2044	Coiling	Link	4	16	18.5	20	29.6	15,000	Powered	No	No	Same as Payoff Mandrel
1971	2076	Coiling	Link	3	17.5	18	N/A	42	20,000	Powered	Yes	No	Saloon Door-Separate Gripper Segment on Links
1971	2146	Payoff	Wedge	3	17.5	20.5	24	30	15,000	Powered	No	No	
1971	2146	Coiling	Wedge	3	19.5	20	24	30	15,000	Manual	Yes	No	Saloon Door - Manual Gripper
1971	2196	Payoff	Link	6	15	16	N/A	2	500	Manual	No	No	Special Vertical Shaft Unit
1971	2196	Coiling	Link	3	15.5	16	N/A	8	500	Powered	No	No	Saloon Door-Expansion Cylinder Inside Mandrel
1972	2220	Coiling	Wedge	3	19.25	20	N/A	50	50,000	Powered	Yes	No	Separate Gripper Segment on Links
1972	2226	Payoff	Link	4	16	18.5	20	28	15,000	Powered	No	No	Elastomer Sleeve
1972	2226	Coiling	Link	4	16	18.5	20	28	15,000	Powered	No	No	Same as Payoff Reel - Elastomer Sleeve
1972	2233	Both	Wedge	2	5.94	6.25	N/A	35	1000	Powered	No	No	2 Mandrels - Paper Winder/Unwinder
1972	2255	Coiling	Link	3	15.3	16	N/A	40	30,000	Powered	Yes	No	Saloon Door-Separate Gripper Segment on Links
1973	2341	Payoff	Link	4	15	16.25	N/A	16	2000	Manual	No	No	
1973	2341	Coiling	Wedge	3	7.56	8.06	12	16	2000	Manual	No	No	Saloon Door
1973	2355	Payoff	Link	4	15.5	18.5	N/A	30	12,000	Powered	No	No	Slot for C-Hook
1974	2190	Payoff	Link	4	14.75	16.75	N/A	13	3300	Powered	No	No	2 Mandrels
1974	2190	Coiling	Wedge	6	18.38	19.68	N/A	15	3300	Powered	No	No	
1974	2265	Coiling	Link	3	15	16	N/A	16	2800	Manual	No	No	4 Mandrels - Saloon Door - Leaf Springs
1974	2280	Payoff	Link	4	18	20.5	N/A	26	10,000	Powered	No	No	2 Mandrels
1974	2280	Coiling	Link	4	18	20.5	N/A	26	10,000	Powered	No	No	Same as Payoff Mandrel
1975	2207A	Payoff	Link	4	18	20.5	N/A	20	5500	Powered	No	No	2 Mandrels
1975	2207A	Coiling	Link	4	18	20.5	N/A	20	5500	Powered	No	No	Same as Payoff Mandrel
1975	2207B	Payoff	Link	4	18	20.5	N/A	20	5500	Powered	No	No	2 Mandrels
1975	2207B	Coiling	Link	4	18	20.5	N/A	20	5500	Powered	No	No	Same as Payoff Mandrel
1975	2208A	Coiling	Wedge	6	18.68	19.68	N/A	30	12,000	Powered	No	No	
1975	2208B	Payoff	Link	4	18	20.5	N/A	30	12,000	Powered	No	No	2 Mandrels
1975	2208B	Coiling	Wedge	6	18.68	19.68	N/A	30	12,000	Powered	No	No	
1975	2282	Payoff	Link	4	18	20.5	N/A	30	12,400	Powered	No	No	
1975	2320	Payoff	Link	4	18	20.5	N/A	30	12,100	Powered	No	No	2 Mandrels
1975	2320	Coiling	Wedge	3	18.81	19.68	N/A	30	12,100	Powered	No	No	
1975	2391	Payoff	Link	4	18	20.5	N/A	48	20,000	Powered	No	No	2 Mandrels
1975	2391	Coiling	Wedge	3	18.81	19.68	N/A	48	20,000	Powered	No	No	
1975	2430	Coiling	Wedge	3	11.12	12.25	16	22	4500	Manual	Yes	No	Modified to Double Toggle Linkage Mechanism
1975	2442	Payoff	Link	4	19.5	23	24	40	30,000	Powered	No	No	



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Year	Job	Application	Type	# of Segmt	Collapse Diameter (in.)	Expand Diameter (in.)	Lagging Diameter (in.)	Face (in.)	Coil Weight (lbs.)	Expansion	Gripper	Outboard Bearing	Remarks
1976	2515	Payoff	Link	4	11.12	13	N/A	14	1000	Manual	No	No	
1976	2550	Payoff	Wedge	4	18.5	21.25	24	48	20,000	Manual	No	No	Springs in Radial Segment Guides
1976	2721	Payoff	Wedge	4	5.75	6.25	N/A	18	1400	Manual	No	No	
1977	2332	Payoff	Wedge	4	15.5	20.5	N/A	32	15,000	Powered	No	No	2 Mandrels
1977	2332	Coiling	Wedge	3	19.5	20	N/A	30	15,000	Powered	Yes	No	2 Mandrels - Saloon Door
1977	2478	Payoff	Link	5	15	18	20	30	8000	Powered	No	No	
1977	2478	Coiling	Link	3	15.5	16	N/A	30	8000	Powered	No	No	
1977	2657	Coiling	Link	3	19.5	20	N/A	20.5	6000	Manual	No	No	Saloon Door-Link Type Radial Segment Guide
1977	2787	Payoff	Link	4	22.25	25	N/A	103	7000	Powered	No	No	Link Type Radial Segment Guide
1977	2787	Coiling	N/A	N/A	N/A	30	N/A	102	7000	N/A	No	Yes	Coils Wound on Removable Solid Block
1977	2891	Payoff	Wedge	4	15.5	20.5	N/A	32	17,000	Powered	No	No	
1978	2696	Payoff	Wedge	4	18.5	21	N/A	50	27,500	Powered	No	No	2 Mandrels
1978	2696	Coiling	Wedge	3	19.5	20	N/A	50	27,500	Powered	Yes	No	Saloon Door
1978	2786	Payoff	Link	4	15	18	18/21	35	13,000	Powered	No	No	
1978	2925	Coiling	Wedge	3	19.25	20	N/A	34	10,000	Powered	Yes	No	Separate Gripper Segment on Links
1978	2963	Coiling	Screw	3	14.5	15	N/A	7.25	2000	Manual	Yes	No	2 Mandrels - Saloon Door - Manual Gripper
1978	2982	Coiling	Screw	3	15.5	16	N/A	4	900	Manual	Yes	No	Saloon Door-Manual Gripper - Slot for C-Hook
1978	3074	Payoff	Link	4	16	18.5	N/A	29.6	15,000	Powered	No	No	
1979	2619	Payoff	Link	4	18.5	21	24	38	30,000	Powered	No	No	
1979	2649	Payoff	Wedge	4	15.5	20.5	N/A	32	17,000	Powered	No	No	
1979	2668	Coiling	Link	3	17.5	18	N/A	30	12,000	Powered	Yes	No	Saloon Door
1979	2964	Payoff	Link	4	15	18	20	31	8000	Powered	No	No	2 Mandrels
1979	2964	Coiling	Link	3	15.5	16	N/A	36	8000	Powered	Yes	No	Saloon Door
1979	3014	Payoff	Wedge	4	19.5	24.5	N/A	60	25,000	Powered	No	No	
1979	3014	Coiling	Wedge	3	19.5	20	N/A	54	25,000	Powered	Yes	No	
1979	3172	Payoff	Link	4	15	16.25	N/A	14	5,000	Manual	No	No	
1979	3200	Payoff	Link	4	11	12.25	16	16	25,600	Manual	No	No	
1980	2644	Payoff	Link	4	14.5	17	20	20	8300	Powered	No	No	
1980	2644	Coiling	Wedge	3	15.5	16	20	18	8300	Powered	Yes	No	Saloon Door
1980	3126	Payoff	Link	4	11.5	13	12,14,16,20	20	3500	Powered	No	No	
1980	3126	Coiling	Link	4	13	14.5	N/A	20	3,500	Powered	No	No	Payoff Type Mandrel
1980	3207	Payoff	Wedge	4	15	19	N/A	30	12,000	Powered	No	No	Holes in Segments to Accommodate Expansion Range
1980	3211	Coiling	Wedge	3	5.79	6	10 thru 27	3.6	2000	Powered	No	No	Used with Winding Forms for Transformer Cores



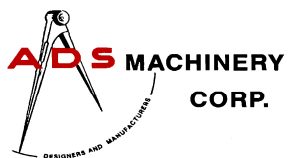
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Year	Job	Application	Type	# of Segmt	Collapse Diameter (in.)	Expand Diameter (in.)	Lagging Diameter (in.)	Face (in.)	Coil Weight (lbs.)	Expansion	Gripper	Outboard Bearing	Remarks
1981	3192	Coiling	Link	3	15.5	16	N/A	31	13,000	Powered	Yes	No	Saloon Door
1981	3357	Payoff	Link	4	18.5	21	N/A	18	8000	Powered	No	No	
1981	3357	Coiling	Wedge	3	19.5	20	N/A	18	8000	Powered	Yes	No	Saloon Door
1981	3519	Coiling	Link	3	19.5	20	N/A	14	6500	Powered	Yes	No	Saloon Door
1981	3530	Coiling	Wedge	3	19.5	20	24	44	30,000	Powered	Yes	No	Saloon Door
1982	3581	Payoff	Wedge	4	18.5	21	N/A	51.5	25,000	Powered	No	No	2 Mandrels
1982	3581	Coiling	Wedge	3	19.5	20	N/A	50	25,000	Powered	Yes	No	Saloon Door
1983	3730	Payoff	Wedge	4	18	24	N/A	67	13,200	Powered	No	No	
1983	3730	Coiling	Wedge	6	22.68	23.62	N/A	65	13,200	Powered	Yes	No	
1983	3861	Coiling	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Manual Gripper Addition to Existing Segment
1984	3834	Payoff	Wedge	4	17.3	20.9	24	72	23,100	Powered	No	No	
1984	3834	Coiling	Wedge	6	19.6	20	N/A	72	23,100	Powered	Yes	No	
1984	3977	Coiling	Wedge	3	5.79	6	8 thru 16	3.6	2500	Powered	No	No	Used with Winding Forms for Transformer Cores
1984	5009	Payoff	Link	4	13.5	17.5	N/A	19	7000	Powered	No	No	
1984	5009	Coiling	Wedge	3	15.5	16	20	19	7000	Powered	No	No	
1984	5017	Payoff	Link	4	18	21	N/A	28	12,000	Powered	No	No	
1984	5017	Coiling	Wedge	3	19.25	20	N/A	26	12,000	Powered	Yes	No	Separate Gripper Segment on Links
1984	5081	Payoff	Link	4	14.5	17	N/A	32	15,000	Powered	Yes	No	4 Mandrels
1984	5081	Coiling	Wedge	3	15.5	16	N/A	24	15,000	Manual	No	No	4 Mandrels - Saloon Door - Gripper Slot Only
1984	5099	Payoff	Wedge	4	15.5	20	N/A	32	17,000	Powered	No	No	Holes in Segments to Accommodate Expansion Range
1984	5133	Coiling	Link	4	13	14.5	N/A	20	3500	Powered	No	No	Payoff Type Mandrel
1985	5226	Coiling	Link	3	19	19.68	N/A	19	5500	Powered	Yes	No	
1985	5245	Coiling	Wedge	3	15.5	16	20	18	8000	Manual	No	No	Saloon Door - Manual Gripper
1985	5252	Coiling	Link	4	15.5	16.5	N/A	25	9500	Powered	No	No	Payoff Type Mandrel
1985	5281	Payoff	Wedge	3	15	18	N/A	22	8000	Powered	No	No	
1985	5335	Coiling	Wedge	3	11.5	12	16	28	12,000	Powered	Yes	No	Saloon Door-Manual Gripper - Similar to 6138
1986	3833	Payoff	Wedge	4	18.9	20.86	N/A	72	23,100	Powered	No	No	2 Mandrels
1986	3833	Coiling	Wedge	6	19.5	20	N/A	72	23,100	Powered	Yes	No	
1986	5339	Coiling	Link	4	18.5	21	N/A	22	7000	Manual	No	No	2 Mandrels - Payoff Type Mandrel
1986	5467	Coiling	Link	4	15.5	20.5	N/A	22	8000	Powered	No	No	2 Mandrels - Payoff Type Mandrel
1986	5532	Coiling	Wedge	3	15	16	N/A	24	15,000	Manual	Yes	No	Similar to 5081 - Gripper Slot Only
1987	5575	Payoff	Link	4	18.5	20.5	N/A	22	7,000	Powered	No	No	
1988	6080	Coiling	Wedge	6	16	16.5	N/A	64	25,000	Powered	No	No	Quill Type Mandrel



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1989	5996	Payoff	Link	4	14.5	17	N/A	21	4,500	Powered	No	No	
1989	5996	Coiling	Link	4	15	16	N/A	24	840	Manual	No	No	For Leader Strips - Complete with Side Plates
1989	6078	Payoff	Wedge	4	19	21.5	24	13	40,000	Powered	No	No	Double Stub Payoff Reel-Stepped for Two Diameters
1989	6138	Payoff	Wedge	3	15	16.75	20	46	40,000	Powered	No	No	2 Mandrels
1989	6138	Coiling	Wedge	3	15.5	16	20	56	40,000	Powered	No	No	Saloon Door - Similar to 5335
1990	6243	Payoff	Wedge	4	20.5	22.5	24	76	90,000	Powered	No	Yes	Holes in Segments to Accommodate Expansion Range
1990	6243	Coiling	Wedge	4	20.5	22.5	24	76	90,000	Powered	No	Yes	Same as Payoff Mandrel-Round Post Segment Guides
1991	6260	Payoff	Wedge	4	18.9	20.9	N/A	57	44,000	Powered	No	No	2 Mandrels
1991	6260	Coiling	Wedge	6	19.3	20	N/A	52	48,500	Powered	Yes	No	
1991	6324	Payoff	Wedge	4	18.5	21	24	73	65,000	Powered	No	Yes	Holes in Segments to Accommodate Expansion Range
1991	6324	Coiling	Wedge	4	18.5	21	24	73	65,000	Powered	No	Yes	Same as Payoff Mandrel-Round Post Segment Guides
1991	6337	Payoff	Wedge	4	17.3	20.9	24	79	22,000	Powered	No	No	2 Mandrels - Holes in Segments
1991	6337	Coiling	Wedge	6	19.292	20	24	79	22,000	Powered	Yes	No	
1991	6366	Coiling	Wedge	6	16	16.5	N/A	64	50,000	Powered	No	No	Quill Type Mandrel
1991	6366	Coiling	Wedge	6	19.5	20	N/A	80	50,000	Powered	No	No	Quill Type Mandrel
1991	6384	Payoff	Wedge	4	18.9	20.9	24	55	55,000	Powered	No	No	
1991	6384	Coiling	Wedge	6	19.3	20	24	55	55,000	Powered	Yes	No	Double Gripper
1992	6524	Payoff	Link	4	18.5	20.5	N/A	18	5,500	Powered	No	No	2 Mandrels
1992	6524	Coiling	Wedge	3	19	19.7	N/A	20	5,500	Powered	Yes	No	Saloon Door
1992	6604	Payoff	Wedge	4	22.8	24.8	30	55	53,000	Powered	No	No	
1992	6604	Coiling	Wedge	3	23.2	24	N/A	54	53,000	Powered	Yes	No	Separate Gripper Segment on Links
1993	6686	Payoff	Wedge	3	9.34	10.34	N/A	16.7	5,500	Powered	No	No	Holes in Segments to Accommodate Expansion Range
1993	6686	Coiling	Wedge	3	19.2	20.2	N/A	16.7	5,500	Powered	No	No	Holes in Segments to Accommodate Expansion Range
1993	6793	Coiling	Wedge	3	15.6	16	N/A	16	1500	Manual	No	No	Saloon Door-Gripper Slot Only-Similar to 1769
1993	6873	Coiling	Wedge	3	5.79	6	12 thru 19	3.6	2,000	Powered	No	No	Used with Winding Forms for Transformer Cores
1994	6748	Payoff	Link	4	14.8	16.1	N/A	20	7,000	Powered	No	No	
1994	6748	Coiling	Link	3	15.2	15.75	N/A	20	7,000	Powered	Yes	No	Saloon Door
1994	6851	Payoff	Wedge	4	18.5	24.5	N/A	56	50,000	Powered	No	Yes	Holes in Segments to Accommodate Expansion Range
1994	6851	Coiling	Wedge	3	19.5	20	N/A	55	50,000	Powered	Yes	No	Separate Gripper Segment on Links
1994	6958	Payoff	Wedge	4	15	17	N/A	35	17,500	Powered	No	No	
1994	6958	Coiling	Wedge	3	15.5	16	N/A	36	17,500	Powered	Yes	No	Saloon Door
1994	6978	Payoff	Wedge	4	18.5	24.5	N/A	56	45,000	Powered	No	Yes	2 Mandrels - Holes in Segments
1994	6978	Coiling	Wedge	6	19.25	20	N/A	52	45,000	Powered	Yes	Yes	2 Mandrels



REFERENCE LIST
EXPANDING MANDRELS
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Year	Job	Application	Type	# of Segmt	Collapse Diameter (in.)	Expand Diameter (in.)	Lagging Diameter (in.)	Face (in.)	Coil Weight (lbs.)	Expansion	Gripper	Outboard Bearing	Remarks
1995	6141	Payoff	Link	4	14.5	17	N/A	32	18,000	Powered	No	No	2 Mandrels
1995	6141	Coiling	Wedge	3	15.6	16	N/A	32	18,000	Powered	Yes	No	2 Mandrels - Saloon Door - Manual Gripper
1995	7109	Payoff	Wedge	4	17.16	20.68	N/A	21	?	Powered	No	No	For Sendzimir Mill
1995	7156	Payoff	Wedge	4	23	24.5	N/A	56	60,000	Powered	No	No	2 Mandrels
1995	7156	Coiling	Wedge	3	17	18	20	58	50,000	Powered	No	No	
1995	7697	Payoff	Link	4	15	16.5	20	29	10,000	Manual	No	No	
1995	7697	Coiling	Link	4	15	16.5	20	29	10,000	Manual	No	No	Payoff Type Mandrel
1995	7800	Payoff	Wedge	4	18.4	20.6	24	66	68,300	Powered	No	Yes	
1995	7800	Payoff	Wedge	4	18.4	20.6	24	55	68,300	Powered	No	No	
1995	7800	Coiling	Wedge	3	23	24	N/A	65	68,300	Powered	Yes	Yes	Separate Gripper Segment on Links
1995	7800	Coiling	Wedge	3	18.4	20	N/A	52	68,300	Powered	Yes	No	Separate Gripper Segment on Links
1996	6851S	Payoff	Wedge	4	18.5	24.5	N/A	56	50,000	Powered	No	Yes	Spare for 6851
1996	6851S	Coiling	Wedge	3	19.5	20	N/A	55	50,000	Powered	Yes	No	Spare for 6851
1996	6978S	Coiling	Wedge	6	19.25	20	N/A	52	45,000	Powered	Yes	Yes	Spare for 6978
1996	7742	Payoff	Wedge	3	15	16.75	20	66	60,000	Powered	No	Yes	2 Mandrels
1996	7742	Coiling	Wedge	3	19	20	24	65	60,000	Powered	No	Yes	
1996	7774	Both	Link	3	11.6	12	N/A	10	N/A	Manual	No	No	2 Mandrels - Special Vertical Shaft Units
1996	7774	Both	Link	3	15.7	16	N/A	10	N/A	Manual	No	No	2 Mandrels - Special Vertical Shaft Units
1996	7882	Coiling	Wedge	3	17.38	18	20	67	50,000	Powered	No	No	Payoff Type Mandrel-Elastomer Sleeve- See 10156
1997	7156S	Payoff	Wedge	4	23	24.5	N/A	56	60,000	Powered	No	No	Spare for 7156
1997	7156S	Coiling	Wedge	3	17	18	20	58	50,000	Powered	No	No	Spare for 7156
1997	7997	Payoff	Wedge	3	15	16.75	20	66	40,000	Powered	No	Yes	2 Mandrels
1997	7997	Coiling	Wedge	6	19	20	24	66	40,000	Powered	No	No	
1998	7997S	Payoff	Wedge	3	15	16.75	20	66	40,000	Powered	No	Yes	Spare for 7997
1998	7997S	Coiling	Wedge	6	19	20	24	66	40,000	Powered	No	Yes	Spare for 7997
1998	10097	Coiling	Wedge	3	17.38	18	20	67	50,000	Powered	No	No	Same as 7882
1998	10269	Payoff	Wedge	3	15	16.75	20	46	40,000	Powered	No	No	Spare for 6138
1998	10255	Payoff	Wedge	3	15.5	17.25	20	66	65,000	Powered	No	Yes	2 Mandrels
1998	10255	Coiling	Wedge	6	19	20	24	66	50,000	Powered	No	No	
1999	10156	Coiling	Wedge	3	17.38	18	20	67	50,000	Powered	No	No	Modification to 7882 Mandrel-Improved Guides & Lube
1999	10475	Coiling	Wedge	4	15.64	16.38	N/A	30	15,000	Powered	No	No	For Sendzimir Mill
2000	10223	Payoff	Wedge	4	28.5	30.5	N/A	51	60,000	Powered	No	No	2 Mandrels
2000	10414	Coiling	Wedge	6	19	20	N/A	54	50,000	Powered	Yes	No	



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Year	Job	Application	Type	# of Segmt	Collapse Diameter (in.)	Expand Diameter (in.)	Lagging Diameter (in.)	Face (in.)	Coil Weight (lbs.)	Expansion	Gripper	Outboard Bearing	Remarks
2000	10432	Coiling	Wedge	8	19	20	N/A	53	55,000	Powered	Yes	No	Dual Rocking Grippers-Replacement for 6851
2000	10557	Payoff	Wedge	3	17.5	20.5	N/A	48	40,000	Powered	No	Yes	2 Mandrels
2000	10616	Coiling	Wedge	3	17.38	18	20	67	50,000	Powered	No	No	Same as 10156
2001	10701	Payoff	Wedge	4	18.5	20.5	N/A	66	25,000	Powered	No	No	
2002	11401	Coiling	Wedge	4	15.64	16.38	N/A	30	15,000	Powered	No	No	Spare for 10475
2003	11579	Coiling	Wedge	4	15.55	16	20	30	10,000	Powered	Yes	No	Saloon Door with Separate Gripper Segment-Axial Spring
2004	11251	Payoff	Wedge	4	19	20.5	N/A	57	44,000	Powered	No	Yes	2 BF Mandrels - Coil Coating Line
2004	11601	Coiling	Wedge	8	19	20	N/A	57	40,000	Powered	Yes	No	Dual Rocking Grippers
2004	11788	Payoff	Wedge	3	15.5	17.25	20	66	65,000	Powered	No	Yes	Spare For 10255
2004	11789	Coiling	Wedge	6	19	20	24	66	50,000	Powered	No	No	Spare For 10255
2004	11857	Payoff	Wedge	4	17.5	20.5	N/A	54	44,000	Powered	No	Yes	Tension Leveling Line
2005	11410	Payoff	Wedge	4	21.5	25	N/A	62	60,000	Powered	No	Yes	Cast Steel Spider and Segments - Hardened
2005	11410	Coiling	Wedge	6	22.75	24	N/A	62	60,000	Powered	No	Yes	Cast Steel Spider and Segments - Hardened
2005	12063	Coiling	Wedge	6	19	20	24	58	30,000	Powered	Yes	No	Coil Coating Line
2006	12027	Payoff	Wedge	4	19.5	20.5	24.5	65	60,000	Powered	No	Yes	2 Mandrels - Coil Coating Line
2006	12027	Coiling	Wedge	6	19	20	24	65	60,000	Powered	No	Yes	Coil Coating Line
2007	12249	Payoff	Wedge	4	18.25	21	N/A	49.5	45,000	Powered	No	No	2 mandrels-4140 hardened cast segments
2007	12249	Coiling	Wedge	6	16.5	17	20	54	40,000	Powered	Yes	No	2 mandrels-4140 hardened cast segments - nitrided
2007	12249	Coiling	Wedge	6	19.5	20	N/A	56	40,000	Powered	Yes	No	4140 hardened cast segments - nitrided
2008	12082	Payoff	Wedge	4	28.5	30.5	N/A	62	44,100	Powered	No	No	2 Mandrels
2010	12511	Coiling	Wedge	6	19	20	N/A	50	42,000	Powered	No	No	Replacement for 6138
2010	12788	Coiling	Wedge	6	19	20	24	64	40,000	Powered	No	Future	60,000# with outboard bearing See 13099 Steel Laging
2011	12849	Coiling	Wedge	6	19	20	24	66	40,000	Powered	No	No	Modification of 7997
2012	12828	Payoff	Wedge	4	26.5	31	N/A	66	44,000	Powered	No	No	3 Mandrels - Spares for 12082
2013	13178	Coiling	Wedge	3	19.5	20	N/A	55	50,000	Powered	Yes	No	Spare for 6851
2013	13199	Payoff	Wedge	3	15	16.75	20	66	60,000	Powered	No	Yes	Spare for 7742
2014	13307	Payoff	Wedge	4	18.5	21	N/A	52	25,000	Powered	No	No	2 Mandrels
2014	13381	Coiling	Wedge	4	19.25	20	N/A	65	50,000	Powered	Yes	No	Separate Gripper Segment on Links
2016	13009	Payoff	Wedge	4	15	17	N/A	37	18,000	Powered	No	No	2 Mandrels - Electroplating Line
2016	13009	Coiling	Wedge	6	15.5	16	N/A	40	18000	Powered	Yes	No	Electroplating Line
2016	13517	Coiling	Wedge	6	19	20	N/A	56	25,000	Powered	No	No	
2018	13831	Payoff	Wedge	4	23	24.5	N/A	56	60,000	Powered	No	No	Spare for 7156
2018	13831	Coiling	Wedge	3	17	18	20	58	50,000	Powered	No	No	Spare for 7156



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Year	Job	Application	Type	# of Segmt	Collapse Diameter (in.)	Expand Diameter (in.)	Lagging Diameter (in.)	Face (in.)	Coil Weight (lbs.)	Expansion	Gripper	Outboard Bearing	Remarks