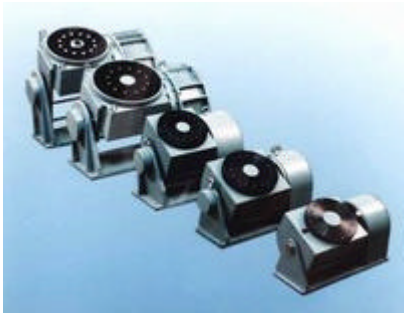
ORBIT/FR

AZ/EL Positioners

Modular High Precision AL-4300 Series
Heavy-Duty Series



Modular High Precision AL-4300 Series

AL-4368-1, AL-4369-1, AL-4370-1, AL-4371-1, AL-4372-1, AL-4373-1, AL-4374-1, AL-4375-1

- Large group of encased modular precision units.
- Totally enclosed design of the drive gear train and data take-off.
- Extended Elevation Travel of ± 95°
- Broad selection of models - 8 models with bending moment ranging from 60 ft-lbs to 12,000 ft-lbs.
- Optimum performance relative to positioner size and weight.
- Angular position readout accuracy up to 0.03° with synchro or encoder readout and 0.005° with Inductosyn® option.
- Precision heavy-duty bearings.
- Low backlash.
- Compatible with ORBIT/FR and other controller/programmers and power control units.
- Wide variety of options, rotary joints, slip-rings, wiring for model tower, MM threads at customer interface, Inductosyn® encoder, etc.
- Temperature range: -20oC to +60oC. Lower temperature available as an option. Please consult factory.

Specifications

Parameter		AL-4368-1	AL-4369-1	AL-4370-1	AL-4371-1	AL-4372-1	AL-4373-1	AL-4374-1	AL-4375-1
Outline Dimensions Drawing No.		10-0090	07-0935	06-1557	07-0531	09-0517	07-0565	07-0565	09-1042
Bending Moment	m-kg	8.3	16	29	83	277	581	830	1,660
	ft-lbs	60	120	210	600	2,000	4,200	6,000	12,000
Vertical Load	kg	23	43	91	363	567	1,270	2.268	4,536
	lbs	50	100	200	800	1,250	2,800	5,000	10,000
Delivered Torque Azimuth	m-kg	5.5	12.4	21	21	69	69	69	166
	ft-lbs	40	90	150	150	500	500	500	1,200
Delivered Torque Elevation	m-kg	5.5	12.4	21	69	166	387	691	1,383
	ft-lbs	40	90	150	500	1,200	2,800	5,000	10,000
Withstand Torque Azimuth	m-kg	8.3	13.6	29	29	83	83	83	277
	ft-lbs	60	120	210	210	600	600	600	2,000
Withstand Torque Elevation	m-kg	8.3	16.6	29	83	277	581	830	1,660
	ft-lbs	60	120	210	600	2,000	4,200	6,000	12,000
Turntable Diameter	mm	200	262	318	318	516	516	516	612
Tunrtable Diameter	in	7.88	10.3	12.5	12.5	20.3	20.3	20.3	24
Weight	kg	24	50	91	125	299	430	445	476
	lbs	53	110	200	275	660	950	980	1,050
Height at 0° Elevation	mm	260	337	400	515	679	870	870	859
Height at 0° Elevation	in	10.2	13.26	15.75	20.27	26.73	34.25	34.25	33.83
Central Thru-Hole Diameter (Az)	mm	38	63	63	63	76	76	76	101.6
	in	1.5	2.5	2.5	2.5	3	3	3	4

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Drive Power Azimuth	hp	1/36	1/8	1/8	1/8	1/3	1/3	1/3	3/4
Drive Power Eleveation	hp	1/36	1/8	1/8	1/3	3/4	3/4	3/4	3/4
Nominal Speed Azimuth	rpm	1.3	2.6	2	2	1.5	1.5	1.5	1.3
Nominal Speed elevation	deg/min	470	936	720	540	470	180	180	55
Rotary Encoder/Synchro Accuracy Azimuth	deg	±0.04	±0.04	±0.03	±0.03	±0.03	±0.03	±0.03	±0.03
Rotary Encoder/Synchro Accuracy Elevation	deg	±0.04	±0.05	±0.04	±0.03	±0.03	±0.03	±0.03	±0.03
Direct Encoder / Inductosyn® Accuracy	deg	N/A	N/A	N/A	±0.005	±0.005	±0.005	±0.005	±0.005
Maximum Backlash (Azimuth)	deg	0.08	0.08	0.06	0.06	0.05	0.05	0.05	0.05
Maximum Backlash (Elevation)	deg	0.08	0.08	0.06	0.05	0.05	0.05	0.05	0.05
Elevation Limit-to-Limit Travel	deg	±95	±95	±95	±95	±95	±95	±95	±95

Notes

1. All models are equipped with tachometer for speed regulation and control.
2. All models are equipped with synchros operable at both 50 Hz and 60 Hz.
3. All models are equipped with limit switches adjustable from 20° to 900° (approx.) travel. Switches are factory set at 400°. When Slip-Rings and/or rotary joint are used, switches are disabled.
4. In this option, angular accuracy increases to ± 0.005°.
5. When used in conjunction with Slip-Ring options, a protective cap protruding from the turntable is provided, in certain models (consult factory).
6. When options RJ or SR are used, there is no central thru-hole available for the user. If user needs central thru-hole, option TH002 should be ordered.
7. In upper Azimuth unit all Slip-Ring contacts are for customer use with IN and OUT connectors.
8. With this option the positioner height may have to be increased (consult factory).

Options

- **EN001** - Replace Synchro with Rotary Incremental encoder
- **EN002** - High accuracy direct readout incremental encoder
- **TH002** - Thru-hole option for central opening
- **MM002** - Metric threads in mounting hole (interface).
- **EX002** - Wiring set for "daisy-chaning" a model tower or bracket system
- **SR051U** - Slip Ring assemblies (including wiring), for light weight upper Azimuth positioners with 5 rings.
- **SR101U** - Slip Ring assemblies (including wiring), for light weight upper Azimuth positioners with 10 rings.
- **SR201U** - Slip Ring assemblies (including wiring), for light weight upper Azimuth positioners with 20 rings.
- **SR301U** - Slip Ring assemblies (including wiring), for light weight upper

Heavy-Duty Series

AL-4316-1, AL-4306-1, AL-4307-1, AL-4378-1, AL-4309-1, AL-4310-1

- Broad selection of models - 6 models with bending moment ranging from 30,000 ft-lbs to 300,000 ft-lbs.
- Optimum performance relative to positioner size and weight.
- Angular position readout accuracy up to 0.02° with synchro or encoder readout and 0.005° with Inductosyn® option.
- Precision heavy-duty bearings.
- Low backlash.
- Compatible with ORBIT/FR and other controller/programmers and power control units.
- Wide variety of options: Rotary joints, slip-rings, wiring for model tower, MM threads at customer interface, Inductosyn® encoder, etc.
- Temperature range: -20°C to +60°C. Lower temperature available as an option. Please consult factory.

Specifications

Parameter		AL-4316-1	AL-4306-1	AL-4307-1	AL-4378-1	AL-4309-1	AL-4310-1
Outline Dimensions Drawing No.		10-2099	10-1928	10-2100	18-6653	10-1929	10-1930
Bending Moment	m-kg	4,149	4,841	6,223	10,373	20,745	41,490
	ft-lbs	30,000	35,000	45,000	150,000	150,000	300,000
Vertical Load	kg	13,608	13,608	13,608	18,144	18,144	20,412
	lbs	30,000	30,000	30,000	40,000	40,000	45,000
Delivered Torque Azimuth	m-kg	387	415	692	2.490	4,149	4,149
	ft-lbs	2,800	3,000	5,000	18,000	30,000	30,000
Delivered Torque Elevation	m-kg	2,766	3,320	4,149	10,373	13,831	35,958
	ft-lbs	20,000	24,000	30,000	75,000	100,000	260,000
Withstand Torque Azimuth	m-kg	581	581	968	2,490	4,480	6,224
	ft-lbs	4,200	4,200	7,000	18,000	35,000	45,000
Withstand Torque Elevation	m-kg	4,149	4,840	6,224	10,373	20,745	41,490
	ft-lbs	30,000	35,000	45,000	75,000	150,000	300,000
Turntable Diameter	mm	870	870	870	1,200	1,219	1,879
Tunrtable Diameter	in	34.25	34.25	34.25	47.2	48	74
Weight	kg	1,044	1,950	2,631	4,750	6,804	15,876
	lbs	2,300	4,300	5,800	10,500	15,000	35,000
Height at 0° Elevation [5]	mm	1,150	1,353	1,353	2,073	2,182	2,629
Height at 0° Elevation [5]	in	38.9	52.9	52.9	80	85.9	103.5
Central Thru-Hole Diameter (Az) [6]	mm	165	165	165	203	203	203
	in	6.5	6.5	6.5	8	8	8
Drive Power Azimuth	hp	3/4	3/4	3/4	5	5	5
Drive Power Eleveation	hp	3/4	3/4	3/4	5	5	5
Nominal Speed Azimuth	rpm	0.5	0.5	0.5	0.5	0.33	0.15
Nominal Speed elevation	deg/min	20	20	15	20	25	8
Rotary Encoder/Synchro Accuracy Azimuth	deg	±0.03	±0.03	±0.03	±0.03	±0.02	±0.02
Rotary Encoder/Synchro Accuracy Elevation	deg	±0.04	±0.03	±0.04	±0.04	±0.03	±0.03
Direct Encoder / Inductosyn® Accuracy	deg	±0.005	±0.005	±0.005	±0.005	±0.005	±0.005
Maximum Backlash (Azimuth)	deg	0.04	0.04	0.04	0.04	0.03	0.03
Maximum Backlash (Elevation)	deg	0.03	0.03	0.03	0.03	0.03	0.03
Elevation Limit-to-Limit Travel	deg	+92 -45	+92 -45	+92 -45	+92 -45	+95 -35	+95 -45

Notes

1. All models are equipped with tachometer for speed regulation and control.
2. All models are equipped with synchros operable at both 50 Hz and 60 Hz.

3. All models are equipped with limit switches adjustable from 20° to 900° (approx.), travel. Switches are factory set at 400°. When Slip-Rings and/or rotary joint are used, switches are disabled.
4. Inductosyn® Encoder Option increases angular accuracy to ± 0.005°.
5. When used in conjunction with Slip-Ring options, a protective cap protruding from the turntable is provided, in certain models (consult factory).
6. When options RJ or SR are used, there is no central thru-hole available for the user. If user needs central thru-hole, option TH002 should be ordered.
7. In upper Azimuth unit all slip-ring contacts are for customer use with input and output connectors.

Options

- **EN001** - Replace Synchro with Rotary Incremental encoder
- **EN002** - High accuracy direct readout incremental encoder
- **TH002** - Thru-hole option for central opening
- **MM002** - Metric threads in mounting hole (interface).
- **EX002** - Wiring set for "daisy-chaning" a model tower or bracket system
- **SR102U** - Slip Ring assemblies (including wiring), for medium upper Azimuth positioners with 10 rings.
- **SR202U** - Slip Ring assemblies (including wiring), for medium upper Azimuth positioners with 20 rings.
- **SR402U** - Slip Ring assemblies (including wiring), for medium upper Azimuth positioners with 40 rings.
- **SR502U** - Slip Ring assemblies (including wiring), for medium upper Azimuth positioners with 50 rings.
- **RJ12U** - Coaxial single-channel Rotary Joints, DC-12.4 GHz (including precision RF path, N-type connector and mounting flange), for upper Azimuth positioners.
- **RJ18U** - Coaxial single-channel Rotary Joints, DC-18 GHz (including precision RF path, SMA connector and mounting flange), for upper Azimuth positioners.
- **RJ40U** - Coaxial single-channel Rotary Joints, DC-40 GHz (including precision RF path, K-type connector and mounting flange), for upper Azimuth positioners.
- **1N001E** - Inductosyn® encoder (including housing and turntable coupler) for elevation positioners. Requires synchro readout.
- **1N001U** - Inductosyn® encoder (including housing and turntable coupler) for upper Azimuth positioners. Requires synchro readout.
- **ST002E** - Stow lock for gear-train protection or storage mode.
- **ST002U** - Stow lock for gear-train protection or storage mode.
- **LS002** - Leveling Screw Set