



# Rotary Index Tables

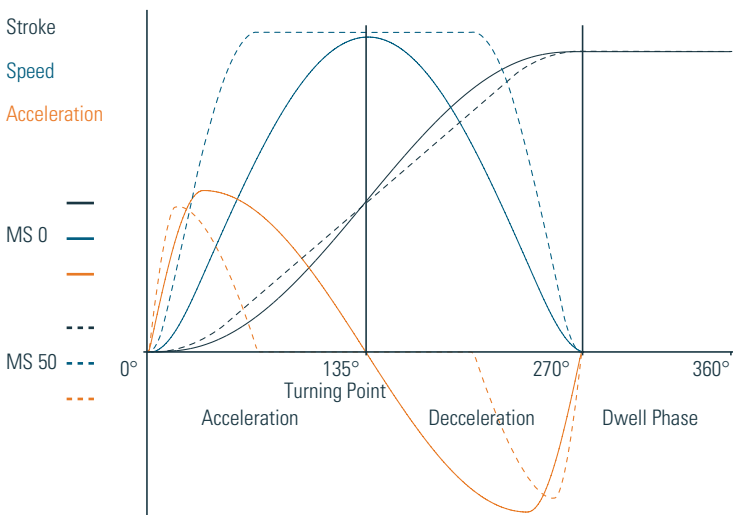
TT Series



The sky is the limit for the Motion product line. Flexible, made-to-order custom designs which are not featured in the product catalog have long been embedded in our corporate philosophy. We keep 10% of our entire workforce in reserve for these custom applications. Our skilled staff are available to assist our customers on a daily basis.

Our drives meet the highest standards regarding quality and precision. Our cams are manufactured in a different manner with regards to our competition, therefore it is often possible to use smaller rotary table sizes supplied by Motion instead of larger ones supplied by our competitors.

Our extensive design expertise enables us to meet customer requirements down to the last detail. We can combine the advantages of different forms of drives to create new value-added solutions which fit the bill completely. This is the added value which we have been offering to our customers in different sectors for many years.



### The rotary index table – design and mode of operation

The rotary table converts a uniform input motion into an intermittent output motion. The intermittent output motion is transmitted through our induction-hardened, precision-machined barrel cam. Mathematical laws of motion are applied to create a soft, smooth, zero-impact movement which is ideally tailored to the operation for any given case. Our design and construction results in a positive fit and zero-backlash positioning of the output flange (tool mounting surface).

No further locking device is required on the output flange. Additional locking devices can lead to forced positioning which can ruin the index table over the long-term.

The force is transmitted through the index table input shaft either by a three-phase brake motor with worm gearing or by a chain wheel or belt pulley. This is mounted to the barrel cam without any further gear stages and in turn rotates the star wheel and cam followers together with the output flange.

The output flange rotates on wire-race bearings which are free of play and backlash (mounted in steel rings - not in cast). Custom-dimensioned shaft sealing rings form an internal and external seal on the index table.

### Advantages for design engineers and special machine builders

Housing machined on all sides. Suitable for use in any mounting position required.

Mounting holes identical on top and bottom.

Large center thru-hole which is large enough to feed entire shafts through, and not just small wiring looms.

Dowel holes in housing and in output flange.

Recessed center column. No obstruction. Lengthened and machined to customer requirements.

Simultaneously rotating input shaft extension. Optional synchronization of other mechanical modules.

### Allowance for individual customer requirements

Choice of drive

Reinforced output flange bearing for higher tilting moment

Optional friction clutch on drive

Dwell and step angle can be tailored to requirements

All sizes also available as programmable FLEX index tables

Custom specified color at no extra charge

### Technical benefits for users

High reliability and long service life

Robust method of construction

Induction-hardened cams: smaller sizes for higher load factors

Needle or roller bearings fully immersed in oil bath. No wear.

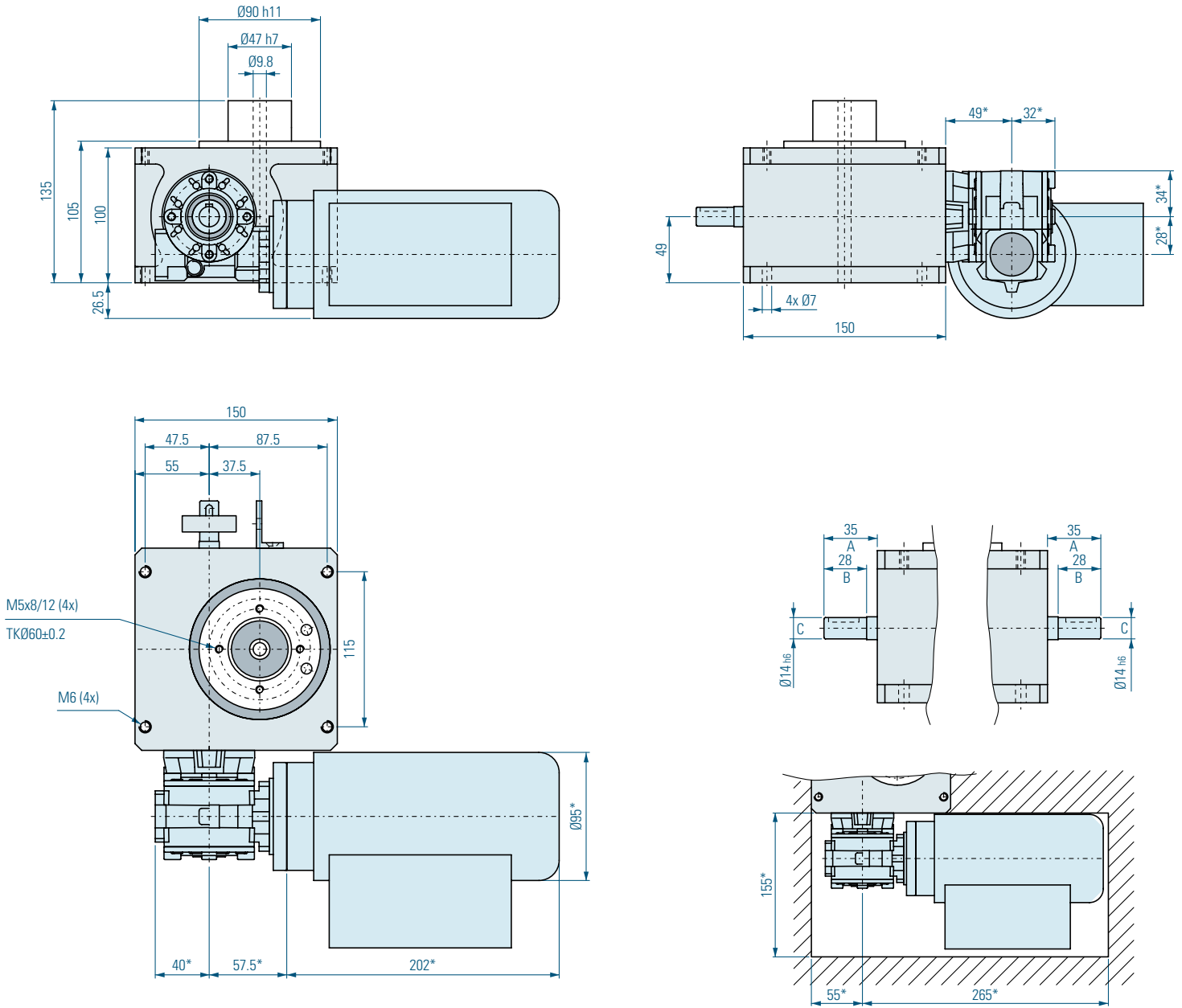
Completely maintenance-free

Completely wear-free when used with optional universal control

Allen Bradley PLC

# TT075

All TT Series tables available in fixed or FLEX programmable formats.



## Dimensions

\* Dimensions depend on the used drive

The dimensions shown here are the standard dimensions. The output flange, central column, housing and input shafts can be machined to your specifications.

The central column can also be designed as a flange.

Should you wish to drill additional holes, please

consult Motion with regard to acceptable drilling depth.

⚠ Caution! Do not drill right through the housing.

⚠ Please note that the opening for mounting the drive varies depending on the size of the drive.

A = Length of input shaft

B = Length of shaft to collar

C = Diameter of input shaft

# Load Table TT075

All TT Series tables available in fixed or FLEX programmable formats.

Speed		1	2	3	4	5	6	7	8	9
n										
2	t			0.38	0.57	0.76	1.07	1.52	1.87	2.13
	J			0.35	0.79	0.97	1.90	3.87	5.84	7.59
3	t			0.36	0.54	0.71	1.00	1.43	1.75	2.00
	J			0.57	1.29	1.97	3.86	7.87	11.87	15.42
4	t			0.36	0.54	0.71	1.00	1.43	1.75	2.00
	J			0.83	1.87	2.85	5.59	11.42	17.22	22.38
5	t			0.36	0.54	0.71	1.00	1.43	1.75	2.00
	J			1.04	2.35	4.18	8.19	16.71	25.20	32.75
6	t			0.36	0.54	0.71	1.00	1.43	1.75	
	J			1.35	3.04	5.40	10.58	21.59	32.57	
8	t			0.36	0.54	0.71	1.00	1.43	1.75	
	J			1.96	4.42	7.85	15.38	31.39	47.34	
10	t			0.32	0.48	0.64	0.90	1.29	1.58	
	J			2.04	4.59	8.16	15.98	32.62	49.20	
12	t			0.32	0.48	0.64	0.90	1.29	1.58	
	J			2.53	5.69	10.10	19.80	40.41	60.95	
16	t	0.16	0.24	0.32	0.45	0.64	0.79	0.90	1.00	
	J	0.77	1.74	3.09	6.06	12.37	18.65	24.24	29.92	
20	t	0.16	0.24	0.32	0.45	0.64	0.79	0.90	1.00	
	J	1.02	2.30	4.08	7.99	16.31	24.60	31.97	39.47	
24	t	0.16	0.24	0.32	0.45	0.64	0.79	0.90	1.00	
	J	1.26	2.84	5.05	9.90	20.21	30.47	39.60	48.89	
30	t	0.16	0.24	0.32	0.45	0.64	0.79	0.90	1.00	
	J	1.62	3.65	6.49	12.72	25.97	39.16	50.89	62.83	
36	t	0.11	0.16	0.21	0.30	0.43	0.53	0.60	0.67	
	J	0.84	1.90	3.37	6.60	13.47	20.32	26.40	32.60	

## Technical Specifications

### Main Dimensions

Output Flange Ø [mm]	90
Overall Height [mm]	105
Center Opening Ø [mm]	9.8
Recomm. max. size of rotating plate Ø [mm]	500
No. of Indexes 2, 3, 4, 6, 8, 10, 12, 16, 20, 24, 30, 36 (other numbers on request)	
Index Table weight [kg]	12
Direction clockwise, counterclockwise, reversing	
Installation Position	any

### Load on output flange

Axial force [kN]	1.5
Radial force [kN]	0.6
Tilting moment [kNm]	0.5

### Load on Central column

Axial force [kN]	0.5
Tilting moment [kNm]	0.04

### Precision

Index precision ["] *	±28
Axial Runout [mm]	±0.01
Radial Runout [mm]	±0.01

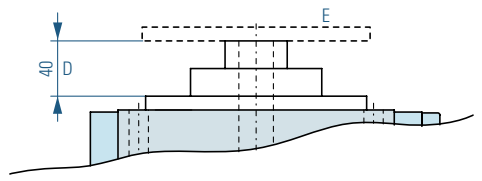
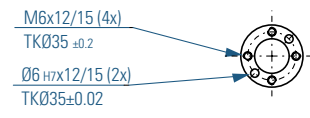
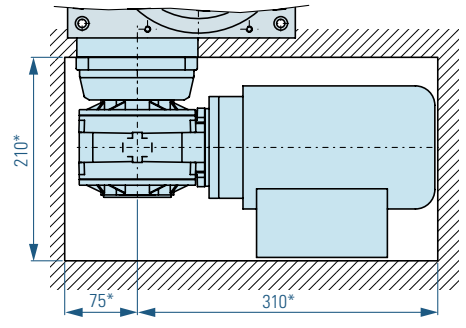
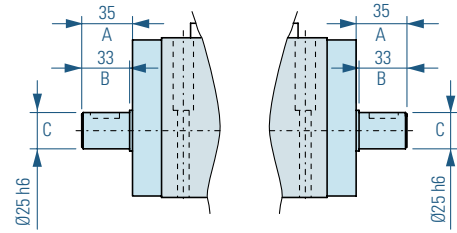
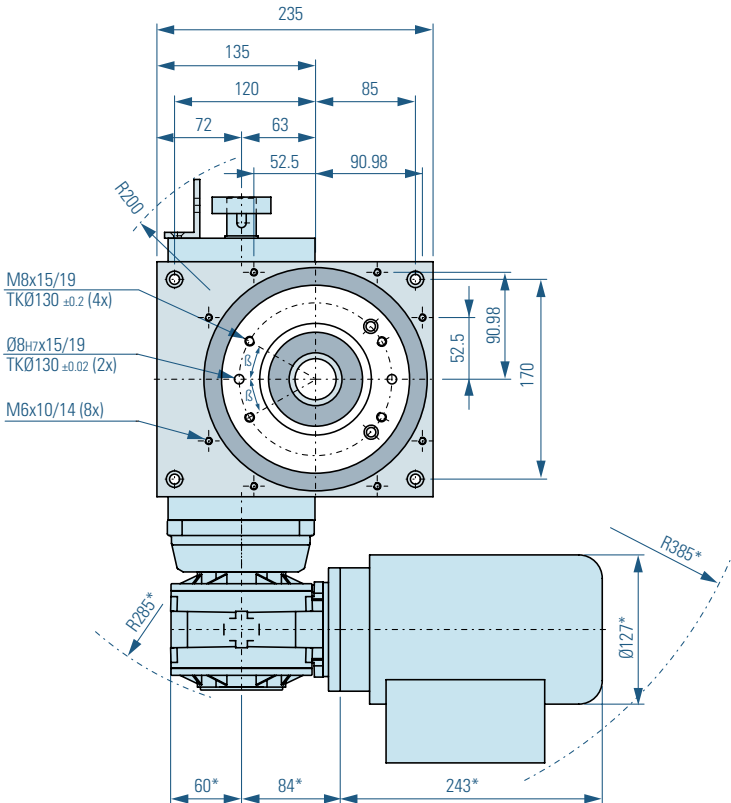
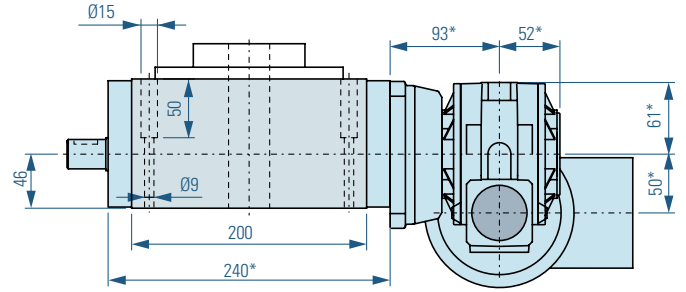
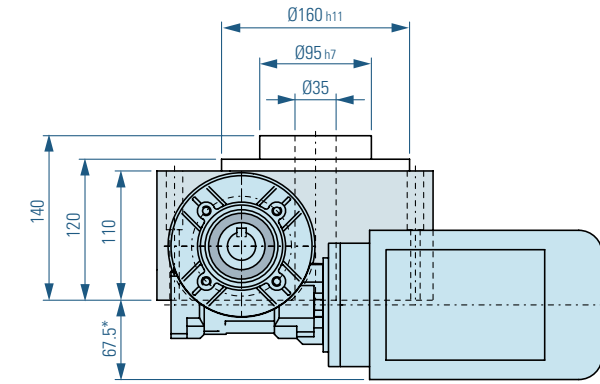
### Standard Drive

Motor	Kobold/SEW
Gear unit	FRS28
Motor size	IEC56
Voltage [V]	230/400
Power [kW]	0.06-0.09

\* The error in index precision is 5 - 8 angular seconds greater at 16 or more indexes due to multiple dwell positions on the drive cam.

# TT125

All TT Series tables available in fixed or FLEX programmable formats.



## Dimensions

\* Dimensions depend on the used drive

The dimensions shown here are the standard dimensions. The output flange, central column, housing and input shafts can be machined to your specifications.

The central column can also be designed as a flange. Should you wish to drill additional holes, please

consult Motion with regard to acceptable drilling depth.  
 ⚠ Caution! Do not drill right through the housing.  
 ⚠ Please note that the opening for mounting the drive varies depending on the size of the drive.

- A = Length of input shaft
- B = Length of shaft to collar
- C = Diameter of input shaft
- D = Height of central column to supporting surface on output flange, standard is -0.5mm
- E = Flange plate as an option

# Load Table TT125

All TT Series tables available in fixed or FLEX programmable formats.

Speed		1	2	3	4	5	6	7	8	9	10	11
n												
2	t			0.57	0.76	1.07	1.52	1.87	2.13	2.37	2.90	3.33
	J			1.50	2.02	3.96	8.08	12.18	15.83	19.55	29.36	38.66
3	t			0.54	0.71	1.00	1.43	1.75	2.00	2.22	2.72	
	J			2.79	4.26	8.34	17.02	25.67	33.36	41.19	61.86	
4	t		0.36	0.54	0.71	1.00	1.43	1.75	2.00	2.22	2.72	
	J		1.83	4.13	6.30	12.35	25.21	38.02	49.41	61.00	91.62	
5	t		0.36	0.54	0.71	1.00	1.43	1.75	2.00	2.22	2.72	
	J		2.31	5.20	9.24	18.12	36.97	55.76	72.47	89.46	134.36	
6	t		0.36	0.54	0.71	1.00	1.43	1.75	2.00	2.22	2.72	
	J		3.05	6.88	12.21	23.94	48.86	73.68	95.76	118.22	177.55	
8	t		0.36	0.54	0.71	1.00	1.43	1.75	2.00			
	J		4.58	10.32	18.34	35.94	73.36	110.63	143.78			
10	t		0.32	0.48	0.64	0.90	1.29	1.58	1.80			
	J		4.82	10.85	19.28	37.79	77.11	116.30	151.14			
12	t		0.32	0.48	0.64	0.90	1.29	1.58				
	J		6.06	13.65	24.25	47.53	96.99	146.28				
16	t	0.24	0.32	0.45	0.64	0.79	0.90	1.00				
	J	4.02	7.14	14.00	28.58	43.10	56.01	69.15				
20	t	0.24	0.32	0.45	0.64	0.79	0.90	1.00				
	J	5.43	9.64	18.89	38.56	58.15	75.57	93.30				
24	t	0.24	0.32	0.45	0.64	0.79	0.90	1.00				
	J	6.82	12.12	23.76	48.50	73.14	95.05	117.35				
30	t	0.24	0.32	0.45	0.64	0.79	0.90	1.00				
	J	8.90	15.81	30.98	63.22	95.35	123.91	152.98				
36	t	0.16	0.21	0.30	0.43	0.53	0.60	0.67	0.82			
	J	4.55	8.08	15.84	32.33	48.76	63.37	78.23	117.49			

## Technical Specifications

### Main Dimensions

Output Flange Ø [mm]	160
Overall Height [mm]	120
Center Opening Ø [mm]	35
Recom. max. size of rotating plate Ø [mm]	1000
No. of Indexes 2, 3, 4, 6, 8, 10, 12, 16, 20, 24, 30, 36 (other numbers on request)	
Index Table weight [kg]	24
Direction clockwise, counterclockwise, reversing	
Installation Position	any

### Load on output flange

Axial force [kN]	6
Radial force [kN]	2.8
Tilting moment [kNm]	0.2

### Load on Central column

Axial force [kN]	3
Tilting moment [kNm]	0.2

### Precision

Index precision ["] *	±20
Axial Runout [mm]	±0.015
Radial Runout [mm]	±0.015

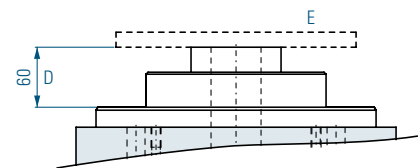
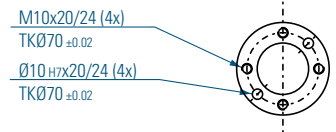
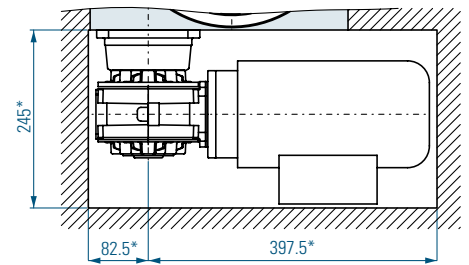
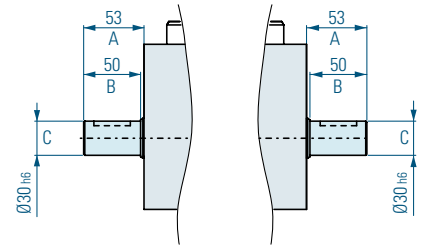
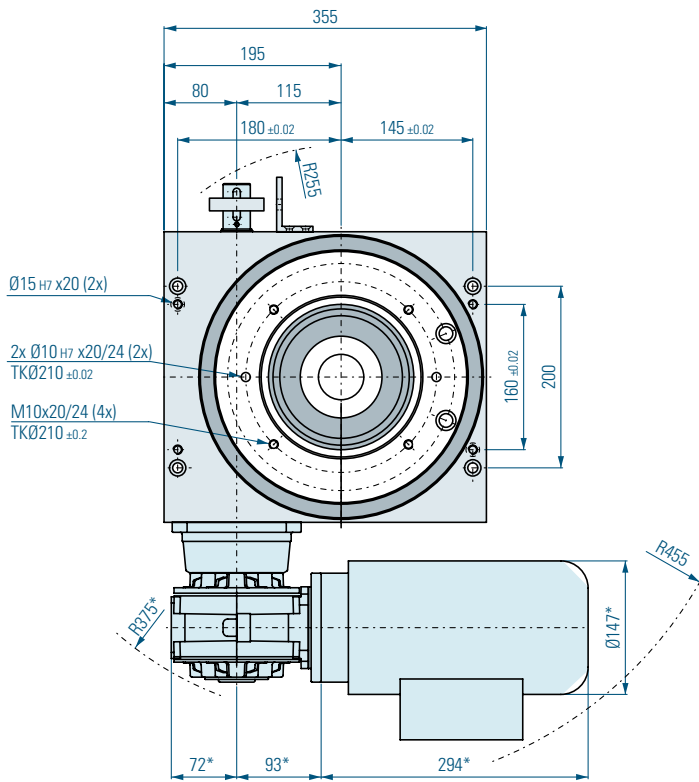
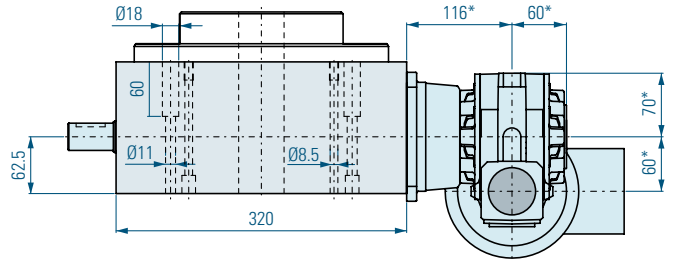
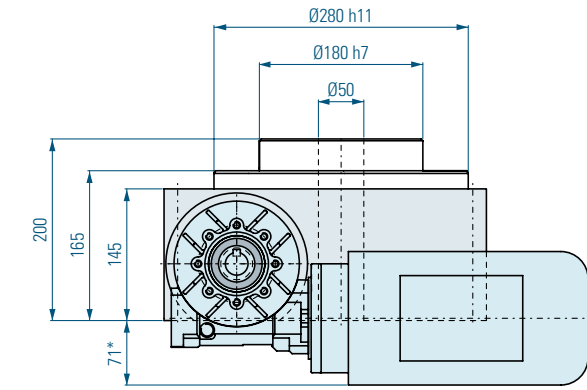
### Standard Drive

Motor	Kobold/SEW
Gear unit	FRS40/50
Motor size	IEC63/71
Voltage [V]	230/400
Power [kW]	0.12-0.55

\*The error in index precision is 5 - 8 angular seconds greater at 16 or more indexes due to multiple dwell positions on the drive cam.

# TT250

All TT Series tables available in fixed or FLEX programmable formats.



## Dimensions

\* Dimensions depend on the used drive

The dimensions shown here are the standard dimensions. The output flange, central column, housing and input shafts can be machined to your specifications.

The central column can also be designed as a flange.

Should you wish to drill additional holes, please

consult Motion with regard to acceptable drilling depth.

⚠ Caution! Do not drill right through the housing.

⚠ Please note that the opening for mounting the drive varies depending on the size of the drive.

A = Length of input shaft

B = Length of shaft to collar

C = Diameter of input shaft

D = Height of central column to supporting surface on output flange, standard is -0.5mm

E = Flange plate as an option

# Load Table TT250

All TT Series tables available in fixed or FLEX programmable formats.

Speed		1	2	3	4	5	6	7	8	9	10	11	12
n													
2	t			0.57	0.76	1.07	1.52	1.87	2.13	2.37	2.90	3.33	4.27
	J			3.90	4.78	9.38	19.14	28.86	37.51	46.31	69.55	91.58	150.05
3	t			0.54	0.71	1.00	1.43	1.75	2.00	2.22	2.72	3.13	
	J			6.80	10.39	20.37	41.58	62.70	81.49	100.61	151.09	198.95	
4	t		0.32	0.48	0.64	0.90	1.29	1.58	1.80	2.00	2.45	2.81	
	J		3.42	7.71	11.78	23.09	47.12	71.06	92.35	114.01	171.22	225.45	
5	t		0.32	0.48	0.64	0.90	1.29	1.58	1.80	2.00	2.45	2.81	
	J		4.33	9.75	17.32	33.94	69.27	104.47	135.77	167.62	251.73	331.47	
6	t		0.32	0.48	0.64	0.90	1.29	1.58	1.80	2.00	2.45		
	J		5.90	13.29	23.61	46.28	94.44	142.44	185.11	228.53	343.21		
8	t		0.32	0.48	0.64	0.90	1.29	1.58	1.80				
	J		9.34	21.02	37.34	73.19	149.37	225.27	292.76				
10	t		0.32	0.48	0.64	0.90	1.29	1.58	1.80				
	J		12.95	29.16	51.81	101.55	207.24	312.56	406.20				
12	t		0.32	0.48	0.64	0.90	1.29	1.58	1.80				
	J		16.63	37.44	66.51	130.35	266.03	401.21	521.41				
16	t	0.24	0.32	0.45	0.64	0.79	0.90	1.00	1.23				
	J	10.51	18.67	36.59	74.68	112.63	146.38	180.71	271.40				
20	t	0.24	0.32	0.45	0.64	0.79	0.90	1.00	1.23				
	J	14.58	25.91	50.77	103.62	156.28	203.10	250.74	376.57				
24	t	0.24	0.32	0.45	0.64	0.79	0.90	1.00	1.23				
	J	18.72	33.25	65.18	133.01	200.61	260.71	321.86	483.38				
30	t	0.24	0.32	0.45	0.64	0.79	0.90	1.00					
	J	24.91	44.26	86.75	177.04	267.01	347.00	428.40					
36	t	0.16	0.21	0.30	0.43	0.53	0.60	0.67	0.82	0.94			
	J	12.48	22.17	43.45	88.68	133.74	173.80	214.57	322.25	424.33			

## Main Dimensions

Output Flange Ø [mm]	280
Overall Height [mm]	165
Center Opening Ø [mm]	50
Recom. max. size of rotating plate Ø [mm]	2000
No. of Indexes 2, 3, 4, 6, 8, 10, 12, 16, 20, 24, 30, 36 (other numbers on request)	
Index Table weight [kg]	77
Direction clockwise, counterclockwise, reversing	
Installation Position	any

## Load on output flange

Axial force [kN]	23
Radial force [kN]	24
Tilting moment [kNm]	2

## Load on Central column

Axial force [kN]	12
Tilting moment [kNm]	2

## Precision

Index precision ["] *	±25
Axial Runout [mm]	±0.01
Radial Runout [mm]	±0.01

## Standard Drive

Motor	Kobold/SEW
Gear unit	FRS60/70
Motor size	IEC71-90
Voltage [V]	230/400
Power [kW]	0.25-1.5

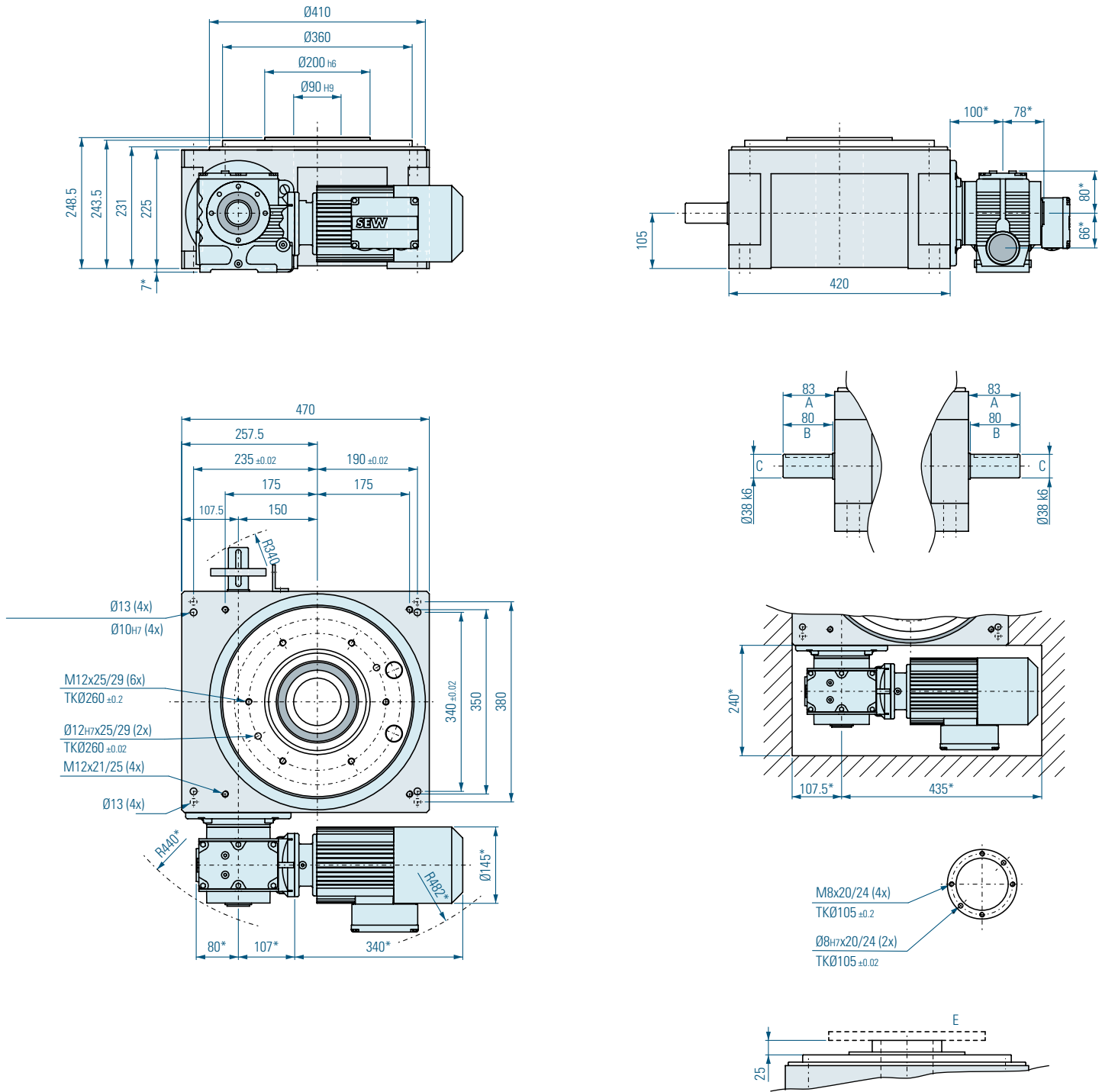
\* The error in index precision is 5 - 8 angular seconds greater at 16 or more indexes due to multiple dwell positions on the drive cam.



# TT315

This rotary index table is identical to the former RT315

All TT Series tables available in fixed or FLEX programmable formats.



## Dimensions

\* Dimensions depend on the used drive

The dimensions shown here are the standard dimensions. The output flange, central column, housing and input shafts can be machined to your specifications.

The central column can also be designed as a flange.

Should you wish to drill additional holes, please

consult Motion with regard to acceptable drilling depth.

**⚠ Caution!** Do not drill right through the housing.

**⚠ Please note** that the opening for mounting the drive varies depending on the size of the drive.

A = Length of input shaft

B = Length of shaft to collar

C = Diameter of input shaft

D = Height of central column to supporting surface on output flange, standard is -0.5mm

E = Flange plate as an option

# Load Table TT315

All TT Series tables available in fixed or FLEX programmable formats.

Speed		1	2	3	4	5	6	7	8	9	10	11	12
n													
2	t		0.38	0.59	0.78	1.13	1.56	1.77	2.06	2.38	2.97	3.27	4.13
	J		2.65	9.8	16.5	45	89	115	180	210	348	463	630
3	t		0.36	0.54	0.73	1	1.49	1.65	1.94	2.23	2.79	3.07	3.87
	J		5.3	20	33	92	175	238	365	427	698	940	1270
4	t	0.24	0.32	0.5	0.65	0.95	1.34	1.48	1.75	2	2.51	2.76	3.48
	J	2.95	7	23	42	102	225	295	420	552	920	1190	1650
5	t	0.24	0.32	0.5	0.65	0.95	1.34	1.48	1.75	2	2.51	2.76	3.48
	J	4.4	10.5	33	61	152	325	415	598	825	1370	1720	2450
6	t	0.24	0.32	0.5	0.65	0.95	1.34	1.48	1.75	2	2.51	2.76	3.48
	J	6.45	14.5	46	81.5	178	440	550	790	1095	1850	2320	3520
8	t	0.24	0.32	0.5	0.65	0.95	1.35	1.48	1.75	2	2.45	2.8	
	J	11.5	23.5	67	123	295	660	815	1220	1650	2610	3560	
10	t	0.24	0.32	0.5	0.65	0.95	1.35	1.48	1.78	2.05	2.45	2.84	
	J	16.5	33.2	90.5	167	395	890	1130	1570	2300	3460	4850	
12	t	0.24	0.32	0.5	0.65	0.95	1.35	1.51	1.78	2.17	2.48		
	J	22.1	42.5	110	216	510	1100	1420	2170	3025	4400		
16	t			0.25	0.33	0.47	0.67	0.74	0.88	1	1.21		
	J			47	81	206	375	455	645	720	1250		
20	t			0.25	0.33	0.47	0.67	0.74	0.89	1	1.24		
	J			64	110	230	460	570	760	1065	1520		
24	t			0.25	0.33	0.47	0.67	0.76	0.91	1.1	1.37		
	J			78	133	257	560	710	995	1340	2310		
30	t			0.25	0.33	0.47	0.72	0.78	0.9	1.1	1.37		
	J			95	163	345	790	940	1270	1910	2880		
36	t			0.25	0.37	0.5	0.71	0.93	1.18	1.48			
	J			113	253	451	940	1610	2380	4190			

## Main Dimensions

Output Flange Ø [mm]	360
Overall Height [mm]	243.5
Center Opening Ø [mm]	90
Recom. max. size of rotating plate Ø [mm]	2800
No. of Indexes 2, 3, 4, 6, 8, 10, 12, 16, 20, 24, 30, 36 (other numbers on request)	
Index Table weight [kg]	193
Direction clockwise, counterclockwise, reversing	
Installation Position	any

## Load on output flange

Axial force [kN]	32
Radial force [kN]	17
Tilting moment [kNm]	5

## Load on Central column

Axial force [kN]	28
Tilting moment [kNm]	4

## Precision

Index precision ["] *	±23
Axial Runout [mm]	±0.01
Radial Runout [mm]	±0.01

## Standard Drive

Motor	Kobold/SEW
Gear unit	SAF57/67
Motor size	IEC80-100
Voltage [V]	230/400
Power [kW]	0.37-3.0

\* The error in index precision is 5 - 8 angular seconds greater at 16 or more indexes due to multiple dwell positions on the drive cam.

# Inquiry and order form for rotary table type TT

All TT Series tables available in fixed or FLEX programmable formats.



Company \_\_\_\_\_

Email Address \_\_\_\_\_

Contact person \_\_\_\_\_

Project no. / Order no. \_\_\_\_\_

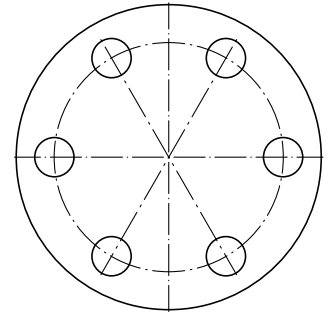
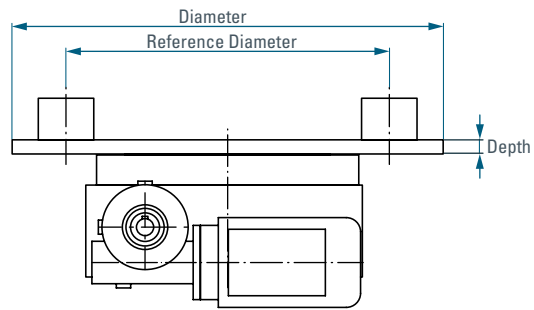
Tel. / Fax \_\_\_\_\_

Date \_\_\_\_\_

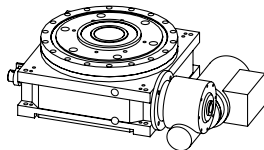
Index plate Diameter [mm] \_\_\_\_\_  
 Depth [mm] \_\_\_\_\_  
 Material or weight \_\_\_\_\_

Tooling and Parts Quantity \_\_\_\_\_  
 Mass/Station [kg] \_\_\_\_\_  
 Reference diameter [mm] \_\_\_\_\_

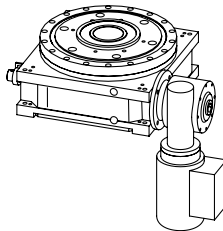
- Stop mode (fixed index time, variable dwell time)
- Continuous mode (fixed index and dwell time)
- Required index time [s] \_\_\_\_\_
- Required dwell time [s] (continuous mode only) \_\_\_\_\_
- Number of cycles [1/min] \_\_\_\_\_
- Required service life (actual cycle time, normal 12,000 h) \_\_\_\_\_
- Additional forces and loads (please give details)



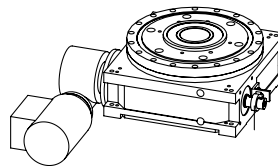
## Possible mounting positions for the drive units



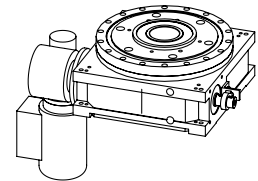
1SL90



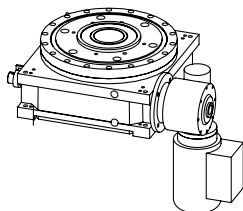
1SL180



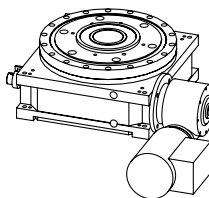
2SL90



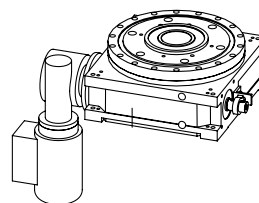
2SL180



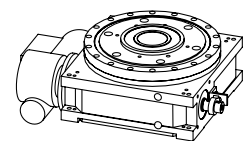
1SR180



1SR270



2SR180



2SR270



## Inquiry and order form for rotary table type TT

All TT Series tables available in fixed or FLEX programmable formats.

### Index Table

Type TT (75-315) \_\_\_\_\_

Number of stops \_\_\_\_\_

Index angle other than standard (see load table) \_\_\_\_\_

Mounting position (underneath) no. \_\_\_\_\_

Direction of rotation of output flange

Clockwise       Counterclockwise       Reverse

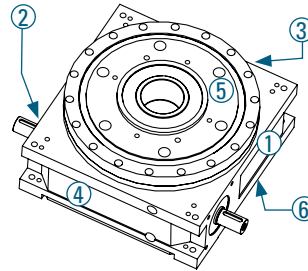
Cam lead       Right (standard)       Left

Standard central column  Yes  No

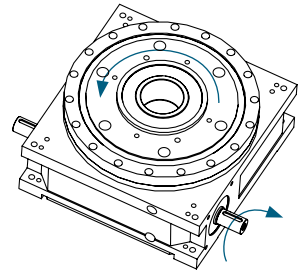
If No      Extended by \_\_\_\_\_ mm

Standard hole pattern

Hole pattern as specified on drawing \_\_\_\_\_



possible mounting positions



Cam Lead Right (Standard)

### Drive

With drive

Drive position (see page 1) \_\_\_\_\_

Terminal box position (see below) \_\_\_\_\_

Motor voltage       230/460-60Hz

Other voltage \_\_\_\_\_

Brake voltage       24V DC

Other voltage \_\_\_\_\_

Manual release on brake  Yes  No

Motor Handwheel       Yes  No

Input Safety Clutch       Yes  No

Additional specifications (temperature sensor, connector assembly, brand...)

\_\_\_\_\_

Without drive

Direction of rotation of input shaft \_\_\_\_\_

Input shaft Ø \_\_\_\_\_ ; Length \_\_\_\_\_

### Allen Bradley PLC

Allen Bradley PLC       Yes  No

### To Speak With a Motion Engineer

Call us at 877-866-1677

Motion Index Drives, Inc.  
1204 East Maple  
Troy, MI 48083

### Terminal box position

