

IC80

In-Line Chassis



After extensive market research and product development, Sankyo America, Inc. is proud to offer the IC80 Inline Chassis to manufacturers around the world. This precision link conveyor offers zero-backlash performance by preloading the link cam followers in all axes. The IC80 can be driven by one of Sankyo’s zero-backlash cam indexers or speed reducers. Sankyo offers numerous feed pitches (*See Fig. 1*) when using a cam indexer or the IC80 can be coupled with Sankyo’s *RollerDrive®* technology for fast, flexible servo indexing. Links sizes of 80mm, 120mm, and 160mm are available and are machined from steel or 7075-T6 aluminum. Steel links are nickel-plated and aluminum links are anodized to prevent oxidation. Steel links are preferred for applications where the manufacturing environment’s temperature fluctuates and accuracy needs to be maintained. Aluminum links are preferred for applications that run at higher speeds in order to reduce the moving mass of the conveyor system.

All design, manufacturing, and assembly of the IC80 Inline Chassis is done in the U.S.A. for faster deliveries and better ability to control the quality of the product for our customers.

Indexer Stops and Feed Pitch

Links per Feed	IC80-080-16T		IC80-120-12T		IC80-160-8T	
	Feed pitch	Stops	Feed pitch	Stops	Feed pitch	Stops
1	80	16	120	12	160	8
2	160	8	240	6	320	4
3	240	16/3	360	4	480	8/3
4	320	4	480	3	640	2

Chart 1

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Please visit www.youtube.com/SankyoAmerica to see the IC80 and many other Sankyo America, Inc. products in action.

Conveyor Description (versatile)



Sankyo's **IC80 Series** precision link conveyor accurately advances and positions part fixtures in carousel or over/under configurations. It features an open design for access to both sides of the conveyor rails and to the back of part if the hollow chain link option is chosen. All frame components are nickel plated steel with sealed bearings compatible with most industrial environments including medical or light machining applications. Overall lengths are available in 480mm (18.89") increments. Standard cam indexing units provides total machine repeatability of $\pm 0.1\text{mm}$ ($\pm 0.004''$) at each station. Other drive options include servo drives, clean room indexers, and torque limiter input overloads. Synchronization of Sankyo part handlers or other equipment can be achieved with optional line shaft(s).

Link Description (rigid & designed for longevity)



Precision links are nickel plated steel or anodized 7075-T6 aluminum offered in 80, 120 and 160mm lengths. All links are 80mm wide with (2) dowel holes and (4) tapped holes for mounting fixtures. Hollow link openings are available for all links. Extreme loads can be applied with each link supported by multiple preloaded cam followers for rigidity in every possible loading direction. Preloading the cam followers eliminates backlash at every station to improve the chassis' dynamic performance characteristics. Each link is rigid enough for light machining operations and the preloaded links support high speed

assembly applications. Each link pivot pin is supported by precision needle bearings. Optional tooling plates fasten quickly and accurately with dowel pins designed to the customer's specifications. Link positioning accuracy is maintained with an innovative chordal tensioning design to reduce machine vibration and to improve life characteristics.

Drive Options (compact, reliable & accurate)



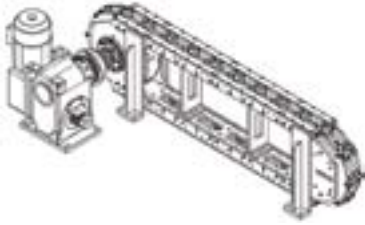
Multiple drive options include Sankyo's economical indexing units featuring accurate positioning with high torque capacity. Sankyo's zero-backlash *RollerDrive*® can be used with a servo drive to achieve flexible motion patterns and frequent stop/start cycles. Cam indexing drives can perform cycle-on-demand or continuous type indexing motions. Indexing units with geared motor drives are available in eight versatile mounting positions with mounting under or above the conveyor for carousel conveyors or on either side for over/under configurations. Optional TC series safety overload clutches (shown right), feature accurate automatic reset positioning, easy to adjust torque trip settings, misalignment error

compensation, and overload sensor monitoring to protect your investment. Indexing units and safety clutches mount securely with compression ring type couplers. Cleanroom and corrosion resistant indexers with safety clutches are available for medical & packaging applications.

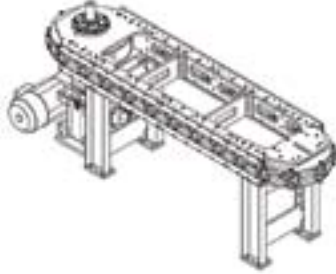
Performance

- Standard chain links offer single feed pitch lengths of 80, 120 & 160mm; capable of over 100 cycles per minute.
- Indexing increments can be changed to 1, 2, 3 or 4 times the chain pitch for feed pitches up to 640mm or more.
- Cycle on demand frequency rates up to 40 cycles per minute with VFD, 80 cpm with clutch/brake option and even higher with a servo drive option. Continuous duty is capable of up to 120 indexes per minute.
- Sankyo designed chordal compensation cam and needle bearing link pins ensure high speeds, minimal maintenance, and long-term accuracy.

Conveyor Mounting Options (multipurpose)



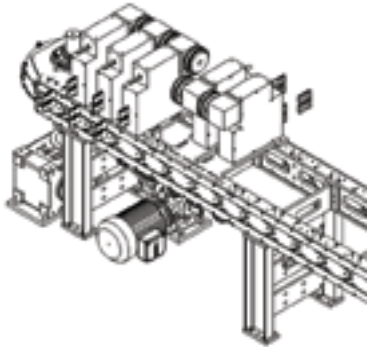
Over & Under Styles are narrow with compact drive mounting options on either side of the conveyor. Multiple units mounted side by side or stacked can share a common drive motor for synchronized applications. Loading can be applied on the top, bottom or both rails. An optional adjustable torque limiting clutch with overload detect couples the drive to the conveyor as shown. Custom configurations with mounted drives and leg/stands are available.



Carousel Styles are offered as stand-alone with leg stands as shown or mounted to a base frame for tabletop applications. Multiple units mounted side by side or stacked can share a common drive motor for synchronized applications. An optional torque limiting clutch with overload detect couples the drive to the conveyor. The clutch can be adjusted to protect the drive and tooling. Custom designed leg/stands, drive configurations, controllers & other accessories are optional equipment.

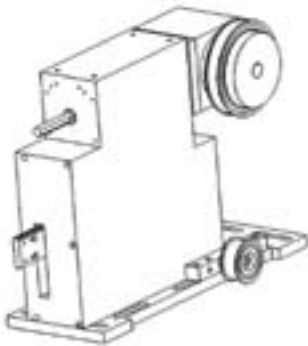
Part Handlers

(high speed accurate placement)



Linear part handlers are designed for pick & place motions, part insertion or applying crimping forces to finish an assembly. Cam driven linear slides feature high-speeds and accurate positioning within 0.02mm (0.0007") up to 80 cycles per minute. Maximum stroke lengths are 50 x 150mm (2" x 6") and units are able to be mounted side-by-side on either side of the precision link conveyor. Linear part handlers are synchronized with the conveyor via a line shaft belt driven systems. Other equipment can be in synchronized with the conveyor if driven by optional line shaft(s). For cycle-on-demand applications, each handler can be independently driven with gearmotors, clutch/brake drives, or servo motors. This system is pre-engineered to save design and installation time, just add tooling to the part handlers to start production.

GY Linear Part Handlers (reliable)



Sankyo's GY series part handler is renowned for high-speed capabilities, accuracy, and reliability. Cam driven linear slides feature accurate positioning within 0.02mm (0.0007") up to 80 cycles per minute. Maximum stroke lengths are 50 x 150mm (2 x 6") and the thin profile allows part handlers to be mounted at adjacent stations. The cam motions incorporate dwell periods for gripper actuation while the drive input is rotating continuously. Each part handler can be driven with an optional line shaft and miter box to keep the motions synchronized as shown, or can be ordered with an independent drive for cycle-on-demand applications. Optional linear overloads can be mounted between the handler output arm and tooling to prevent damage to tooling in the event of a crash. Force thresholds are easily adjusted without any disassembly and a photo eye sensor can detect when overloads have occurred.

Machined Options

(peripheral)



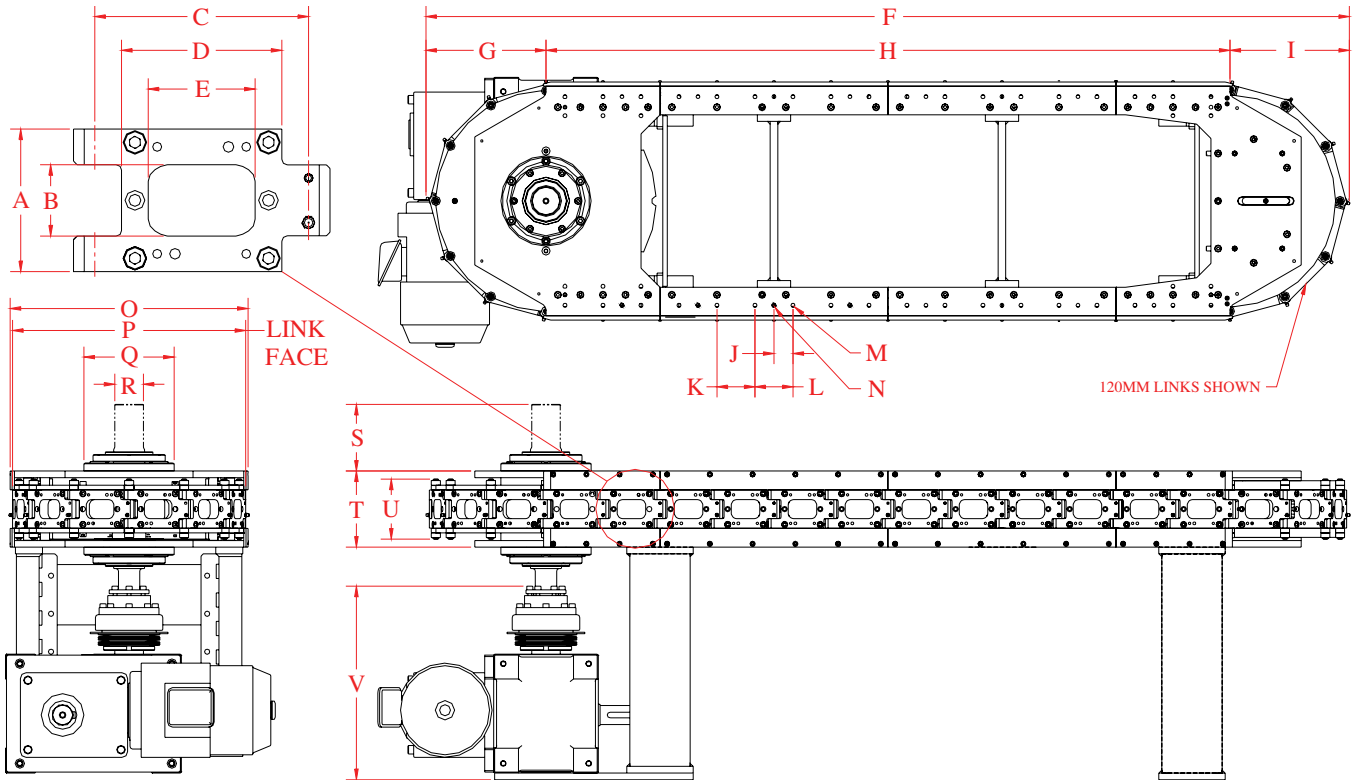
Precision tooling plates are available per your specification. Sankyo will manufacture and install any tooling plate that you have designed and deliver the entire package saving you time and money during system assembly. Other machined options include; custom machine bases, leg stands, and guarding. These options are available with customer provided drawings or we can engineer based on information given to us. Sankyo will ship the chassis with heavy-duty shipping legs if no other options have been specified. Certified drawings must be approved prior to machining for your guaranteed satisfaction.

IC80 Series

DIMENSIONS

Dimensions

Model	Units	A	B	C	D	E	F	G	H	I	J	K
IC80-80	mm	80	40	80	50	25	1395	218	960	218	40 TYP.	80 TYP.
IC80-120	mm			120	90	60	TO	244	TO	244		
IC80-160	mm			160	130	100	10043	222	9600	222		



Model	Units	L	M	N	O	P	Q	R	S	T	U	V
IC80-80	mm	80 TYP.	M10x1.5 TAPPED TYP.	Ø8 DOWEL TYP.	450	435	190	45 OR 60	140	160	126	ED11/8TC: 354 14D/11TC: 438 18D/14TC: 507
IC80-120	mm				503	488						
IC80-160	mm				458	443						

Model Code

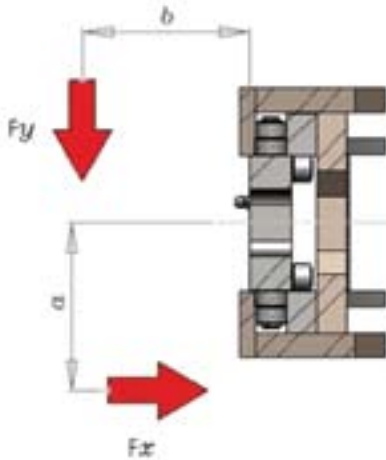
IC80	120	12T	2880	AS	/X
Link Height	Link Length	Sprocket Teeth	Chassis Center to Center Distance	Link Material and Type	Special
80 mm	80 mm 120 mm 160 mm	16 Teeth 12 Teeth 8 Teeth	960, 1440, 1920, 2400, 2880, 3360, 3840, 4320, 4800, 5280, 5760, 6240, 6720, 7200, 7680, 8160, 8640, 9120, 9600	AH (AL Hollow) AS (AL Solid) SH (Steel Hollow) SS (Steel Solid)	Requires Drawing

Specifications (Quick Reference Chart)

Model	Units	IC80-80	IC80-120	IC80-160
Cycles per Minute	cpm	0~120	0~120	0~120
Center to Center Distance	mm (ft)	960 to 9600 (3.1 to 31.5) in 480mm sections		
Standard Chain Link Length	mm (in)	80 (3.14")	120 (4.72")	160 (6.29")
Linear Feed Pitch Accuracy	mm (in)	±0.10 (±0.004")		
Total Link Quantity	each	40 (+12/section)	28 (+8/section)	20 (+6/section)
Link Quantity per 480mm Add-in Section	/side	6/side	4/side	3/side
Examples of Index Periods for Cam Driven Indexing Units	deg	90° (1:3 ratio index to dwell time running continuously) 120° (1:2 ratio index to dwell time running continuously) 180° (1:1 ratio index to dwell time running continuously) 270° (3:1 ratio index to dwell time running continuously)		
Indexer Cam Curves	data	Modified Sine(MS), Sankyo Modified Sine (SMS-3) & Modified Constant Velocity (MCV50)		
Line Shaft Option Availability	-	Yes		
GY Part Handler Availability	-	Yes		
Drive End Section Weight	kg (lb)	53 (118)	58.0 (128)	54 (120)
Return End Section Weight	kg (lb)	25 (56)	29.5 (65)	26 (57)
Single 480mm Mid Section Weight	kg (lb)	17 (37)	17.2 (38)	17 (37)
Indexer w/ Gearmotor & Torque Limit Weight	kg (lb)	ED11 - 91 (201), 14D - 171 (378), 18D - 311 (686)		

Note: Special stops, cam profiles, pitch configurations, etc. are available upon request

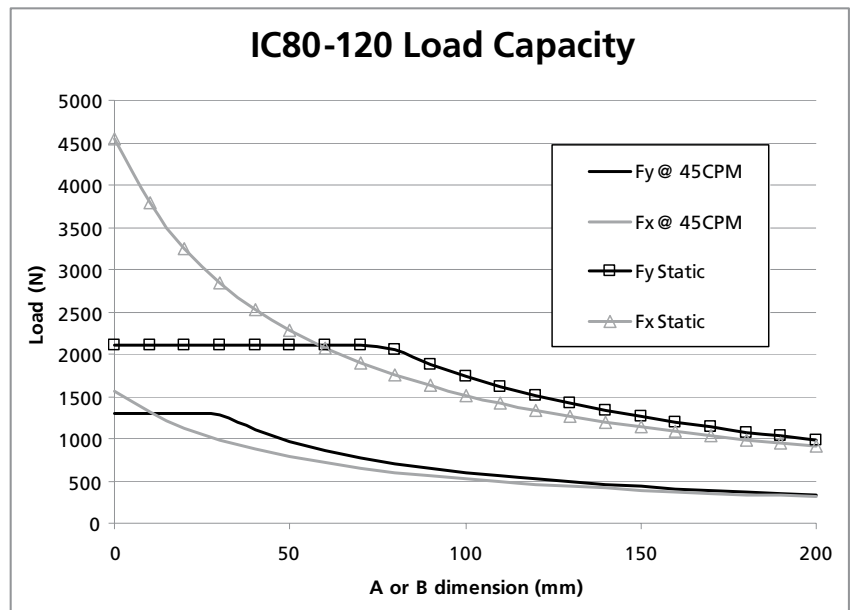
Chain Link Loading



Link Size	Axis	Dynamic Allowable Load per Link	Static Allowable Load per Link
80	Fx	1770	4550
	Fy	730	1055
120	Fx	1570	4550
	Fy	1300	2110
160	Fx	1440	4550
	Fy	1190	2110

*Dynamic Ratings at 45 CPM

*All forces are in Newtons



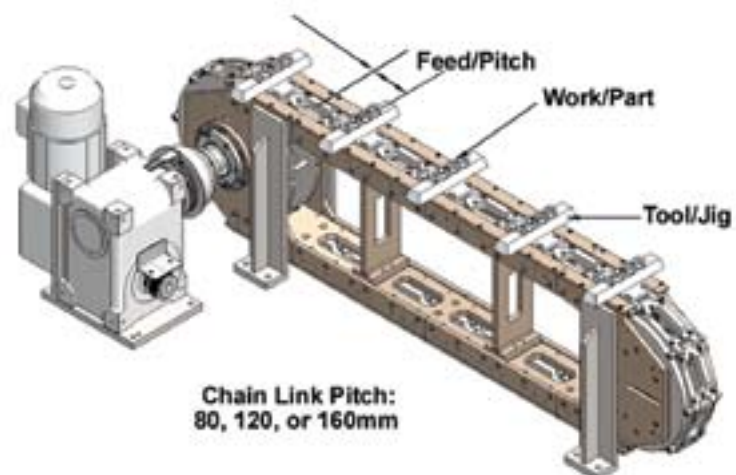
Conversions: 1 Newton = 0.225 pound, 1 millimeter = 0.03937 inch

Link Loading Capacities

Each link is supported by multiple cam followers and needle roller bearings are used on the link pins. All bearings are preloaded to eliminate backlash in every direction.

Fax-back Sizing Data Sheet

Company		Phone	
Address		Fax	
City		Contact	
State		E-mail	
Zip			

Item			Item	
Feed Pitch [P]	mm	in	Index Transfer Time (sec)	
Chain Link Pitch	mm	in	Dwell or Idle Time (sec)	
Stations Required			Cycle on Demand	<input type="checkbox"/> Yes
Jig/Tooling Quantity			Continuous Duty Cycle	<input type="checkbox"/> Yes
Jig/Tooling Weight	kg	lb	Output Torque Limit Clutch	<input type="checkbox"/> Yes
Work/Part Quantity			Link Type	Solid <input type="checkbox"/> Hollow <input type="checkbox"/>
Work/Part Weight	kg	lb	Voltage Requirements	
			Sensor Style	<input type="checkbox"/> PNP (std.) <input type="checkbox"/> NPN
			Carousel Type	<input type="checkbox"/> Yes
			Over & Under Type (as shown)	<input type="checkbox"/> Yes
			Line Shaft Required	<input type="checkbox"/> Yes
			Special:	

Notes:

Service

Sankyo offers engineering support, repair or rebuild service at our facility in Sidney, Ohio. On-site service is available throughout the world by contacting Sankyo America or any of Sankyo's international service centers.



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Service Network



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