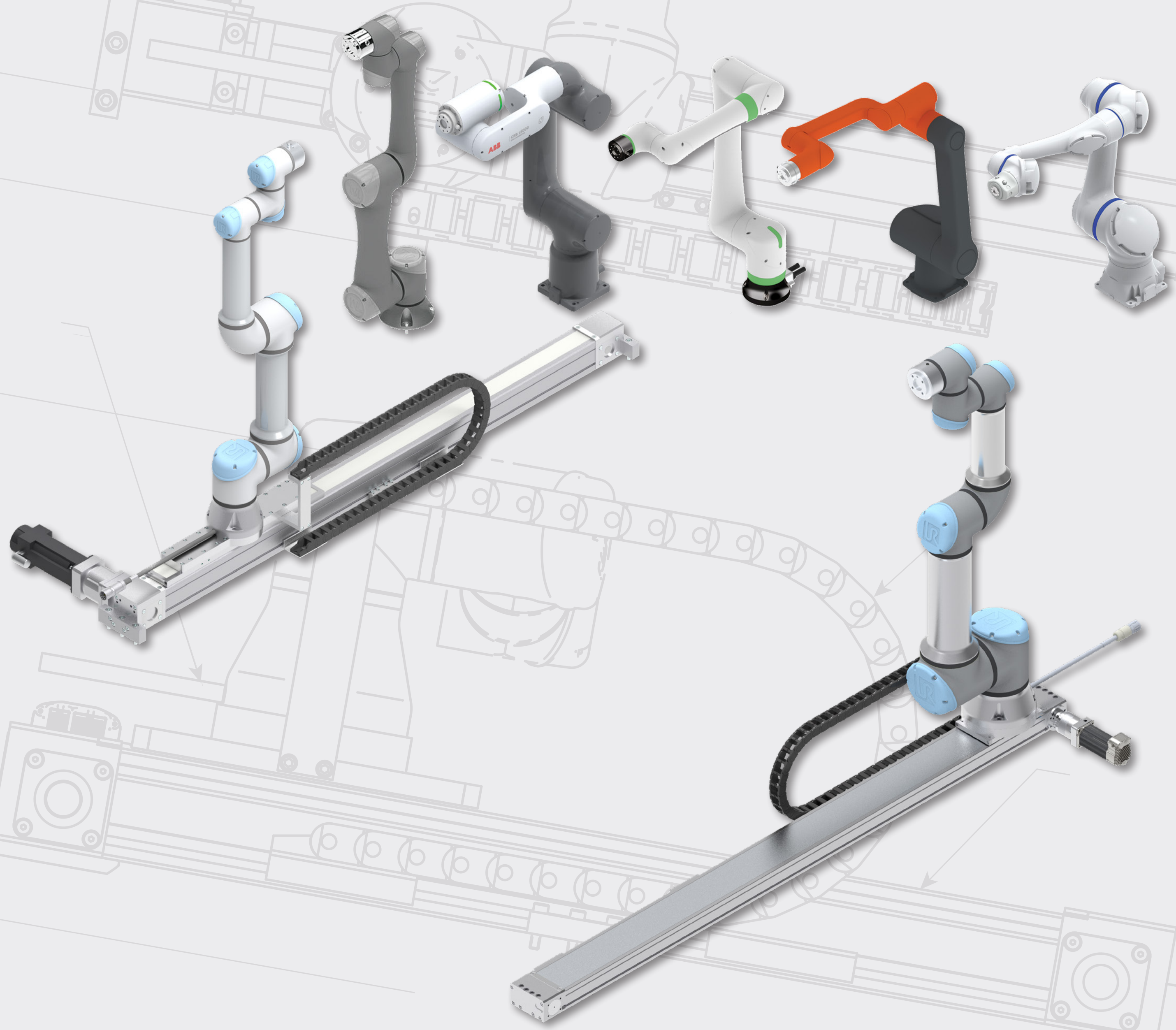
7TH AXIS SOLUTIONS

Robot Transfer Units for Cobots

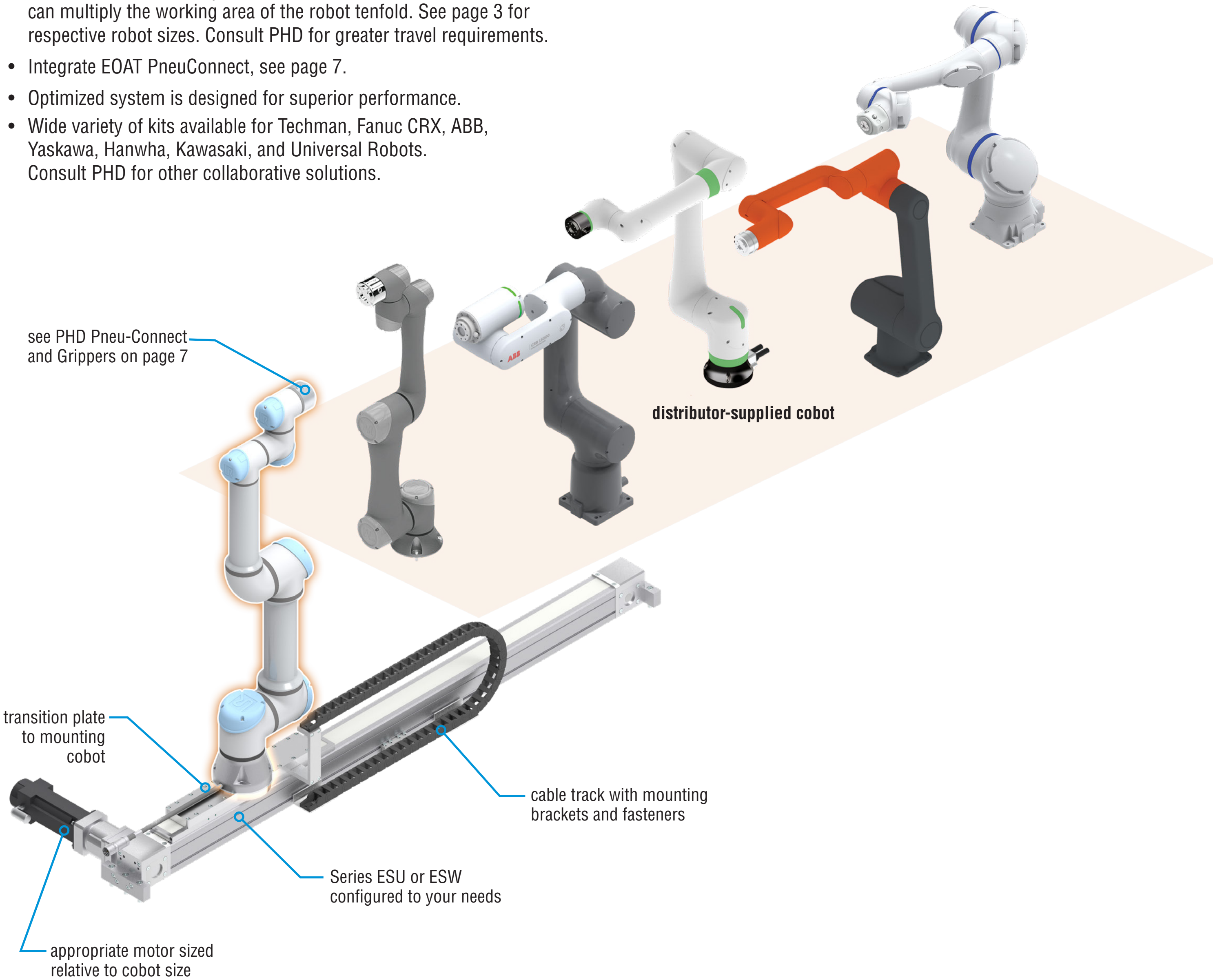
- Increases work area of robot productivity
- Solutions for wide range of cobot brands and sizes
- Standard travels up to 5,500 mm



Robot Transfer Units for Cobots

DESCRIPTION AND BENEFITS

- The robust design of the Series ESU and ESW Electric Belt-Driven Linear Actuators provide a superior RTU (robot transfer unit) to support the robot in various orientations.
- Torque limiting servo-driven linear actuator can provide fault in case of collisions. Series ESx is not collaborative rated from PHD. Customer assumes the responsibility of risk assessment.
- With a standard travel up to 5,500 mm, the 7th axis linear actuator can multiply the working area of the robot tenfold. See page 3 for respective robot sizes. Consult PHD for greater travel requirements.
- Integrate EOAT PneuConnect, see page 7.
- Optimized system is designed for superior performance.
- Wide variety of kits available for Techman, Fanuc CRX, ABB, Yaskawa, Hanwha, Kawasaki, and Universal Robots. Consult PHD for other collaborative solutions.



ORDERING DATA: 7th Axis Solutions

TRAVEL
Example: 0500 = 500 mm
50 mm minimum travel
and 50 mm increments

MOTOR & CONTROLS
00 - None
(For distributor supplied motor)
EC - Ethercat (Teknic motor included)

320400 - 0500 - 1 - 00 - xx

ML BASE NUMBER
See chart below for desired robot model.

CABLE MANAGEMENT
(Default motor position is -H71)
0 - None
1 - Opposite of Motor
2 - Same side as Motor (removes -H71 motor position option)

ROBOT TRANSITION PLATE
See chart below for desired robot model.

ROBOT	ROBOT SIZE	ML BASE NUMBER	ROBOT TRANSITION PLATE DASH NUMBER	ROBOT MAX PAYLOAD (kg)	ROBOT REACH (mm)	ROBOT WEIGHT (kg)	RECOMMENDED 7TH AXIS**	PLATE WEIGHT (kg)
TECHMAN	TM5 - 700	ML320401	-01	6	700	22.1	ESWSS55	4
	TM5 - 900			4	900	22.6		
	TM12	ML320402	-02	12	1300	33.3	ESWSS56	5
	TM14			14	1100	32.6		
	TM16		-03	16	917	32		
	TM20	ML320403	-04	20	1300	32.8	ESWSD56	10
FANUC	CRX-5i A	ML320401	-05	5	994	25	ESWSS55	4
	CRX-10i A	ML320402	-06	10	1249	39	ESWSS56	5
	CRX-10i A/L				1418			
	CRX-20i A/L	ML320403	-07	20	1418	41	ESWSD56	10
	CRX-25i A		-08	25	1889	135		
	CRX-30i A		-09	30	1756			
ABB	GoFa 5	ML320401	-10	5	950	28	ESWSS55	4
	GoFa 12	ML320403	-11	12	1270	48	ESWSD56	10
	GoFa 10			10	1520	51		
HANWHA	HCR-3	ML320400	-12	3	630	13	ESUS55	1
	HCR-5	ML320401	-13	5	915	21	ESWSS55	3
	HCR-12	ML320402	-14	12	1300	53	ESWSS56	5
	HCR-14		-15	14	1420	42		
KAWASAKI	CL103N	ML320400	-16	3	590	17	ESUS55	1
	CL105N	ML320401	-17	5	800	26	ESWSS55	4
	CL108N	ML320402	-18	8	1300	48	ESWSS56	5
	CL110N			10	1000	42		
UNIVERSAL ROBOTS	UR3	ML320400	-19	3	500	11	ESUS55	1
	UR5	ML320401	-20	4	850	18.4	ESWSS55	3
	UR10	ML320402	-21	10	1300	28.9	ESWSS56	5
	UR16			16	900	33.1		
	UR20	ML320403	-22	20	1750	64	ESWSD56	10
	UR30			30	1300	63.5		
YASKAWA	HC10DTP	ML320403	-23	10	1200	58	ESWSD56	10
	HC20DTP		-24	20	1700	140		
	HC30PL		-25	30	1700	140		

NOTES:
1) URCap software available for UR Cobot combinations when combined with Kollmorgen.
2) **Recommended linear actuator selected for maximum payload and reach of robot. Sizing is based on robot center of gravity to be less than 1/3 of robot reach during dynamic moves. Contact PHD Applications Engineering for other combinations.
3) RTU (robot transfer unit) sized for maximum velocity of 300 mm/sec.

SERIES ESU & ESW -RT CONFIGURATION REFERENCE

ESU S 5 5 x 300 - RTxxx - QL11 - H71 - Wxxxx - KSxxx - SCNK2

PRODUCT
Slide

SIZE
5
6
8

DRIVE MODE: BELT (RT)

Size		Lead mm
5	RT160	160
6	RT192	192
8	RT256	256

RT000 = Passive Unit (without drive)
Must be ordered with QL00 option.

MOTOR CONFIGURATION
QL11 - Inline with 1:1 ratio (Standard)
QLT1 - Inline Plain Shaft
QLD1 - Inline Dual Shaft 1:1 Ratio
QLTD - Inline Dual Plain Shaft 1:1 Ratio
QL00 - No Shaft (Passive Configuration), Must be ordered with RT000 option.

MOTOR MOUNT CODE
Wxxxx - Open Architecture
W0000 - Blank Motor Mount
Blank - Slide Only (No motor mount)

END/MID SUPPORTS

Head Support Qty
KS**0**xx or KS**1**xx
Qty Support (Max 1)

Mid Support Qty
KSx**0**x to KSx**9**x
Qty Support (Max 9)
See Options page for recommended spacing

Cap Support Qty
KSxx**0** or KSxx**1**
Qty Support
(Max 1, Motor End)

TYPE
S - Single Saddle
D - Dual In-Line Saddle

DESIGN NO.
5 - Metric

TRAVEL (MAX.)

ESUS Size	ESUS mm	ESUD Size	ESUD mm
5	5500	5	5350
6	5500	6	5250
8	5500	8	5100

50 mm minimum travel in 50 mm increments

DRIVE SHAFT ORIENTATION
Blank - Right Hand (Standard)
H71 - Left Hand

SWITCH BUNDLE (OPTIONAL)

S C N K 2

SWITCH SERIES
C - JC1SDx-x Series Single Position

SWITCH CIRCUITRY
N - NPN (Sink)
P - PNP (Source)

QUANTITY
1 to 9 (JC1SDx-x)

CABLE TYPE
K - Quick Connect only (JC1SDx-K)
5 - 5 Meter Length Cable (JC1SDx-5)

Visit PHD, Inc. for more details - Series ESU

ESW S S 5 5 x 300 - RTxxx - QL11 - Wxxxx - KSxxx -

CLASSIFICATION
Electromechanical

SADDLE QTY
S - Single Saddle
D - Dual Saddle

DESIGN NO.
5 - Metric

TRAVEL
50 mm minimum travel in 50 mm increments

Size	Max (mm) Belt (-RT)	Max (mm) Ball Screw (-RB)
5	5500	1000
6	5500	1000

MOTOR MOUNT CODE
Wxxxx - Open Architecture
W0000 - Blank Motor Mount

MOUNTING KIT (OPTIONAL)

PRODUCT
S - Slide

SERIES
W - Dual Rail

TYPE
S - Standard Saddle (Long)
C - Compact Saddle (Short)

SIZE
5
6

DRIVE MODE (BELT)
RT120 (55)
RT160 (56)

(BALL SCREW)
RB010 (55)
RB016 (55)
RB010 (56)
RB020 (56)

MOTOR CONFIGURATION
QL11 - Inline with 1:1 Ratio (Standard)

CAP FASTENERS/ MID SUPPORTS

DRIVER END CAP FASTENERS
KS**0**xx or KS**1**xx
= Fasteners (Max 1)

MID SUPPORT QTY
KSx**1**x thru KSx**Z**x
= Qty Support
1=1 thru 9,
J=10, K=11, L=12, M=13, N=14, P=15, Q=16, R=17, S=18, T=19, U=20, V=21, W=22, X=23, Y=24, Z=25

IDLE END CAP FASTENERS
KSxx**0** or KSxx**1**
= Fasteners (Max 1)

SWITCH BUNDLE (OPTIONAL)

-SCNK2

SWITCH SERIES
C - JC1SDx-x Series Single Position

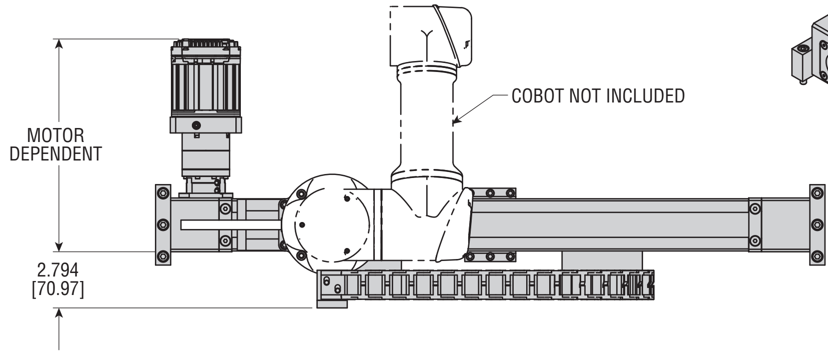
SWITCH CIRCUITRY
N - NPN (Sink)
P - PNP (Source)

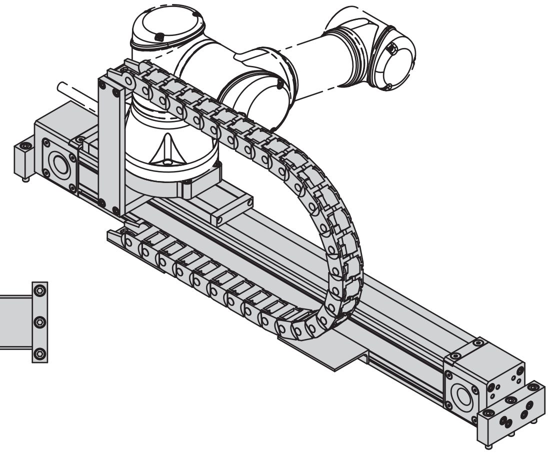
QUANTITY
1 to 9 (JC1SDx-x)

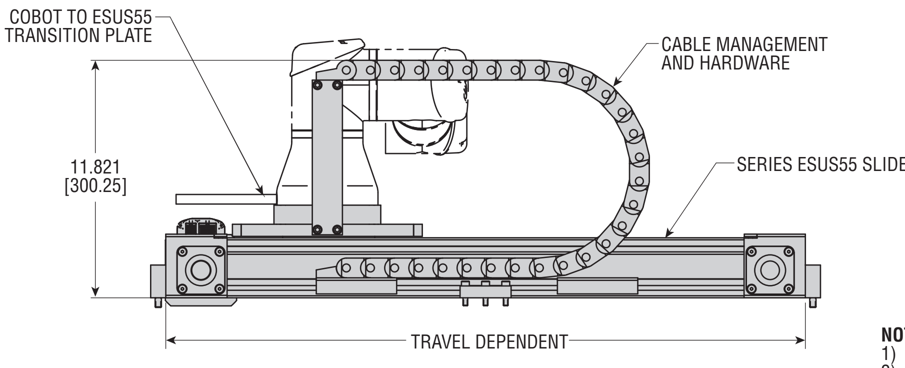
CABLE TYPE
K - Quick Connect only (JC1SDx-K)
5 - 5 Meter Length Cable (JC1SDx-5)

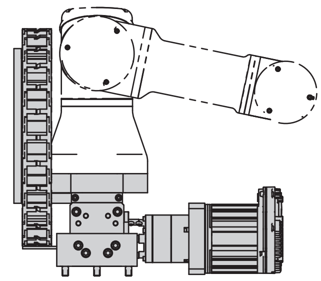
Visit PHD, Inc. for more details - Series ESW

ML320400 - ESUS55



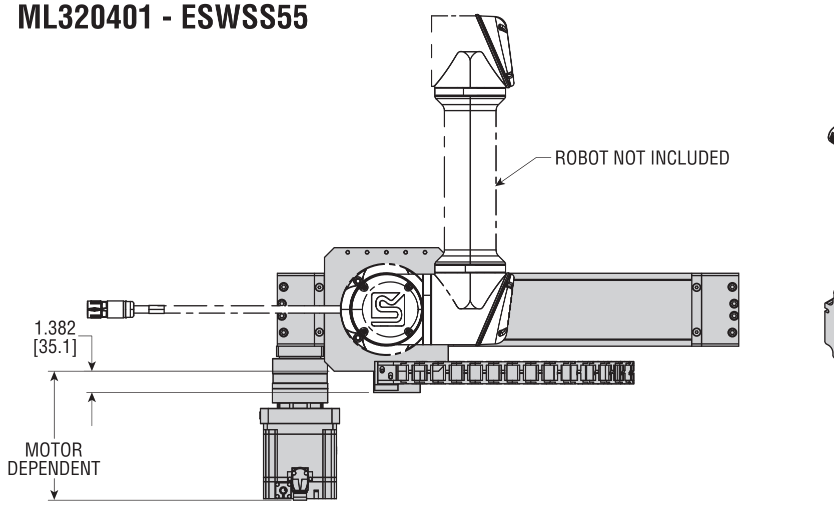


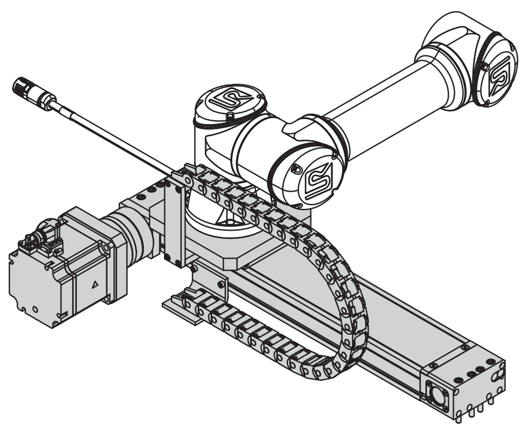


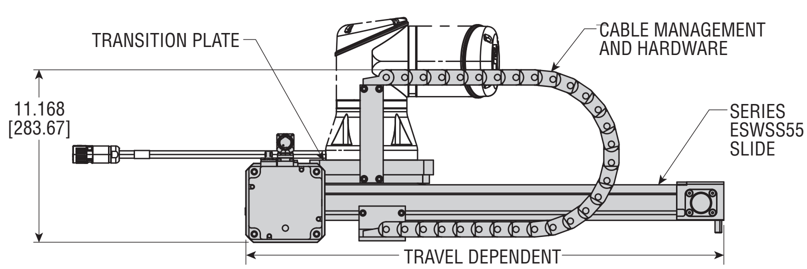


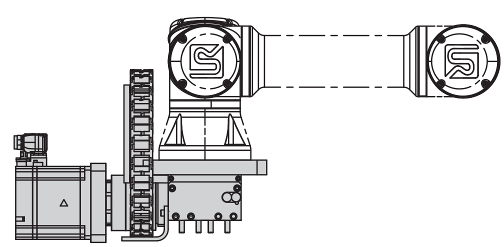
NOTES:
1) ALL DIMENSIONS FOR REFERENCE ONLY
2) DIMENSIONS SUBJECT TO CHANGE

ML320401 - ESWSS55









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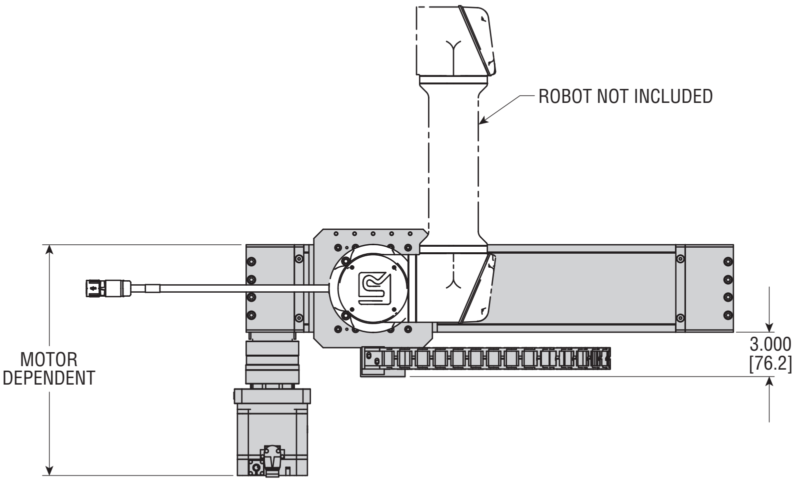
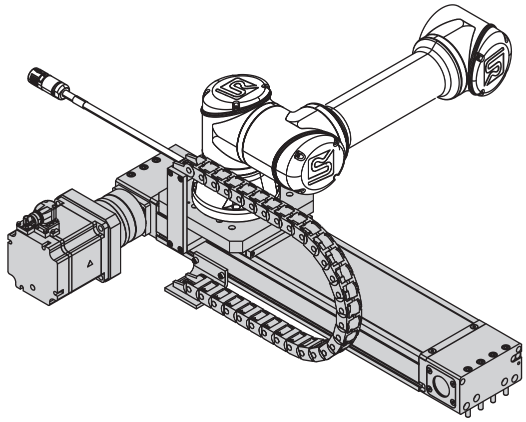
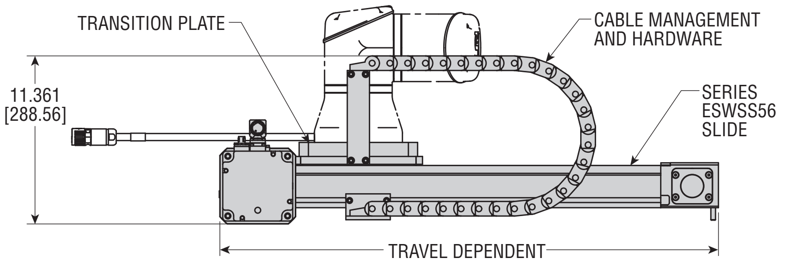
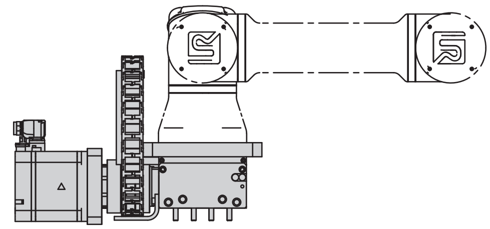
ML320402 - ESWSS56









NOTES:
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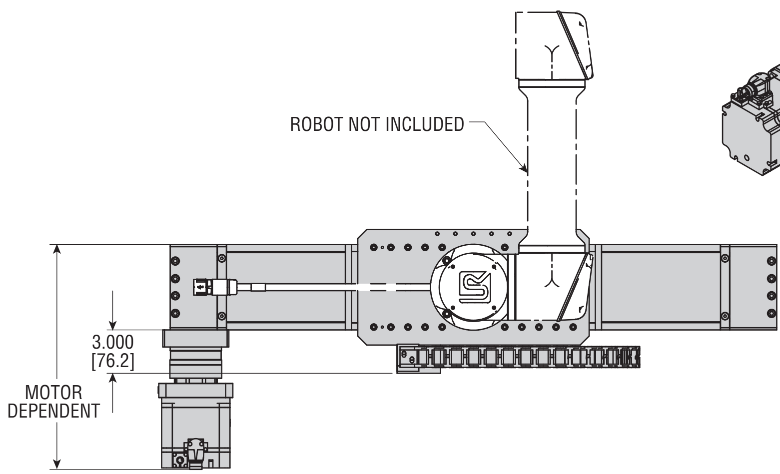
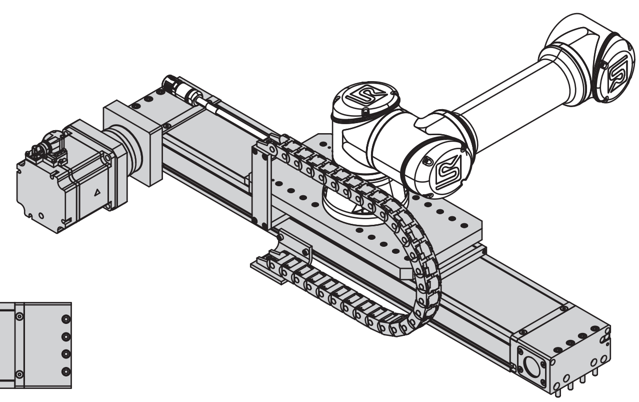
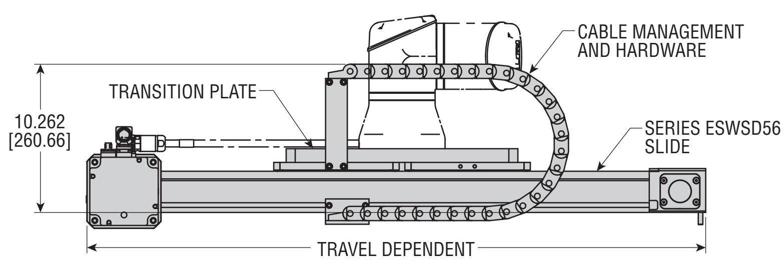
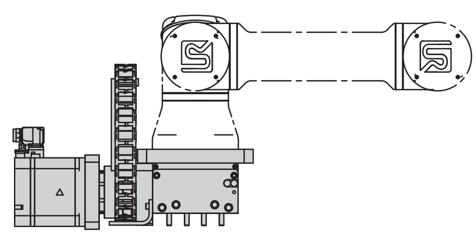
ML320403 - ESWSD56









NOTES:
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2) DIMENSIONS SUBJECT TO CHANGE

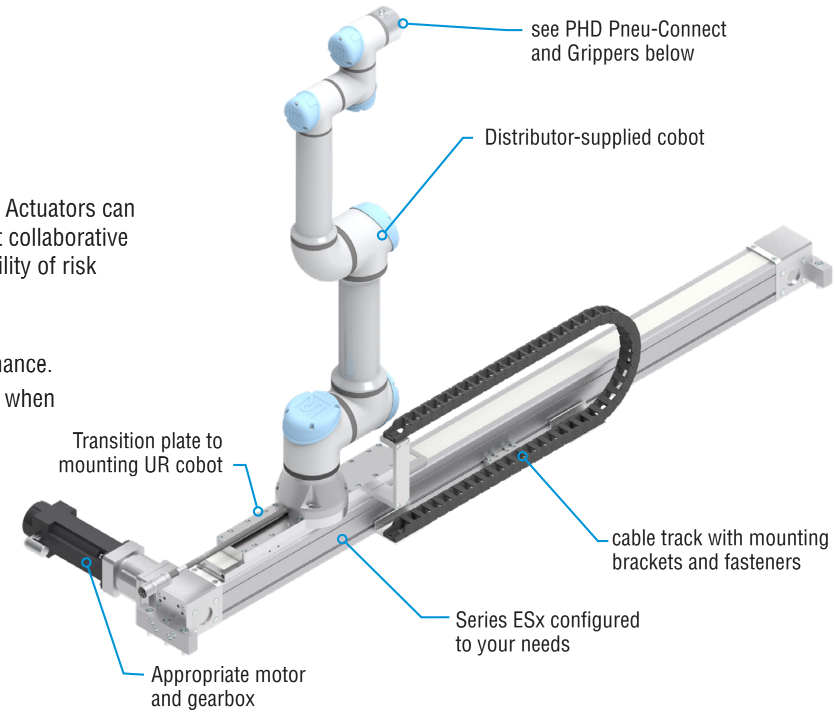
Systems for UR Cobots

DESCRIPTION

- Torque limiting servo-driven Series ESx -RT Linear Actuators can provide fault in case of collisions. Series ESx is not collaborative rated from PHD. Customer assumes the responsibility of risk assessment.
- Integrate EOAT PneuConnect, see below.
- Optimized system is designed for superior performance.
- Easy to set up and program using URCap software when combined with Kollmorgen.

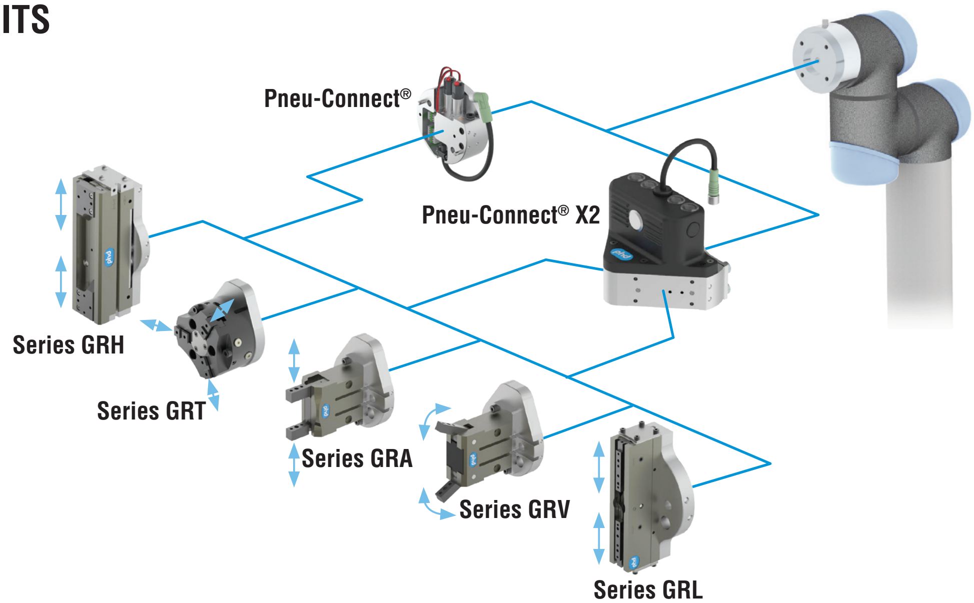
URCap software is included with system

UNIVERSAL ROBOTS
UR+ Partner



PNEU-CONNECT® BENEFITS

- Provides seamless, cost-effective, pneumatic end-effector integration for collaborative robots.
- Couples directly to the robot arm tool port enabling pneumatic gripping capability.
- Incorporated MAC® valves
- URCap software is included for intuitive, easy setup of Pneu-Connect system.
- Pneu-Connect X2 design features the Freedrive button that interfaces with the UR for easy position programming.
- Consult PHD for use on other cobots.



CLICK & GRIP: Adjustable Gripper Tooling

- Fast configuration and reconfiguration
- Flexibility with interchangeable component - segments can be added and removed allowing for endless combinations
- Lightweight polyamide plastic, ideal for cobot applications and proof of concept
- Design provides limited compliance – helpful during setups and around workers

THE PHD ADVANTAGE

Digital Design Tools

CAD APP
- Select from popular CAD formats (AutoCAD®, Inventor®, Unigraphics®, SolidWorks®, and more)

- Graphical configurator supports real-time compatibility
- Download CAD models directly from your browser or have them emailed

Sizing APP
Answer questions about your application to find a product that meets your exact requirements.

- Save a project to revisit and revise later
- Automatic calculations and unit conversion: imperial or metric
- Available for web and mobile use

Our powerful online engineering tools simplify the design process to save you time.

Product Selector Tool

- Easy step-by-step pneumatic and electric product selector. Choose power source, number of axes, load/force, travel, and maximum speed.
- Pre-sized dual and multi-axis Cartesian system options
- Same-day quotes for faster decision-making
- 7th axis Robot Transfer Unit (RTU) solutions
- An intuitive and user-friendly interface

Customized Solutions

We have the engineering expertise and factory capability to design and build custom solutions for almost any industry and application. Currently, our database includes over 35,000 unique designs born out of a commitment to provide our customers exactly what they need. If an application requires a modified component, our experienced design team is ready to help. We welcome special requests for fully custom products, regardless of quantity or frequency of order.

- FAST & EASY PRODUCT CUSTOMIZATION
- 35,000+ DESIGNS IN OUR DATABASE
- 150,000+ AVAILABLE QUOTES
- NO MINIMUM ORDER QUANTITIES

Partnering to Serve the Customer

We're a proud member of the MAC Distributor Network (MDN): a global network of manufacturers and distributors partnering to provide superior product, service, and support to customers.

Our distribution partners within this global network are factory-trained, application-oriented, and carry a wide range of supporting products. MDN offers the opportunity to blend their unique expertise with that of the PHD team to provide exceptional automation solutions and ongoing support to our customers around the world.

Global Reach
A globally linked network of partners in over 45 countries facilitates fast and seamless support to multinational customers.

Expert Support
Factory-trained application and industry specialists ensure cost-effective and field-proven automation solutions.

Customer Commitment
MDN members are committed to providing customers what they need when they need it.

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