

# FLEXION

An innovation in gripping technology inspired by the ultimate gripper – the human hand.

## SERIES FG GRIPPING SOLUTIONS

### Key Features and Benefits

- **PROBLEMS SOLVED** - Flexion's distinctly untraditional design solves many challenges that previously had no answer.
- **ADAPTIVE DESIGN** - The unique finger module, similar to a human finger, conforms and adapts to the user's workpiece. When actuated, the internal tendon system engages multiple joints to either encapsulate the part or grip by the fingertips.
- **WIDE RANGE OF FORCE** - The adjustment of the operating pressure allows for a wide range of usable force to provide industrial strength grip for demanding applications or a delicate touch for soft and sensitive product handling.
- **CONFIGURABLE SYSTEM** - Finger modules mount to a gripper hub in either parallel or radial configuration. Finger modules can be mounted in arrays of one to five fingers in each hub position to suit the user's unique requirements. In addition, fingers can be reconfigured by the user as needed to suit multiple purposes.
- **DIRECT ROBOT MOUNTING** - The configured system follows ISO 9409 mounting standards to mount directly to most robots on the market.
- **SENSOR READY** - Each finger can be equipped with up to two JC1 switches to sense positions such as "part gripped", "missed part", or "starting position."
- **ANGULAR ADJUSTMENT** - Finger modules can be rotated on the hub to spread opposing finger arrays apart or together for optimal workpiece encapsulation.
- **CHOICE OF FINGERTIPS** - A Rounded style tip provides greater grip force while an Edged style tip assists with picking up small items from flat surfaces.

### Radial Hub Models

Utilizes 3 finger arrays, ideal for handling circular objects



### Parallel Hub Models

Utilizes 2 finger arrays, with up to 5 fingers per array



### ENGINEERING DATA

SPECIFICATIONS	IMPERIAL	METRIC
OPERATING PRESSURE	5 psi min to 120 psi max	0.4 bar min to 8.3 bar max
RATED LIFE	5 million cycles	
LUBRICATION	Factory lubricated for rated life	

FINGER FULL ARTICULATION TRAVEL				MINIMUM GRIP FORCE AT FINGER TIP AT 120 psi [8.2 bar]		MAXIMUM GRIP FORCE AT FINGER TIP AT 5 psi [0.4 bar]	
LATERAL MOVEMENT		LONGITUDINAL MOVEMENT		lb	N	lb	N
in	mm	in	mm				
2.20	55.9	2.95	75	13.9	62.1	1.0	4.4

**NOTE:** Grip forces assume 0.5 coefficient of friction between finger tip and workpiece.

GRIPPING SYSTEM COMPONENT	WEIGHT		
	lb	kg	
Finger Module	0.45	0.20	
3-Clevis Radial Hub	0.77	0.35	
2-Clevis Parallel Hub	0.69	0.31	
Clevis	0.17	0.08	
Clevis Link	0.26	0.12	
Full Spacer Block	0.19	0.09	
Half Spacer Block	0.09	0.04	
Tie-Rod Sets (required to assemble finger groups together)	1.5 Finger	0.04	0.02
	2 Finger	0.05	0.02
	3 Finger	0.07	0.03
	4 Finger	0.08	0.04

**NOTE:** Weight values include weights of associated fasteners, but not interconnecting air tubing and fittings.



# 12 CONFIGURATION MODELS

Contact PHD Applications Engineering for more configurations and assistance.

## PARALLEL CONFIGURATIONS

FGCBP - 5 - 20 x 2 - FG410 - FG410



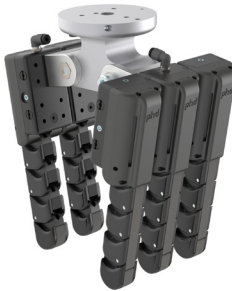
FGCBP - 5 - 20 x 2 - FG420 - FG420



FGCBP - 5 - 20 x 2 - FG410 - FG420



FGCBP - 5 - 20 x 2 - FG420 - FG430



FGCBP - 5 - 20 x 2 - FG450 - FG450



FGCBP - 5 - 20 x 2 - FG440 - FG450



FGCBP - 5 - 20 x 2 - FG421 - FG422



FGCBP - 5 - 20 x 2 - FG421 - FG435



FGCBP - 5 - 20 x 2 - FG435 - FG435



FGCFP - 5 - 20 x 2 - FG420 - FG420



## RADIAL CONFIGURATIONS

FGCBBR - 5 - 20 x 2 - FG410 - FG410 -  
FG410



FGCBBR - 5 - 20 x 2 - FG420 - FG420 -  
FG420

