



### NB-SERIES

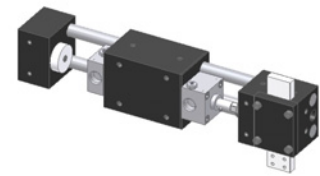
**DURA-TRANS NB** Series of Bidirectional Transfer Devices, commonly known as tuckers, provide a practical low-cost method for automatic work positioning. The units are extremely compact and eliminate the need for complex, expensive work positioning mechanisms. The NB-10 with its single integrated air cylinder offers a range of box motions with different slide strokes. The NB-20 with its cross-slide arrangement combined with two air cylinders allows either an inverted "L" or box motion and also has a range of strokes available. Even with the complex motion being produced both units operate on a single 4-way air valve.

#### QUALITY CONSTRUCTION

**DURA-TRANS NB** Series utilizes oil impregnated bronze bushings in each of their slide blocks which eliminates the need for re-lubrication. Bronze bearings are utilized rather than linear ball bearings because the bushings distribute the load over a larger surface area. This results in less wear on the slide rods. All rods are pinned to the end blocks to assure positive fastening. The Delrin bumper on the main slide contributes to a low noise level to minimize the clatter inherent in fast acting slide devices.

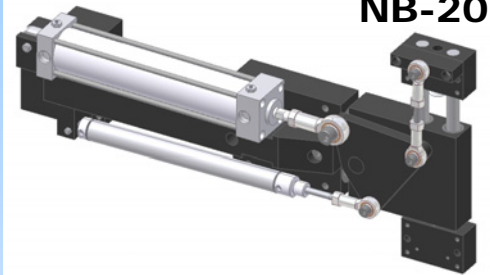
#### MOUNTING INFORMATION

**DURA-TRANS NB** Series can be mounted in any plane with the main block in the main slide used as the support. The end block is provided with tapped and drilled holes for mounting appropriate tooling.



**NB-10**

See Page **6-1.2**



**NB-20**

See Page **6-1.9**

### TECHNICAL SPECIFICATION

#### Pneumatic Specifications

Pressure Range  
Required Valves

#### ENGLISH

40-100 psi  
4-way, 2 position

#### METRIC

3-7 bar  
-35 to 80 C  
-30 to 150 C

#### Construction

Travel Tolerance  
Cylinder Type  
Dynamic Seals  
Maintenance

+0.015" / - 0.000" +0.40 / 0.00mm  
Double Acting  
Buna-N  
Field Repairable

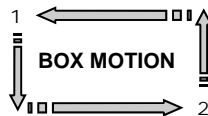
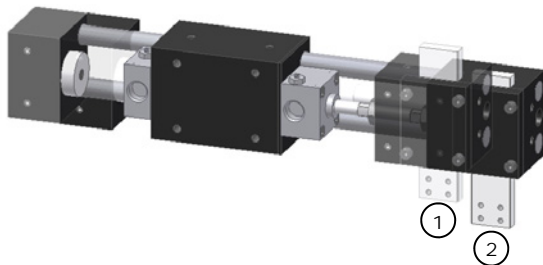
#### Temperature Range

Buna-N Seals (standard)  
Viton Seals (-V option)

-30 to 180 F  
-20 to 300 F

### OPERATING PRINCIPLES

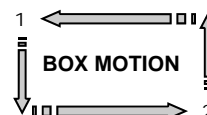
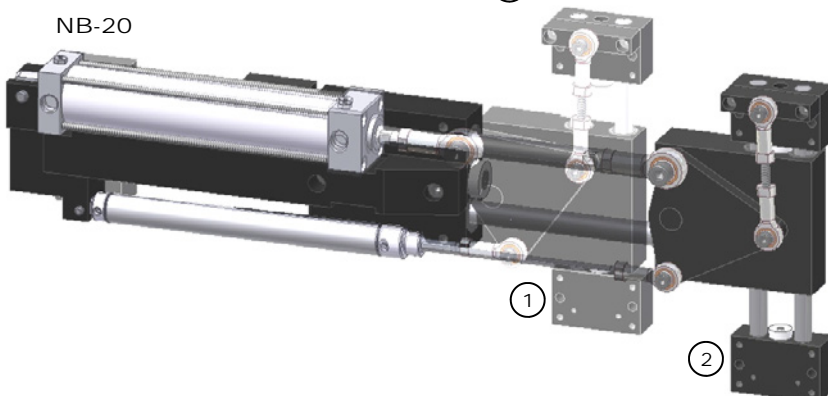
NB-10



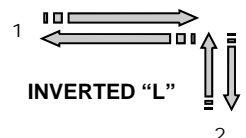
The **DURA-TRANS NB** series is capable of the following motion all with a **single** 4-way air valve.

The **DURA-TRANS NB** series includes an additional Delrin stop. This stop can be machined by user to create a specific, hard-stopped stroke. Hard stops provide highly repeatable and accurate stroke control. (Additional stops can be ordered, see parts page for ordering information.)

NB-20



- OR -







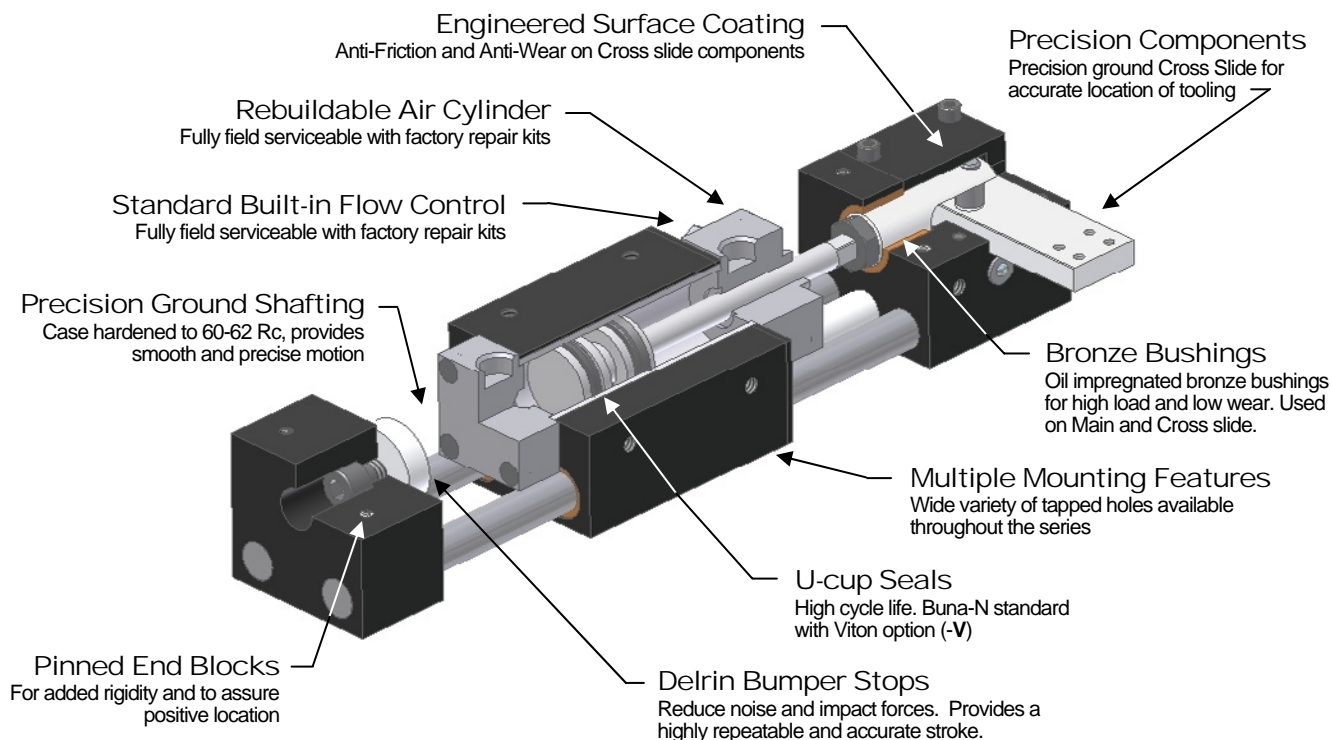
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BI-DIRECTIONAL TRANSFER

**NB-10**

## PRODUCT FEATURES

- Aircraft Grade Aluminum  
Black Anodize Finish
- Simple and Highly Durable  
Time tested, field approved design
- Compact Design  
Internal cylinder reduces overall length



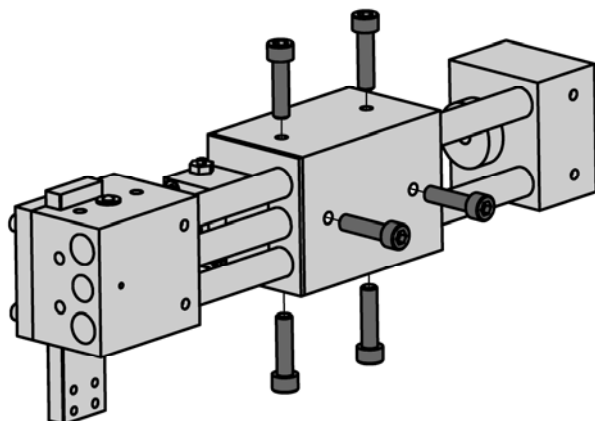
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## MOUNTING INFORMATION

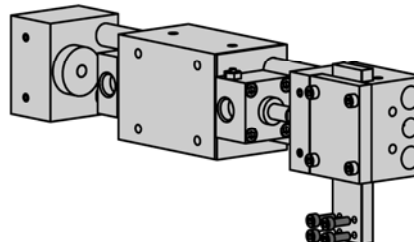
**Mounts and operates in any orientation**

### MAIN BODY

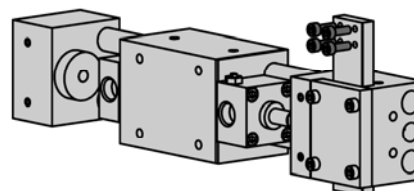


Mount up to Main body utilizing Tapped holes located on back, top and bottom of the unit.

### TOOLING



Mount tooling to Cross slide using Tapped holes. Key tooling to precision ground slide for positive location.



(-F) Option flips Cross slide 180 degrees if required for custom tooling



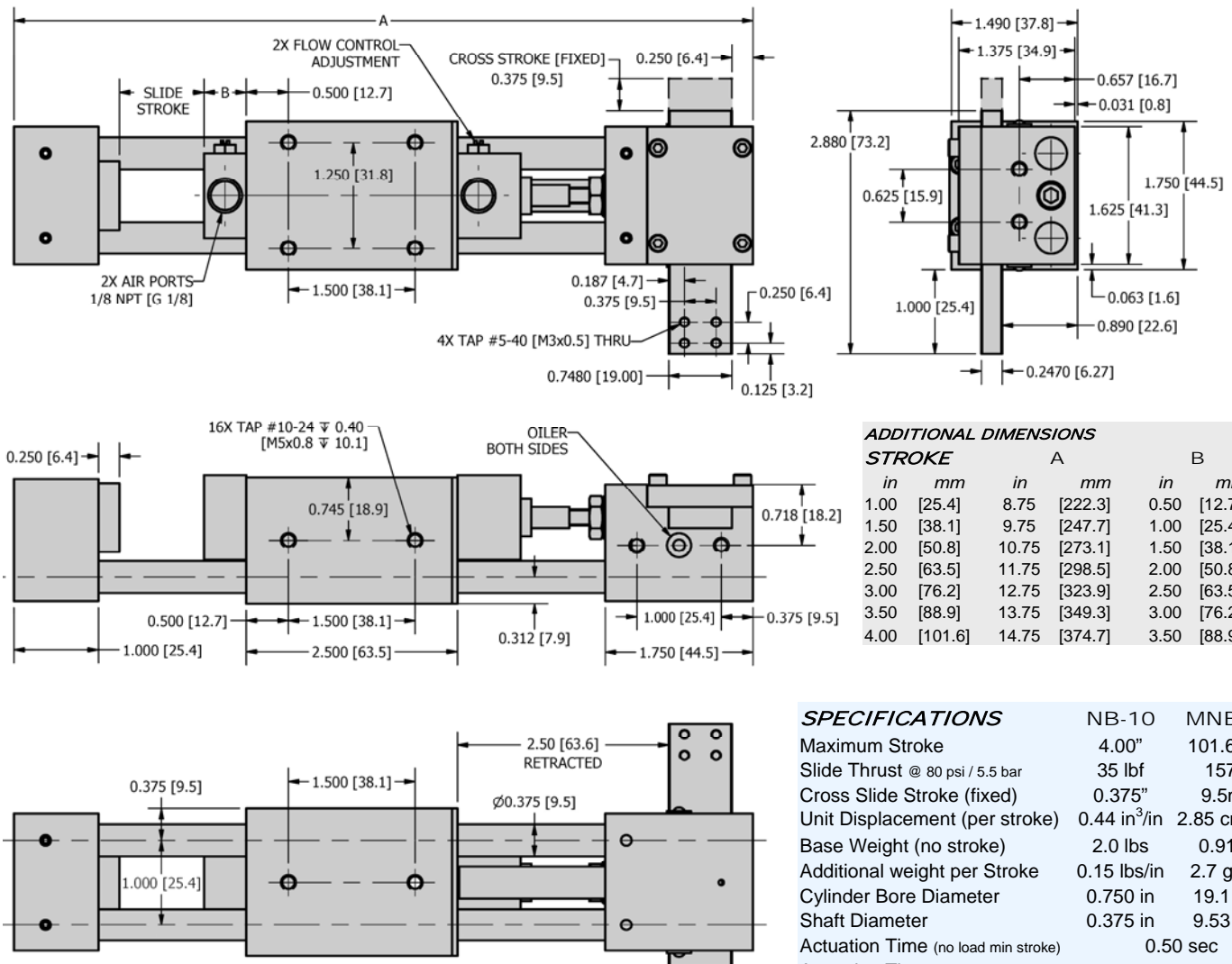


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**NB-10**

## DIMENSIONAL DRAWING



## HOW TO ORDER : BASIC UNIT

METRIC BASIC MODEL STROKE CROSS SLIDE SEALS  
**M** **NB-10** - **L** - **F** - **O** - **V**  
 LEFT HAND OPERATION

**SAMPLE ORDER: MNB-10-25.4-L**

Ex) Metric NB-10 with 25.4mm stroke and Left Hand option

METRIC M

STROKE (Main Slide) Inch: 1.0" - 4.0" @ 0.5" Increments  
 mm: 25.4mm - 101.6mm @ 12.7mm Increments

LEFT HAND L - Left Hand Unit (see Additional Information section)  
 CROSS SLIDE F - Cross Slide Flipped (see Additional Options section)  
 OPERATION O - Opposite Operation (see Additional Options section)  
 SEALS V - Viton (standard Buna - N)

**CUSTOM DESIGNS ALWAYS AVAILABLE INCLUDING :**

- LONGER STROKES
- OVERSIZED BODIES

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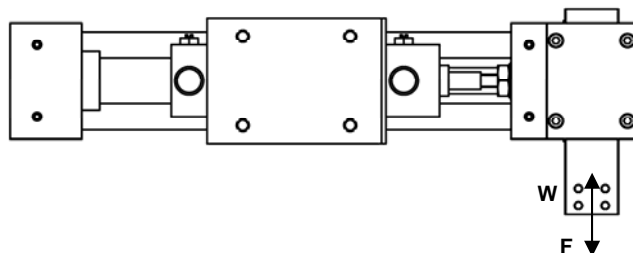
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**NB-10**

## LOADING INFORMATION

### LOADING

	NB-10	MNB-10
Typical Load <b>F</b>	10 lbf	44.5 N
Typical Payload <b>W</b>	1 lbs	4.4 N



Flow controls recommended for nearly all applications

### TYPICAL LOAD

The Typical load is the load required to stop the Cross slide during its stroke. This load may be developed as a reaction when clamping down on a part or may be developed when lifting a part. The Typical load also reached when the Cross slide reaches the mechanical limit of its stroke. When the Cross slide stops the Main slide will execute its stroke.

### CLAMPING

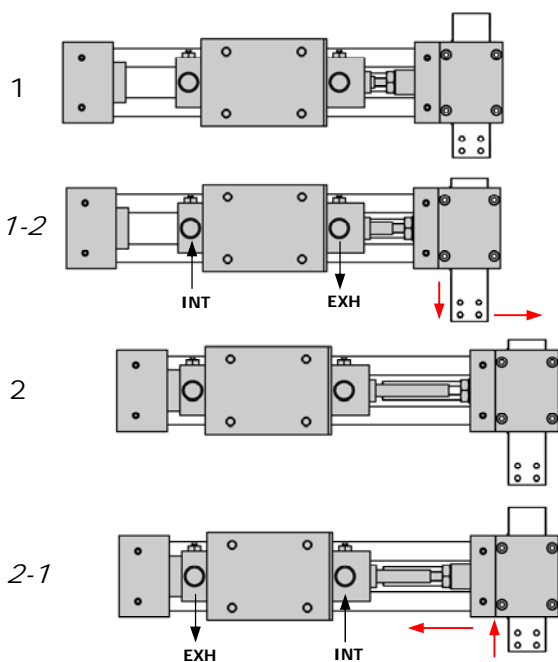
When clamping with the unit the Cross slide extends until it reaches the part. This will stop the Cross slide and the Main slide will begin its stroke. The full Cross stroke does not have to be utilized and will not harm the unit.

### LIFTING

Use caution when lifting with the unit. The use of Flow Controls is highly recommended to reduce impact loading developed by the payload's mass. If the Typical Load is exceeded during the lift the Cross slide will stop and the Main slide will begin its stroke. When this occurs the unit will not follow the proper motion.

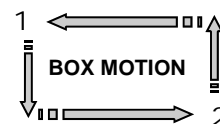
## DETAILED OPERATION

### STANDARD OPERATION



### APPLICATION EXAMPLE:

Stripping a part from a feeder track



### UNIT IS IN IT'S RETRACTED POSITION

The vertical slide is in the up position and the end block is fully retracted

### FORWARD MOTION

The air cylinder is energized outward to start the forward portion of the box motion. **FIRST** - The low friction vertical slide is free to move down during the first part of the air cylinder's motion extending it to it's down position. **SECOND** - The remaining air cylinder's motion extends the endblock to it's fully extended position. The unit remains in motion though this entire sequence.

### UNIT IS IN IT'S EXTENDED POSITION

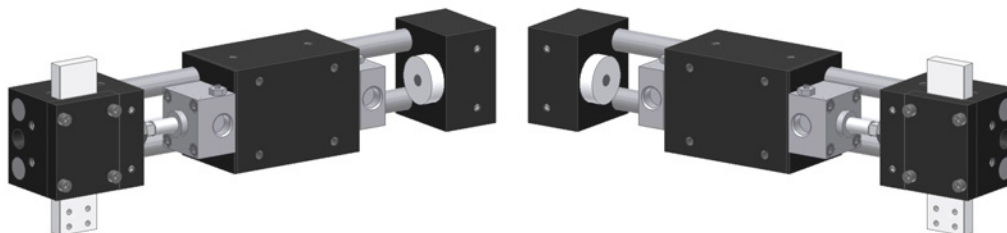
The vertical slide is in the down position and the end block is fully extended

### BACKWARD MOTION

The air cylinder is energized inward and the return portion of the box motion is commenced. **FIRST** - The low friction vertical slide is free to move up during the first part of the air cylinder's motion returning it to it's initial up position. **SECOND** - The remaining air cylinder's motion returns the endblock to it's initial fully retracted position. The unit remains in motion though this entire sequence.

### LEFT HAND OPTION (-L OPTION)

The Left hand option is the mirror image of the standard right hand unit. It allows for further flexibility and versatility in mounting the unit.



LEFT HAND UNIT (-L OPTION)

RIGHT HAND UNIT (STANDARD)





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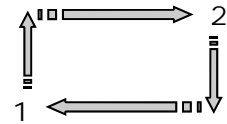


**NB-10**

## ADDITIONAL OPTIONS

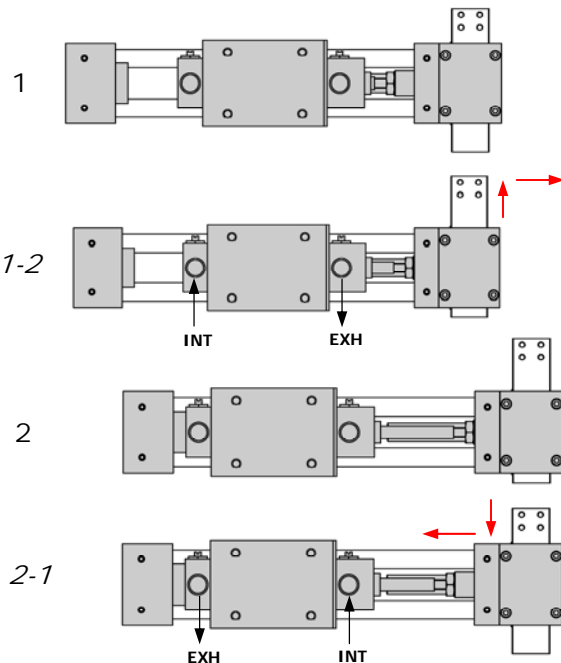
### (-F) FLIPPED OPERATION

Vertical Slide is flipped with tooling mounting on top



#### UNIT IS IN IT'S RETRACTED POSITION

The vertical slide is in the down position and the end block is fully retracted



#### FORWARD MOTION

The air cylinder is energized outward to start the forward portion of the box motion. FIRST - The low friction vertical slide is free to move up during the first part of the air cylinder's motion extending it to it's up position. SECOND - The remaining air cylinder's motion extends the endblock to it's fully extended position. The unit remains in motion though this entire sequence.

#### UNIT IS IN IT'S EXTENDED POSITION

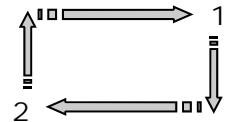
The vertical slide is in the up position and the end block is fully extended

#### BACKWARD MOTION

The air cylinder is energized inward and the return portion of the box motion is commenced. FIRST - The low friction vertical slide is free to move down during the first part of the air cylinder's motion returning it to it's initial down position. SECOND - The remaining air cylinder's motion returns the endblock to it's initial fully retracted position. The unit remains in motion though this entire sequence.

### (-O) OPPOSITE OPERATION

Unit operates opposite from standard



#### UNIT IS IN IT'S EXTENDED POSITION

The vertical slide is in the up position and the end block is fully extended

#### BACKWARD MOTION

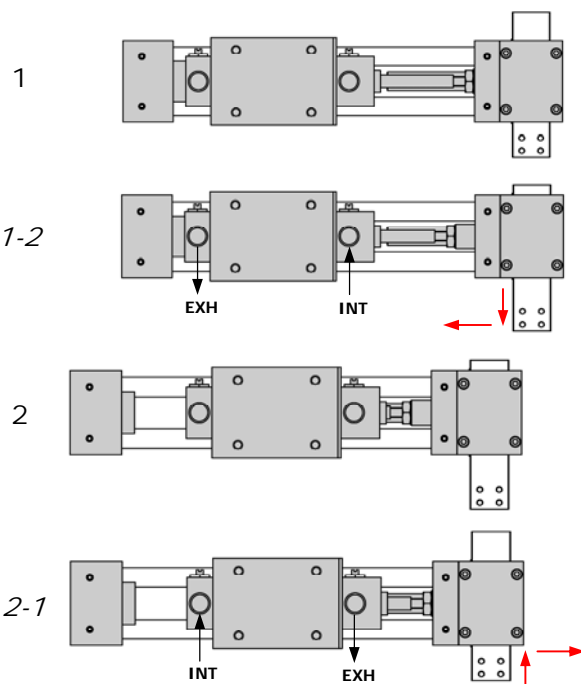
The air cylinder is energized inward to start the return portion of the box motion. FIRST - The low friction vertical slide is free to move down during the first part of the air cylinder's motion extending it to it's down position. SECOND - The remaining air cylinder's motion retracts the endblock to it's fully retracted position. The unit remains in motion though this entire sequence.

#### UNIT IS IN IT'S RETRACTED POSITION

The vertical slide is in the down position and the end block is fully retracted

#### FORWARD MOTION

The air cylinder is energized outward and the forward portion of the box motion is commenced. FIRST - The low friction vertical slide is free to move up during the first part of the air cylinder's motion returning it to it's initial up position. SECOND - The remaining air cylinder's motion extends the endblock to it's initial fully extended position. The unit remains in motion though this entire sequence.





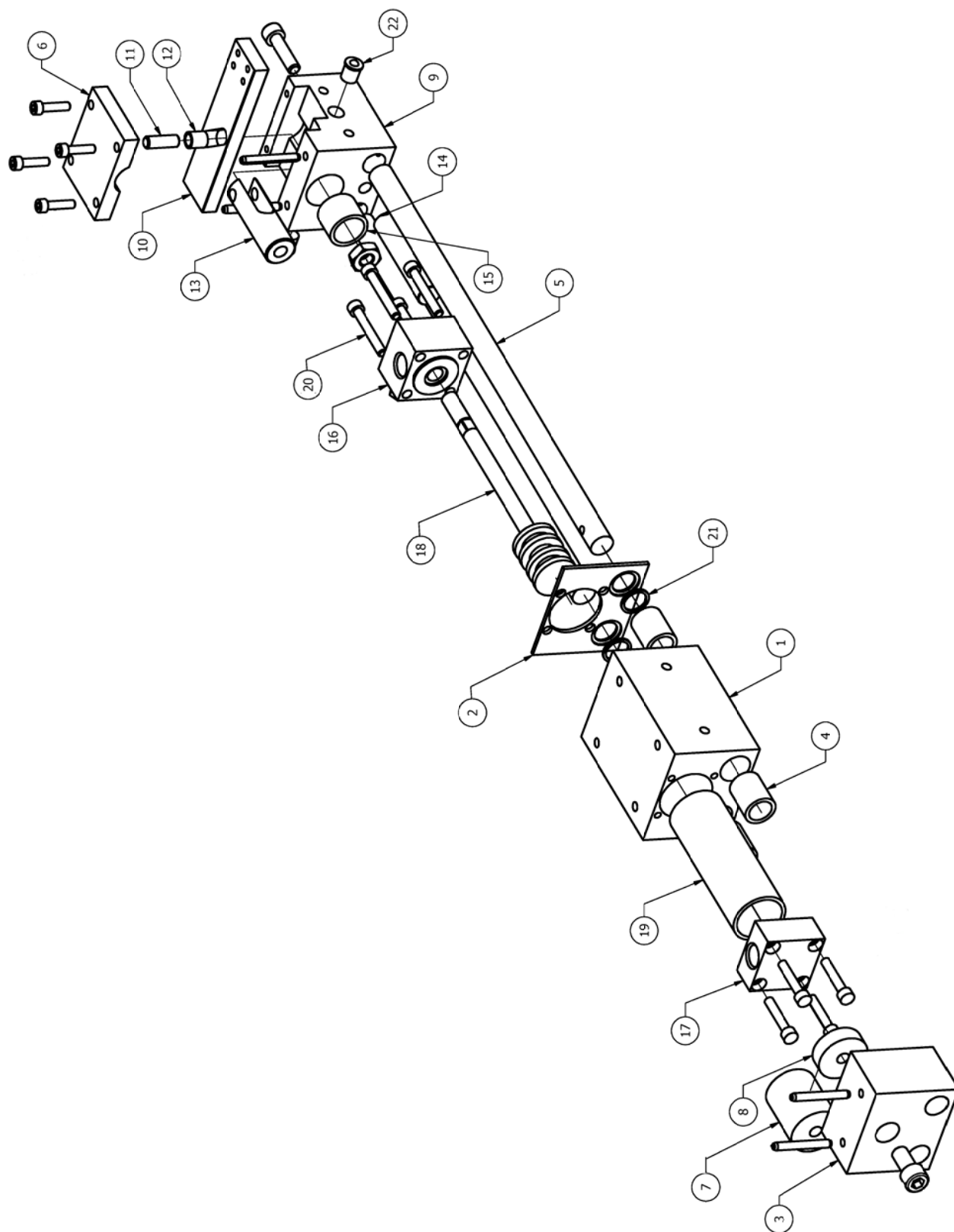


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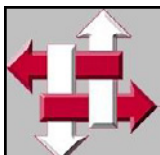
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BI-DIRECTIONAL TRANSFER

**NB-10**

EXPLODED VIEW







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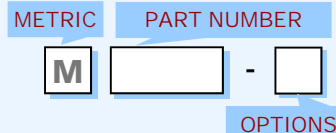
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BI-DIRECTIONAL TRANSFER

**NB-10**

**PARTS LIST**

**HOW TO ORDER PARTS**

ITEM	REQ'D	NAME	NB-10	OPTIONS
1	1	Main Body	NB-101	
2	1	Body Cover *	NB-102	
3	1	End Block	NB-103	
4	4	Rod Bushing *	AIR-104	
5	2	Rod	NB-105	-S <sup>1</sup>
6	1	Cover Plate *	NB-106	
7	1	Additional Stop *	AIR-107	
8	1	Bumper *	AIR-108	
9	1	Cross Slide Block	NB-109	
10	1	Cross Slide	NB-110	
11	1	Pivot Pin *	NB-111	
12	1	Roller *	NB-112	
13	1	Clevis *	NB-113	
14	1	Long Bumper *	NB-114	
15	1	Clevis Bushing *	NB-115	
16	1	Front Head *	AVR-101	-V <sup>2</sup>
17	1	Rear Head *	AVR-102	-V <sup>2</sup>
18	1	Piston & Rod	AVR-103	-S <sup>1</sup> -V <sup>2</sup>
19	1	Tube	AVR-104	-S <sup>1</sup>
20	1	Cylinder Screw Set	AVR-105	-S <sup>1</sup>
21	2	Retaining Ring *	FRR-0375	
22	2	Oiler *	OIL-250	
FK	2	Flow Control Kit *	AIR-10-FK	-V <sup>2</sup>
CK	1	Cylinder Kit *	AIR-10-CK	-V <sup>2</sup>
RK	1	Repair Kit *	NB-10-RK	-V <sup>2</sup>
CC	1	Complete Cylinder	AIR-10-CC	-S <sup>1</sup> -V <sup>2</sup> -L <sup>3</sup>



**SAMPLE ORDER: NB-101**

Ex) NB-10 Main Body

**OPTIONS** (see product pages for information)

- <sup>1</sup> - S = Stroke
- <sup>2</sup> - V = Viton
- <sup>3</sup> - L = Left Hand Unit

**NOTES**

\* - Metric code not required

**PART KIT INFORMATION** (see table for specific part #)

**FK - FLOW CONTROL KIT**

This kit is used to rebuild / replace the flow controls located on cylinder head.

- Includes (1) Flow Control to rebuild a single head (front or rear)

**CK - CYLINDER KIT**

This kit is used to fully rebuild the air cylinder.

- Includes Piston seals, Tube seals, Wiper, and Bushings

**RK - REPAIR KIT**

This kit is used to completely rebuild all the wear components on the unit

- Includes above Cylinder Kit, (4) Rod Bushings, (1) Clevis Bushing, and (2) Retaining Rings

**CC - COMPLETE AIR CYLINDER**

Complete replacement air cylinder

- Includes (1) New complete air cylinder and fasteners





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TECH NOTES





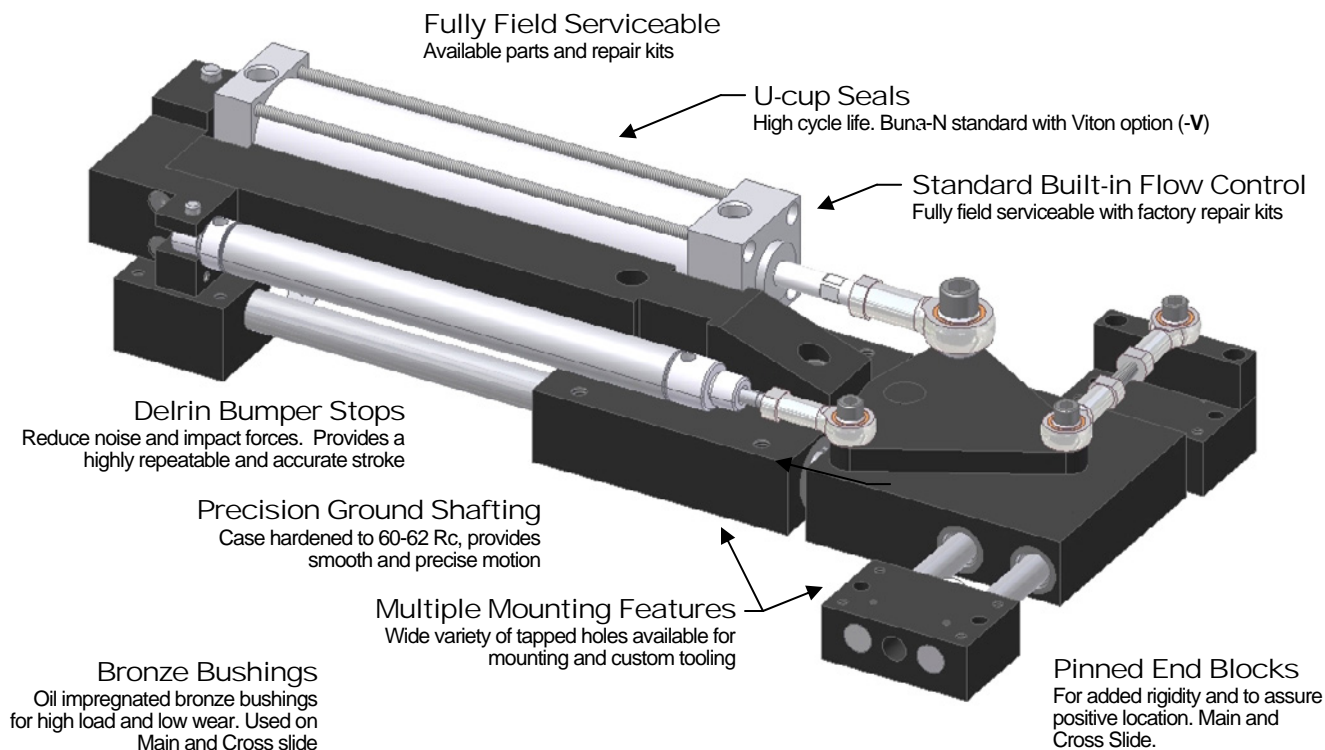
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BI-DIRECTIONAL TRANSFER

**NB-20**

## PRODUCT FEATURES

- Aircraft Grade Aluminum  
Black Anodize Finish
- Simple and Highly Durable  
Time tested, field approved design
- Multiple Motions  
Box or Inverted "L" motion



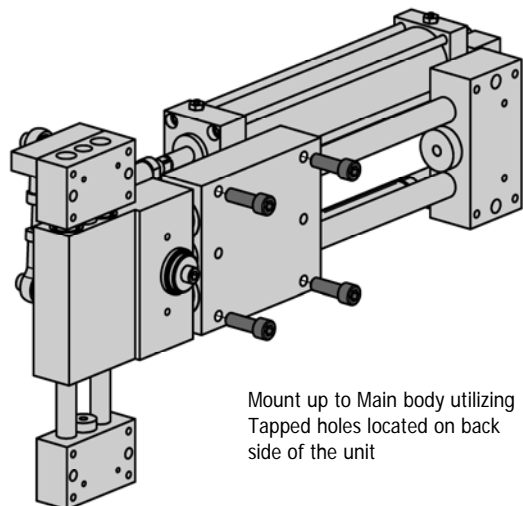
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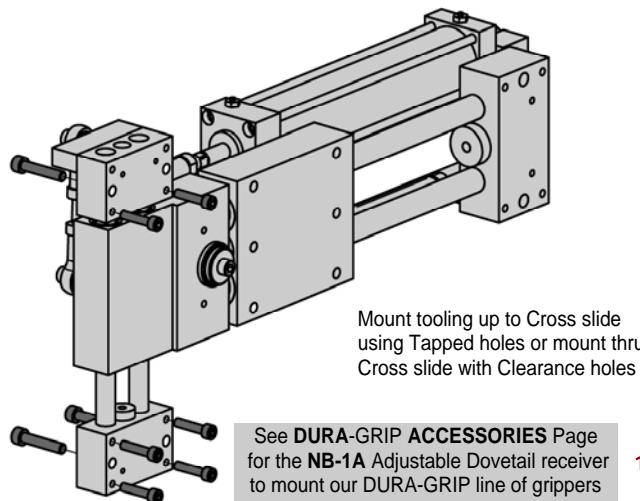
## MOUNTING INFORMATION

**Mounts and operates in any orientation**

### MAIN BODY



### TOOLING



Page  
**1-3.2**



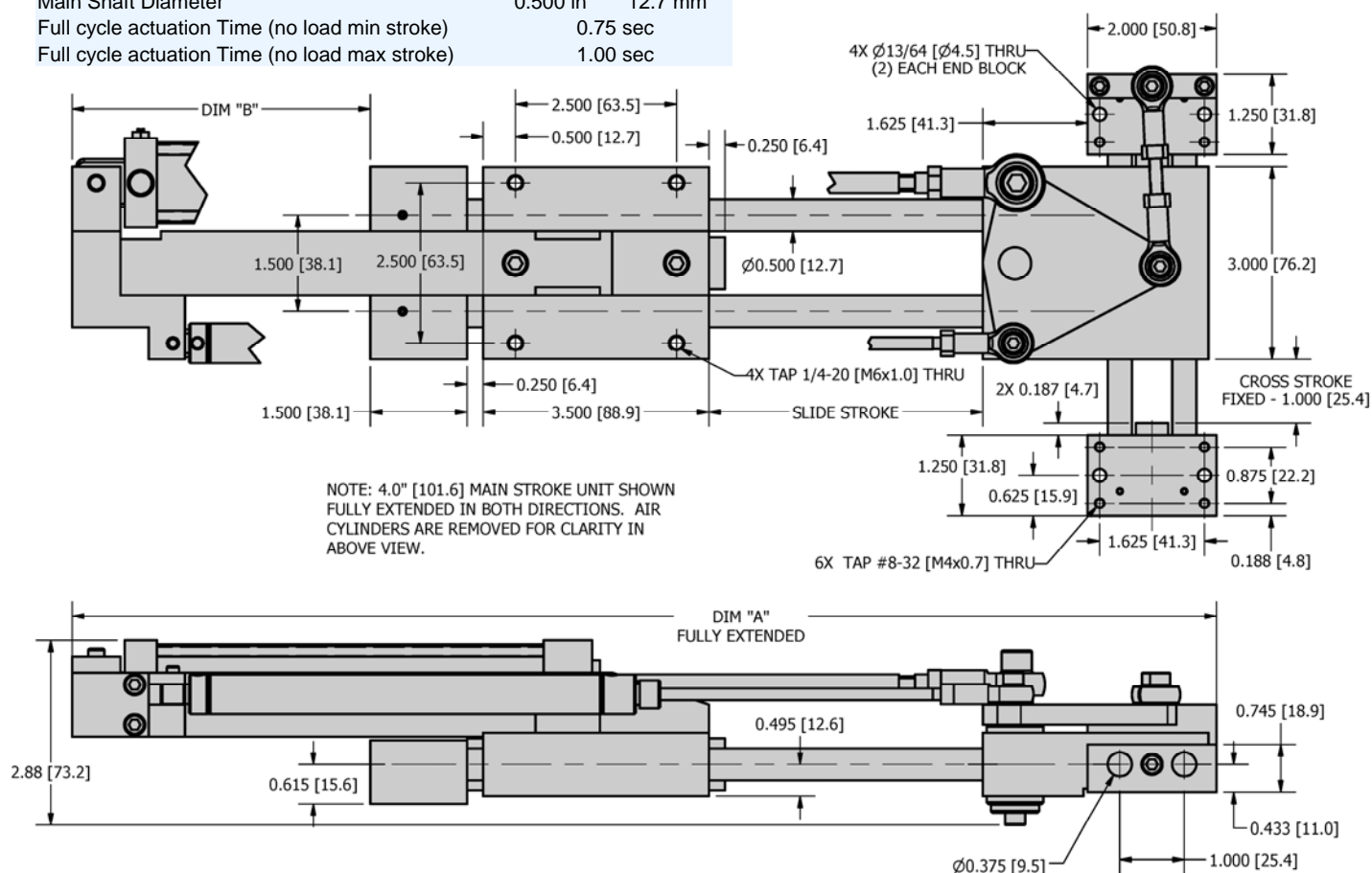
## DIMENSIONAL DRAWING

## SPECIFICATIONS

<b><i>SPECIFICATIONS</i></b>	<b>NB-20</b>	<b>MNB-20</b>
Maximum Stroke	4.00"	101.6 mm
Max Slide Thrust @ 80 psi / 5.5 bar	76 lbf	338 N
Cross Slide Stroke (fixed)	1.000"	25.4mm
Unit Displacement (per stroke)	1.1 in <sup>3</sup> /in	6.7 cm <sup>3</sup> /cm
Base Weight (no stroke)	7.2 lbs	3.3 kg
Additional weight per Stroke	0.2 lbs/in	3.6 g/mm
Main Cylinder Bore Diameter	1.000 in	25.4 mm
Secondary Cylinder Bore Diameter	0.562 in	14.3 mm
Main Shaft Diameter	0.500 in	12.7 mm
Full cycle actuation Time (no load min stroke)		0.75 sec
Full cycle actuation Time (no load max stroke)		1.00 sec

### ADDITIONAL DIMENSIONS

<i>STROKE</i>		A		B	
<i>in</i>	<i>mm</i>	<i>in</i>	<i>mm</i>	<i>in</i>	<i>mm</i>
2.00	[50.8]	13.75	[349.3]	2.63	[66.7]
3.00	[76.2]	15.75	[400.1]	3.63	[92.1]
4.00	[101.6]	17.75	[450.9]	4.63	[117.3]



## HOW TO ORDER : BASIC UNIT

METRIC

## BASIC MODEL

## STROKE

## SEALS

M

**NB-20**

—

L

V

## MODIFIED STROKE

LEFT HAND

## MODIFIED STROKE

**SAMPLE ORDER: NB-20-4.0-3.5**

Ex) NB-20 with 4.0" stroke with it's stroke reduced to 3.5"

***CUSTOM DESIGNS ALWAYS AVAILABLE INCLUDING :***

- LONGER STROKES
- OVERSIZED BODIES

**PLEASE CONTACT US FOR INFORMATION**

METRIC M

**STROKE** Inch: 2.0" - 4.0" @ 1.0" Increments

(Main Slide) mm: 50.8mm - 101.6mm @ 25.4mm Increments

*The Stroke determines the overall size the unit (see above)*

**Reduced Stroke.** When a modified stroke is requested a custom bumper will replace the standard bumper (*Item 20 on parts list*) to reduce the stroke to the Reduced Stroke. The stroke is reduced in the extension of the main slide. The Reduced Stroke must be less than the main stroke above. The Reduced Stroke will be the actual stroke of the main slide. Use this option if you have standardized on a specific size unit and require a different stroke.

**LEFT HAND** L - Left Hand Unit (see *Additional Information* section)

**SEALS** V - Viton (standard Buna - N)

FOR MORE INFORMATION CALL US AT **1-800-588-0174** OR **860-589-6364** FAX: **860-589-6235**

VISIT US AT [www.RIMFG.com](http://www.RIMFG.com)





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**NB-20**

## LOADING INFORMATION

### LOADING

Typical Clamp Load **F** @ 80 psi / 5.5 bar

Typical Lift Payload **W**

Max Dynamic Moment **M**

NB-20

30 lbf

2 lbf

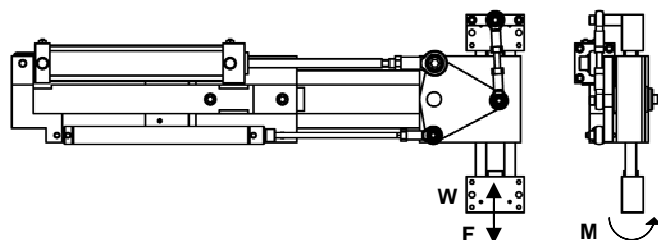
50 lbf-in

MNB-20

44.5 N

8.8 N

5.6 N-m



### TYPICAL LOAD

#### CLAMPING

When clamping with the unit the Cross slide extends until it reaches the part. This will stop the Cross slide and the Main slide will begin its stroke. The full Cross stroke does not have to be utilized and will not harm the unit.

#### LIFTING

Use caution when lifting with the unit. The use of Flow controls is highly recommended to decrease impacting loading developed by payload's mass.

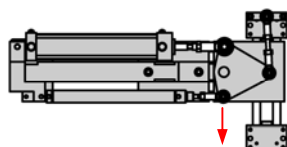
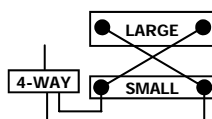


Flow controls recommended for nearly all applications

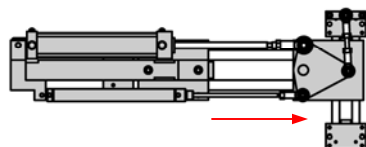
## ADDITIONAL INFORMATION

### DETAILED OPERATION

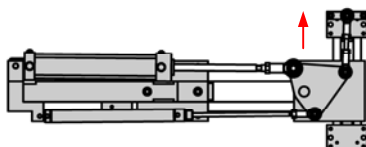
#### BOX MOTION



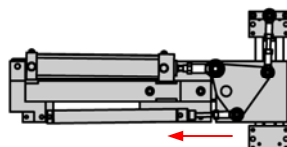
The air cylinders are energized and the push/pull arrangement moves the vertical slide down during the first part of the air cylinder's motion



The vertical slide bottoms out and the main air cylinder now powers the end block forward giving the horizontal stroke

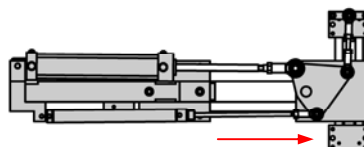
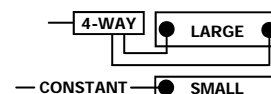


The air cylinders are energized in reverse and the vertical slide moves up during the first part of the air cylinder's motion

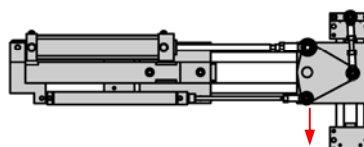


The vertical slide locks in the up position and the main air cylinder powers the end block back, giving the return horizontal stroke,

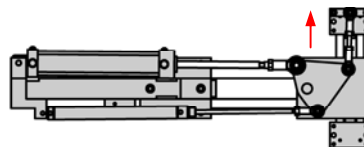
#### INVERTED "L"



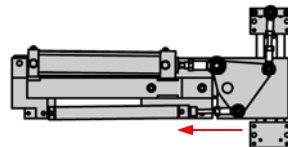
The air cylinders are energized and the push/push arrangement moves the end block forward giving the horizontal stroke



The horizontal slide bottoms out and the main air cylinder now powers the vertical slide down.



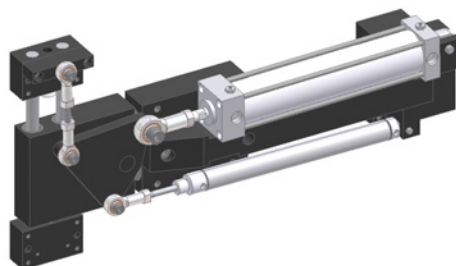
The main air cylinder is energized in reverse and the vertical slide moves up during the first part of the air cylinder's motion



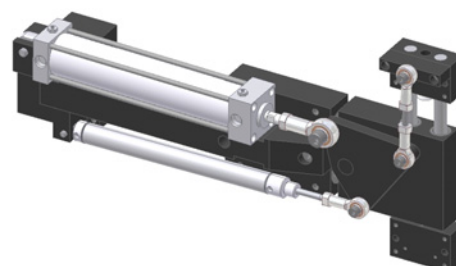
The vertical slide locks in the up position and the main air cylinder powers the end block back, giving the return horizontal stroke,

### LEFT HAND OPTION (-L OPTION)

The Left hand option is the mirror image of the standard right hand unit. It allows for further flexibility and versatility in mounting the unit.



LEFT HAND UNIT (-L OPTION)



RIGHT HAND UNIT (STANDARD)



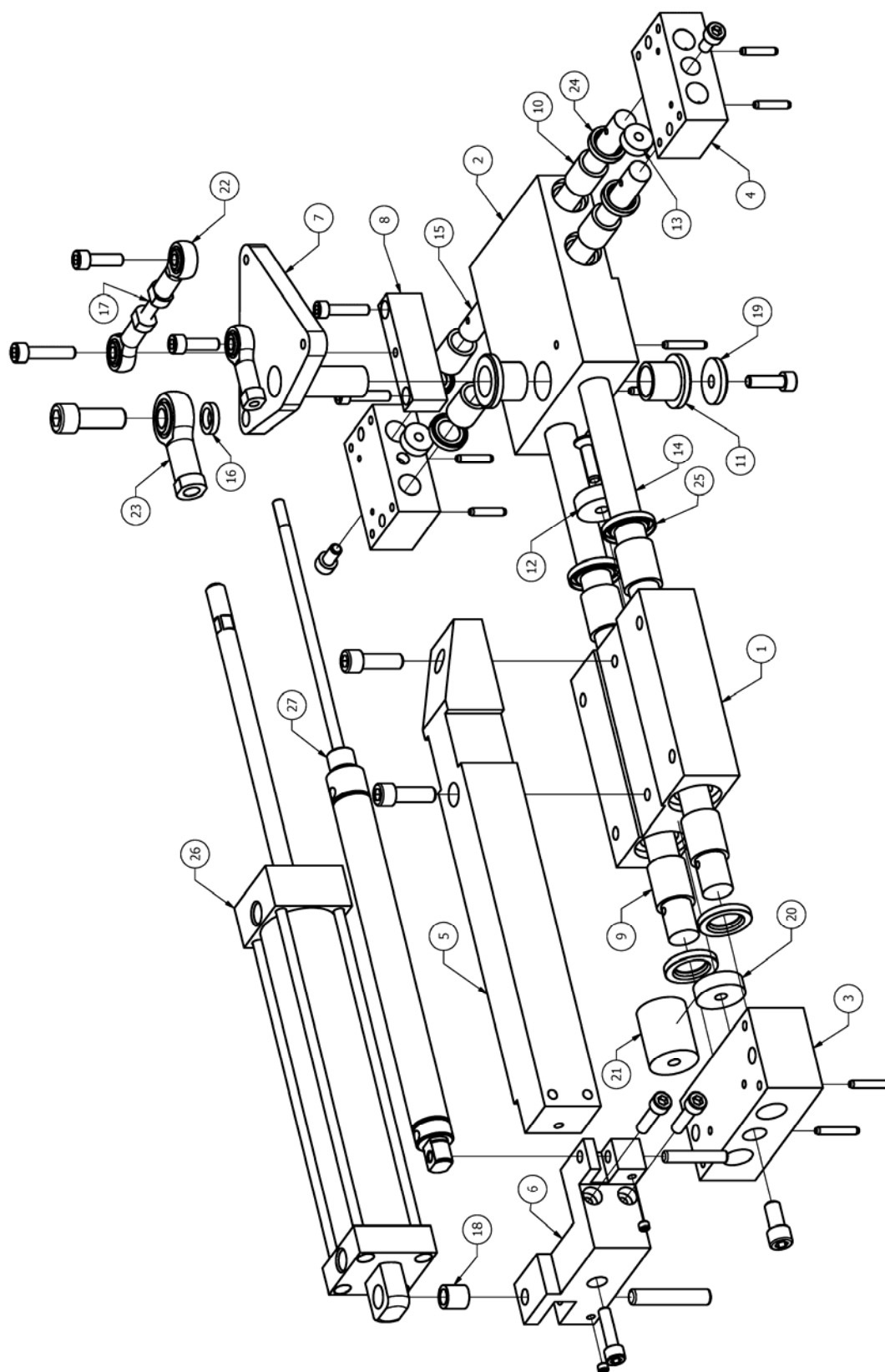


**R&I**  
MANUFACTURING CO.

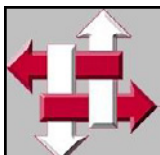
**DURA-TRANS**  
BI-DIRECTIONAL TRANSFER

**NB-20**

EXPLODED VIEW







**R&I**  
MANUFACTURING CO.

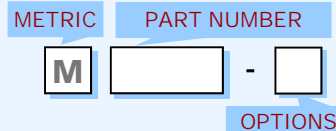
**DURA-TRANS**  
BI-DIRECTIONAL TRANSFER

**NB-20**

PARTS LIST

HOW TO ORDER PARTS

ITEM	REQ'D	NAME	NB-20	OPTIONS
1	1	Main Body	NB-201	
2	1	Cross Slide Body *	NB-202	
3	1	End Block	NB-203	
4	2	Cross Slide End Block	NB-204	
5	1	Arm Bracket *	NB-205	-S <sup>1</sup> -L <sup>2</sup>
6	1	Bracket *	NB-206	
7	1	Pivot *	NB-207	-L <sup>2</sup>
8	1	Riser Block *	NB-208	
9	4	Slide Bushing *	NB-209	
10	4	Cross Slide Bushing *	NB-210	
11	2	Pivot Bushing *	NB-211	
12	1	Main Body Bumper *	NB-212	
13	2	Cross Slide Bumper *	NB-213	
14	2	Main Slide Rod *	NB-214	-S <sup>1</sup>
15	2	Cross Slide Rod *	NB-215	
16	1	Rod End Spacer *	NB-216	
17	1	Treaded Rod *	NB-217	
18	1	Cylinder Bushing *	NB-218	
19	1	Pivot Washer *	NB-219	
20	1	End Block Bumper *	AIR-108	
21	1	Stroke Reducer	NB-220	-S <sup>1</sup> -MS <sup>4</sup>
22	2	Small Rod End *	RE-100	
23	1	Large Rod End *	RE-400	
24	4	Cross Slide Rod Seals *	SSA-215	
25	4	Main Slide Rod Seals *	SSA-225	
26	1	Main Air Cylinder *	NB-220	-S <sup>1</sup> -L <sup>2</sup> -V <sup>3</sup>
27	1	Secondary Air Cylinder *	NB-221	-S <sup>1</sup> -V <sup>3</sup>
FK	2	Flow Control Kit *	AIR-30-FK	-V <sup>3</sup>
CK	1	Cylinder Kit *	AIR-30-CK	-V <sup>3</sup>
RK	1	Repair Kit *	NB-20-RK	-V <sup>3</sup>



**SAMPLE ORDER: NB-201**

Ex) NB-20 Main Body

**OPTIONS** (see product pages for information)

- <sup>1</sup> - S = Stroke
- <sup>2</sup> - L = Left Hand
- <sup>3</sup> - V = Viton
- <sup>4</sup> - MS = Modified Stroke

**NOTES**

\* - Metric code not required

**PART KIT INFORMATION** (see table for specific part #)

**FK - FLOW CONTROL KIT**

This kit is used to rebuild / replace the flow controls located on cylinder head.

- Includes (1) Flow Control to rebuild a single head (front or rear)

**CK - CYLINDER KIT**

This kit is used to fully rebuild the Main Air cylinder.

- Includes Piston seals, Tube seals, Wiper, and Bushings

**RK - REPAIR KIT**

This kit is used to completely rebuild all the wear components on the unit

- Includes above Cylinder Kit, (4) Main Slide Rod Bushings, (4) Main Slide Rod Seals, (4) Cross Slide Rod Bushings, (4) Cross Slide Rod Seals, (2) Pivot Bushings, and (1) Main Cylinder Bushing