brookfield industries, inc.
99 West Hillside Ave
Thomaston, CT 06787
T: 860.283.6211, **F:** 860.283.6123
www.bfimfg.com

NB-4120-1 Sliding Door Operator

Description:

The NB-4120-1 Double Belt, Bi-Parting Sliding Door Operator is designed and tested for lead shielding doors weighing up to 70,000 lbs (total both doors) operating at linear speeds of 6.0 in/sec maximum (each leaf in opposite directions) or a maximum horizontal operating force of up 1400 lbs (total both doors).

This is accomplished with a linear drive system comprised of double, 2" wide H polyurethane steel reinforced timing belts, coupled to a 2hp AC, high torque, right angle gear motor.

The NB-4120-1 is designed to be used in conjunction with a linear track system (by others) capable of supporting heavy doors that have a very low coefficient of friction. The open ended style timing belts are designed to be clamped directly to the side of each door carriage. Once the timing belt has been properly aligned and pre-loaded, in addition to the motor control parameters being correctly set, the **NB-4120-1** will provide many years of maintenance free service.

The PLC (Programmable Logic Control) is programmed by the manufacturer to accept input signals from an external (4) button station (including open, partial open, close and stop commands). Additional inputs are provided to accommodate a command from infrared presence sensors and pressure sensitive tape switches that will reverse the door to the open position, when activated during the closing cycle. All input commands to the PLC are class 2, low voltage. There are no limit or proximity switches to adjust or install. Simply adjust the door's positioning presets as required by interfacing with the PLC via a hand held HMI (purchased separately).

Rating a Sliding Door Operator:
The rating of a sliding door operator in any installation cannot be based solely on the weight of the door. Other factors such as linear bearing alignment, coefficient of friction, and acceleration/deceleration rates may have a substantial affect on the total horizontal force acting on the door operator components. We have factored these variables into the **Rated Maximum Operating Forces**. This assures the customer they are getting the most dependable product at a reasonable cost over the life expectancy of the operator.

Maximum Operating Force* =	700 lbs (3115 N) per door leaf 1400 lbs (6230 N) total both doors
Maximum Rated Linear Speed =	6.0 in/sec (15.24 cm/sec)
Maximum Door Weight per leaf =	35,000 lbs (15,890kg)
Maximum Door Weight bi-parting=	70,000 lbs (31,780 kg)
Minimum Rated Cycles =	500,000 openings and closings
Maximum Travel =	Unlimited

**The maximum horizontal force acting on the timing belt assembly in order to accelerate the mass of the door to the maximum operating speed and to overcome friction and any misalignment.*

Specification:
1) ***Supply voltage:*** 208/230 VAC 50/60 Hertz 3 phase. In-Line circuit breakers supplied with motor control and PLC. Surge protection, line filters, and EMI ferrites shall be included.
2) ***Current Consumption:*** maximum 12 amperes per phase
3) ***Entrapment Protection:*** the **NB-4120-1 Commercial/Industrial Sliding Door** is compliant with **UL 325 Section 30.2 External Entrapment Protection (Fail Safe/Self-Monitoring)** providing all External Safety Devises are wired and installed per this manual.

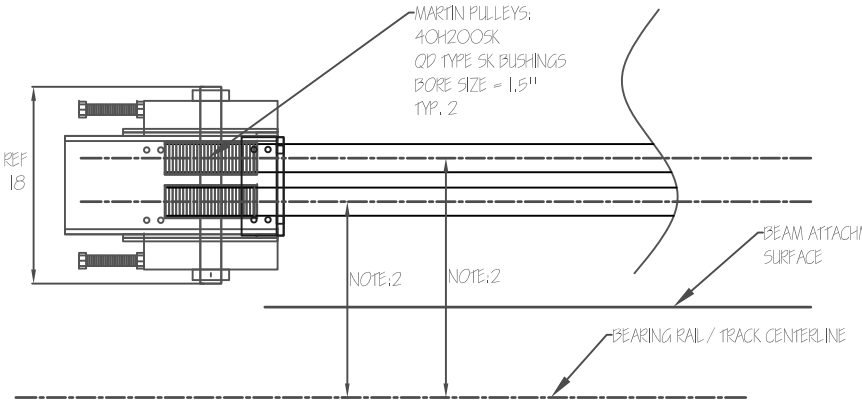
brookfield industries, inc.
99 West Hillside Ave
Thomaston, CT 06787
T: 860.283.6211, **F:** 860.283.6123
www.bfimfg.com

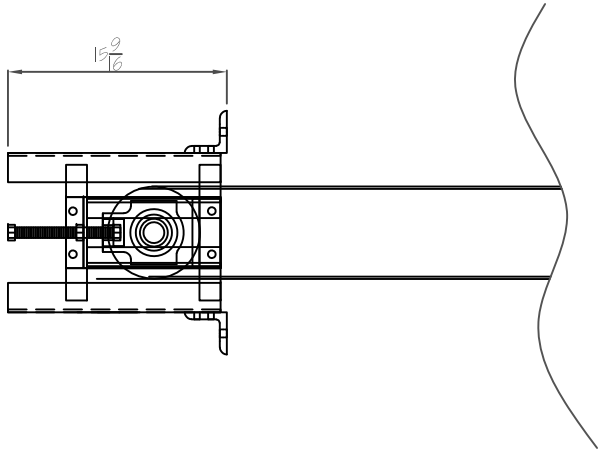
4) ***PLC/Logic Control:***
   a) Shall be a PLC with sufficient I/O and a CPU (Central Processing Unit) with adequate memory, response times and scanning rates in order to properly control the motion and positioning of Linear Accelerator Sliding Doors.
   b) Outputs commands shall be the internal type, integral with the PLC. No external limit or proximity switches shall be allowed for control of door positioning.
   c) A means to interface with the PLC for adjusting preset values for the open, partial open, closed, latch check and back check positions.
   d) Diagnostics and troubleshooting of the PLC shall be provided with LED and modular plug-in components.
   e) The PLC shall be provided with an internal battery to store the door position presets in the CPU memory.
5) ***Absolute position feedback control:*** this assures the CPU always knows the door's position. During installation, a power interruption, or if electrical noise is encountered, the door is not required to be "homed", "reset" nor go through a "learn speed cycle" at any time. Also, limit or proximity switches are not required for controlling the door's position.
6) ***Motor:*** 2hp 208-230VAC 3 phase motor (50/60 Hz) 1745 RPM TEFC
7) ***Motor Control:*** adjustable frequency drive to provide variable speed control for standard 3 phase AC motors with the following functions:

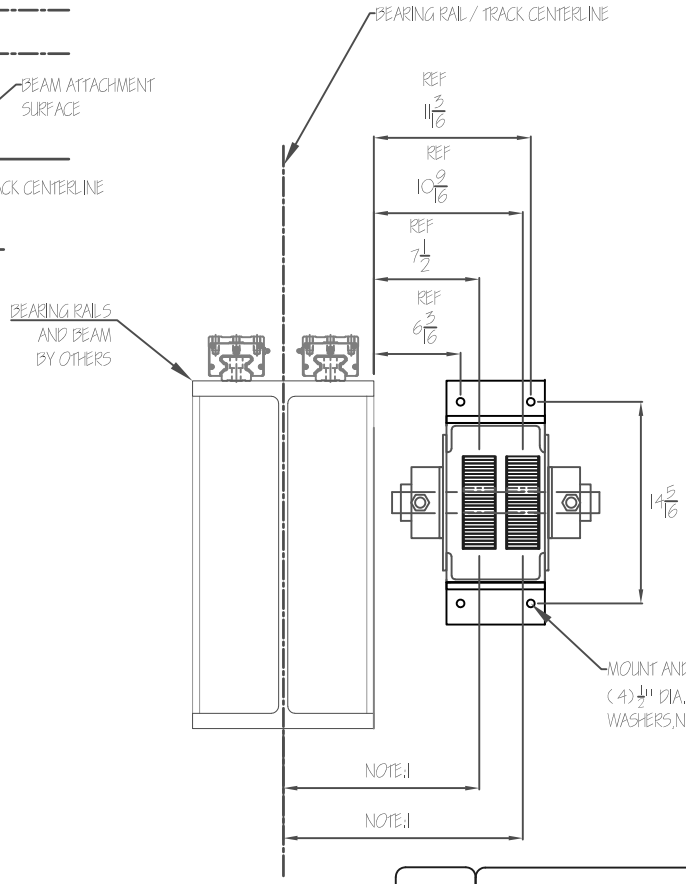
FWD/REV maximum speed	FWD/REV current limit	motor overload protection
FWD/REV accel/decel	2.5% speed regulation	60:1 speed range.

8) ***Speed Control:*** a means of controlling independent forward and reverse speeds as well as controlling end of travel or latch check/back check speeds. This can be accomplished externally with speed/trim pots or internally with the PLC.
9) ***Drive train:*** shall be designed to assure each component (including motor, gear reducers, belt material and structural parts) from the motor to the door attachment point is properly "sized" in order to transfer all operating torques and forces as defined for Linear Accelerator Sliding Doors.
10) ***Enclosure:*** NEMA 1 vented enclosure of sufficient size (24" x 20 x 6-5/8") to house the PLC, motor control, speed pots, and terminal strip hookups. Enclosure shall have separate penetrations for supply voltage, safety sensors, push buttons, motor and positioning transducer hookups. All penetrations shall be drilled for ¾" conduits or the equivalent metric size for European installations.
11) ***Raw Materials:*** ASTM A36, AISI 1018 cold rolled steel, Aluminum 6061-T6511, Structural tubing ASTM A- 500, grade 5 bolting or better.
12) ***Mounting hardware:*** the **NB-4120-1** shall be mounted with grade 5, ½" diameter bolts with compatible washers and means of locking. Hardware must also be properly tightened with adequate thread engagement.
13) ***Finish:*** all exposed metal surfaces shall be prime painted.
14) ***Functionality test:*** **each NB-4120-1** is cycle tested in position for 24 hrs. prior to shipment. Each unit is checked for leaks and that all I/O are functioning properly.
15) **Manual Operation:** emergency hand wheel.
16) ***Installation:*** please refer to the **NB-4120 Door Operator Manual, Installation instructions** and Drawings: NB-4120-1-Travel, NB-4120-1B, NB-4120-1D, NB-4120-1P, NB-4120-1P2 & NB-4120-1-EHW.

RevNo	Revision note	Date	Signature	Checked







Drawing Notes:

NOTES:

1) PULLEY CENTERLINES PARALLEL(+ / - 1/32)

2) BELT CENTERLINES PARALLEL(+ / -1/16)

Tolerances
Decimal
Fractional + / - xxx
Angular + / - xxx

NB-4120-1 TAKE-UP

Drawn by KPK
Checked by XXX

INSTALLATION (DOUBLE BELT)

Edition 0

Approved by - date
XXX - 00/ 00/ 00

Filename
XXX

Date
02/ 21/ 2020

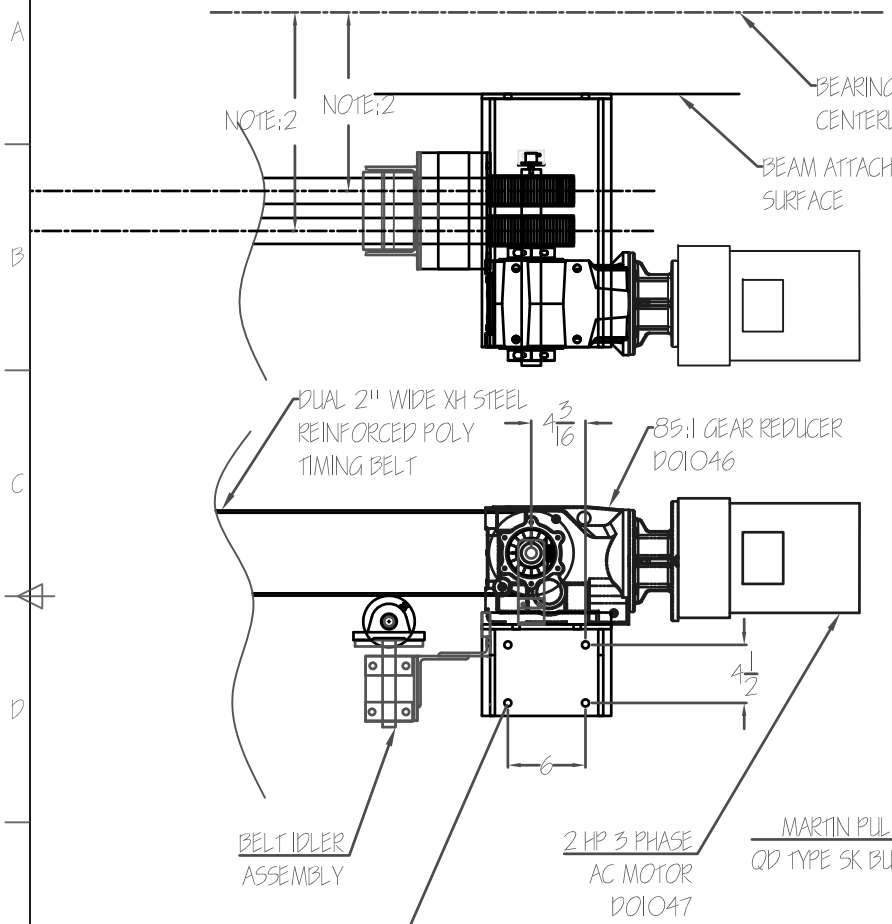
Scale
1:1

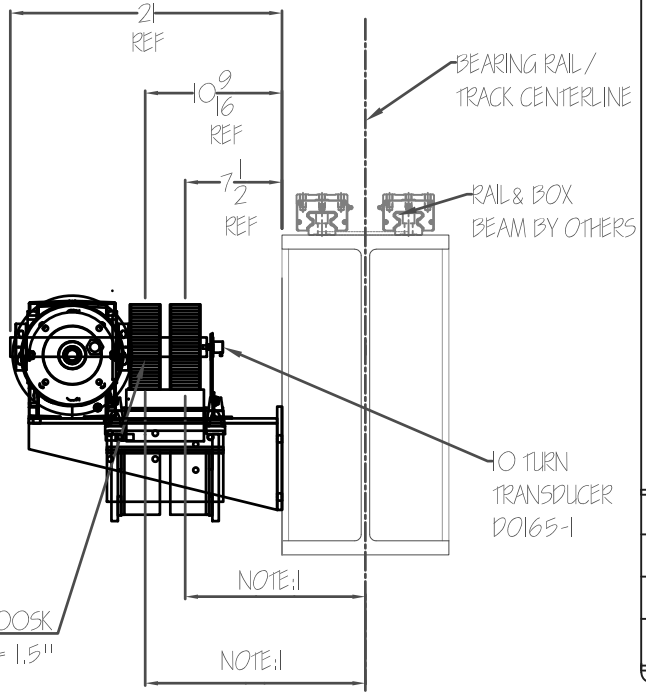
brookfield industries inc.
99 West Hillside Ave. ; Thomaston, CT 06787
P: (860) 283-6211 F: (860) 283-6123

Material
SEE BOM

NB-4120-1B

RevNo	Revision note	Date	Signature	Checked





Drawing Notes:

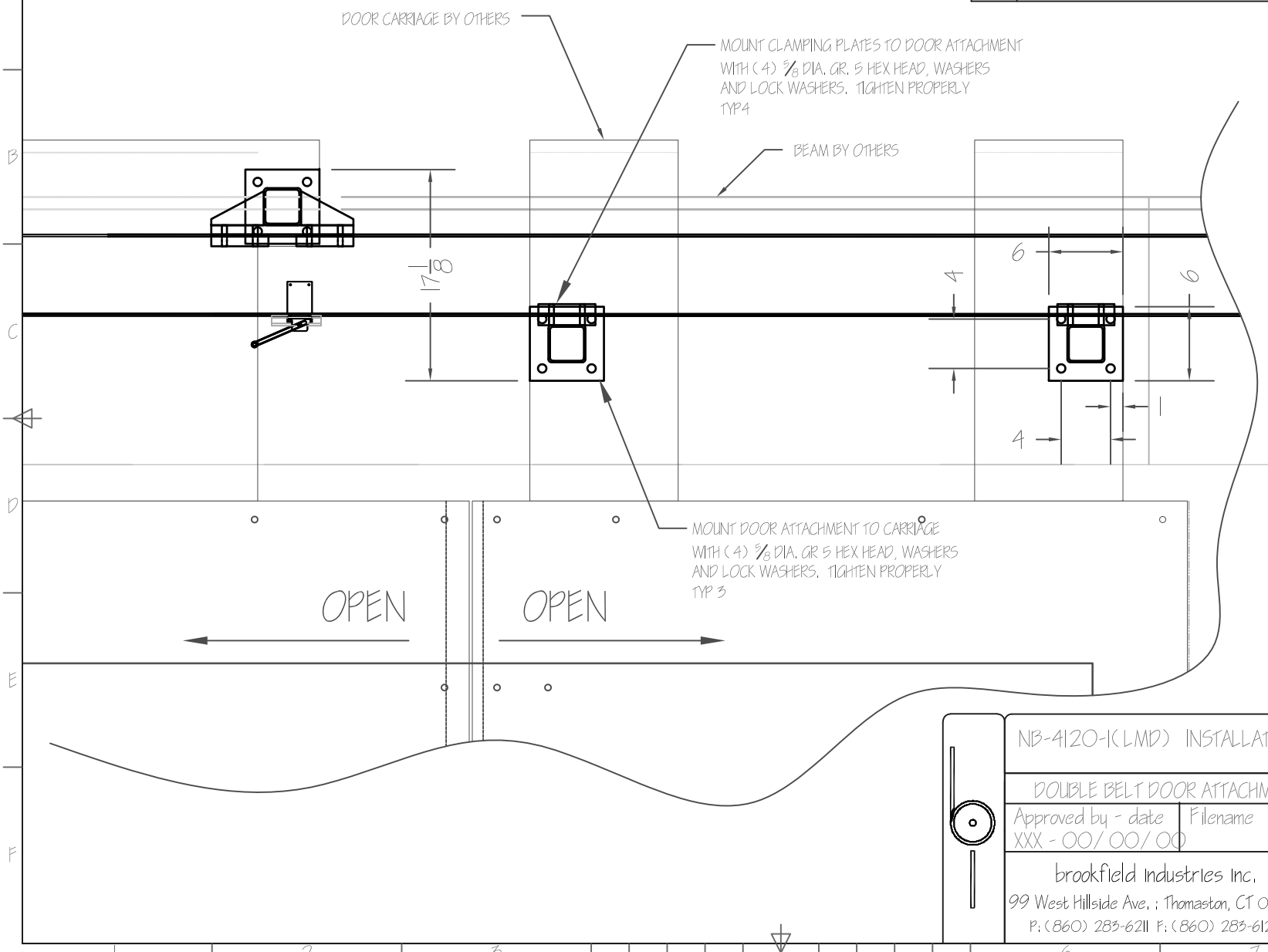
NOTES:
1) PULLEY CENTERLINES PARALLEL(+ / - 1/32)

2) BELT CENTERLINES PARALLEL(+ / -1/16)

Tolerances	
Decimal	+ / - 1/32 UNO
Fractional	+ / - xxx
Angular	+ / - xxx

NB-4120-1-GEAR MOTOR BRACKET		Drawn by KPK Checked by XXX	
INSTALLATION FOR DOUBLE BELT		Edition 0	
Approved by - date XXX - 00/00/00	Filename XXX	Date 02/20/2020	Scale 1:1
brookfield industries inc. 99 West Hillside Ave. ; Thomaston, CT 06787 P: (860) 283-6211 F: (860) 283-6123		Material SEE BOM	
		NB-4120-1D	

RevNo	Revision note	Date	Signature	Checked



Drawing Notes:

Tolerances	
Decimal	+ / - 1/16 UNO
Fractional	+ / - xxx
Angular	+ / - xxx

NB-4120-1(LMD) INSTALLATION

Drawn by KPK
Checked by XXX

DOUBLE BELT DOOR ATTACHMENTS

Edition 0

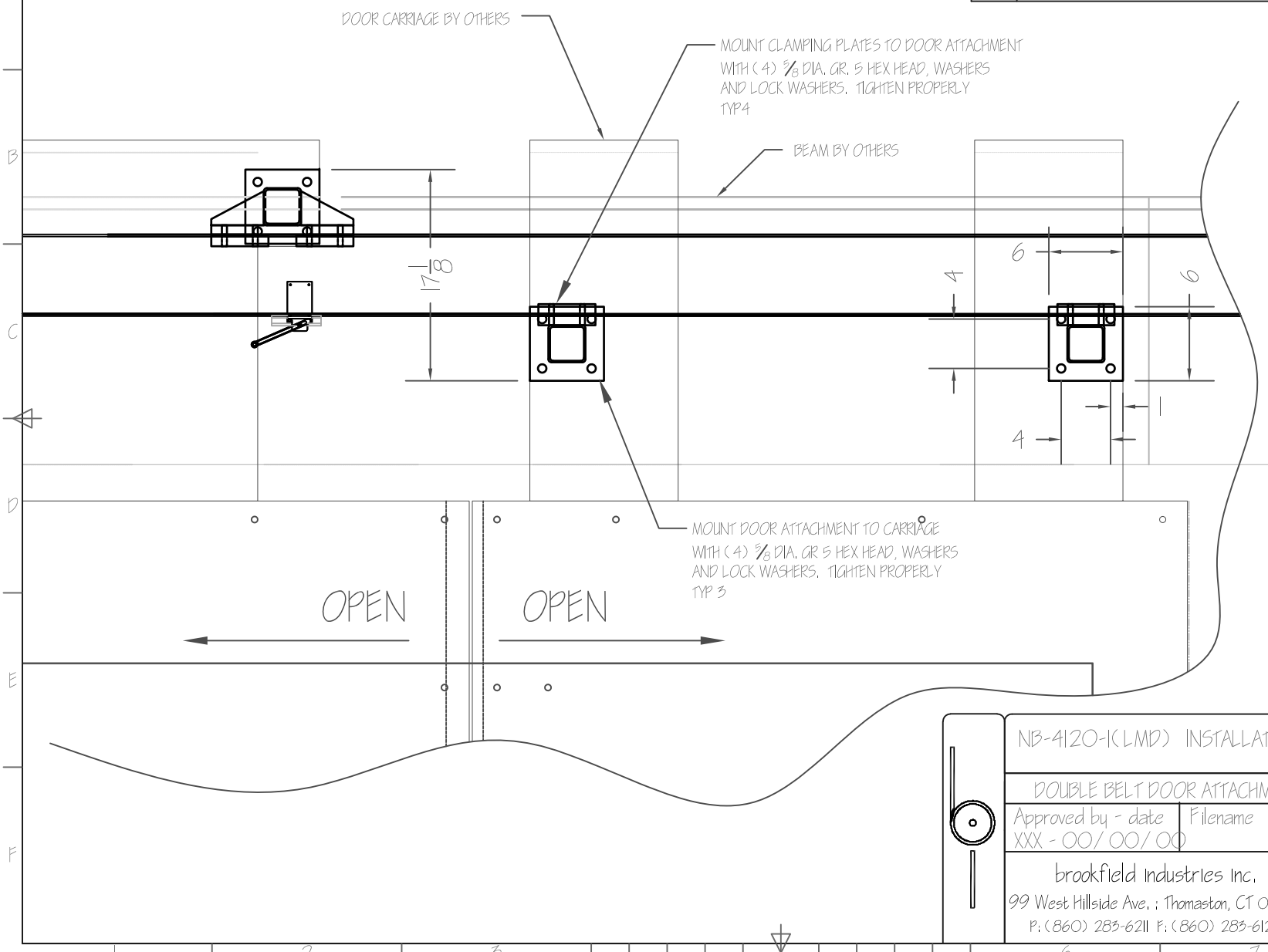
Approved by - date	Filename	Date	Scale
XXX - 00/00/00		10/29/12	1:1

brookfield industries inc.
99 West Hillside Ave. ; Thomaston, CT 06787
P: (860) 283-6211 F: (860) 283-6123

Material
SEE BOM

NB-4120-1P

RevNo	Revision note	Date	Signature	Checked



Drawing Notes:

Tolerances	
Decimal	+ / - 1/16 UNO
Fractional	+ / - xxx
Angular	+ / - xxx

NB-4120-1(LMD) INSTALLATION

Drawn by KPK
Checked by XXX

DOUBLE BELT DOOR ATTACHMENTS

Edition 0

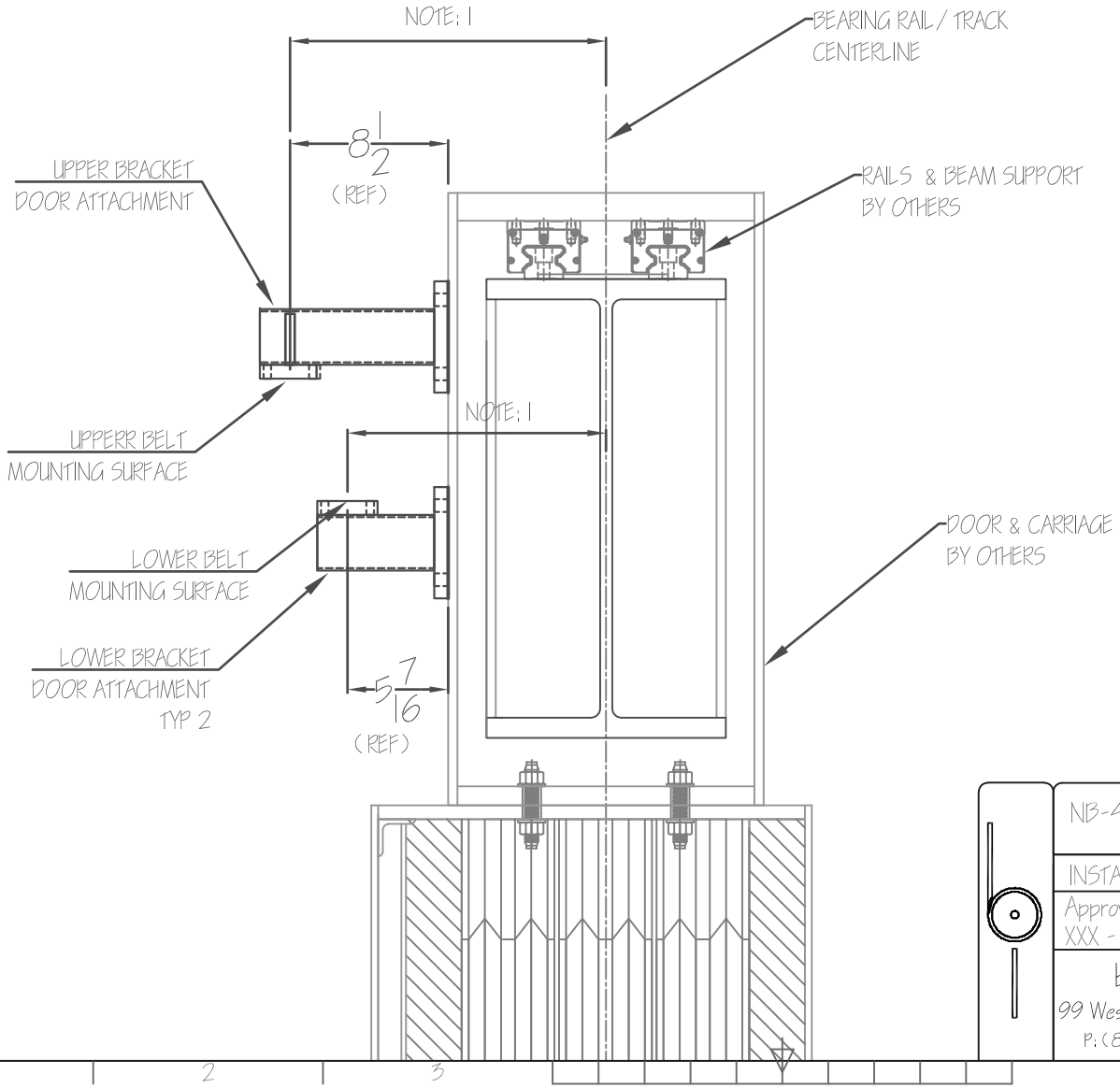
Approved by - date	Filename	Date	Scale
XXX - 00/00/00		10/29/12	1:1

brookfield industries inc.
99 West Hillside Ave. ; Thomaston, CT 06787
P: (860) 283-6211 F: (860) 283-6123

Material
SEE BOM

NB-4120-1P

RevNo	Revision note	Date	Signature	Checked



Drawing Notes:

NOTES:
1) BELT CENTERLINE TO BE PARALLEL (+ / - 1/16)

Tolerances	
Decimal	+ / - 1/32 UNO
Fractional	+ / - xxx
Angular	+ / - xxx

NB-4120-1-DOOR ATTACHMENTS

Drawn by KPK
Checked by XXX

INSTALLATION FOR DOUBLE BELT

Edition 0

Approved by - date	Filename	Date	Scale
XXX - 00/ 00/ 00	XXX	02/ 20/ 2020	1:1

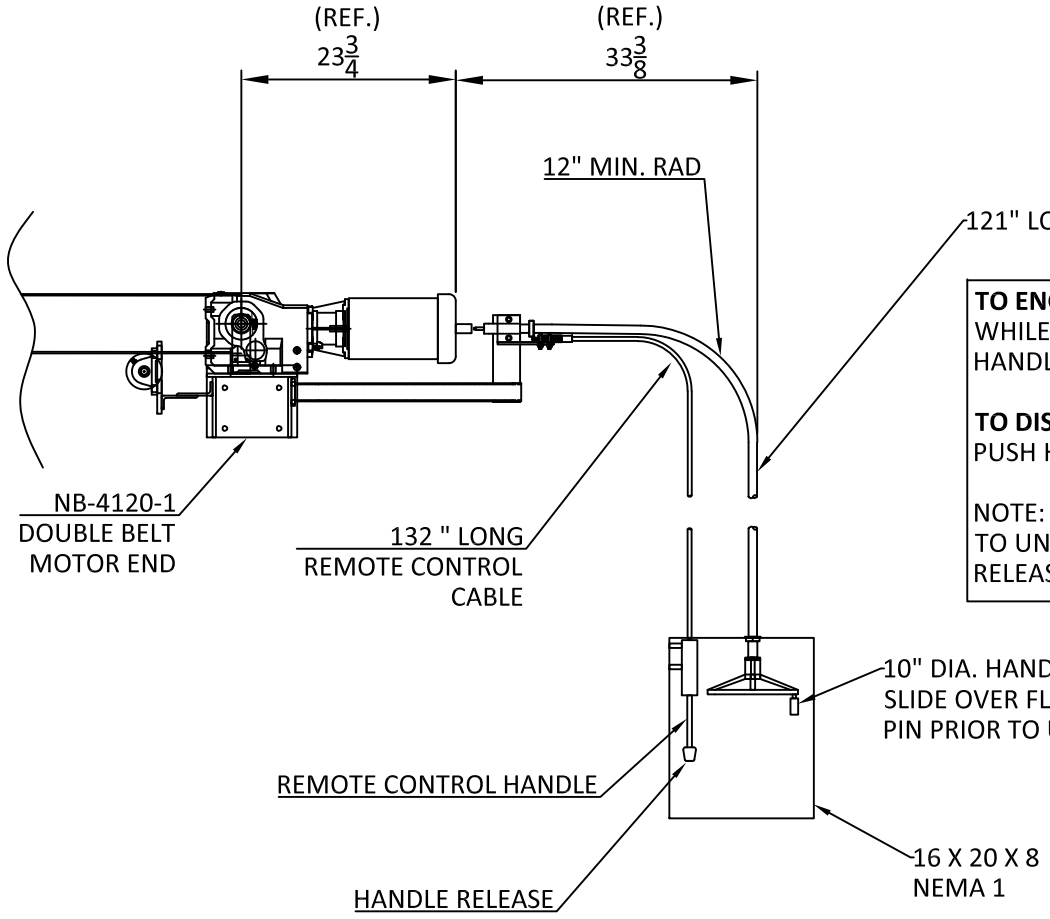
brookfield Industries Inc.
99 West Hillside Ave. ; Thomaston, CT 06787
P: (860) 283-6211 F: (860) 283-6123

Material
SEE BOM

NB-4120-IP2

RevNo	Revision note	Date	Signature	Checked

WARNING!
ENGAGE ONLY DURING POWER INTERRUPTION
FOR EMERGENCY OPERATION.
DISENGAGE FOR ALL OTHER USE.



TO ENGAGE:
WHILE TURNING HAND WHEEL, PULL HANDLE OUT UNTIL IT LOCKS.

TO DISENGAGE:
PUSH HANDLE IN UNTIL IT LOCKS

NOTE:
TO UNLOCK HANDLE, PUSH IN HANDLE RELEASE

Drawing Notes:

Tolerances
Decimal
Fractional + / - xxx
Angular + / - xxx

NB-4120-1 BI-PART DOUBLE BELT		Drawn by KPK Checked by XXX	
EHW INSTRUCTIONS/ INSTALLATION		Edition 0	
Approved by - date XXX - 00/ 00/ 00	Filename XXX	Date 03/ 04/ 2020	Scale 1:1
brookfield industries inc. 99 West Hillside Ave. ; Thomaston, CT 06787 P: (860) 283-6211 F: (860) 283-6123		Material SEE BOM	
		NB-4120-1-EHW	