Integral V Technology

Linear Guide System

IVT

INTEGRAL™

ABK

AAG

AAE

AAQ

AAN

AAB

AAW

PBC LINEAR®
A PACIFIC BEARING CO.
1-800-962-8979
www.pbclinear.com

SIMO ENABLED

INTEGRAL

SIMO ENABLED

What Makes IVT Different?

| 30 MINUTE INSTALLATION | **2** COMPONENTS | **90** COMPONENTS | 2 HOUR INSTALLATION |

Integral V   vs.   Profile Rail

FEWER COMPONENTS = LESS COST & ASSEMBLY TIME

INSTALLATION STEPS*

1. Drill and tap machine plate for Integral V™

2. Securely fasten Integral V™ to machining plate

ADVANTAGES OF IVT

- **Fewer components**:
  Hardened steel v-raceways, embedded into durable anodized aluminum rails, eliminate fasteners and reduce mounting components by 40%

CARRIAGE

RAIL

Double Row Ball Bearing

EMBEDDED STEEL RACEWAY

- **High speeds**: Max speed of 10 m/s

- **High accuracy**: The SIMO® process provides qualified rail surfaces–resulting in extremely high accuracy, without mis-alignments and added installation time.

- Standard lengths up to 3,650 mm (Consult factory for longer continuous length or joinable rails)

- "Roll-in" style t-nut - mounts rail to structural t-slot framing
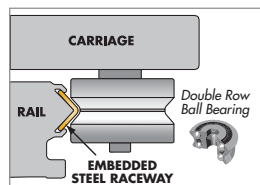
BILL OF MATERIAL

Qty	Description	Cost
1	2 m IVT Rail	291.00
1	Carriage Assembly	230.00
30 minutes of labor to assemble @ $36.00/hr		18.00

TOTAL COST $539.00

* Based on 2 meter general linear guide application
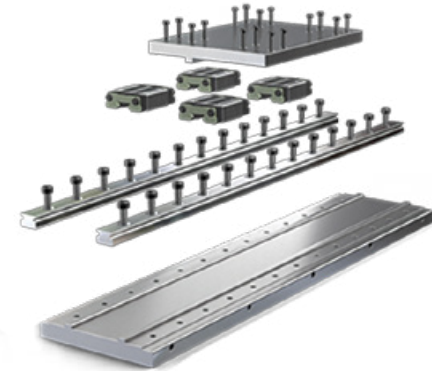
INSTALLATION STEPS

1. Drill and tap base plate holes along profile rail for installation

2. Clean and align rail with reference surface

3. Loosely secure profile rail to base plate surface

4. Tighten fasteners while continuously checking straightness and alignment

5. Repeat processes 1-3 for second profile rail, also checking for parallelism

6. Install (4) runner-block sliders (2 per rail)

7. Align runner blocks to corresponding mate (check for parallelism)

8. Install carriage plate onto carriages, check alignment

9. Attach carriage plate to carriage with fasteners

BILL OF MATERIAL

Qty	Description	Cost
82	Fasteners	28.00
2	15 mm Rails (2 m long)	528.00
4	15 mm Carriages	184.00
1	Base Plate	300.00
1	Carriage Plate	50.00
2 hours of labor to assemble @ $36.00/hr		72.00

TOTAL COST   **$1162.00**

FLEXIBILITY TO MEET APPLICATION REQUIREMENTS

- SIMO® machined for precision qualified rail surfaces, to within .050 mm (.002")

- Handles loads up to 10,020 N (2,252 lbs)

- Multiple configurations provide pre-aligned, high performance v-wheel guidance for a wide range of applications (see application examples on pages 3-7)

Click here or visit www.pbclinear.com to read the IVT vs. Profile Rail whitepaper, *"A Technical Comparison Between Integral V Technology and Linear Re-circulating Ball Bearing and Guideway Assemblies (Profile Rail)"*

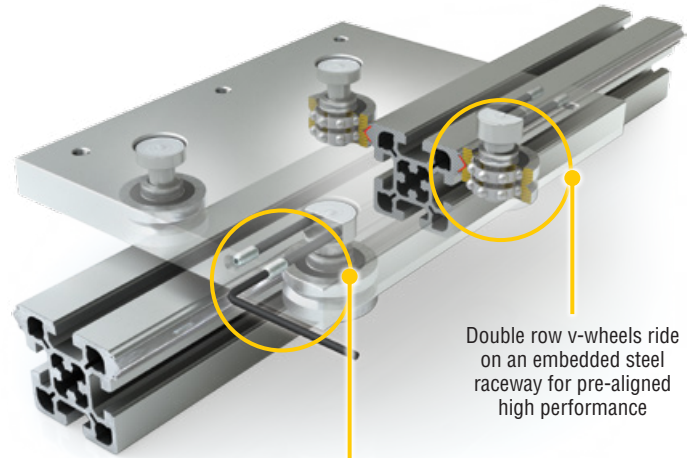## What Makes IVT Different?

SIMO ENABLED

EASY INSTALLATION

Integral V[TM] runs along a patent pending, pre-aligned, precision-machined anodized aluminum rail with high performance v-wheel cam rollers–eliminating mounting components and dramatically cutting assembly time.

INSTALLATION AND MOUNTING FEATURES

- Feature t-slots for:
  - Rack and pinion mounting without drilled and tapped holes
  - Mounting of gussets in the corners
  - Accessory mounting such as sensors, wire ties, etc.

- End mounting features (AAG and ABK): use of lag bolts from the ends

- Lubrication, rail scraper, and wheel cover options available

Double row v-wheels ride on an embedded steel raceway for pre-aligned high performance

Patented side adjust enables pre-load adjustment without removing the load from the carriage

SIMULTANEOUS INTEGRAL MILLING OPERATION

SIMO
SIMULTANEOUS INTEGRAL
MILLING OPERATION

PBC Linear has revolutionized traditional machining with the patent pending SIMO® (Simultaneous Integral Milling Operation). The SIMO process uses synchronized cutters, eliminating built-in extrusion variances by machining all critical edges concurrently in one pass. This ensures tight tolerances, limited variance and a remarkably straight and repeatable surface at negligible additional cost!
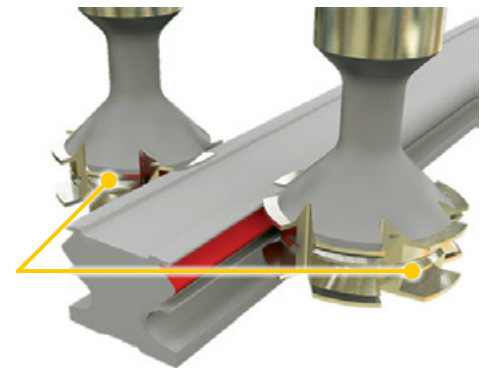
PATENT PENDING MACHINING PROCESS

No Bow

MACHINED PRECISION AT EXTRUSION PRICES

- Rigid, accurate, repeatable

- Low cost

- Machined rail edges can be used as a reference when mounting

No Twist

▶ Link to the SIMO process video
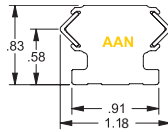
Synchronized Cutters Eliminate Built-In Extrusion Variances

COMPARE SIMO VS. STANDARD ALUMINUM EXTRUSION

No Warp

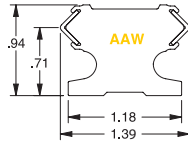|	Standard Aluminum Extrusion		SIMO
Straightness (Camber)	.0125 in/ft (1 mm/m)	⇨ 6 TIMES BETTER ⇨	± .002 in/ft (.166 mm/m)
Twist	1/2° per ft (1.5° per m)	⇨ 2 TIMES BETTER ⇨	< 1/4° per ft (.82° per m)
Flatness	.004 in (.10 mm)	⇨ 2 TIMES BETTER ⇨	.002 in (.0508 mm)

IVT Overview

IVT AAN
Page 8

IVT AAW
Page 10

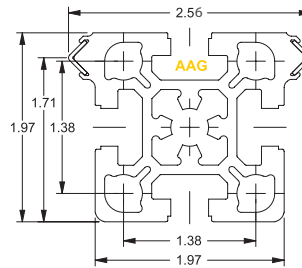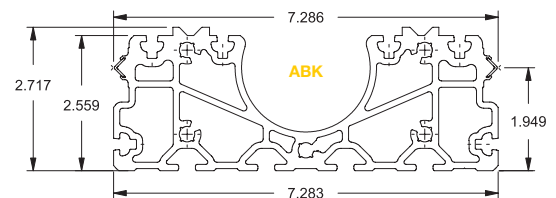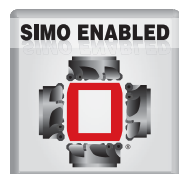**IVT AAB**
Page 12
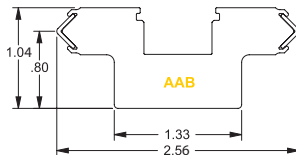
IVT AAE
Page 14
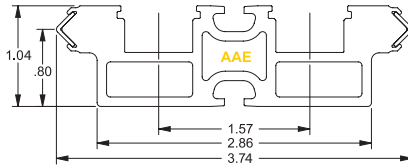
IVT AAQ
Page 16
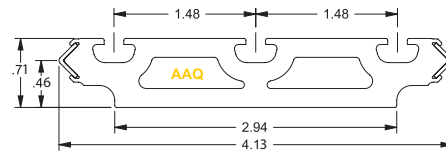
IVT AAG
Page 18

IVT ABK
Page 20

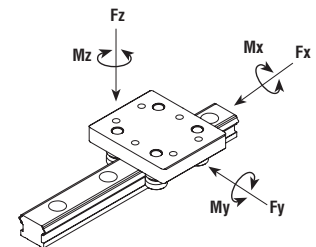## **MACHINED PRECISION AT EXTRUSION PRICES**

SIMO ENABLED

- Rigid, accurate, repeatable
- Low cost
- Machined rail edges can be used as a reference when mounting

Fd = Dynamic capacity (LC)
Fz = Axial capacity
Fy = Radial capacity
Mx, My, Mz = Moment capacities

Conversions
newton (N) x 0.2248 = lbs.
(lbf) meter x 0.0397 = inch
newton - meter (N-m) x 8.851 = in.-lbs.

SERIES	Static Load Ratings**					Dynamic Load Ratings**					Rail Moments of Inertia		Rail Weight (kg/m)	Max Rail Length (mm)
	Radial F^{oy} (N)	Axial F^{oz} (N)	Roll M^{ox} (N-m)	Pitch M^{oy} (N-m)	Yaw M^{oz} (N-m)	Radial Fy (N)	Axial Fz (N)	Roll Mx (N-m)	Pitch My (N-m)	Yaw Mz (N-m)	L_Y (cm⁴)	L_Z (cm⁴)		
IVTAAN	1,960	1,200	16	36	59	2,480	1,490	20	45	74	1.7	2.1	1.30	3,657
IVTAAW	8,900	5,560	194	278	445	10,020	6,150	214	308	501	2.8	3.8	1.65	3,657
IVTAAB	8,900	5,560	171	348	556	10,020	6,150	190	384	626	5.5	25.4	2.77	3,048
IVTAAE	8,900	5,560	255	487	778	10,020	6,150	282	538	877	6.0	74.8	2.74	3,657
IVTAAQ	8,900	5,560	283	278	445	10,020	6,150	313	308	501	3.4	91.9	3.06	3,657
IVTAAG	8,900	5,560	171	348	556	10,020	6,150	190	384	626	29.7	34.9	3.36	3,657
IVTABK	8,900	5,560	599	390	1,154	10,020	6,150	662	431	1,300	175	1,300	10.1	3,657

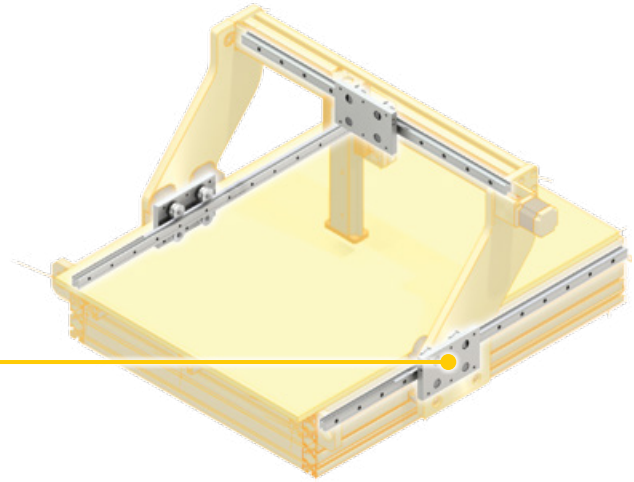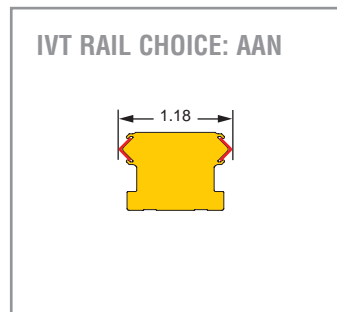*Weight may vary slightly depending on carriage options. **Load ratings are based on standard carriage.

Applications

PICK-AND-PLACE: IVT utilizes PBC Linear's SIMO® machining process for precise mounting and alignment on all critical sides–ensuring dimensional and rail form accuracy that is required in pick-and-place and other XYZ applications.
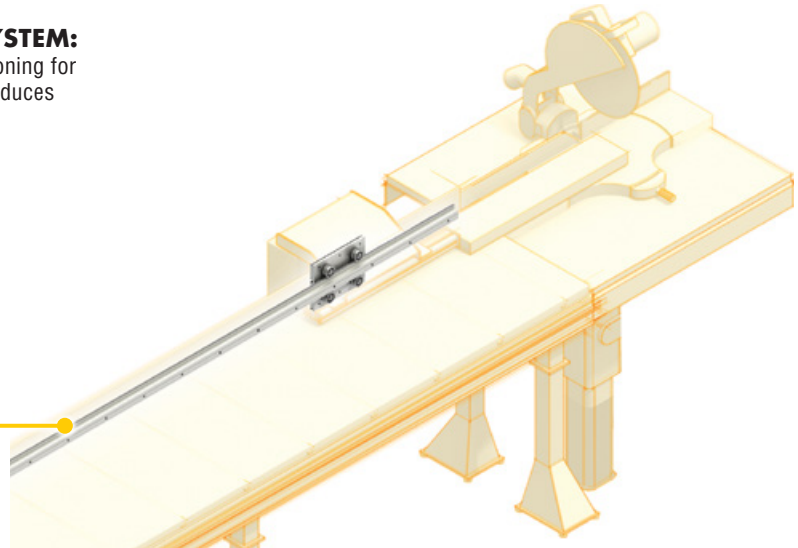
IVT RAIL CHOICE: AAN

1.18

INTEGRAL **INTEGRAL V**™ LINEAR GUIDE SYSTEM

Integral V™
vs.
Profile Guide

PBC LINEAR RST CRT **IVT** GST LAT PRT TGT

▶ Link to IVT vs. Profile Guide video

INKJET AND 3D PRINTING: IVT's pre-aligned hardened steel raceway and high performance v-wheels are highly repeatable, making IVT an optimal choice in inkjet printing, label printing, and the 3D printing space.
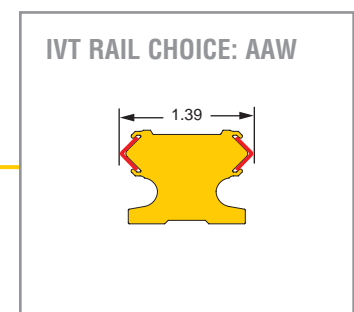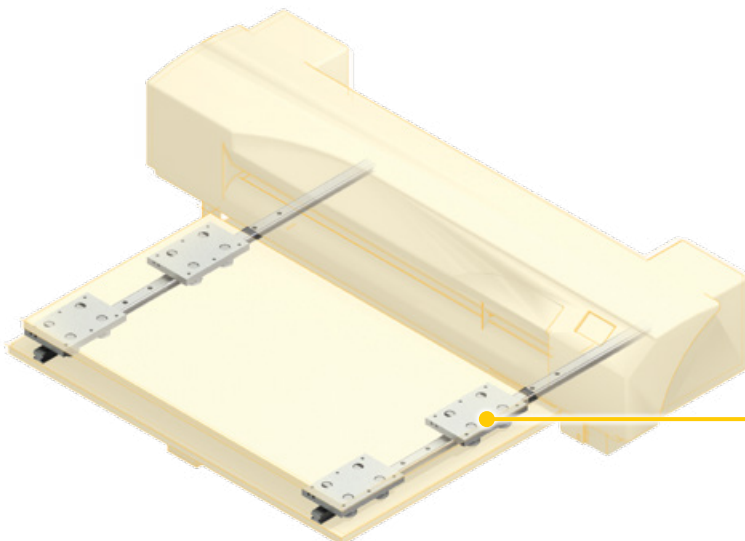
IVT RAIL CHOICE: AAW

1.39

Applications

INDUSTRIAL STOP GAUGE & PUSH FEED SYSTEM:

The Integral V linear guide system provides accurate positioning for band saws, punches, bending machines, and brakes. IVT reduces mounting components, while improving alignment and ease of installation.

▶ Link to material positioning video

IVT RAIL CHOICE: AAB

2.56
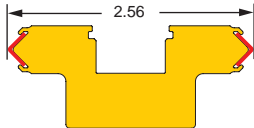
KIOSK & AUTOMATED RETAIL: IVT's low profile design
and high repeatability make it an ideal solution for the tight spaces found in automated dispensing applications.

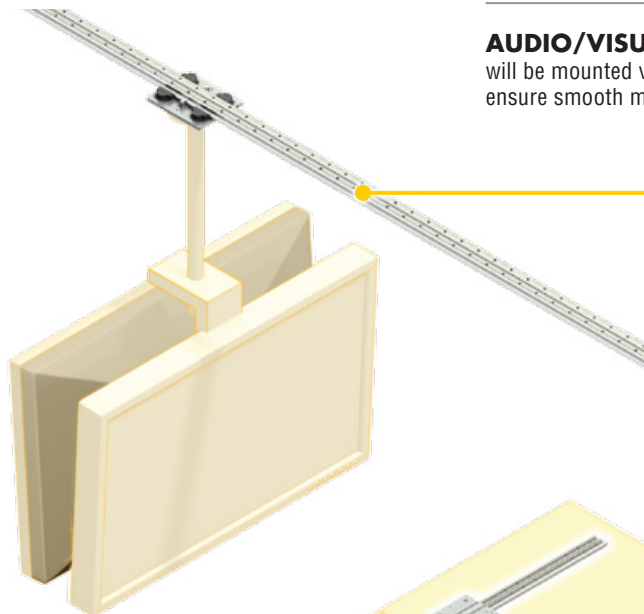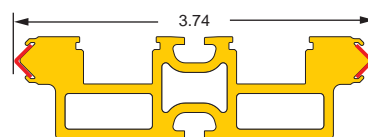▶ Link to kiosk & mechanical delivery systems video

IVT RAIL CHOICE: AAE
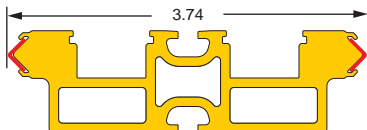
3.74

Applications

**AUDIO/VISUAL DISPLAY MOUNTS:** Whether the linear motion system will be mounted vertically or horizontally, IVT provides the strength and versatility to ensure smooth motion–plus, fewer parts means less installation time and less money.

IVT RAIL CHOICE: AAE

3.74

▶ Link to architectural design video

MEDICAL ASSIST: Hardened steel races eliminate fasteners and reduce mounting components, while IVT carriages are equipped with sealed rollers creating a clean, low maintenance solution for medical tables and emergency vehicles.
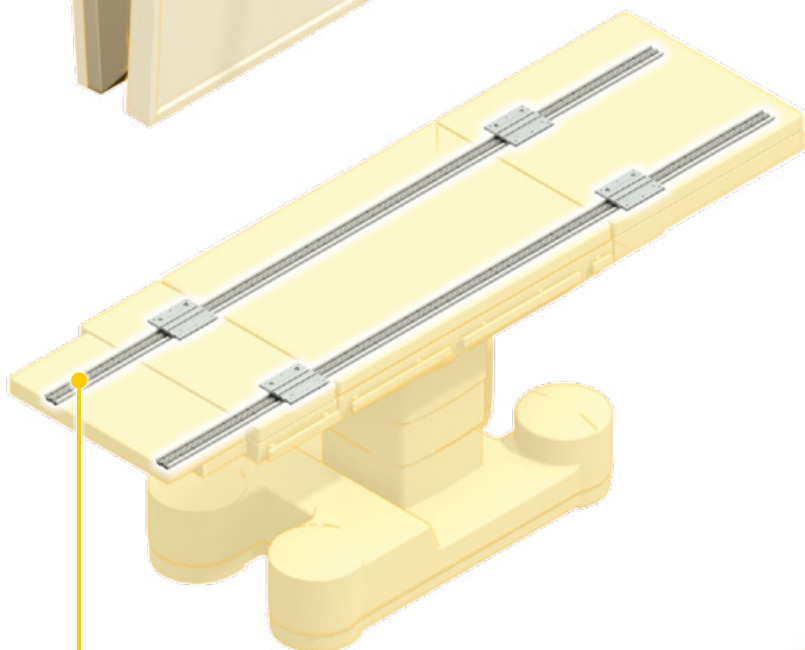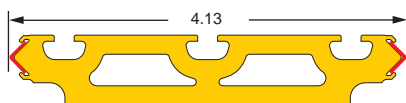
ERGONOMIC ASSIST: Integral V guide system handles the moment loads and provides smooth, low friction motion for hand tools in manufacturing and assembly operations.
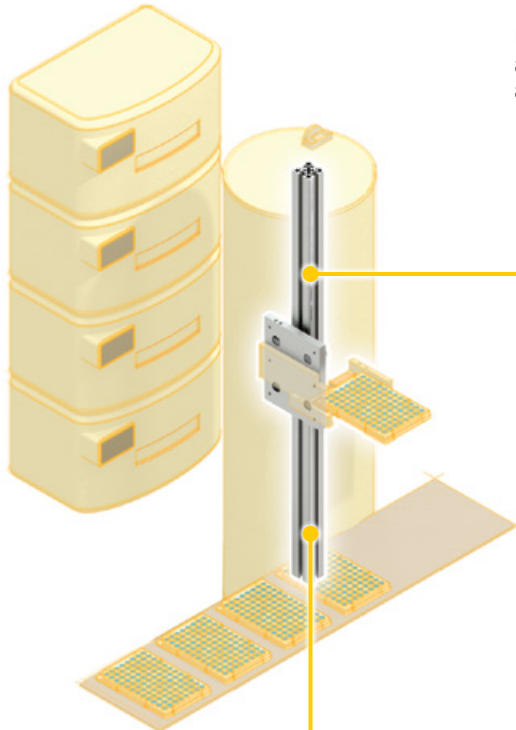
IVT RAIL CHOICE: AAQ

4.13
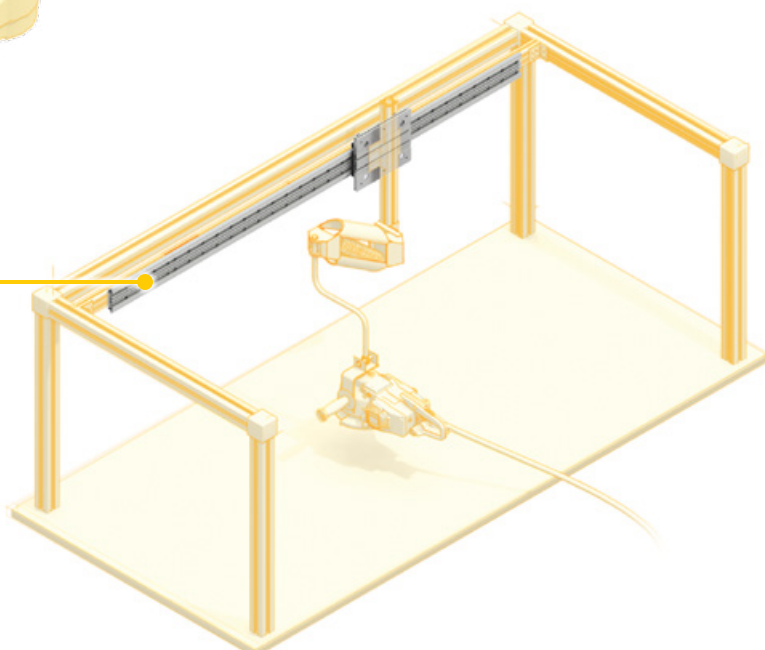
▶ Link to ergonomic application video

Applications

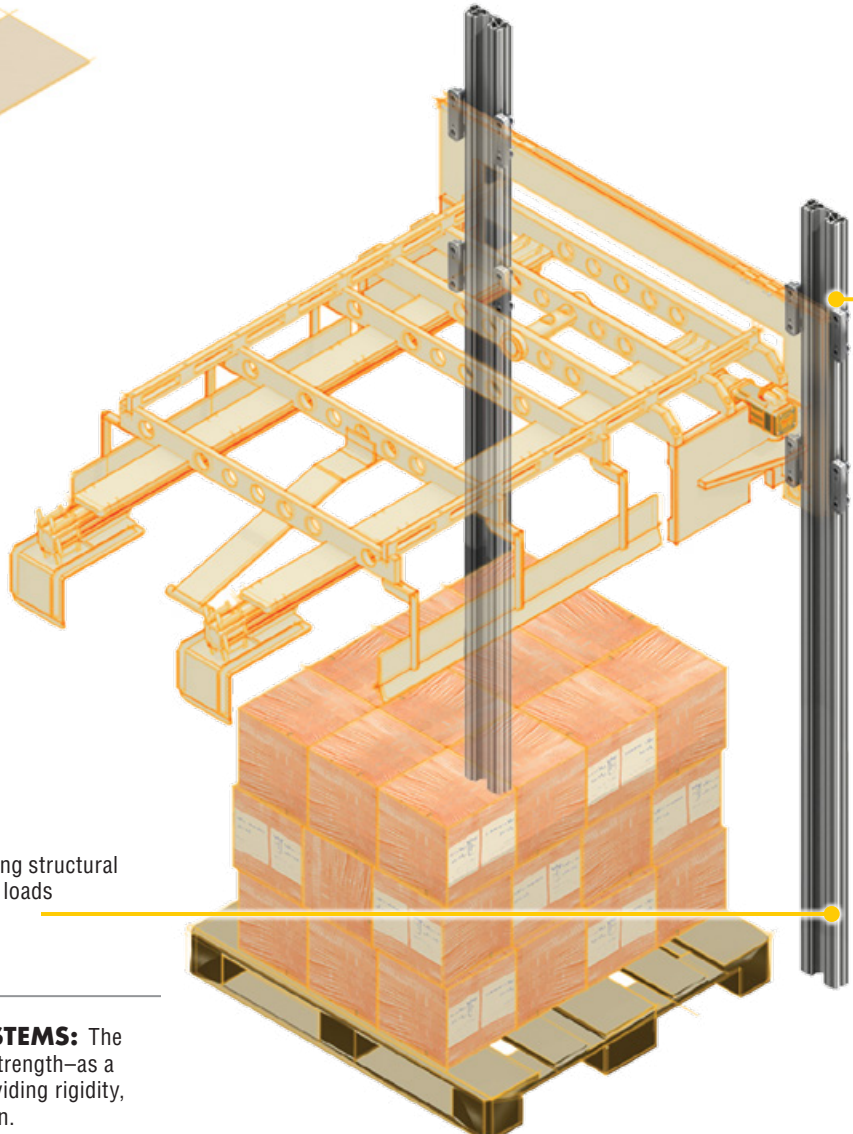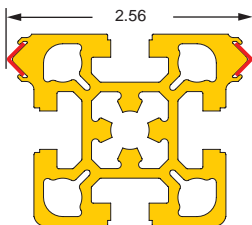**POLAR ROBOT:** IVT can be used in vertically or horizontally oriented applications. The polar robot shown here provides repeatable motion and high accuracy in the laboratory automation space.

V-wheel bearings provide smooth travel and IVT AAG provides structural support

IVT RAIL CHOICE: AAG

2.56

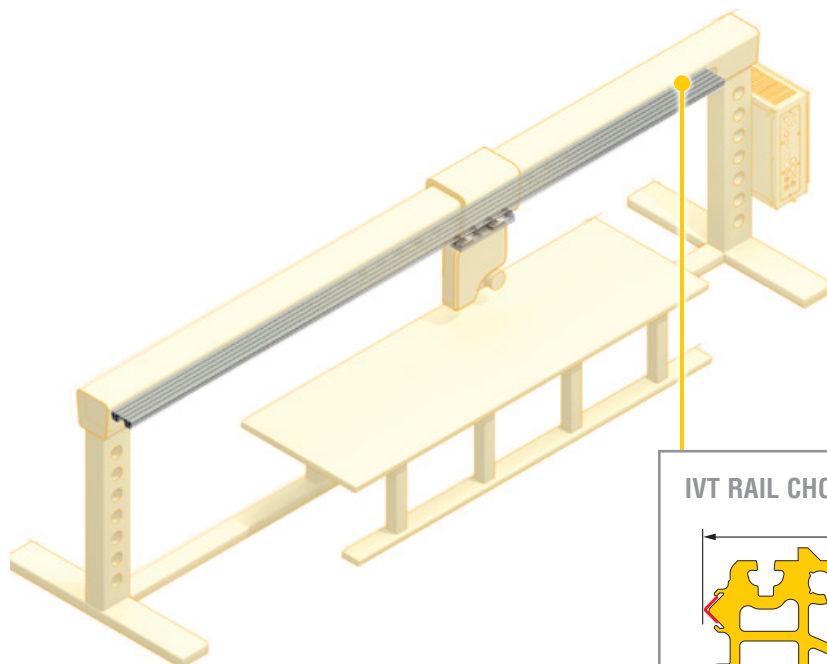The new IVT ABK is a strong structural element that handles high loads

DEPALLETIZER & HEAVY-DUTY LIFT SYSTEMS: The Integral V ABK aluminum extrusion is designed for strength—as a structural element—of a machine's design, while providing rigidity, high moment capacities, and consistent linear motion.

Applications

CUTTING OPERATIONS: IVT ABK provides rigid and smooth motion for long length cutting operations for metals, textiles, and other materials.

Link to application story

IVT RAIL CHOICE: ABK

7.29
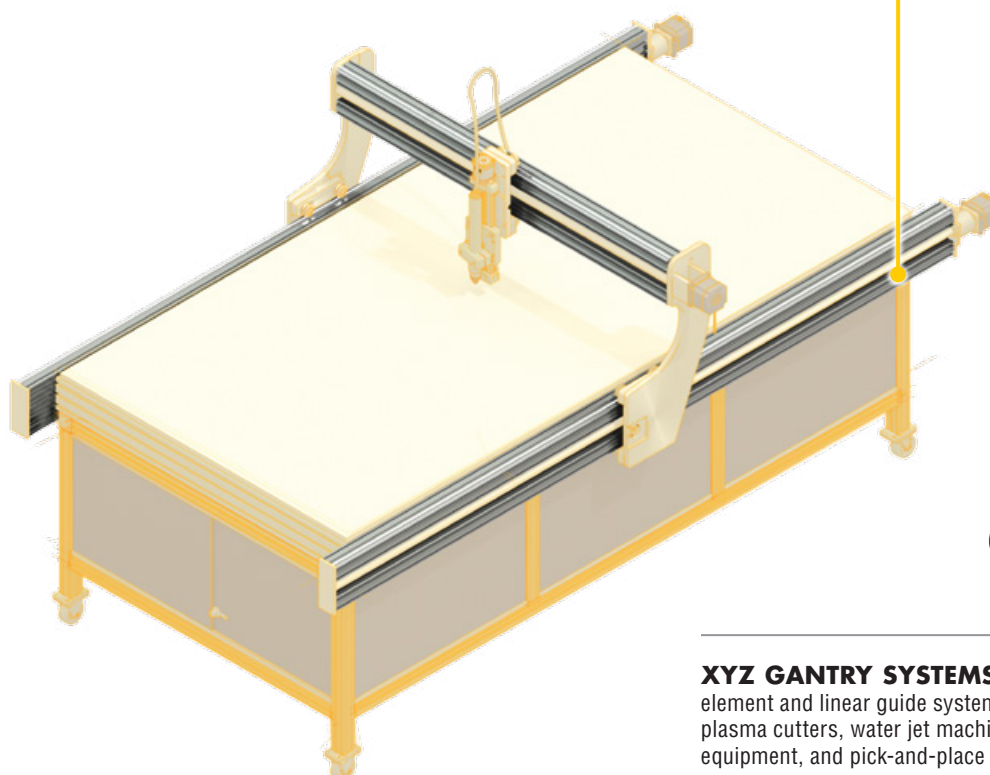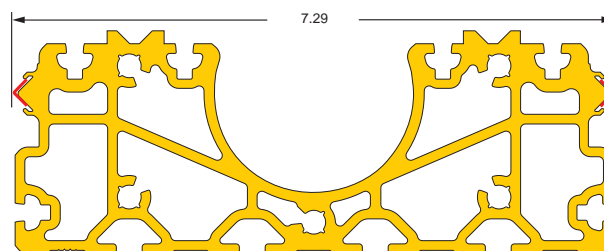
Link to product related video

XYZ GANTRY SYSTEMS: IVT ABK is ideal as a structural element and linear guide system for XYZ gantry applications used in plasma cutters, water jet machines, routers, etchers, other fabrication equipment, and pick-and-place automation.

INTEGRAL

IVT AAN

RAIL

AAN

1:1

[30.0]
1.181

[21.0]
.827

[23.0]
.906

[14.7]
.579

RAIL ORDERING INFORMATION

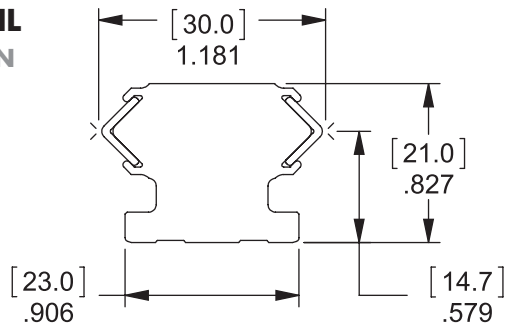| IVT | AAN | R | - | XXXX | - | O | OO |

Integral V Technology

OO - Standard Version

Rail Type

Rail

Length (mm)

End Treatment
O - Saw cut and deburr
*Other options such as joinable rails, consult factory
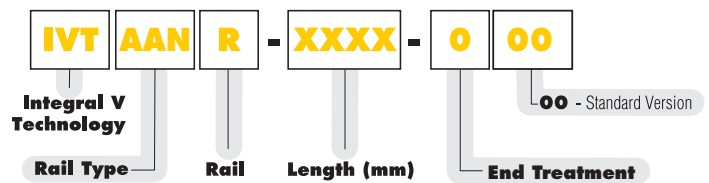
Ordering Example:
IVT AAN R - 1500 - 000; 1500 mm rail
IVT AAN R - 0500 - 000; 500 mm rail

RAIL LENGTHS TO 3,657 mm (12 ft)

90

20

30

20

4X Ø
M8 x 1.25

40

80
TYP

29.5

80

29.5

Ø M6 SHCS

MAX 3,657

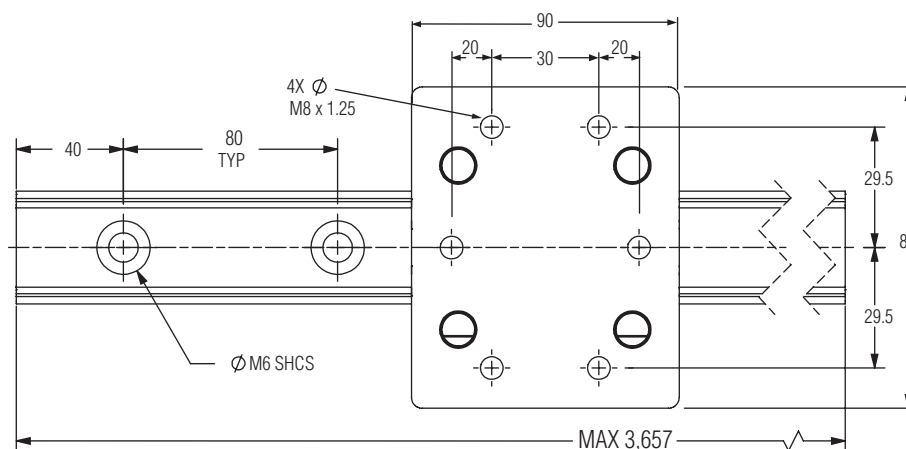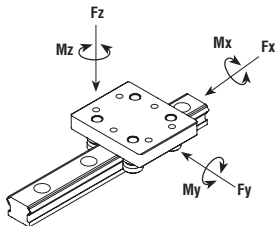# IVT AAN

SPECIFICATIONS

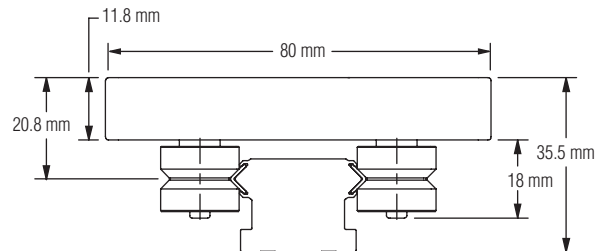| SERIES	# of Rollers	Carriage Weight (kg)*	Static Load Ratings					Dynamic Load Ratings					Rail Weight (kg/m)	Moments of Inertia		Max Rail Length (mm)
			Radial F^{oy} (N)	Axial F^{oz} (N)	Roll M^{ox} (N-m)	Pitch M^{oy} (N-m)	Yaw M^{oz} (N-m)	Radial F_y (N)	Axial F_z (N)	Roll M_x (N-m)	Pitch M_y (N-m)	Yaw M_z (N-m)		L_Y (cm⁴)	L_Z (cm⁴)	
IVTAAN	4	0.35	1,960	1,200	16	36	59	2,480	1,490	20	45	74	1.30	1.7	2.1	3,657

*Weight may vary slightly depending on carriage options.

Fd = Dynamic capacity (LC)
Fz = Axial capacity
Fy = Radial capacity
Mx, My, Mz = Moment capacities

Conversions
newton (N) x 0.2248 = lbs.
(lbf) meter x 0.0397 = inch
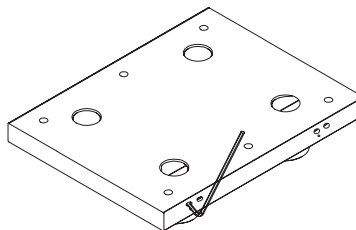newton - meter (N-m) x 8.851 = in.-lbs.

CARRIAGE

11.8 mm
80 mm
20.8 mm
35.5 mm
18 mm

PRELOAD ADJUSTMENTS

Standard
Side (CAM) Adjustable

PATENTED

CARRIAGE ORDERING INFORMATION

IVT AAN C - A 2 0 A 0

Integral V Technology

Rail Type

Carriage

Carriage Type
A - Flat plate with taps

Roller Type
2 - Sealed

Lubrication Options
0 - No Lubrication (none available)

Preload Type
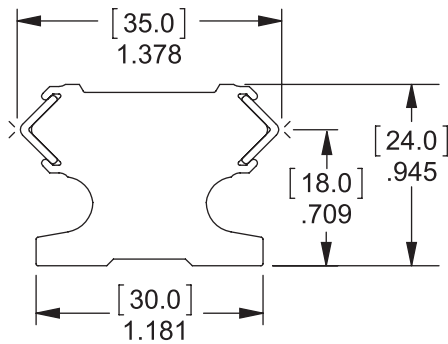A - Side (CAM) Adjustable

Carriage Length
0 - Standard Length
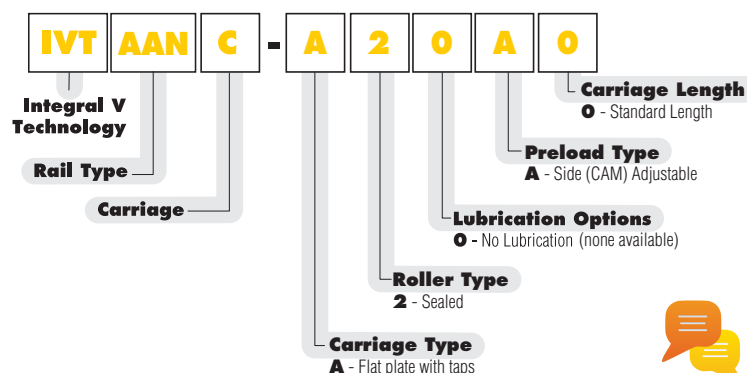
Note: Lubrication is highly recommended for IVT

Consult Factory • 800-962-8979

IVT AAW

RAIL
AAW
1:1

RAIL ORDERING INFORMATION

IVT — Integral V Technology

AAW — Rail Type

R — Rail

XXXX — Length (mm)

0 — End Treatment
O - Saw cut and deburr
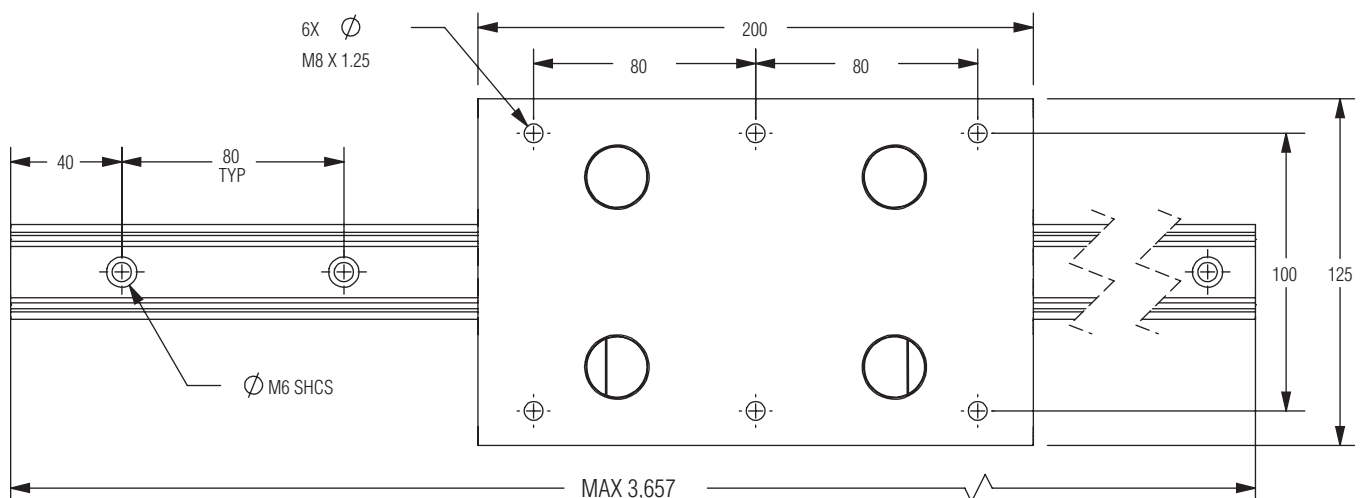*Other options such as joinable rails, consult factory

00 - Standard Version
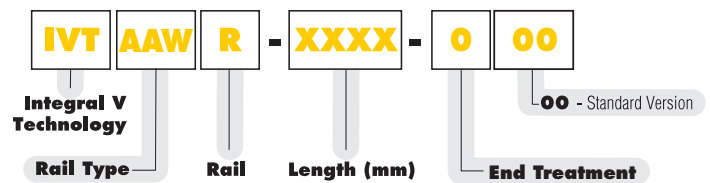
Ordering Example:
IVT AAW R - 1500 - 000; 1500 mm rail
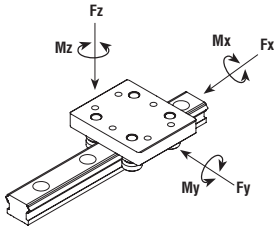IVT AAW R - 0500 - 000; 500 mm rail

RAIL LENGTHS TO 3,657 mm (12 ft)

IVT AAW

SPECIFICATIONS

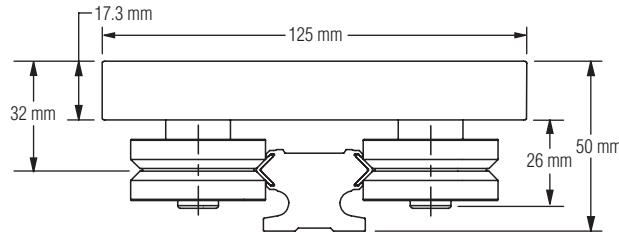| SERIES	# of Rollers	Carriage Weight (kg)*	Static Load Ratings					Dynamic Load Ratings					Rail Weight (kg/m)	Moments of Inertia		Max Rail Length (mm)
			Radial F^{oy} (N)	Axial F^{oz} (N)	Roll M^{ox} (N-m)	Pitch M^{oy} (N-m)	Yaw M^{oz} (N-m)	Radial F_y (N)	Axial F_z (N)	Roll M_x (N-m)	Pitch M_y (N-m)	Yaw M_z (N-m)		L_Y (cm⁴)	L_Z (cm⁴)	
IVTAAW	4	1.54	8,900	5,560	194	278	445	10,020	6,150	214	308	501	1.65	2.8	3.8	3,657

*Weight may vary slightly depending on carriage options.

Fd = Dynamic capacity (LC)
Fz = Axial capacity
Fy = Radial capacity
Mx, My, Mz = Moment capacities

Conversions
newton (N) x 0.2248 = lbs.
(lbf) meter x 0.0397 = inch
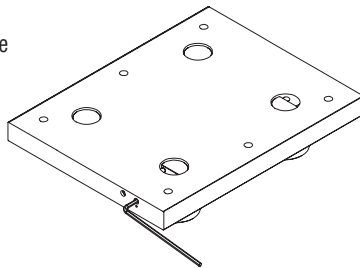newton - meter (N-m) x 8.851 = in.-lbs.
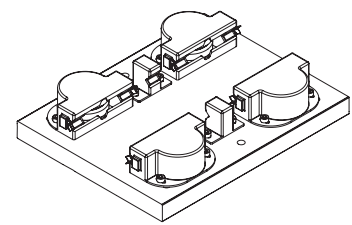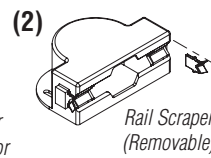
CARRIAGE

PRELOAD ADJUSTMENTS

Standard
Side (CAM) Adjustable

PATENTED

LUBRICATION ACCESSORIES

(1) Lube Holder
(2) Wheel Cover

(1) Polymer Lubricator

(2) Rail Scraper (Removable)

CARRIAGE ORDERING INFORMATION

IVT AAW C - A 2 X A 0

Integral V Technology

Rail Type

Carriage

Carriage Type
A - Flat plate with taps

Roller Type
2 - Sealed

Lubrication Options
O - No Lubrication
1 - Lube Holder
2 - Wheel Cover

Preload Type
A - Side (CAM) screw adjustable

Carriage Length
O - Standard Length
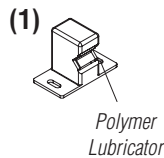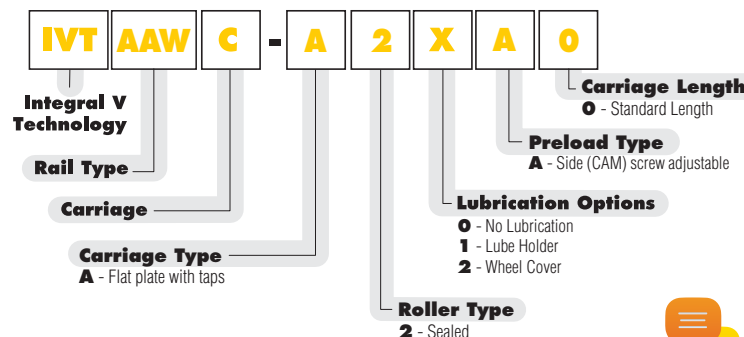
Note: Lubrication is highly recommended for IVT

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IVT AAB

RAIL
AAB
1:1

[65.0] 2.557
[26.4] 1.038
[20.2] .793
[33.7] 1.327

RAIL ORDERING INFORMATION

IVT AAB R - XXXX - 0 00

OO - Standard Version

Integral V Technology

Rail Type

Rail

Length (mm)

End Treatment
O - Saw cut and deburr
*Other options such as joinable rails, consult factory
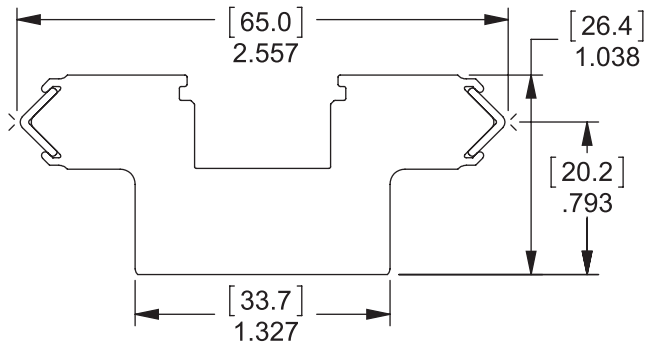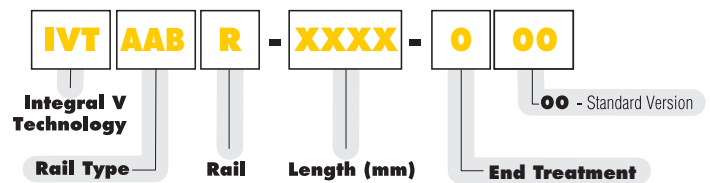
Ordering Example:
IVT AAB R - 1500 - 000; 1500 mm rail
IVT AAB R - 0500 - 000; 500 mm rail

RAIL LENGTHS TO 3,048 mm (10 ft)

6X ⌀ M8 X 1.25
225
90
90
40
80 TYP
⌀ M8 SHCS
140   175
MAX 3,048
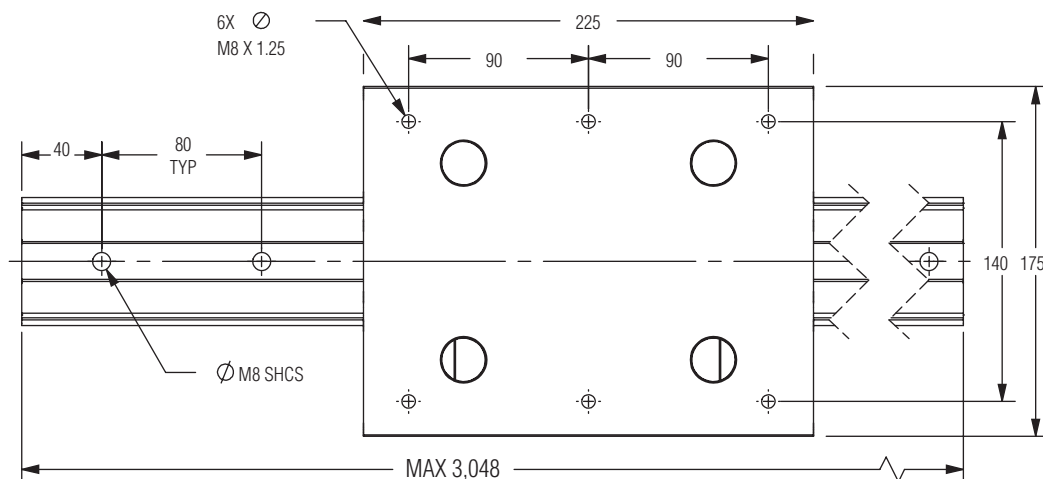
IVT AAB

SPECIFICATIONS

SERIES	# of Rollers	Carriage Weight (kg)*	Static Load Ratings					Dynamic Load Ratings					Rail Weight (kg/m)	Moments of Inertia		Max Rail Length (mm)
			Radial F^{oy} (N)	Axial F^{oz} (N)	Roll M^{ox} (N-m)	Pitch M^{oy} (N-m)	Yaw M^{oz} (N-m)	Radial F_y (N)	Axial F_z (N)	Roll M_x (N-m)	Pitch M_y (N-m)	Yaw M_z (N-m)		L_Y (cm^4)	L_Z (cm^4)	
IVTAAB	4	2.42	8,900	5,560	171	348	556	10,020	6,150	190	384	626	2.77	5.5	25.4	3,048

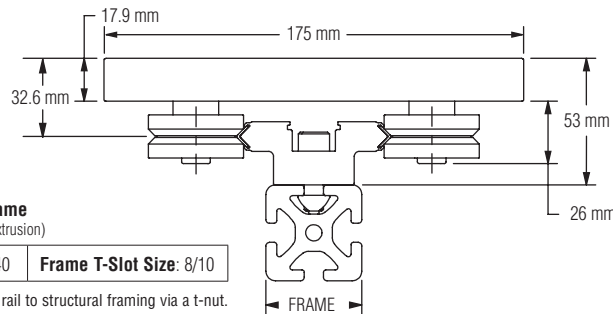*Weight may vary slightly depending on carriage options.
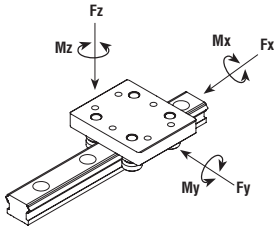
F_d = Dynamic capacity (LC)
F_z = Axial capacity
F_y = Radial capacity
M_x, M_y, M_z = Moment capacities

Conversions
newton (N) x 0.2248 = lbs.
(lbf) meter x 0.0397 = inch
newton - meter (N-m) x 8.851 = in.-lbs.

CARRIAGE

17.9 mm
175 mm
32.6 mm
53 mm
26 mm

Typical Mounting Frame
(when mounted to aluminum extrusion)

Screw Length*: 25	Frame Size (TYP): 40 x 40	Frame T-Slot Size: 8/10

*Recommended screw length when bolting IVT rail to structural framing via a t-nut.
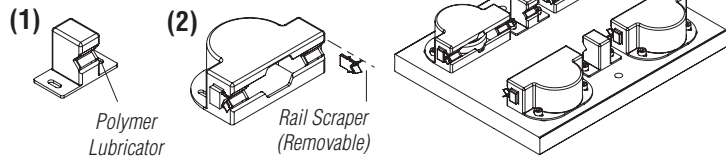
FRAME

PRELOAD ADJUSTMENTS

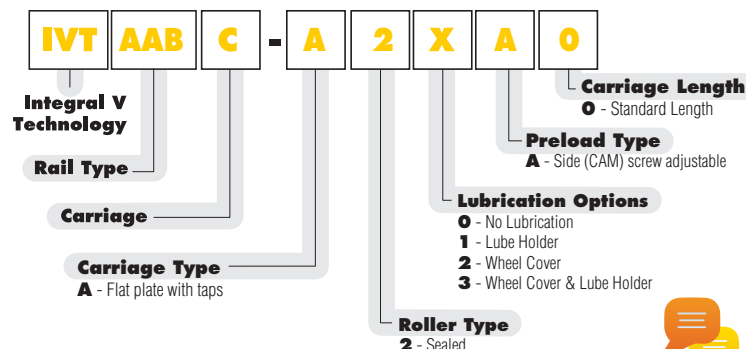**Standard**
Side (CAM) Adjustable

PATENTED

LUBRICATION ACCESSORIES

(1) Lube Holder
(2) Wheel Cover
(3) Wheel Cover & Lube Holder

(1)

Polymer Lubricator

(2)

Rail Scraper (Removable)

(3)

CARRIAGE ORDERING INFORMATION

IVT AAB C - A 2 X A 0

Integral V Technology

Rail Type

Carriage

Carriage Type
A - Flat plate with taps

Roller Type
2 - Sealed

Lubrication Options
0 - No Lubrication
1 - Lube Holder
2 - Wheel Cover
3 - Wheel Cover & Lube Holder

Preload Type
A - Side (CAM) screw adjustable
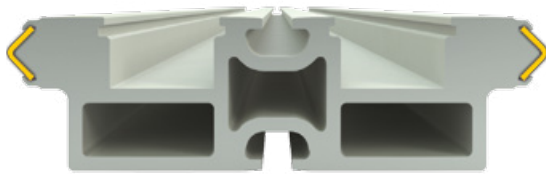
Carriage Length
0 - Standard Length
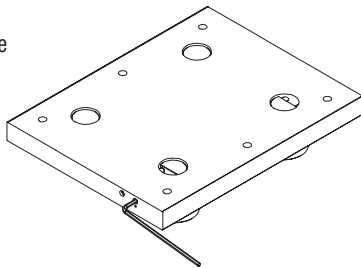
Note: Lubrication is highly recommended for IVT

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IVT AAE

RAIL
AAE
1:1

[95.0]
3.738

[26.4]
1.038

[20.2]
.793

[72.6]
2.858

2x Size 5 T-slot

RAIL ORDERING INFORMATION

IVT **AAE** **R** - **XXXX** - **0** **00**

Integral V
Technology

Rail Type

Rail

Length (mm)
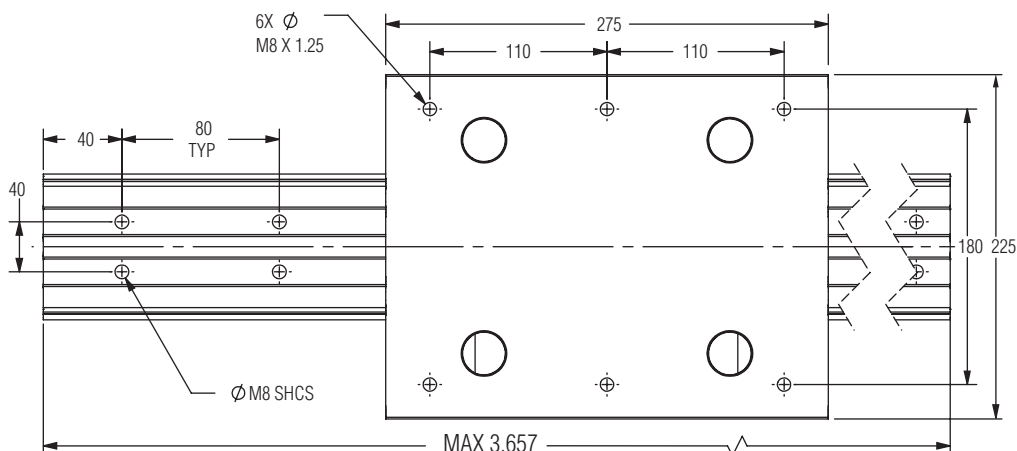
00 - Standard Version

End Treatment
0 - Saw cut and deburr
  *Other options such as joinable rails,
   consult factory
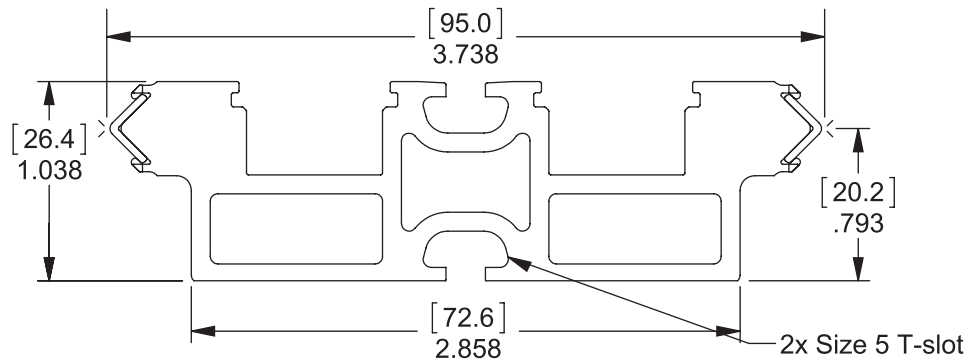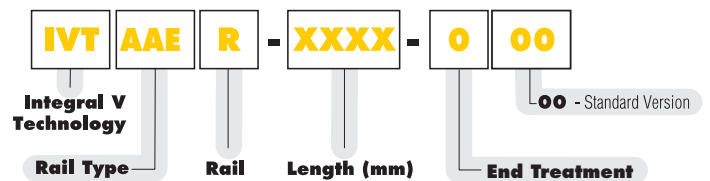
Ordering Example:
IVT AAE R - 1500 - 000; 1500 mm rail
IVT AAE R - 0500 - 000; 500 mm rail

RAIL LENGTHS TO 3,657 mm (12 ft)

6X ⌀
M8 X 1.25

275

110

110

40

80
TYP

40

180 225

⌀ M8 SHCS

MAX 3,657

IVT AAE

SPECIFICATIONS

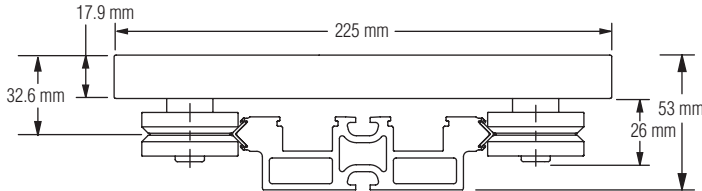| SERIES	# of Rollers	Carriage Weight (kg)*	Static Load Ratings					Dynamic Load Ratings					Rail Weight (kg/m)	Moments of Inertia		Max Rail Length (mm)
			Radial F^{oy} (N)	Axial F^{oz} (N)	Roll M^{ox} (N-m)	Pitch M^{oy} (N-m)	Yaw M^{oz} (N-m)	Radial Fy (N)	Axial Fz (N)	Roll Mx (N-m)	Pitch My (N-m)	Yaw Mz (N-m)		L$_Y$ (cm^4)	L$_Z$ (cm^4)	
IVTAAE	4	3.47	8,900	5,560	255	487	778	10,020	6,150	282	538	877	2.74	6.0	74.8	3,657

*Weight may vary slightly depending on carriage options.

Fd = Dynamic capacity (LC)
Fz = Axial capacity
Fy = Radial capacity
Mx, My, Mz = Moment capacities

Conversions
newton (N) x 0.2248 = lbs.
(lbf) meter x 0.0397 = inch
newton - meter (N-m) x 8.851 = in.-lbs.

CARRIAGE

17.9 mm
225 mm
32.6 mm
53 mm
26 mm

Typical Mounting Frame
(when mounted to aluminum extrusion)

Screw Length*: 25	Frame Size (TYP): 40 x 80	Frame T-Slot Size: 8/10

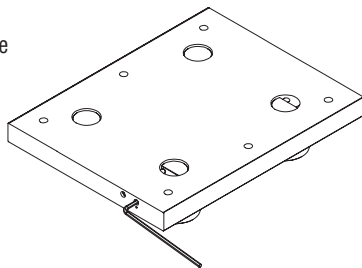*Recommended screw length when bolting IVT rail to structural framing via a t-nut.

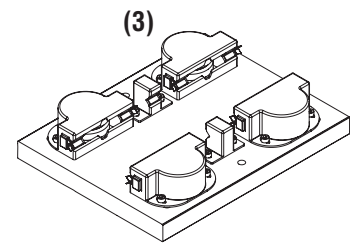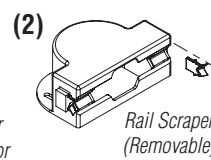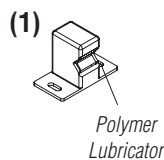## PRELOAD ADJUSTMENTS

Standard
Side (CAM) Adjustable

PATENTED

LUBRICATION ACCESSORIES

(1) Lube Holder
(2) Wheel Cover
(3) Wheel Cover & Lube Holder

(1)

Polymer Lubricator

(2)

Rail Scraper (Removable)

(3)

CARRIAGE ORDERING INFORMATION

IVT AAE C - A 2 X A 0

Integral V Technology

Rail Type

Carriage

Carriage Type
A - Flat plate with taps

Roller Type
2 - Sealed

Lubrication Options
0 - No Lubrication
1 - Lube Holder
2 - Wheel Cover
3 - Wheel Cover & Lube Holder

Preload Type
A - Side (CAM) screw adjustable

Carriage Length
0 - Standard Length

Note: Lubrication is highly recommended for IVT

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IVT AAQ

RAIL
AAQ
1:1

3X Size 5 T-slot

[105.0] 4.132
[37.5] 1.477
[37.5] 1.477
.709
[74.6] 2.938
[11.8] .464

RAIL ORDERING INFORMATION

| IVT | AAQ | R | - | XXXX | - | 0 | 00 |

Integral V Technology

Rail Type

Rail

Length (mm)

End Treatment
O - Saw cut and deburr
*Other options such as joinable rails, consult factory

OO - Standard Version
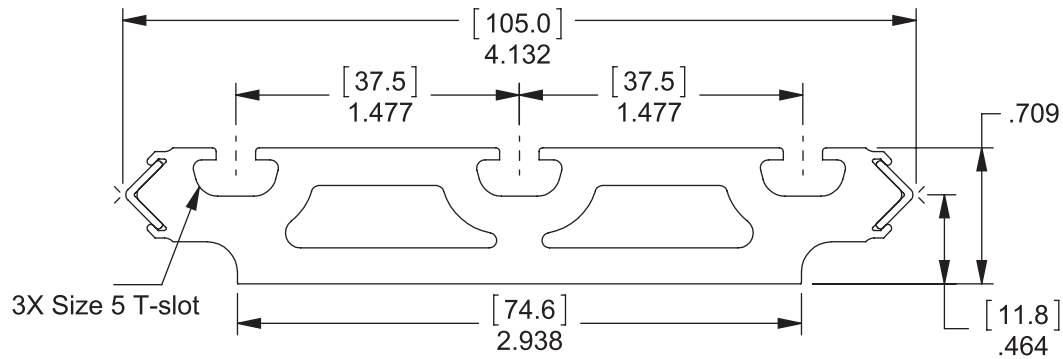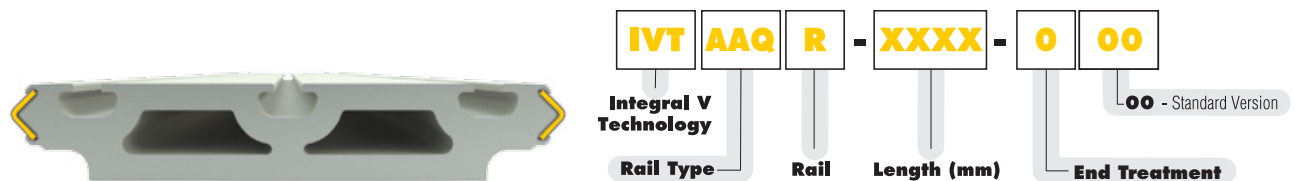
Ordering Example:
IVT AAQ R - 1500 - 000; 1500 mm rail
IVT AAQ R - 0500 - 000; 500 mm rail

RAIL LENGTHS TO 3,657 mm (12 ft)

6X ⌀ M8 X 1.25

275
110
110
40
80 TYP
40
180 225
⌀M8 SHCS
MAX 3,657
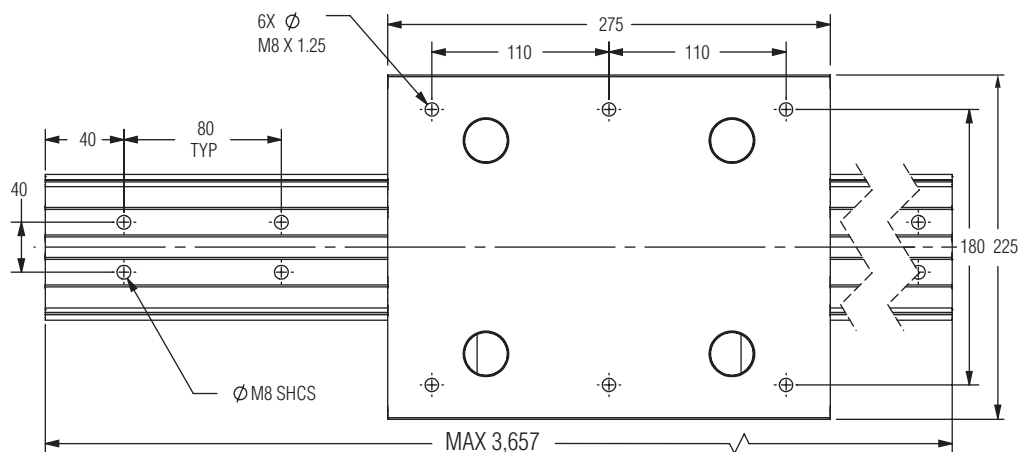
IVT AAQ

SPECIFICATIONS

| SERIES	# of Rollers	Carriage Weight (kg)*	Static Load Ratings					Dynamic Load Ratings					Rail Weight (kg/m)	Moments of Inertia		Max Rail Length (mm)
			Radial F^{oy} (N)	Axial F^{oz} (N)	Roll M^{ox} (N-m)	Pitch M^{oy} (N-m)	Yaw M^{oz} (N-m)	Radial F_y (N)	Axial F_z (N)	Roll M_x (N-m)	Pitch M_y (N-m)	Yaw M_z (N-m)		L_Y (cm⁴)	L_Z (cm⁴)	
IVTAAQ	4	3.47	8,900	5,560	283	278	445	10,020	6,150	313	308	501	3.06	3.4	91.9	3,657

*Weight may vary slightly depending on carriage options.

Fd = Dynamic capacity (LC)
Fz = Axial capacity
Fy = Radial capacity
Mx, My, Mz = Moment capacities

Conversions
newton (N) x 0.2248 = lbs.
(lbf) meter x 0.0397 = inch
newton - meter (N-m) x 8.851 = in.-lbs.

CARRIAGE

17.9 mm
225 mm
32.6 mm
44.4 mm
26 mm
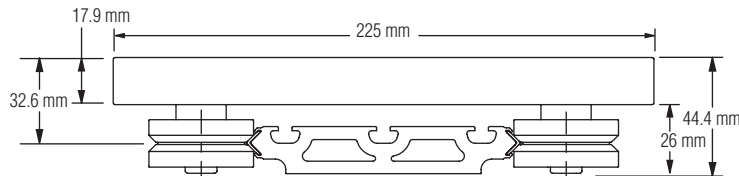
Typical Mounting Frame
(when mounted to aluminum extrusion)

Screw Length*: 12	Frame Size (TYP): 40 x 80	Frame T-Slot Size: 8/10

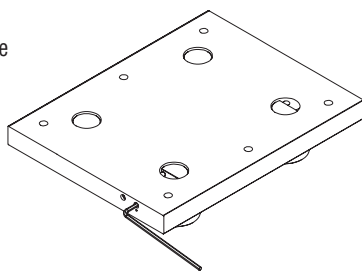*Recommended screw length when bolting IVT rail to structural framing via a t-nut.
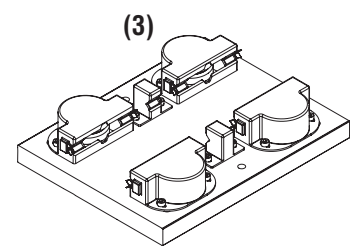
PRELOAD ADJUSTMENTS

Standard
Side (CAM) Adjustable
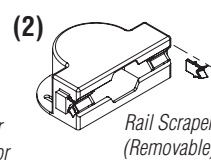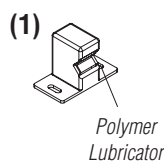
PATENTED

LUBRICATION ACCESSORIES

(1) Lube Holder
(2) Wheel Cover
(3) Wheel Cover & Lube Holder

(3)

(1)

(2)

Polymer Lubricator

Rail Scraper (Removable)

CARRIAGE ORDERING INFORMATION

IVT **AAQ** **C** - **A** **2** **X** **A** **0**

Integral V Technology

Rail Type

Carriage

Carriage Type
A - Flat plate with taps

Roller Type
2 - Sealed

Lubrication Options
0 - No Lubrication
1 - Lube Holder
2 - Wheel Cover
3 - Wheel Cover & Lube Holder

Preload Type
A - Side (CAM) screw adjustable

Carriage Length
0 - Standard Length
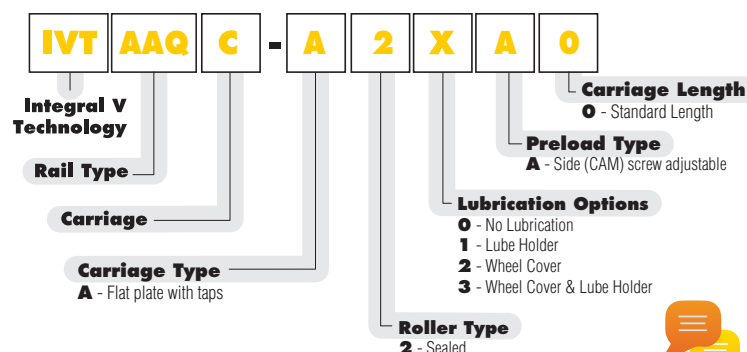
Note: Lubrication is highly recommended for IVT

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IVT AAG

RAIL
AAG
1:1

[65.0]
2.557

[10.0]
4x ⌀ .394

[50.0]
1.969

[43.4]
1.709

[35.0]
2x 1.378

[25.0]
.984

[35.0]
2x 1.378

[50.0]
1.969

4X Size 10 T-slots

Space for thread forming screw

RAIL LENGTHS TO 3,657 mm (12 ft)

RAIL ORDERING INFORMATION

| IVT | AAG | R | - | XXXX | - | 0 | 00 |

Integral V Technology

Rail Type

Rail

Length (mm)

End Treatment
O - Saw cut and deburr
*Other options such as joinable rails, consult factory

OO - Standard Version
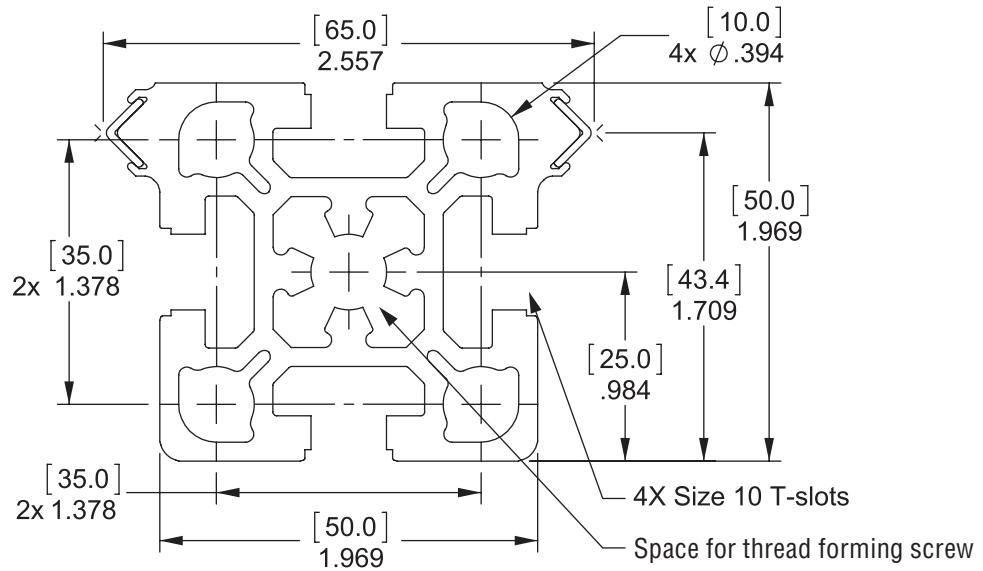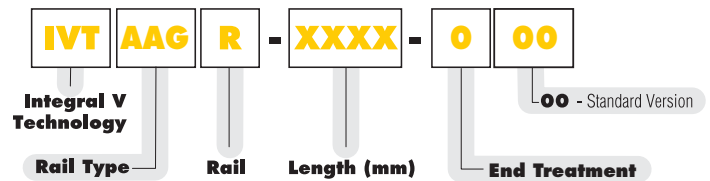
Ordering Example:
IVT AAG R - 1500 - 000; 1500 mm rail
IVT AAG R - 0500 - 000; 500 mm rail

6X ⌀
M8 X 1.25

225

90

90

140   175

MAX 3,657
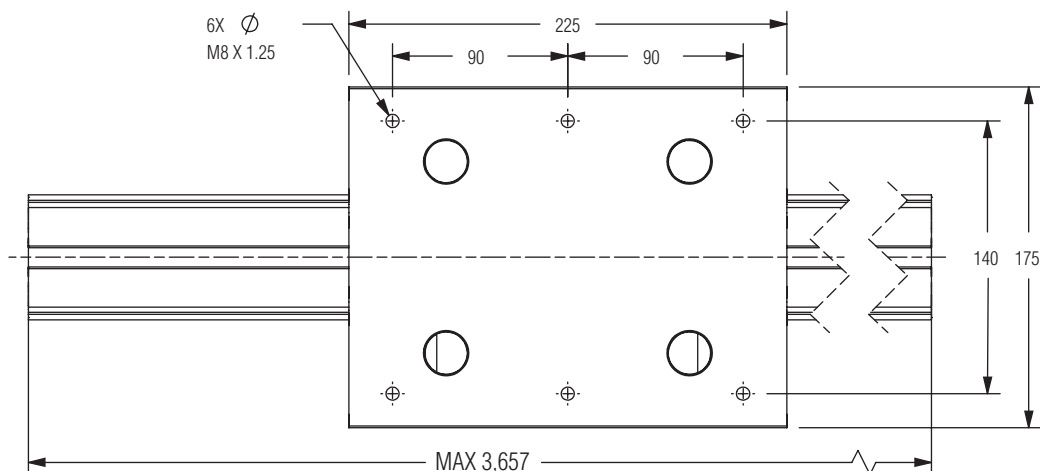
IVT AAG

SPECIFICATIONS

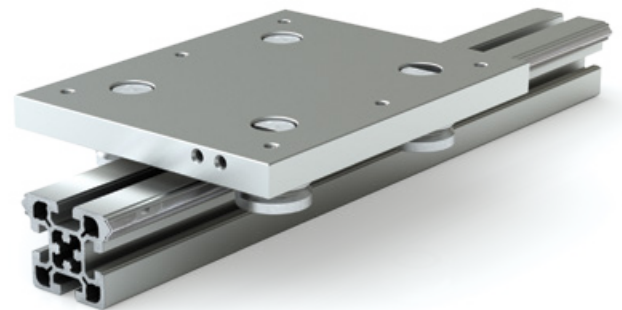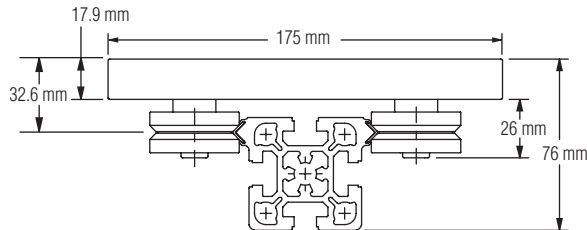| SERIES	# of Rollers	Carriage Weight (kg)*	Static Load Ratings					Dynamic Load Ratings					Rail Weight (kg/m)	Moments of Inertia		Max Rail Length (mm)
			Radial F^{oy} (N)	Axial F^{oz} (N)	Roll M^{ox} (N-m)	Pitch M^{oy} (N-m)	Yaw M^{oz} (N-m)	Radial Fy (N)	Axial Fz (N)	Roll Mx (N-m)	Pitch My (N-m)	Yaw Mz (N-m)		L$_Y$ (cm^4)	L$_Z$ (cm^4)	
IVTAAG	4	2.42	8,900	5,560	171	348	556	10,020	6,150	190	384	626	3.36	29.7	34.9	3,657

*Weight may vary slightly depending on carriage options.
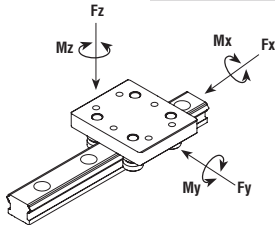
Fd = Dynamic capacity (LC)
Fz = Axial capacity
Fy = Radial capacity
Mx, My, Mz = Moment capacities

Conversions
newton (N) x 0.2248 = lbs.
(lbf) meter x 0.0397 = inch
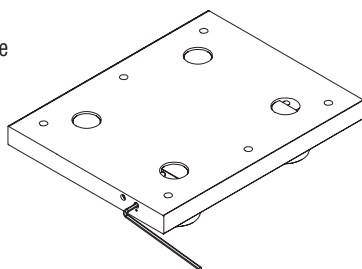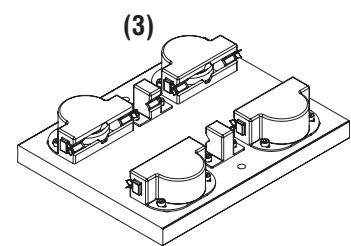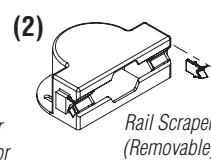newton - meter (N-m) x 8.851 = in.-lbs.

CARRIAGE

17.9 mm
175 mm
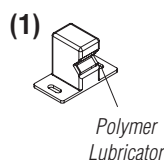32.6 mm
26 mm
76 mm

PRELOAD ADJUSTMENTS

Standard
Side (CAM) Adjustable

PATENTED

LUBRICATION ACCESSORIES

(1) Lube Holder
(2) Wheel Cover
(3) Wheel Cover & Lube Holder

(1)   **(2)**   **(3)**

Polymer Lubricator

Rail Scraper (Removable)

CARRIAGE ORDERING INFORMATION

IVT **AAG** **C** - **A** **2** **X** **A** **0**

Integral V Technology

Rail Type

Carriage

Carriage Type
A - Flat plate with taps

Roller Type
2 - Sealed

Lubrication Options
0 - No Lubrication
1 - Lube Holder
2 - Wheel Cover
3 - Wheel Cover & Lube Holder

Preload Type
A - Side (CAM) screw adjustable

Carriage Length
0 - Standard Length

Note: Lubrication is highly recommended for IVT

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INTEGRAL

IVT ABK Features & Benefits

FOR LARGE FORMAT APPLICATIONS & HEAVY LOADS

COMPONENT OPTIONS

Patented side adjust enables pre-load adjustment without removing the load from the carriage
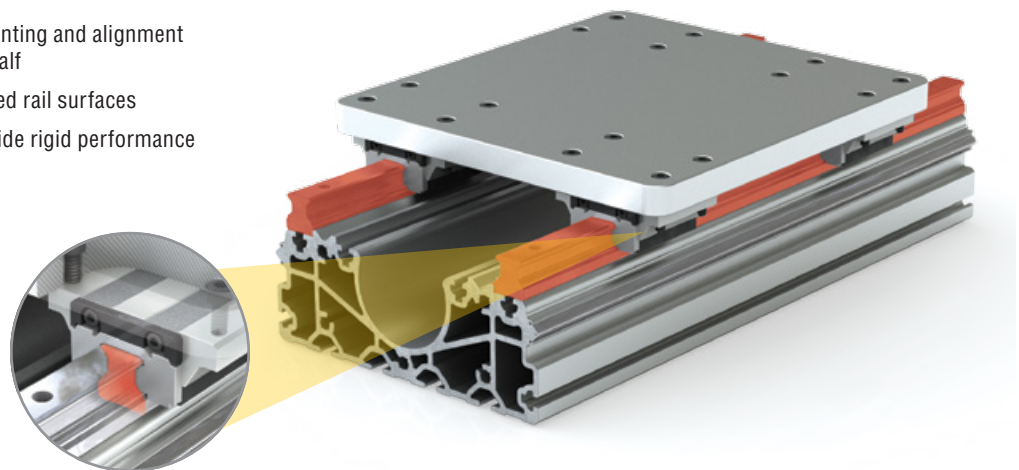
V-Guide Bearing System
- Embedded hardened steel raceways reduce mounting components
- SIMO® machined for precision qualified rail surfaces
- High load capacity
- Optimized extrusion design provides a large scale structural member
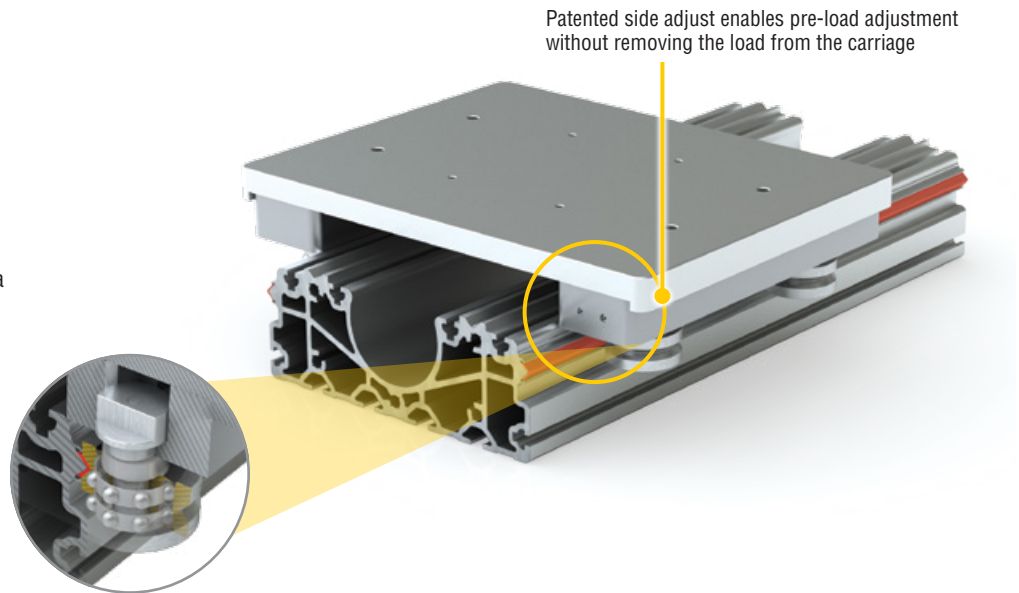
Profile Rail Guide System
- Pre-aligned profile rail eliminates mounting and alignment problems and cuts assembly time in half
- SIMO® machined for precision qualified rail surfaces
- Recirculating ball bearing blocks provide rigid performance
- Designed for 20 mm profile rail
- Smooth and quiet operation
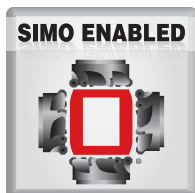
DRIVE OPTIONS

Belt Drive

Ball Screw

Rack Drive
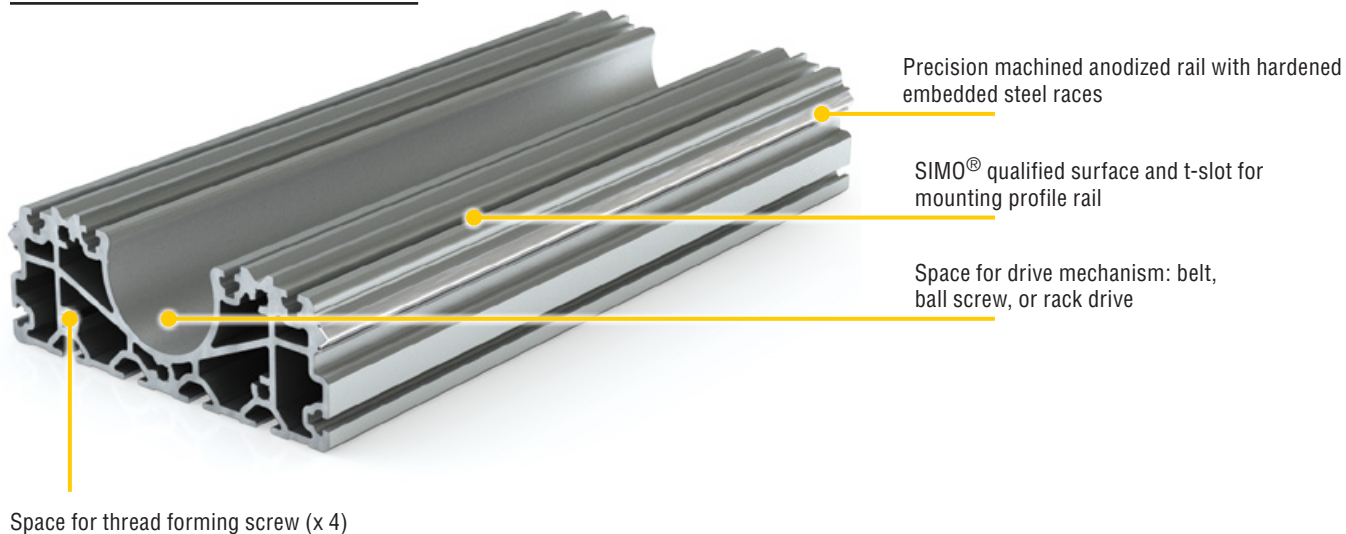
Features & Benefits **IVT ABK**

RAIL FEATURES & OPTIONS

Precision machined anodized rail with hardened embedded steel races

SIMO® qualified surface and t-slot for mounting profile rail

Space for drive mechanism: belt, ball screw, or rack drive
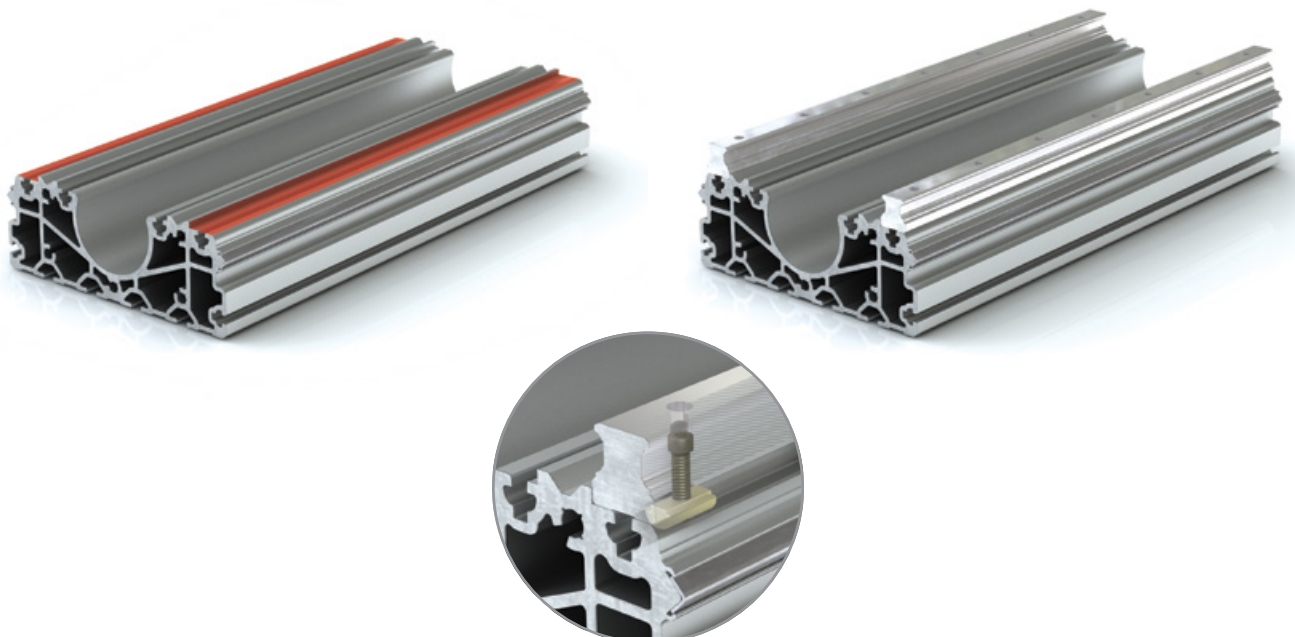
Space for thread forming screw (x 4)

SIMO ENABLED

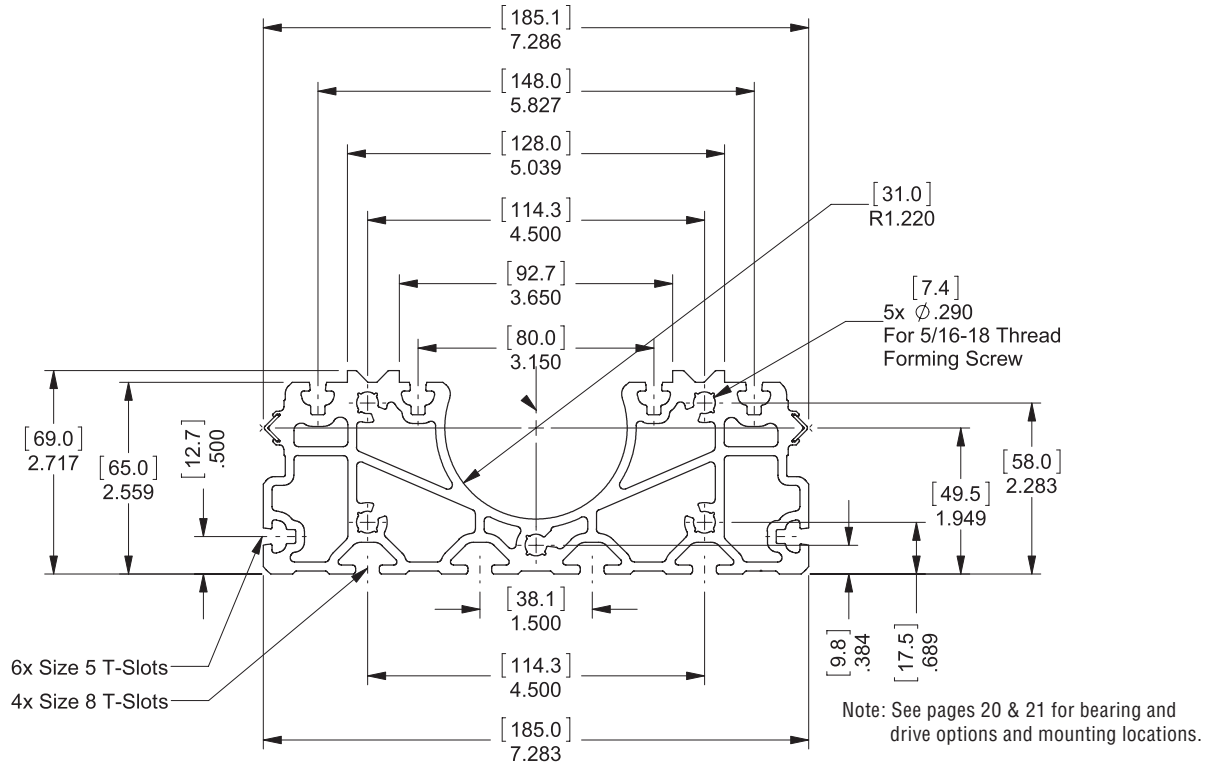### MACHINED PRECISION AT EXTRUSION PRICES

Pre-aligned Profile Rail Guides

- SIMO® machined for precision qualified rail surfaces
  —Synchronized cutters eliminate built-in extrusion variances
  —Machined rail edges can be used as a reference when mounting

- High load capacity

- Optimized extrusion design provides a large scale structural member

- Rigid, accurate, repeatable

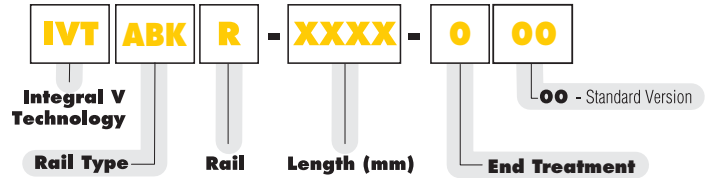- Low cost

IVT ABK Rail & Carriage

RAIL

[185.1] 7.286
[148.0] 5.827
[128.0] 5.039
[114.3] 4.500
[92.7] 3.650
[80.0] 3.150
[31.0] R1.220
[7.4] 5x ⌀.290 For 5/16-18 Thread Forming Screw
[69.0] 2.717
[65.0] 2.559
[12.7] .500
[58.0] 2.283
[49.5] 1.949
[38.1] 1.500
[9.8] .384
[17.5] .689
[114.3] 4.500
[185.0] 7.283

6x Size 5 T-Slots
4x Size 8 T-Slots

Note: See pages 20 & 21 for bearing and drive options and mounting locations.

RAIL LENGTHS TO 3,657 mm (12 ft)

RAIL ORDERING INFORMATION

IVT **ABK** **R** - **XXXX** - **0** **00**

Integral V Technology

Rail Type | Rail | Length (mm) | End Treatment

OO - Standard Version

O - Saw cut and deburr
*Other options such as joinable rails, consult factory

Ordering Example:
IVT ABK R - 1500 - 000; 1500 mm rail
IVT ABK R - 0500 - 000; 500 mm rail

200
100
(8) M8 x 1.25
130
284.5
260
221
MAX 3,657
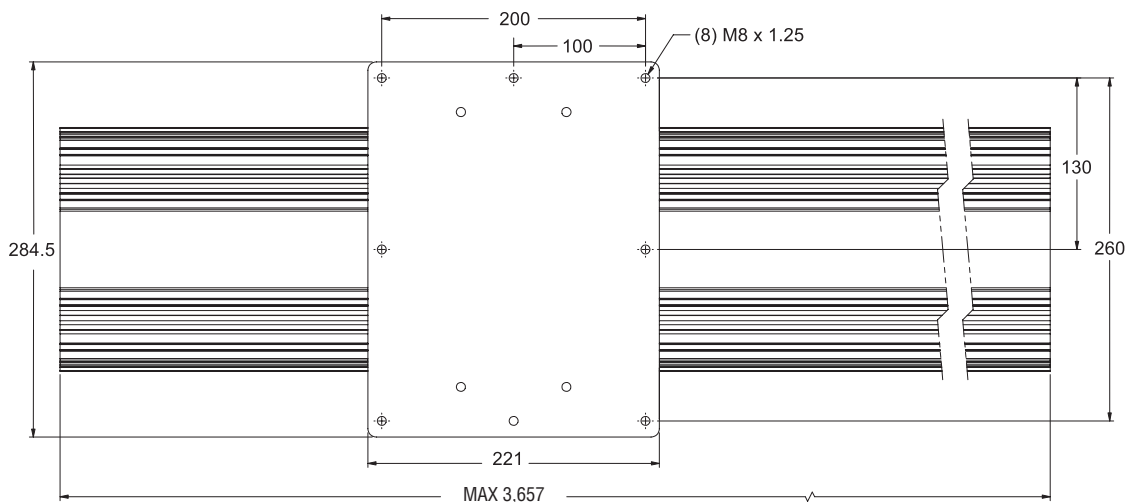
Rail & Carriage **IVT ABK**

SPECIFICATIONS

| SERIES | # of Rollers | Carriage Weight (kg)* | Static Load Ratings | | | | | Dynamic Load Ratings | | | | | Rail Weight (kg/m) | Moments of Inertia | | Max Rail Length (mm) |
			Radial F_{oy} (N)	Axial F_{oz} (N)	Roll M_{ox} (N-m)	Pitch M_{oy} (N-m)	Yaw M_{oz} (N-m)	Radial F_y (N)	Axial F_z (N)	Roll M_x (N-m)	Pitch M_y (N-m)	Yaw M_z (N-m)		L_Y (cm⁴)	L_Z (cm⁴)	
IVTABK	4	4.3	8,900	5,560	599	390	1,154	10,020	6,150	662	431	1,300	10.1	175	1,300	3,657

*Weight may vary slightly depending on carriage options.
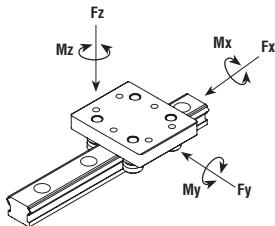
Fd = Dynamic capacity (LC)
Fz = Axial capacity
Fy = Radial capacity
Mx, My, Mz = Moment capacities

Conversions
newton (N) x 0.2248 = lbs.
(lbf) meter x 0.0397 = inch
newton - meter (N-m) x 8.851 = in.-lbs.
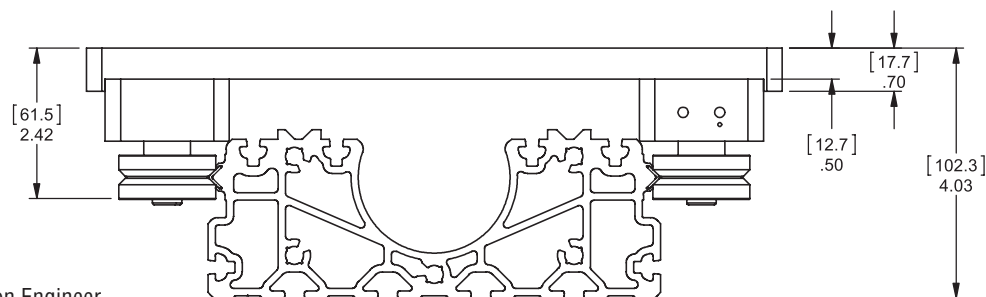
CARRIAGE

CRT
Cam Roller Technology
V-Guide Bearing
Option Shown

Consult factory for Profile Rail option.
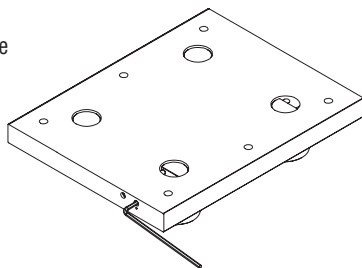
Email an Application Engineer
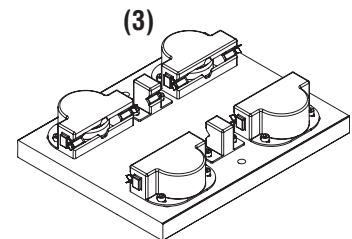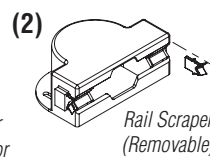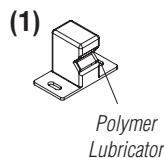

PRELOAD ADJUSTMENTS

Standard
Side (CAM) Adjustable

PATENTED

LUBRICATION ACCESSORIES

(1) Lube Holder
(2) Wheel Cover
(3) Wheel Cover & Lube Holder

(1) Polymer Lubricator
(2) Rail Scraper (Removable)
(3)

CARRIAGE ORDERING INFORMATION

IVT ABK C - A 2 X A 0

- **Integral V Technology**
- **Rail Type**
- **Carriage**
- **Carriage Type** A - Flat plate with taps
- **Roller Type** 2 - Sealed
- **Lubrication Options** 0 - No Lubrication / 1 - Lube Holder / 2 - Wheel Cover / 3 - Wheel Cover & Lube Holder
- **Preload Type** A - Side (CAM) screw adjustable
- **Carriage Length** 0 - Standard Length
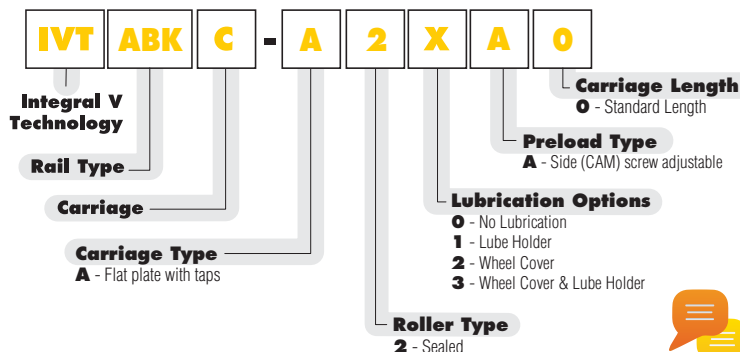
Note: Lubrication is highly recommended for IVT

Consult Factory • 800-962-8979

Consult factory for profile rail option.

IVT ABK Driven Systems

Bearing Options for All Drive Types
- Cam Roller Technology: V-Guide Bearings
- Profile Rail Technology: Profile Rail Guideways
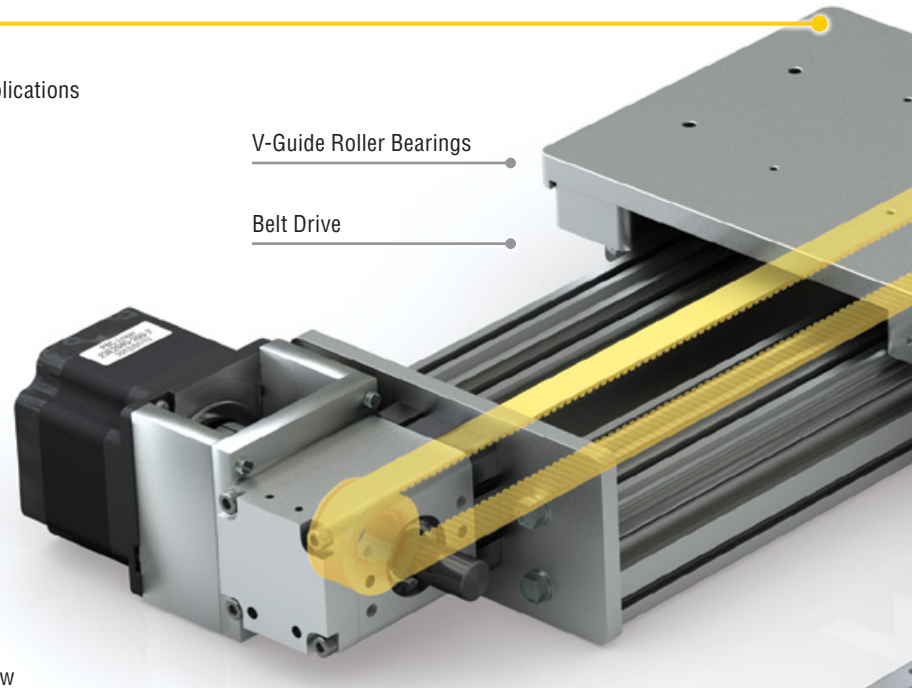
CRT: V-Guide Bearings

PRT: Profile Rail Guides

Belt Drive
- Ideal for use with V-Guide wheel bearings in high speed applications
- Performs well in contaminated environments
- PBC designed motor and idler ends
  – Can support a variety of design configurations
- Motor mount for Nema 23 and 34 (Nema 34 motor shown)
- Belt type: ATL 5 - 12 mm

V-Guide Roller Bearings

Belt Drive

Polymer Covers Protect Ball Screw

Ball Screw
- Rigid ball nut performance in high-precision applications
  – Ball screw diameters 16 - 25 mm
- Good for Z-axis and high thrust applications
- PBC designed motor and idler ends
  – Can support a variety of design configurations
- Motor mount for Nema 23 and 34 (Nema 34 motor shown)
- Optional polymer cover
- Lead screw with polymer nut option available

Profile Rail Guides

Ball Screw

Rack Drive
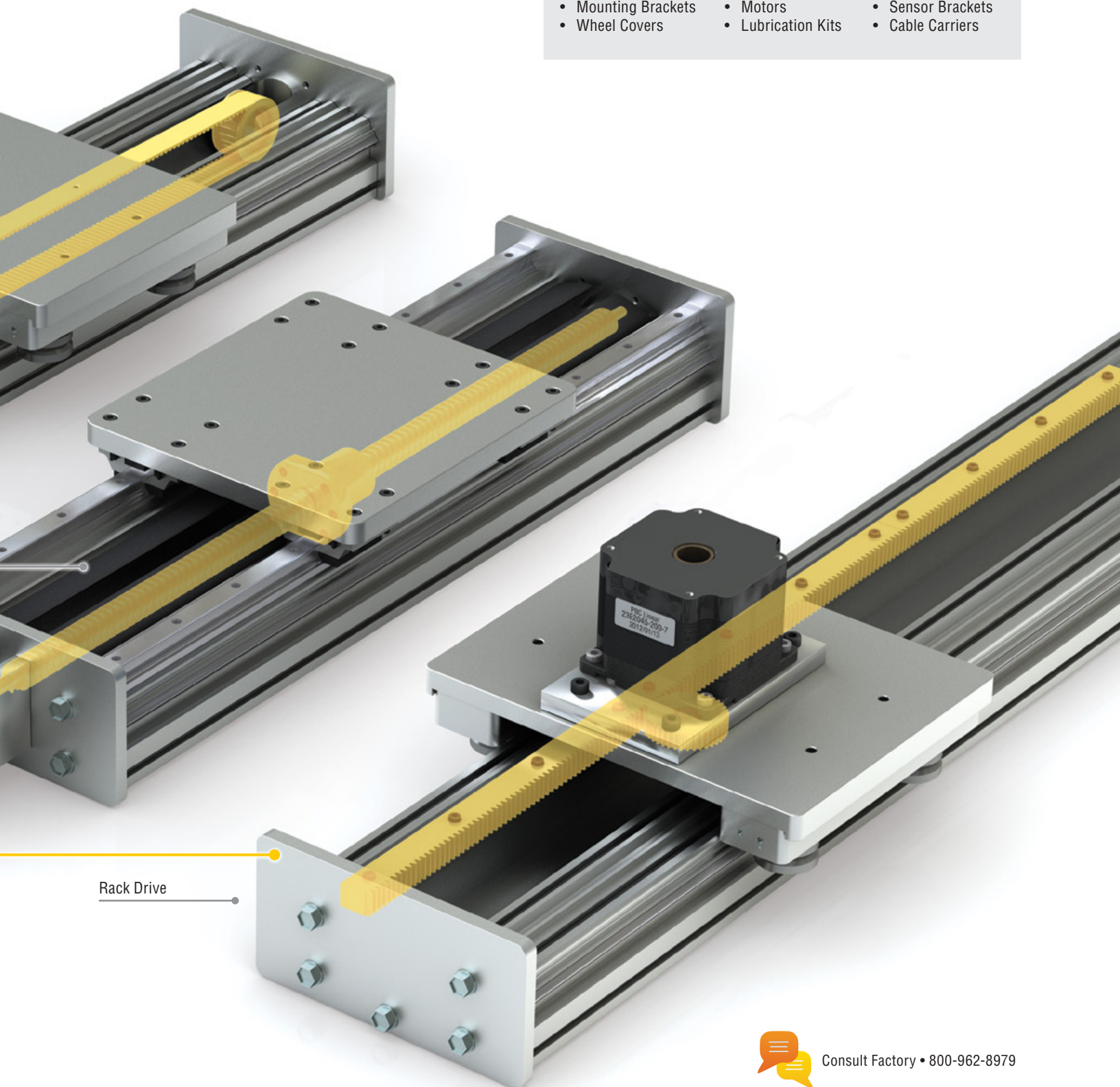- Ideal for extended long length travel
- Typical rack: RA12

Email an Application Engineer

Driven Systems **IVT ABK**

Drives & Accessories
- Belt Drive
- Mounting Brackets
- Wheel Covers
- Ball Screw
- Motors
- Lubrication Kits
- Rack Drive
- Sensor Brackets
- Cable Carriers

Rack Drive

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