

3.0 - Basic Structural Components:

III. Actuators

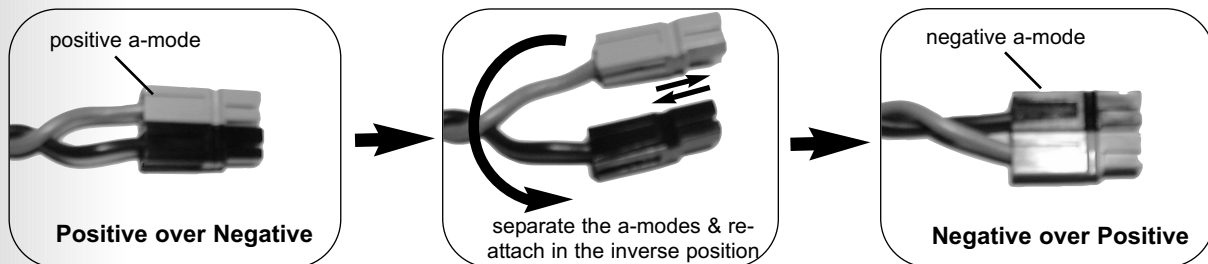
Motion Concept's uses power actuators to operate our TRx power positioning systems. Different actuators are used to perform different functions (i.e.; tilt, recline, elevate, etc.) depending on the size and configuration of the seating system. In order reduce confusion when wiring our systems, Motion Concepts uses color coded **a-mode connectors** to identify the actuator type/ function. The following table shows the typical color coding system:

A-Mode Connectors	Polarity	Actuator Type/ Function
Blue Black	Positive Negative	Tilt Actuator and/or Elevating Actuator
White Black	Positive Negative	Recline Actuator
Yellow Black	Positive Negative	Power Leg Actuator/ PSB ¹

Note that each actuator can be uniquely wired in order to achieve the appropriate motor function.

- i) If an actuator is wired 'positive over negative', this will create a *pushing* action (the actuator rod begins fully retracted and extends outward).
- ii) If an actuator is wired 'negative over positive', this will create a *pulling* action (the actuator rod begins fully extended and retracts inward).

By separating the a-mode connectors and reversing the orientation of the individual connectors, the 'push' actuator can become a 'pull' actuator. The **black** a-mode connector will always be **negative**, and the colored a-mode connector (**Blue, White, or Yellow**) will always be **positive**. See photos below illustrating the change from positive over negative to negative over positive using a Tilt Actuator (blue & black a-modes).



¹ Important! Certain legrest actuators and power sliding back (PSB) actuators can be manufactured with either a "left-handed" or "right-handed" motor. A left-handed motor will have **reverse polarity**, and will therefore be wired negative over positive.

A reference list of Motion Concepts actuators is provided in **Table 1.0 - Common Actuators** (p.26), and includes the typical application and the stroke length of our standard actuators. (**Note:** The stroke length of an actuator can vary depending on the type of actuator and is dictated by the seating system function for which it is required).

Tables 2A. and 2B. - System/ Actuator Matrix (p.27-28) serve as a reference matrix that identifies several of our common seating systems (sorted by base manufacturer and base type) along with their required **tilt actuator** and associated **rod end**.

For more information on rod ends, please also see **Section 5.0- XIII. Rod End Adjustments** (p.99)

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Table 1.0 - Common Actuators

Actuator	Type	Stroke	Gear Ratio ¹
TRA0042	Elevating	7" Lift	20:1
TRA0047	Elevating	8" Lift	20:1
TRB0311-7	Elevating	7" Lift	20:1
TRB0311-6	HD Elevating	6" Lift	20:1
TRA0192	Right Leg/ PSB*	5"	20:1
TRA0264	Left Leg	5"	20:1
TRA0235	Right Leg	6"	20:1
TRA0266	Left Leg	6"	20:1
TRA0205	Leg	7"	20:1
TRA0208	PSB* (right motor)	3"	20:1
TRA0265	PSB* (left motor)	3"	20:1
TRA0209	Leg/PSB*	4"	20:1
TRA0219	Leg	5"	20:1
TRA0378	Tilt	5"	20:1
TRA0440	Tilt	4"	20:1
TRA0458	Recline	3"	40:1
TRA0489	Tilt	5"	40:1
TRA0547	Tilt	2"	40:1
TRA0548	Tilt	3"	40:1
TRA0564	Recline	6"	40:1
TRA0571	Tilt	3"	40:1
TRA0572	Tilt	7"	40:1
TRA0602	Tilt	6"	40:1
TRA0660	Tilt	4"	40:1
TRC0384	Left Leg	6"	20:1
TRC0385	Right Leg	6"	20:1

PSB- Power Sliding Back

¹ **Note-** the higher the gear ratio, the more powerful the push or pull action of the actuator.

Actuator Types:



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Table 2A. - System/ Actuator Matrix

<i>Powerbase</i>	<i>Seating System</i>	<i>Actuator</i>	<i>Rod End</i>	<i>Stroke</i>
Invacare				
3G Storm	Tilt Classic	TRA0378	2.50"	5"
3G Storm	Super Low	TRA0378	2.00"	5"
3G Storm	CG Tilt Kit	TRA0548	2.50"	3"
3G Storm	CG Tilt Kit GB	TRA0548	2.50"	3"
3G Storm	J-11 CG System	TRA0602	2.00"	6"
3G Storm	J-14 System	TRA0489	2.50"	5"
3G Storm	Low Pro	TRA0660	1.75"	4"
3G Storm	Ultra Low 5"	TRA0489	2.00"	5"
3G Storm	Ultra Low 7"	TRA0572	1.75"	7"
M94	Low Pro	TRA0660	1.75"	4"
M94	Low Pro Bariatric	TRA0489	2.25"	5"
M94	Ultra Low 5"	TRA0489	2.00"	5"
M94	Ultra Low 7"	TRA0572	1.75"	7"
M94	Ultra Low Bariatric	TRA0572	1.75"	7"
M91	Super Low	TRA0660	2.25"	4"
M91	J-14 System	TRA0489	2.50"	5"
M91	J-14 Medium System	TRA0548	3.25"	3"
M91	Low Pro	TRA0660	1.75"	4"
M91	Ultra Low 5"	TRA0489	2.00"	5"
M91	Ultra Low 7"	TRA0572	1.75"	7"
M71	J-14 System	TRA0489	2.50"	5"
M71	J-14 Medium System	TRA0548	3.25"	3"
M71	Ultra Low 5"	TRA0489	2.00"	5"
M71	Ultra Low 7"	TRA0572	1.75"	7"
TDX	Super Low	TRA0660	2.00"	4"
TDX	CG Low Pro	TRA0548	2.25"	3"
TDX	Ultra Low 5"	TRA0489	2.00"	5"
TDX	Ultra Low 7"	TRA0572	1.75"	7"
TDX Pediatric	CG Low Pro	TRA0547	2.50"	2"
TDX	J-14 System	TRA0489	2.50"	5"
TDX	J-14 Medium System	TRA0548	3.25"	3"
Power Tiger	Tilt Interface Kit	TRA0660	2.50"	4"
X-Terra	J-11 CG System	TRA0602	2.25"	6"
Lateral Tilt Storm	Side Tilt System	TRA0547	1.75"	2"
Lateral Tilt TDX	Side Tilt System	TRA0547	2.00"	2"
Latitude	Scooper System	TRA0489	1.75"	5"
Solara	CG Tilt	TRA0660	contact MC	4"

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Table 2B. - System/ Actuator Matrix

Pride Mobility				
Jazzy 1420	Super Low	TRA0660	1.75"	4"
Jazzy 1420	Ultra Low 5"	TRA0489	2.00"	5"
Jazzy 1420	Ultra Low 7"	TRA0572	1.75"	7"
Jazzy 1400	J-14 System	TRA0489	2.50"	5"
Jazzy 1400	Ultra Low 5"	TRA0489	2.00"	5"
Jazzy 1400	Ultra Low 7"	TRA0572	1.75"	7"
Jazzy 1122	J-11 CG System	TRA0602	2.00"	6"
Jazzy 1122	Super Low	TRA0660	1.75/2.75"	4"
Jazzy 1122	Low Pro	TRA0660	1.75"	4"
Jazzy 1122	Ultra Low 5"	TRA0489	2.00"	5"
Jazzy 1122	Ultra Low 7"	TRA0572	1.75"	7"
Jazzy 1113	CG Tilt	TRA0489	2.50"	5"
Jazzy 1113	J-14 Medium System	TRA0548	3.25"	3"
Jazzy 1121	Super Low	TRA0660	1.75"	4"
Jazzy 1121	CG Tilt	TRA0489	2.50"	5"
Quantum Blast	J-14 CG System	TRA0489	2.50"	5"
Quantum Blast	Super Low	TRA0660	1.75"	4"
Quantum Blast	Ultra Low 5"	TRA0489	2.00"	5"
Quantum Blast	Ultra Low 7"	TRA0572	1.75"	7"
Jazzy 1650	J-14 CG System	TRA0489	2.50"	5"
Jazzy 1650	Ultra Low 5"	TRA0489	2.00"	5"
Jazzy 1650	Ultra Low 7"	TRA0572	1.75"	7"
Jazzy 1650 Barriatric	Single Pivot Tilt	TRA0383	Old Gold Style	4"
Quickie/ Sunrise Medical				
Sunrise 525	CG Tilt	TRA0548	2.75"	3"
525 Lateral Tilt	Scooper System	TRA0548	1.75"	3"
626/646 Barriatric	Low Pro	TRA0489	2.25"	5"
626/646	Low Pro	TRA0660	1.75"	4"
626/646	J-11 CG System	TRA0602	2.00"	6"
Sunrise 626 (old Style)	CG Tilt	TRA0571	2.25"	3"
Sunrise 424	CG Tilt System	TRA0571	3.00"	3"
Sunrise P220/222	CG Tilt System	TRA0602	2.00"	6"
Sunrise P220/222	Super Low	TRA0660	4.00"	4"
Sunrise P220/222	Ultra Low 5"	TRA0489	2.00"	5"
Sunrise P220/222	Ultra Low 7"	TRA0572	1.75"	7"
Sunrise P320	CG Tilt System	TRA0660	2.75"	4"
Recline(J11, J14)	J11/J14 T/R System	TRA0564	2.00"	6"
Low Pro/ULT Recline	LP/ULT T/R System	TRA0489	3.88"	5"