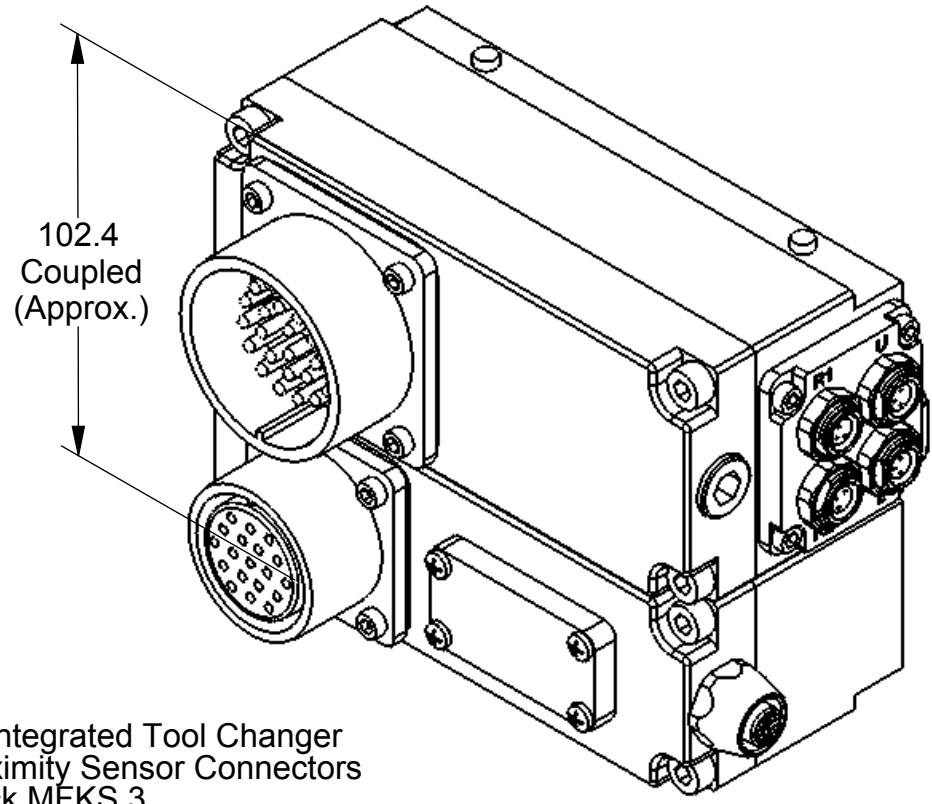
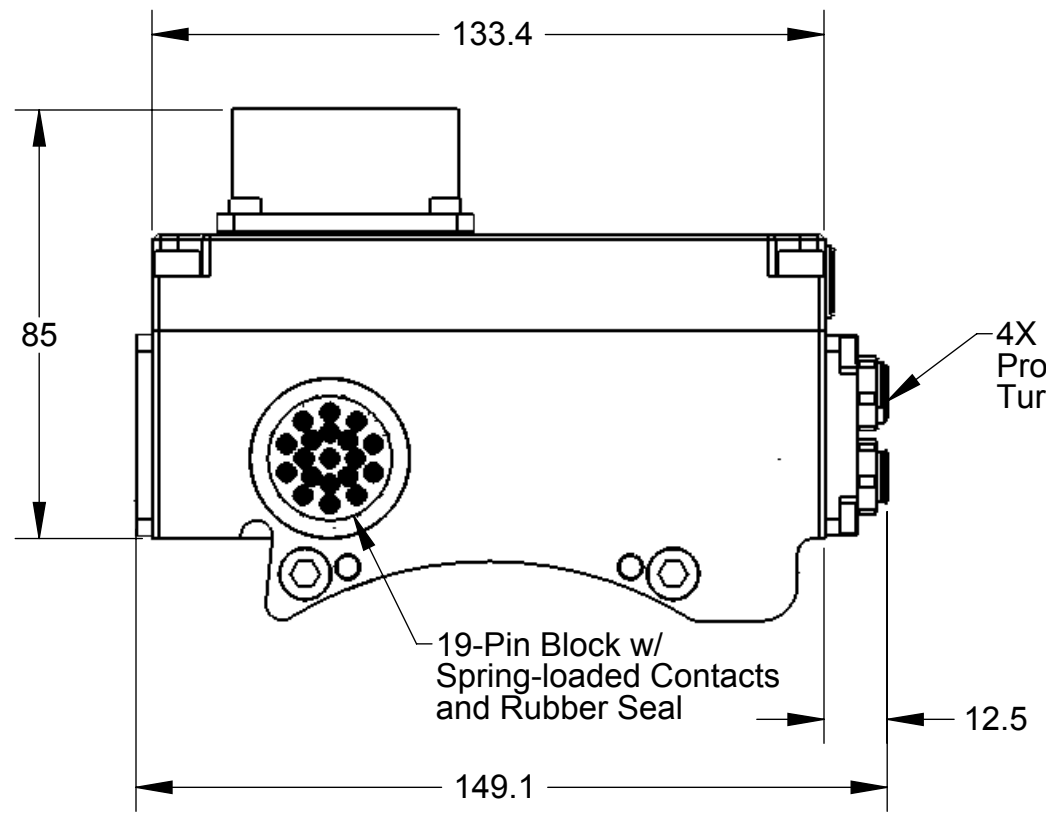
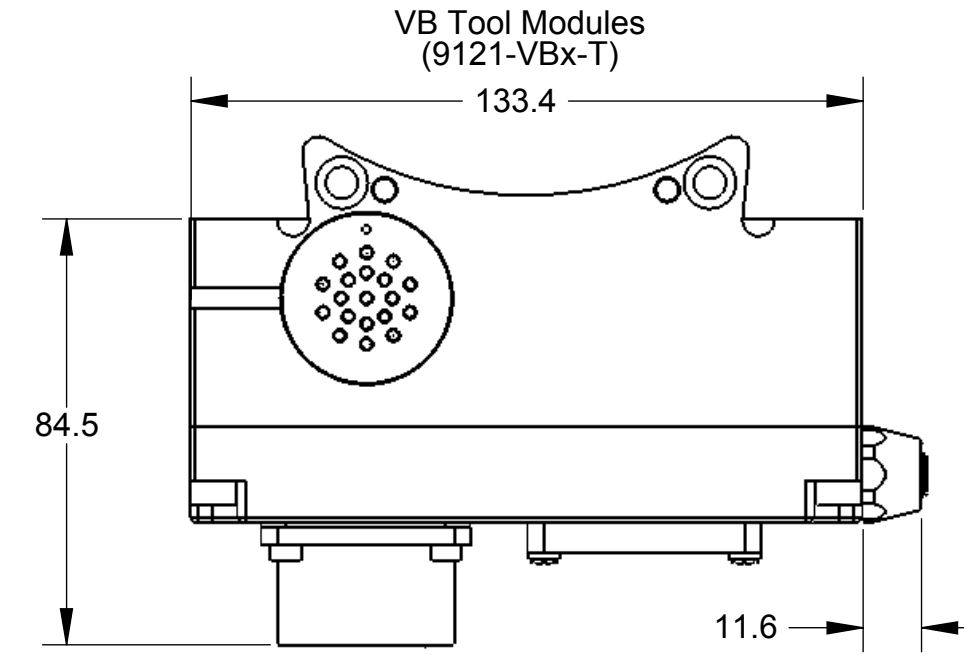
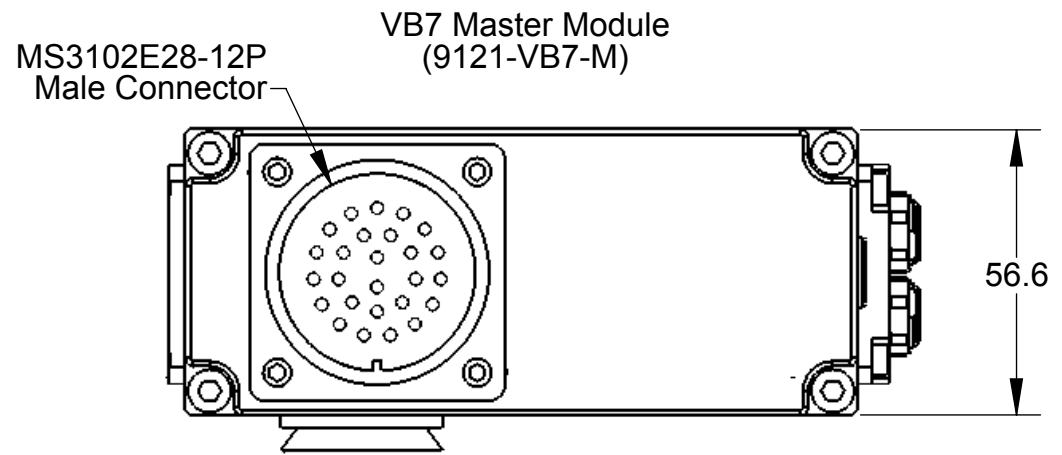


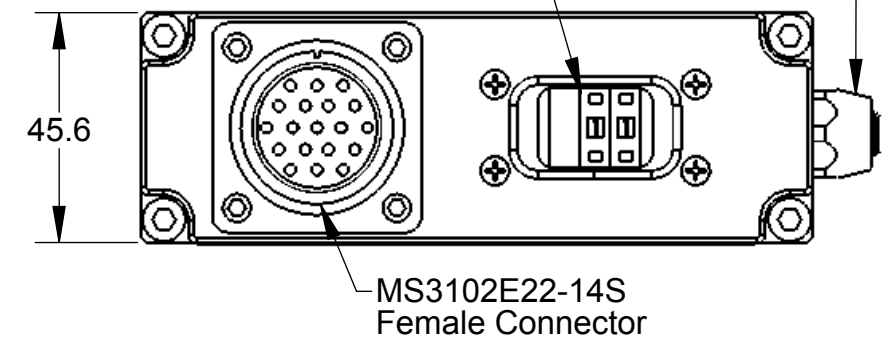
**" DANGER! - For electrical modules using > 60VDC or 42 VAC, NO contact should be attempted before removing power. This especially includes separation or insertion of the mating connectors or any contact with the tool changer or its components."**

Rev.	Description	Initiator	Date
02	Eco 12206; Replaced Sensor Input Connector, Input Plate, O-ring with PCB Sensor Connector Assembly. Changed dim 142.9 to 149.1; Added dim 12.5	CF	7/31/2014



TSI Connector 4-Pin M12 Female Turck FK4.4-0.5/18.25

Tool ID Switches Accessible Through Window (If Applicable, Window Not Shown for Clarity) VB4-T Shown Here



4X Integrated Tool Changer Proximity Sensor Connectors Turck MFKS 3

- Sheet Configurations**
- Sheet 1: VB7 Dimensions
  - Sheet 2: VB7 Valve and Sensor Connection Details and Serviceable Parts
  - Sheet 3: VB7 Master with VB2 Tool
  - Sheet 4: VB7 Master with VB3 Tool (0-9 Tool ID)
  - Sheet 5: VB7 Master with VB4 Tool (0-99 Tool ID)

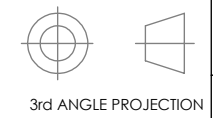
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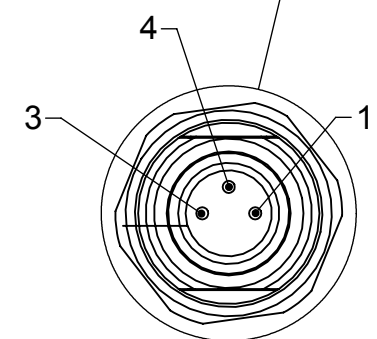
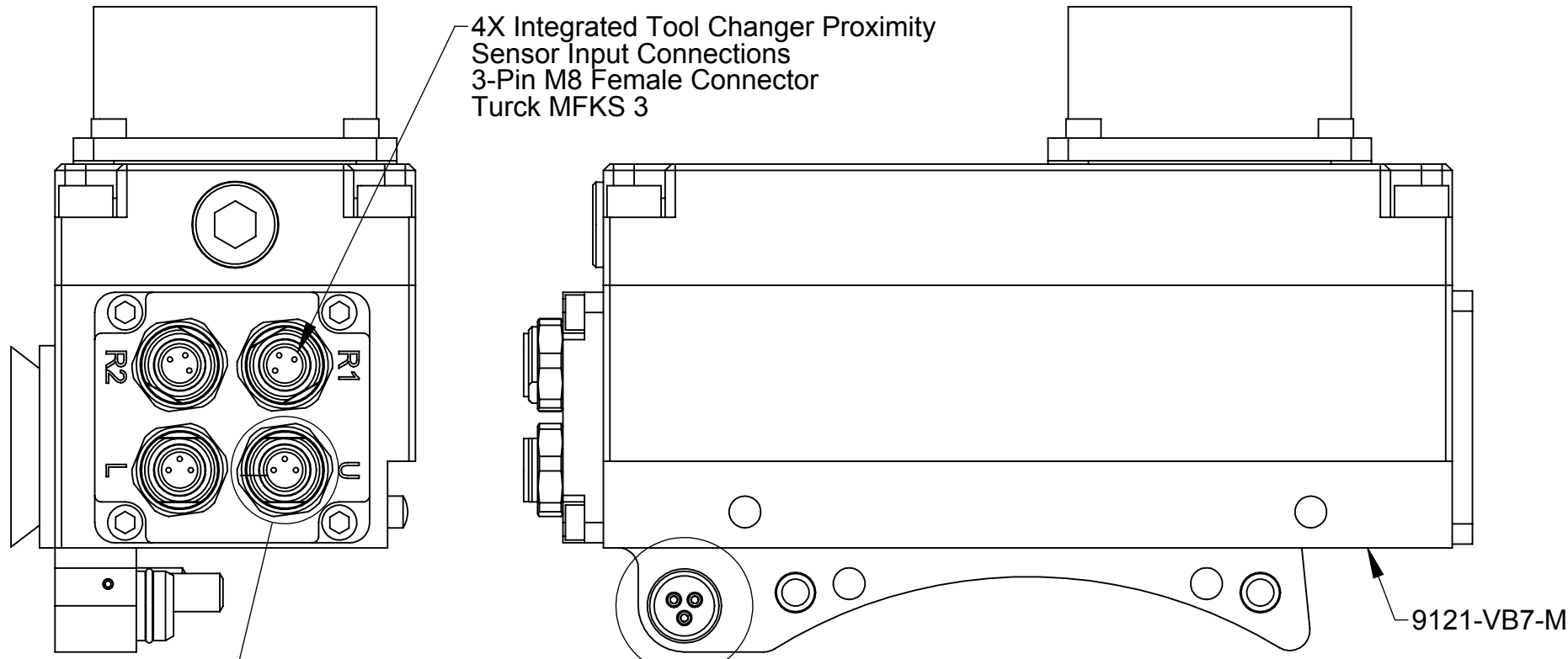
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DRAWN BY: W. Berrocal, 4/2/09		TITLE	
CHECKED BY: B. Digeso, 4/3/09		VB7 Family Module Drawing	
PROJECT # 090114-2	SHEET 1 OF 5	SCALE 1:2	SIZE B
DRAWING NUMBER 9630-20-VB7 Family		REVISION 02	

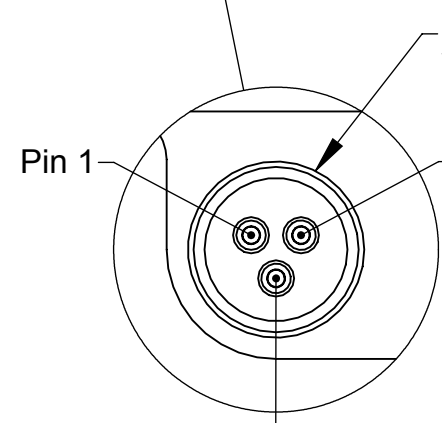
Rev.	Description	Initiator	Date
-	See Sheet1	-	-

### VB7 Family Serviceable Parts



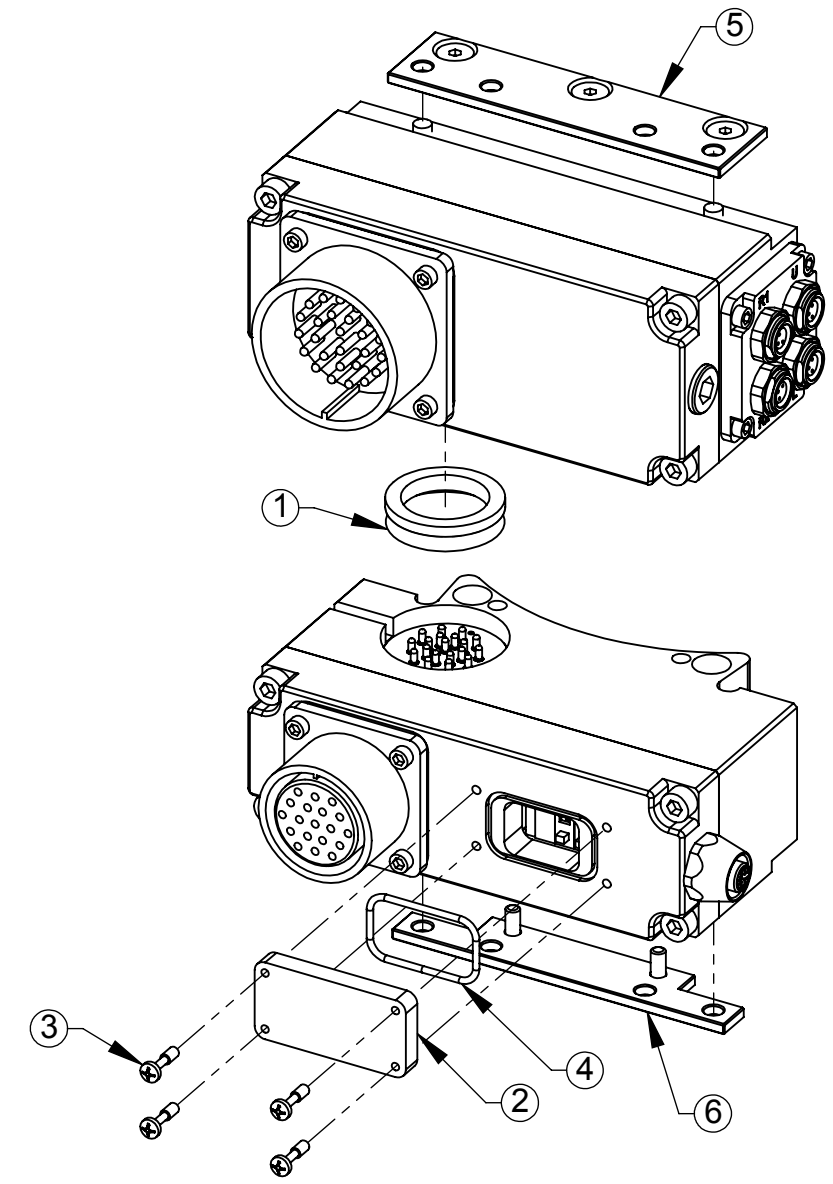
DETAIL B  
SCALE 2 : 1

Sensor Connector Wiring (Typical)	
Pin	Signal
1	V+ (24 VDC)
3	0 VDC
4	Input



DETAIL A  
SCALE 2 : 1

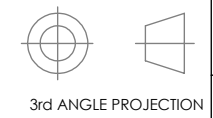
Internal Valve Connection		
Pin 1	V+	Unlock Output
Pin 3	V-	Common
Pin 4	V+	Lock Output



ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	1	4010-0000030-01	V-Ring Seal
2	1	3700-20-2696	Thick Window for DP/DE45 Master
3	4	3500-9957012-21	CAPTIVE SCREW M3 X 12 SLOTTED HEAD SS
4	1	3410-0001092-01	O-ring AS568-023
5	1	9005-20-1198	Master Cleat Sub-Assembly
6	1	9005-20-1199	Tool Cleat Sub-Assembly

NOTES: UNLESS OTHERWISE SPECIFIED.

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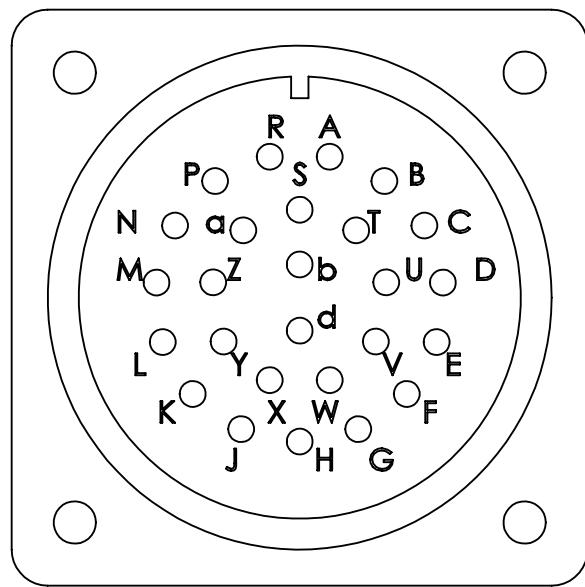


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CHECKED BY: B. Digeso, 4/3/09		VB7 Family Module Drawing	
SCALE	SIZE	DRAWING NUMBER	REVISION
1:2	B	9630-20-VB7 Family	02
PROJECT # 090114-2 SHEET 2 OF 5			

VB7-M  
Master Side  
(MS3102E28-12P)



**VB7 Master with VB2 Tool**

VB7 to VB2 Pin Out

VB7 Master MS3102E28-12P Male Connector	VB2 Tool MS3102E22-14S Female Connector
---	---

0 VDC Reference	A ----- >> ----- A	0 VDC Reference
+24 VDC	B ----- >> ----- B	+24 VDC
available	C ----- >> ----- C	available
available	D ----- >> ----- D	available
available	E ----- >> ----- E	available
available	F ----- >> ----- F	available
available	G ----- >> ----- G	available
available	H ----- >> ----- H	available
available	J ----- >> ----- J	available
available	K ----- >> ----- K	available
available	L ----- >> ----- L	available
available	M ----- >> ----- M	available
available	N ----- >> ----- N	available
available	P ----- >> ----- P	available
available	R ----- >> ----- R	available
available	S ----- >> ----- S	available
not available	T	not available
not available	U	not available
not available	V	not available
Lock O/P	W	
Unlock O/P	X	
RTL V I/P	Y	
RTL #1 I/P	Z	4
RTL #2 I/P	a	3
Lock I/P	b	2
Unlock I/P	d	1

**Controller Outputs**

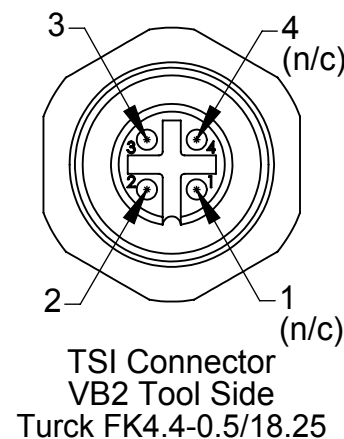
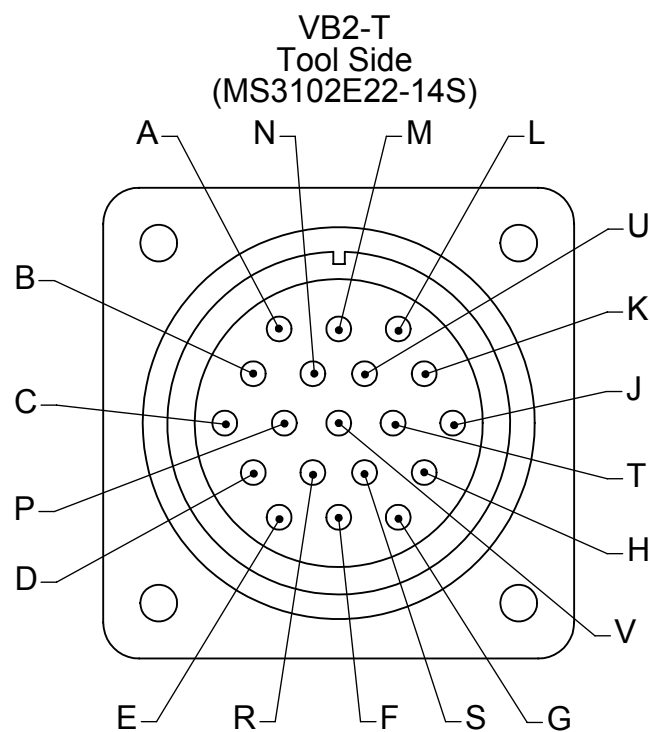
Pin	Signal	Description
A	0 VDC	Voltage Reference
B	24 VDC	Voltage Supply
X	24 VDC	Unlock Solenoid Supply
W	24 VDC	Lock Solenoid Supply (Double Solenoid)

**Controller Inputs**

Pin	Signal	Description
Y	RTL V	RTL Verify Input
Z	RTL #1	Ready-To-Lock Input #1
a	RTL #2	Ready-To-Lock Input #2
b	Lock	Tool Changer Lock Input
d	Unlock	Tool Changer Unlock Input

**TSI Connector  
4-Pin Eurofast Female**

4	N/C
3	TSI Out
2	TSI In
1	N/C



**Notes:**

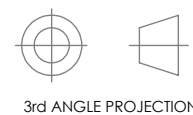
- Pin "A" on the MS connector is First-to-Mate Last-to-Break at the tool changer interface. This pin is recommended for use as 0 VDC / ground reference.
- Large views of connectors are 1.5:1 scale.

**Tool Stand Interlock (TSI) Operation:**

- A hard-wired break in the Valve Unlock Output is provided on the tool module via the 4-pin Eurofast connector. It is suggested that the customer integrate a single throw, double pole (NO, spring return) limit switch to work with this feature. The limit switch should be mounted to the end effector in such a way that the switch is "made" only when the tool is in the stand or storage location.
- The RTL sensor is very important to this TSI feature and therefore should be monitored for failure. RTL V Input is available for fault monitoring of this circuit. Please consult the product manual for operation and fault monitoring suggestions.
- Limit switches, trip dogs and cabling are also available from ATI.

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CHECKED BY: B. Digeso, 4/3/09		VB7 Family Module Drawing	
PROJECT #	090114-2	SHEET	OF 5
SCALE	1:2	SIZE	B
DRAWING NUMBER	9630-20-VB7 Family		REVISION
			02

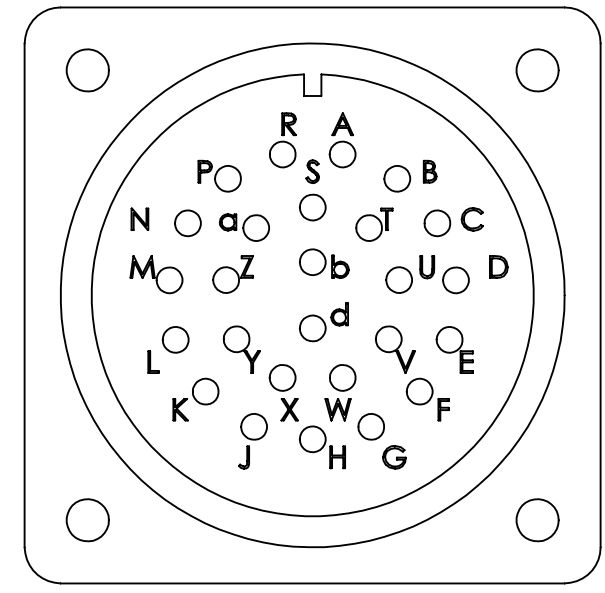


### VB7 Master with VB3 Tool (0-9 Tool ID)

#### VB7 to VB3 Pin Out

VB7 Master	VB3 Tool
MS3102E28-12P	MS3102E22-14S
Male Connector	Female Connector

VB7-M  
Master Side  
(MS3102E28-12P)



0 VDC Reference	A ----- >> ----- A	0 VDC Reference
+24 VDC available	B ----- >> ----- B	+24 VDC available
available	C ----- >> ----- C	available
available	D ----- >> ----- D	available
available	E ----- >> ----- E	available
available	F ----- >> ----- F	available
available	G ----- >> ----- G	available
available	H ----- >> ----- H	available
available	J ----- >> ----- J	available
available	K ----- >> ----- K	available
available	L ----- >> ----- L	available
available	M ----- >> ----- M	available
Tool ID, Bit Value 8	N ----- >> ----- N	not available
Tool ID, Bit Value 4	P ----- >> ----- P	not available
Tool ID, Bit Value 2	R ----- >> ----- R	not available
Tool ID, Bit Value 1	S ----- >> ----- S	not available
not available	T ----- >> ----- T	not available
not available	U ----- >> ----- U	not available
not available	V ----- >> ----- V	not available
Lock O/P	W ----- >> ----- W	
Unlock O/P	X ----- >> ----- X	
RTL V I/P	Y ----- >> ----- Y	
RTL #1 I/P	Z ----- >> ----- Z	4 N/C
RTL #2 I/P	a ----- >> ----- a	3 TSI Out
Lock I/P	b ----- >> ----- b	2 TSI In
Unlock I/P	d ----- >> ----- d	1 N/C

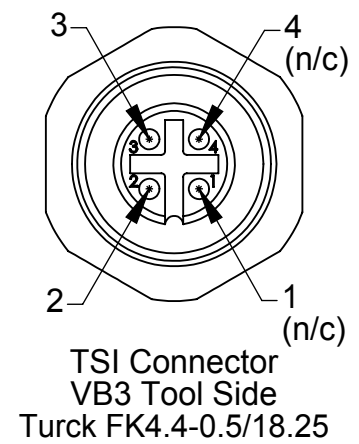
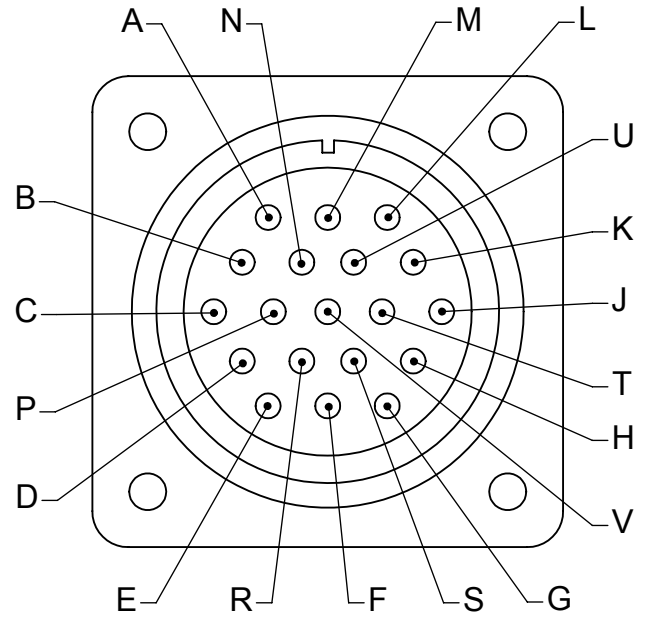
**Tool ID Output**

Switch 1	Pin "N"	Pin "P"	Pin "R"	Pin "S"
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1

**Controller Outputs**

Pin	Signal	Description
A	0 VDC	Voltage Reference
B	24 VDC	Voltage Supply
X	24 VDC	Unlock Solenoid Supply
W	24 VDC	Lock Solenoid Supply (Double Solenoid)

VB3-T  
Tool Side  
(MS3102E22-14S)



**Controller Inputs**

Pin	Signal	Description
N	Tool ID	Bit Value 8 (See Table)
P	Tool ID	Bit Value 4 (See Table)
R	Tool ID	Bit Value 2 (See Table)
S	Tool ID	Bit Value 1 (See Table)
Y	RTL V	RTL Verify Input
Z	RTL #1	Ready-To-Lock Input #1
a	RTL #2	Ready-To-Lock Input #2
b	Lock	Tool Changer Lock Input
d	Unlock	Tool Changer Unlock Input

**Notes:**

- Pin "A" on the MS connector is First-to-Mate Last-to-Break at the tool changer interface. This pin is recommended for use as 0 VDC / ground reference.
- The common for Tool ID is tied into the 24VDC line (Pin B). The Tool ID switches are Rated for service at 50V and 100 mA max. Refer to the Tool ID table for switch setup information.
- Large views of connectors are 1.5:1 scale.

**Tool Stand Interlock (TSI) Operation:**

- A hard-wired break in the Valve Unlock Output is provided on the tool module via the 4-pin Eurofast connector. It is suggested that the customer integrate a single throw, double pole (NO, spring return) limit switch to work with this feature. The limit switch should be mounted to the end effector in such a way that the switch is "made" only when the tool is in the stand or storage location.
- The RTL sensor is very important to this TSI feature and therefore should be monitored for failure. RTL V Input is available for fault monitoring of this circuit. Please consult the product manual for operation and fault monitoring suggestions.
- Limit switches, trip dogs and cabling are also available from ATI.

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<p>PROJECT # 090114-2 SHEET 4 OF 5</p>	<p>SCALE 1:2</p> <p>SIZE B</p>	<p>DRAWING NUMBER</p> <p style="font-weight: bold;">9630-20-VB7 Family</p>
		<p>REVISION</p> <p style="text-align: right; font-weight: bold;">02</p>

### VB7 Master with VB4 Tool (0-99 Tool ID)

#### VB7 to VB4 Pin Out

VB7 Master MS3102E28-12P Male Connector	VB4 Tool MS3102E22-14S Female Connector
---	---

0 VDC Reference	A ----- >> ----- A	0 VDC Reference
+24 VDC available	B ----- >> ----- B	+24 VDC available
available	C ----- >> ----- C	available
available	D ----- >> ----- D	available
available	E ----- >> ----- E	available
available	F ----- >> ----- F	available
available	G ----- >> ----- G	available
available	H ----- >> ----- H	available
Tool ID, Bit Value 8	J ----- >> ----- J	not available
Tool ID, Bit Value 4	K ----- >> ----- K	not available
Tool ID, Bit Value 2	L ----- >> ----- L	not available
Tool ID, Bit Value 1	M ----- >> ----- M	not available
Tool ID, Bit Value 8	N ----- >> ----- N	not available
Tool ID, Bit Value 4	P ----- >> ----- P	not available
Tool ID, Bit Value 2	R ----- >> ----- R	not available
Tool ID, Bit Value 1	S ----- >> ----- S	not available
not available	T ----- >> ----- T	not available
not available	U ----- >> ----- U	not available
not available	V ----- >> ----- V	not available
Lock O/P	W ----- >> ----- W	
Unlock O/P	X ----- >> ----- X	
RTL V I/P	Y ----- >> ----- Y	
RTL #1 I/P	Z ----- >> ----- Z	4 N/C
RTL #2 I/P	a ----- >> ----- a	3 TSI Out
Lock I/P	b ----- >> ----- b	2 TSI In
Unlock I/P	d ----- >> ----- d	1 N/C

#### Tool ID Output

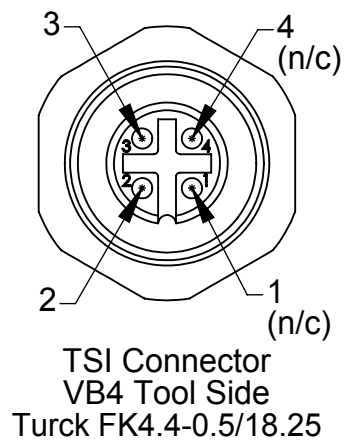
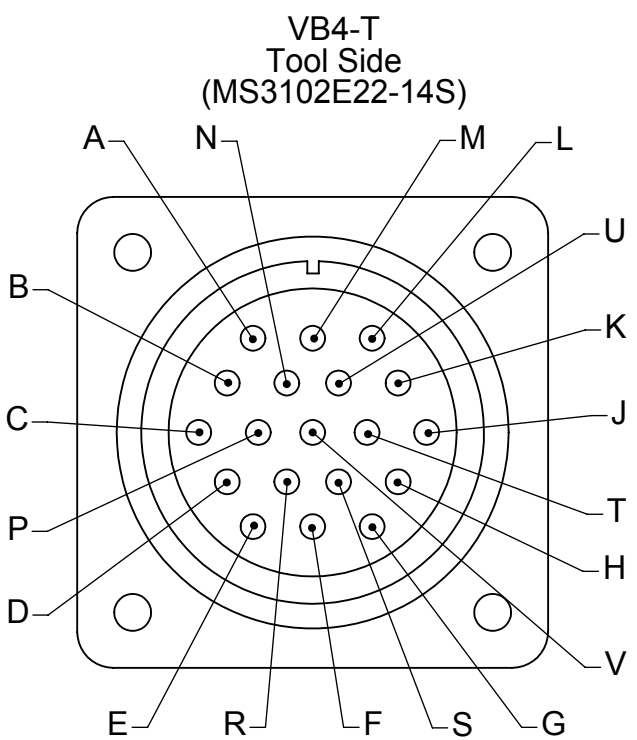
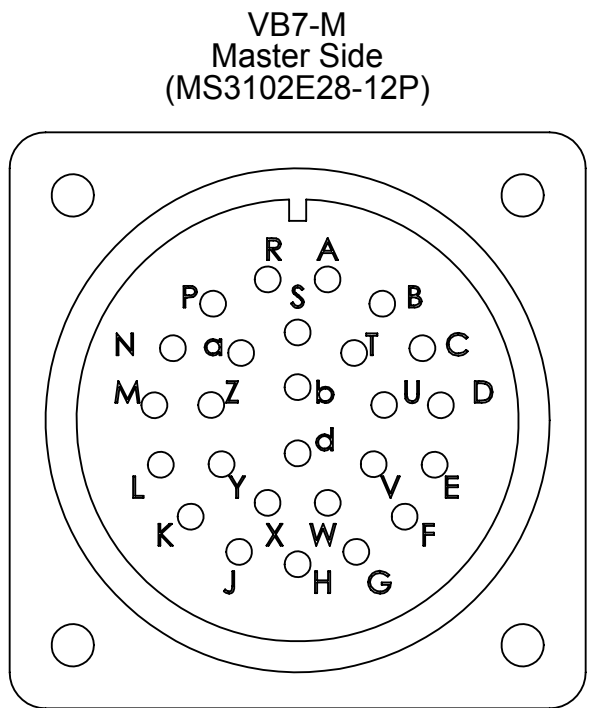
Position	Pin	Pin	Pin	Pin
Switch 2	"J"	"K"	"L"	"M"
Switch 1	"N"	"P"	"R"	"S"
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1

#### Controller Outputs

Pin	Signal	Description
A	0 VDC	Voltage Reference
B	24 VDC	Voltage Supply
X	24 VDC	Unlock Solenoid Supply
W	24 VDC	Lock Solenoid Supply (Double Solenoid)

#### Controller Inputs

Pin	Signal	Description
N	Tool ID	Bit Value 8 (See Table)
P	Tool ID	Bit Value 4 (See Table)
R	Tool ID	Bit Value 2 (See Table)
S	Tool ID	Bit Value 1 (See Table)
J	Tool ID	Bit Value 8 (See Table)
K	Tool ID	Bit Value 4 (See Table)
L	Tool ID	Bit Value 2 (See Table)
M	Tool ID	Bit Value 1 (See Table)
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Z	RTL #1	Ready-To-Lock Input #1
a	RTL #2	Ready-To-Lock Input #2
b	Lock	Tool Changer Lock Input
d	Unlock	Tool Changer Unlock Input



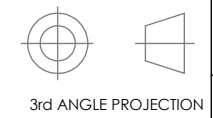
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CHECKED BY: B. Digeso, 4/3/09		VB7 Family Module Drawing	
PROJECT # 090114-2	SHEET 5 OF 5	SCALE 1:2	SIZE B
DRAWING NUMBER 9630-20-VB7 Family		REVISION 02	