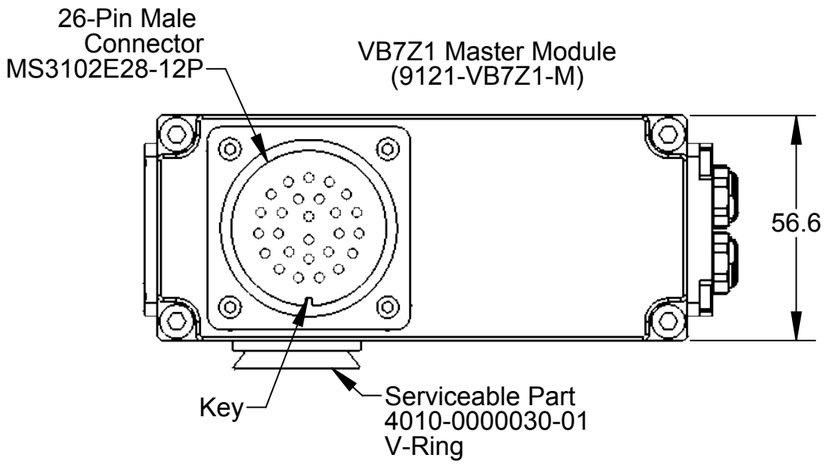
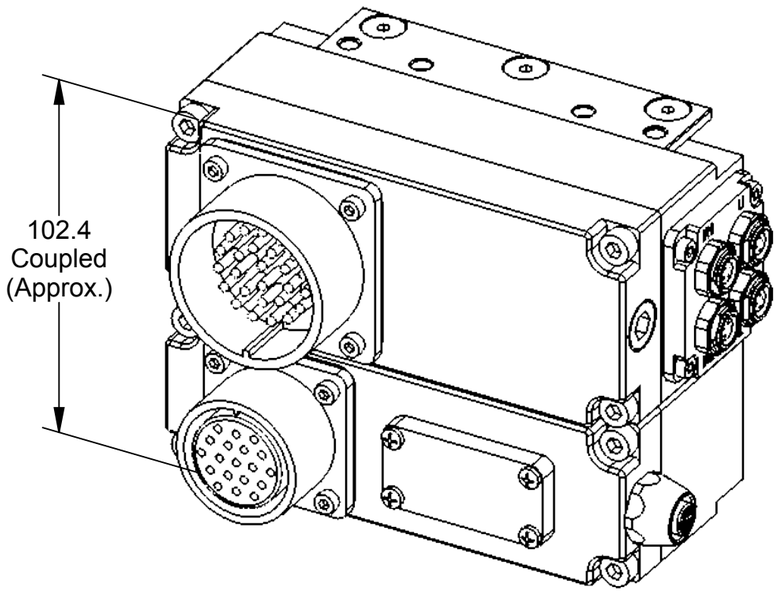
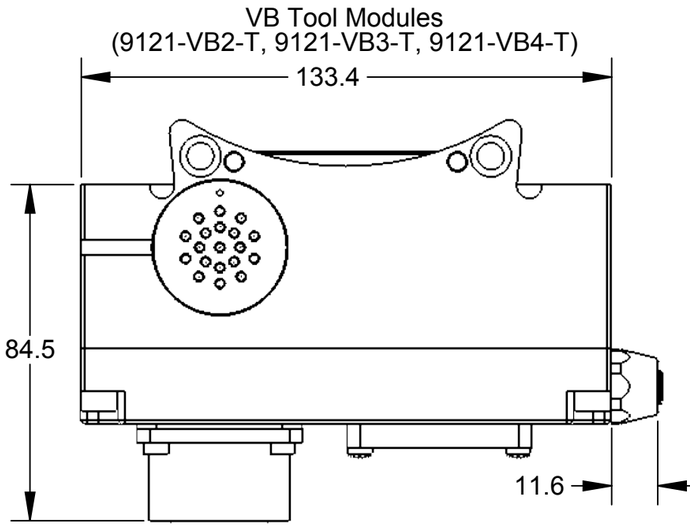
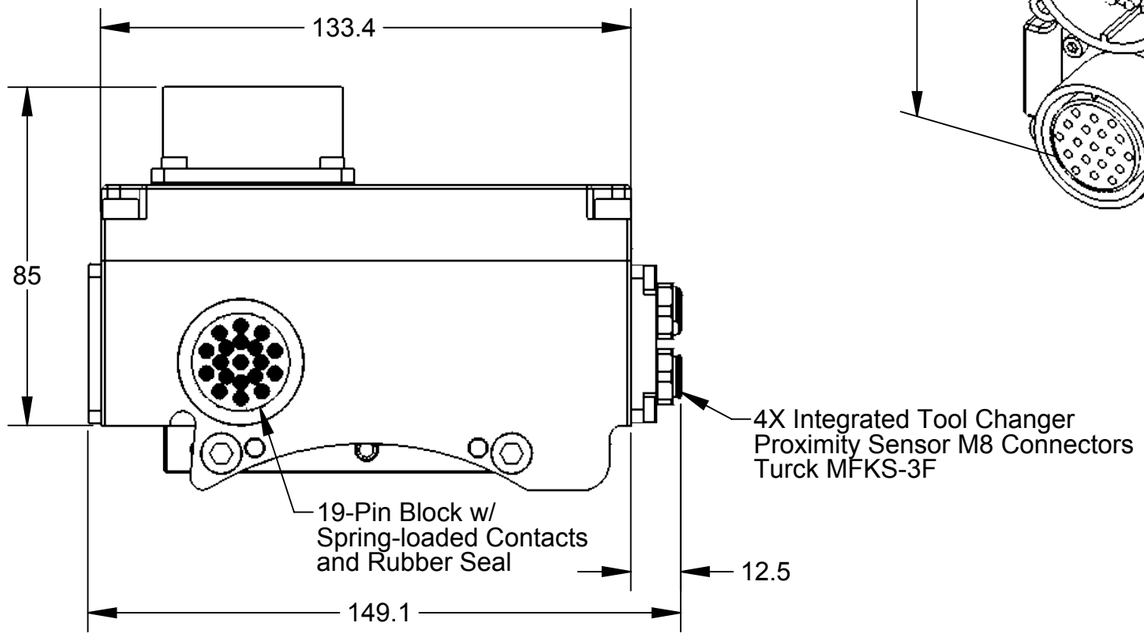
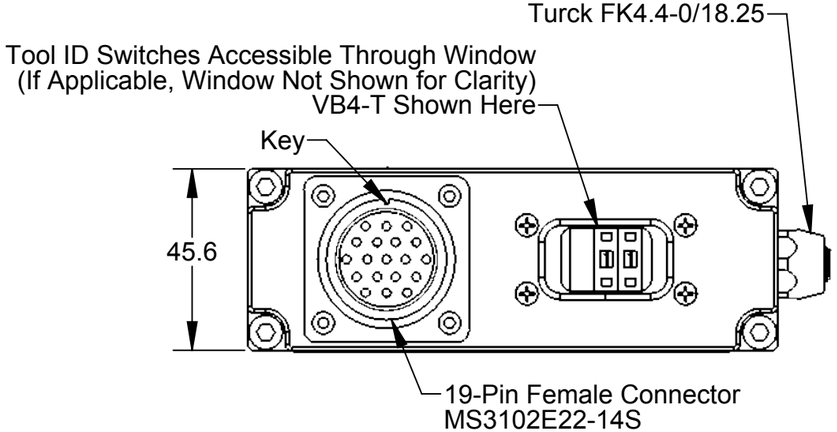
Rev.	Description	Initiator	Date
03	Eco 16876; Sht 4, corrected position of Latch/Unlatch and Lock/Unlock in the tables.	LJH	6/11/18











Sheet Configurations

Sheet 1: VB7Z1 Dimensions
Sheet 2: VB7Z1 Connector and Pin Block Details
Sheet 3: VB7Z1 Valve and Sensor Connection Details and Serviceable Parts
Sheet 4: VB7Z1 Wiring Schemes
Sheet 5: VB7Z1 Master with VB2 Tool
Sheet 6: VB7Z1 Master with VB3 Tool (0-9 Tool ID)
Sheet 7: VB7Z1 Master with VB4 Tool (0-99 Tool ID)

"DANGER!" - Electrical Shock Hazard

This module has a Voltage of 50V or greater, 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.

NOTES: UNLESS OTHERWISE SPECIFIED.

DO NOT SCALE DRAWING. ALL DIMENSIONS ARE IN MILLIMETERS.

3rd ANGLE PROJECTION

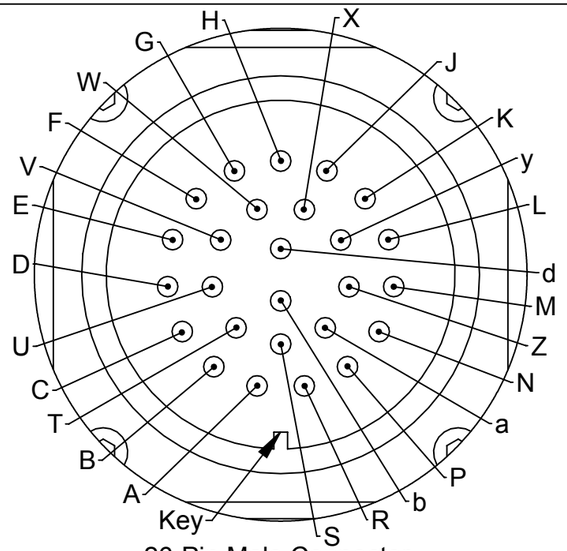
ATI INDUSTRIAL AUTOMATION

1031 Goodworth Drive, Apex, NC 27539, USA
Tel: +1.919.772.0115 Email: info@ati-ia.com
Fax: +1.919.772.8259 www.ati-ia.com
ISO 9001 Registered Company

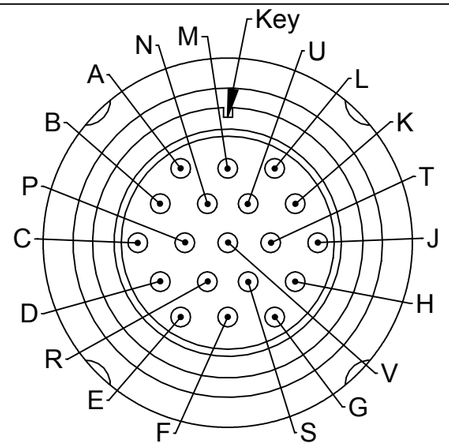
DRAWN BY: M.Newell, 7/9/15
CHECKED BY: J. Bunting, 7/28/15
D. Fleissner, 7/31/15
PROJECT # 150707-1 SHEET 1 OF 7

TITLE: VB7Z1 Customer Drawing

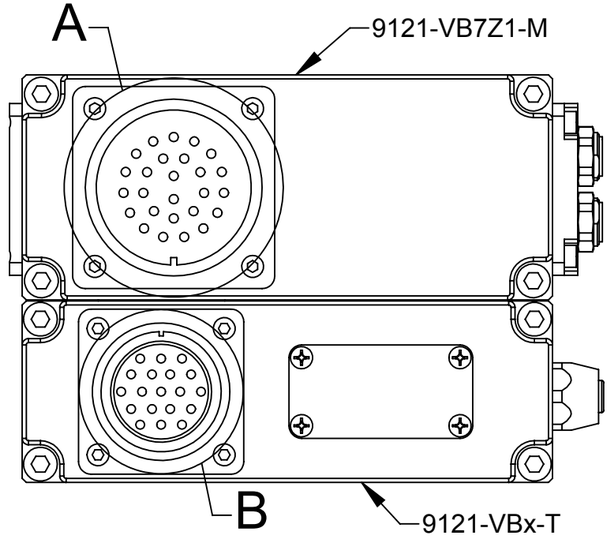
SCALE	SIZE	DRAWING NUMBER	REVISION
1:2	B	9630-20-VB7Z1 Family	03

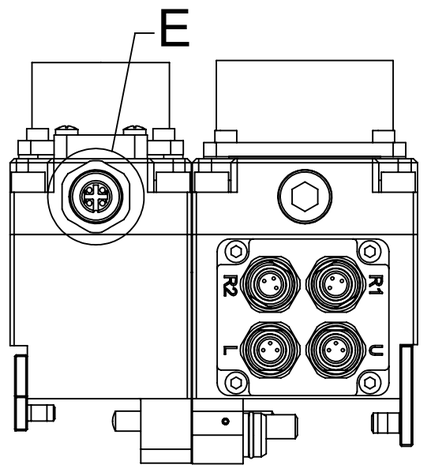


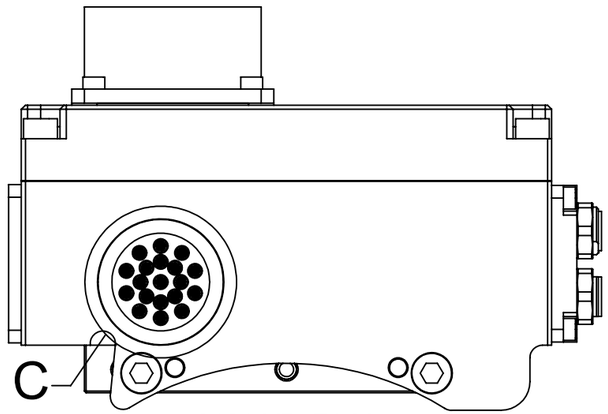
26-Pin Male Connector
DETAIL A
SCALE 1.5 : 1



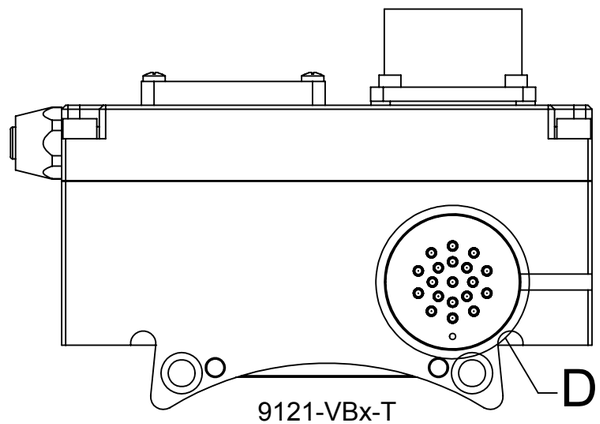
19-Pin Female Connector
DETAIL B
SCALE 1.5 : 1



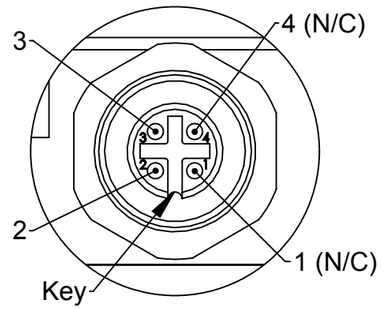




9121-VB7Z1-M



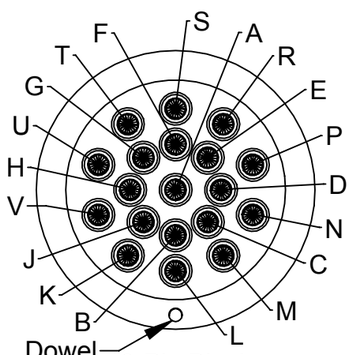
9121-VBx-T
Note 1



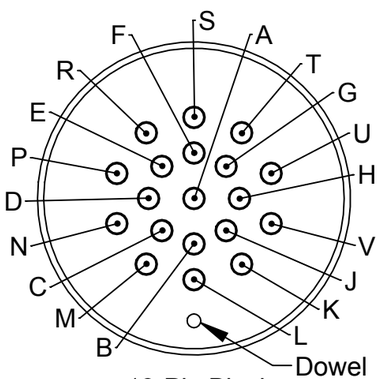
TSI Connector
Turck M12, 4-Pin Female
DETAIL E
SCALE 2 : 1

TABLE 1: TSI CONNECTOR

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



19-Pin Block
DETAIL C
SCALE 1.5 : 1



19-Pin Block
DETAIL D
SCALE 1.5 : 1

Note 1: Compatible Tool Modules, 9121-VB2-T, 9121-VB3-T, 9121-VB4-T

NOTES: UNLESS OTHERWISE SPECIFIED.

DO NOT SCALE DRAWING. ALL DIMENSIONS ARE IN MILLIMETERS.

3rd ANGLE PROJECTION

ATI INDUSTRIAL AUTOMATION

1031 Goodworth Drive, Apex, NC 27539, USA
Tel: +1.919.772.0115 Email: info@ati-ia.com
Fax: +1.919.772.8259 www.ati-ia.com
ISO 9001 Registered Company

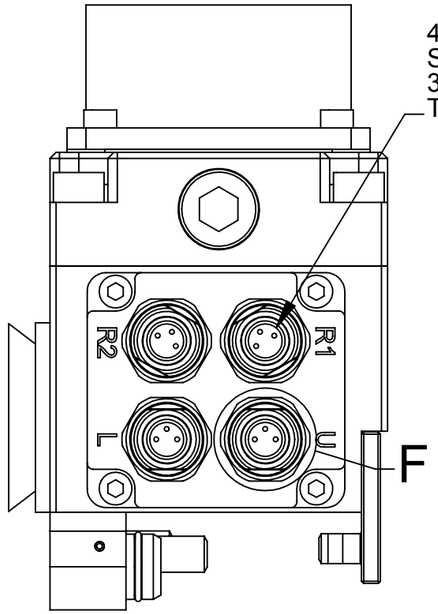
DRAWN BY: M.Newell, 7/9/15

CHECKED BY: J. Bunting, 7/28/15
D. Fleissner, 7/31/15

PROJECT # 150707-1 SHEET 2 OF 7

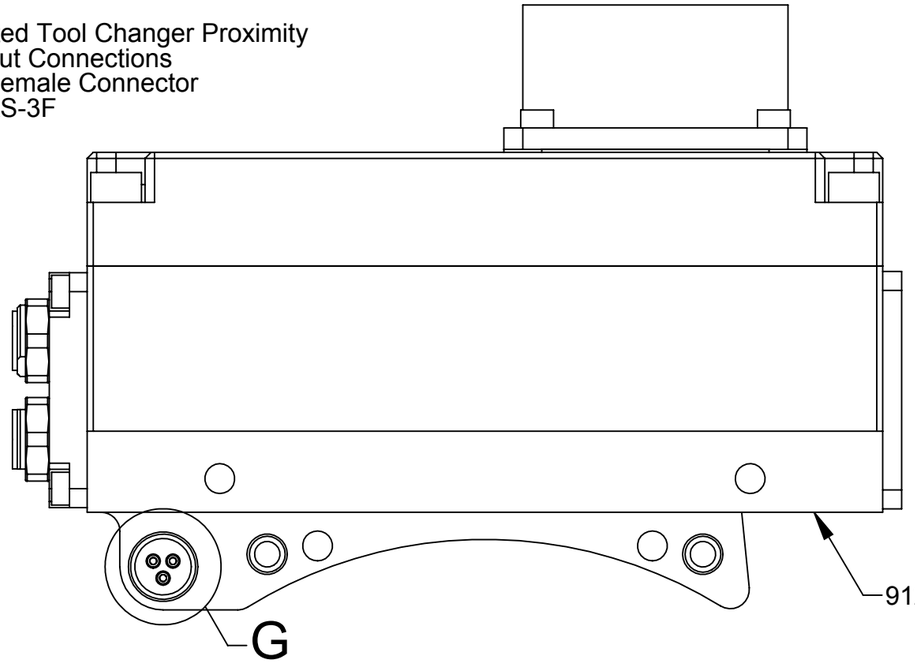
TITLE: VB7Z1 Customer Drawing

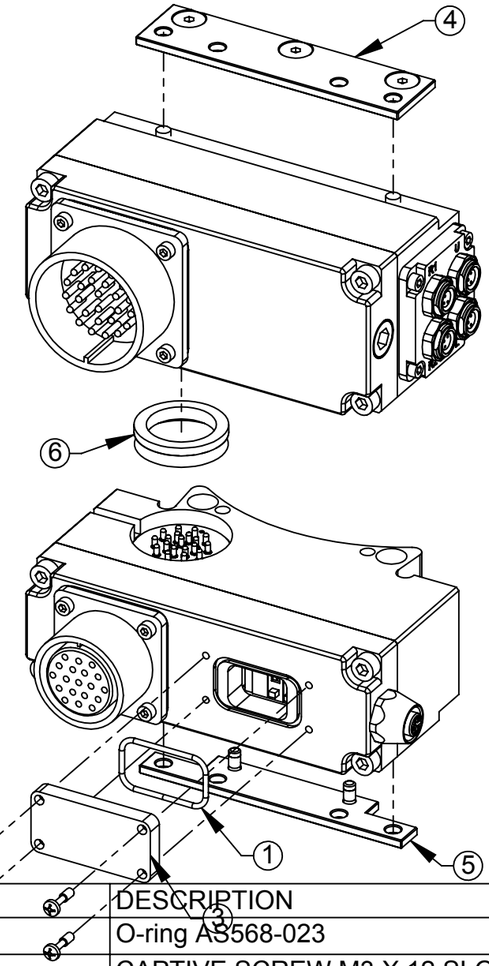
SCALE	SIZE	DRAWING NUMBER	REVISION
1:2	B	9630-20-VB7Z1 Family	03

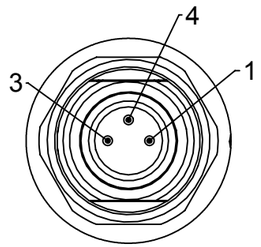


4X Integrated Tool Changer Proximity
Sensor Input Connections
3-Pin M8 Female Connector
Turck MFKS-3F

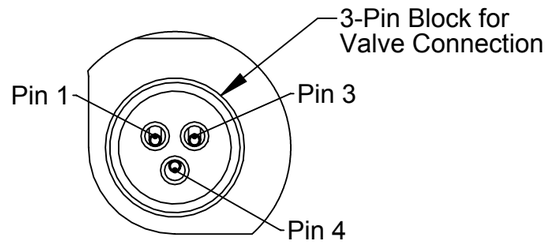
F







DETAIL F
SCALE 2 : 1



DETAIL G
SCALE 2 : 1

TABLE 2: SENSOR CONNECTOR WIRING

Pin 1	V+ (24VDC)
Pin 3	0 VDC
Pin 4	Input

TABLE 3: INTERNAL VALVE CONNECTION

Pin 1	V+	Unlatch Output
Pin 3	0V	Common
Pin 4	V+	Latch Output

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
1	1	3410-0001002-01	O-ring AS568-023
2	4	3500-9957012-21	CAPTIVE SCREW M3 X 12 SLOTTED HEAD SS
3	1	3700-20-2696	Thick Window for DP/DE45 Master
4	1	3700-20-4052	Master Cleat
5	1	3700-20-4053	Tool Cleat
6	1	4010-0000030-01	V-Ring Seal
67	19	1700-1140215-01	.125 Centers Probe, High conductivity Alloy/Gold Plated Tube, 0.25 Stroke, 5-Point Crown, 12 oz Spring Force

NOTES: UNLESS OTHERWISE SPECIFIED.

DO NOT SCALE DRAWING. ALL DIMENSIONS ARE IN MILLIMETERS.

3rd ANGLE PROJECTION

ATI INDUSTRIAL AUTOMATION
1031 Goodworth Drive, Apex, NC 27539, USA
Tel: +1.919.772.0115 Email: info@ati-ia.com
Fax: +1.919.772.8259 www.ati-ia.com
ISO 9001 Registered Company

DRAWN BY: M.Newell, 7/9/15
CHECKED BY: J. Bunting, 7/28/15
D. Fleissner, 7/31/15
PROJECT # 150707-1 SHEET 3 OF 7

TITLE: VB7Z1 Customer Drawing

SCALE	SIZE	DRAWING NUMBER	REVISION
1:2	B	9630-20-VB7Z1 Family	03

Rev.	Description	Initiator	Date
-	See Sheet1	-	-

TABLE 4: VB7Z1/VB2

Pin	26-Pin Male Connector Master Side	19-Pin Female Connector Tool Side
A	0 VDC	0 VDC
B	+24 VDC	+24 VDV
C	Available 1	Available 1
D	Available 2	Available 2
E	Available 3	Available 3
F	Available 4	Available 4
G	Available 5	Available 5
H	Available 6	Available 6
J	Available 7	Available 7
K	Available 8	Available 8
L	Available 9	Available 9
M	Available 10	Available 10
N	Available 11	Available 11
P	Available 12	Available 12
R	Available 13	Available 13
S	Available 14	Available 14
T	N/C	N/C
U	N/C	N/C
V	N/C	N/C
W	Latch O/P	
X	Unlatch O/P	
Y	TSRV I/P	
Z	RTL1 I/P	
a	RTL2 I/P	
b	Locked I/P	
d	Unlocked I/P	

TABLE 5: VB7Z1/VB3

Pin	26-Pin Male Connector Master Side	19-Pin Female Connector Tool Side
A	0 VDC	0 VDC
B	+24 VDC	+24 VDV
C	Available 1	Available 1
D	Available 2	Available 2
E	Available 3	Available 3
F	Available 4	Available 4
G	Available 5	Available 5
H	Available 6	Available 6
J	Available 7	Available 7
K	Available 8	Available 8
L	Available 9	Available 9
M	Available 10	Available 10
N	Tool ID8	N/C
P	Tool ID4	N/C
R	Tool ID2	N/C
S	Tool ID1	N/C
T	N/C	N/C
U	N/C	N/C
V	N/C	N/C
W	Latch O/P	
X	Unlatch O/P	
Y	TSRV I/P	
Z	RTL1 I/P	
a	RTL2 I/P	
b	Locked I/P	
d	Unlocked I/P	

TABLE 6: VB7Z1/VB4

Pin	26-Pin Male Connector Master Side	19-Pin Female Connector Tool Side
A	0 VDC	0 VDC
B	+24 VDC	+24 VDV
C	Available 1	Available 1
D	Available 2	Available 2
E	Available 3	Available 3
F	Available 4	Available 4
G	Available 5	Available 5
H	Available 6	Available 6
J	Tool ID8	N/C
K	Tool ID4	N/C
L	Tool ID2	N/C
M	Tool ID1	N/C
N	Tool ID8	N/C
P	Tool ID4	N/C
R	Tool ID2	N/C
S	Tool ID1	N/C
T	N/C	N/C
U	N/C	N/C
V	N/C	N/C
W	Latch O/P	
X	Unlatch O/P	
Y	TSRV I/P	
Z	RTL1 I/P	
a	RTL2 I/P	
b	Lock I/P	
d	Unlocked I/P	

TABLE 7: 19-PIN BLOCK VB7Z1/VB2

A	0 VDC
B	+24 VDC
C	Available 1
D	Available 2
E	Available 3
F	Available 4
G	Available 5
H	Available 6
J	Available 7
K	Available 8
L	Available 9
M	Available 10
N	Available 11
P	Available 12
R	Available 13
S	Available 14
T	TSI Out
U	TSI In
V	N/C

TABLE 8: 19-PIN BLOCK VB7Z1/VB3

A	0 VDC
B	+24 VDC
C	Available 1
D	Available 2
E	Available 3
F	Available 4
G	Available 5
H	Available 6
J	Available 7
K	Available 8
L	Available 9
M	Available 10
N	Tool ID8
P	Tool ID4
R	Tool ID2
S	Tool ID1
T	TSI Out
U	TSI In
V	N/C

TABLE 9: 19-PIN BLOCK VB7Z1/VB4

A	0 VDC
B	+24 VDC
C	Available 1
D	Available 2
E	Available 3
F	Available 4
G	Available 5
H	Available 6
J	Tool ID8
K	Tool ID4
L	Tool ID2
M	Tool ID1
N	Tool ID8
P	Tool ID4
R	Tool ID2
S	Tool ID1
T	TSI Out
U	TSI In
V	N/C

NOTES: UNLESS OTHERWISE SPECIFIED.

DO NOT SCALE DRAWING. ALL DIMENSIONS ARE IN MILLIMETERS.

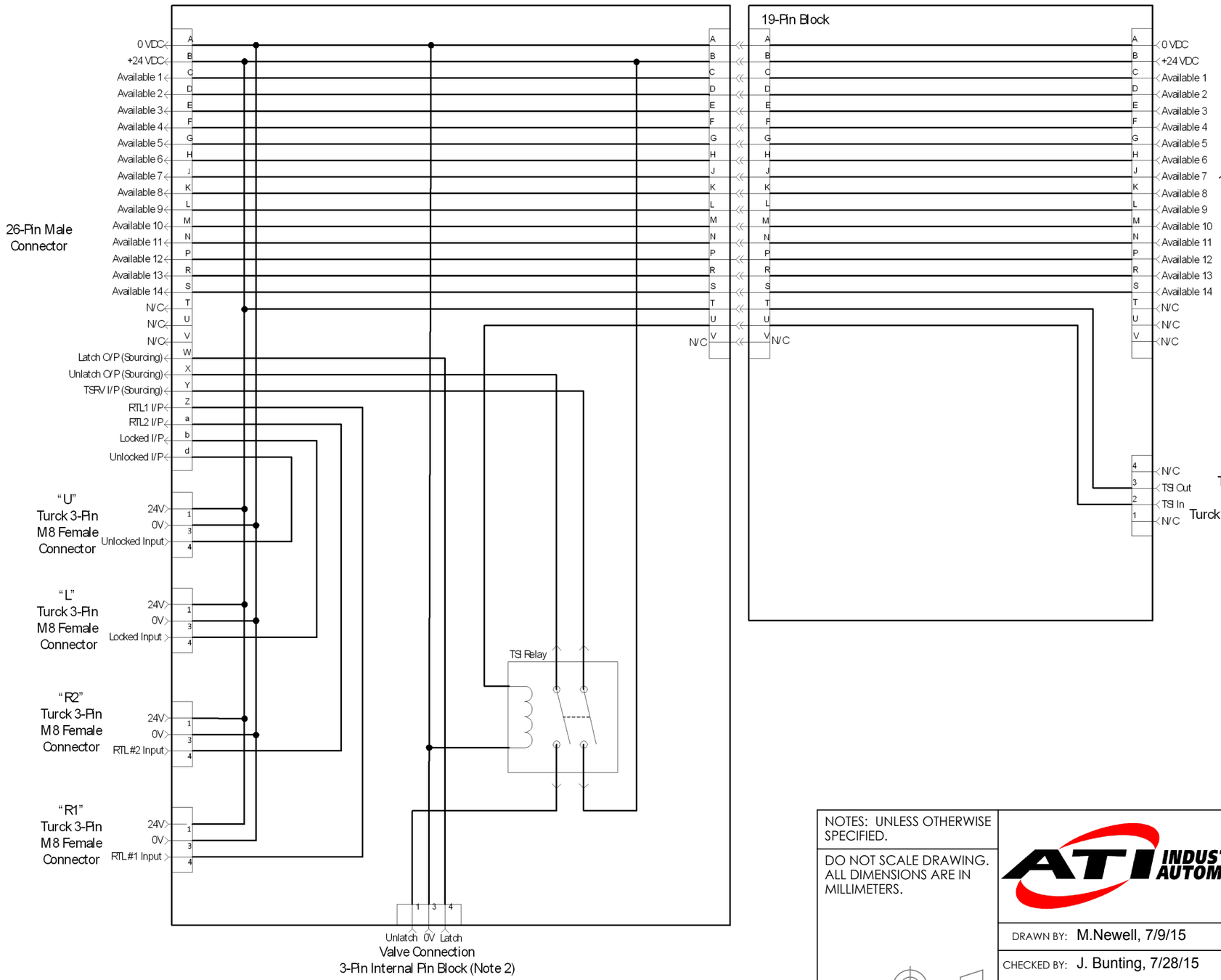
3rd ANGLE PROJECTION

ATI INDUSTRIAL AUTOMATION
1031 Goodworth Drive, Apex, NC 27539, USA
Tel: +1.919.772.0115 Email: info@ati-ia.com
Fax: +1.919.772.8259 www.ati-ia.com
ISO 9001 Registered Company

DRAWN BY: M.Newell, 7/9/15
CHECKED BY: J. Bunting, 7/28/15
D. Fleissner, 7/31/15
PROJECT # 150707-1 SHEET 4 OF 7

TITLE: VB7Z1 Customer Drawing

SCALE	SIZE	DRAWING NUMBER	REVISION
1:2	B	9630-20-VB7Z1 Family	03



Notes:

1. The complete tool changer package comes equipped with external cables that are connected to the sensors.
2. An internal pin block is used to transmit the Latch/Unlatch signal to the valve adapter, as shown in the schematic.
3. The Tool Stand Interlock (TSI) circuit is provided to ONLY allow tool release while in the stand or storage location as indicated by actuation of a customer-integrated mechanical switch. It is suggested that the customer integrate a single-pole, single throw (Normally Open, 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.
4. The TSRV input is provided for fault monitoring of the TSI Circuit. Please consult the product manual for operation and fault monitoring recommendations..
5. Tool ID and TSRV I/P are sourcing inputs.
6. Pin "A" on the 19-Pin Block is the First-to-Mate Last-to-Break at the tool changer interface. This pin is recommended for use as 0VDC / ground reference.
7. The Available circuit pass throughs are rated to 6A, and 700V.

NOTES: UNLESS OTHERWISE SPECIFIED.

DO NOT SCALE DRAWING. ALL DIMENSIONS ARE IN MILLIMETERS.

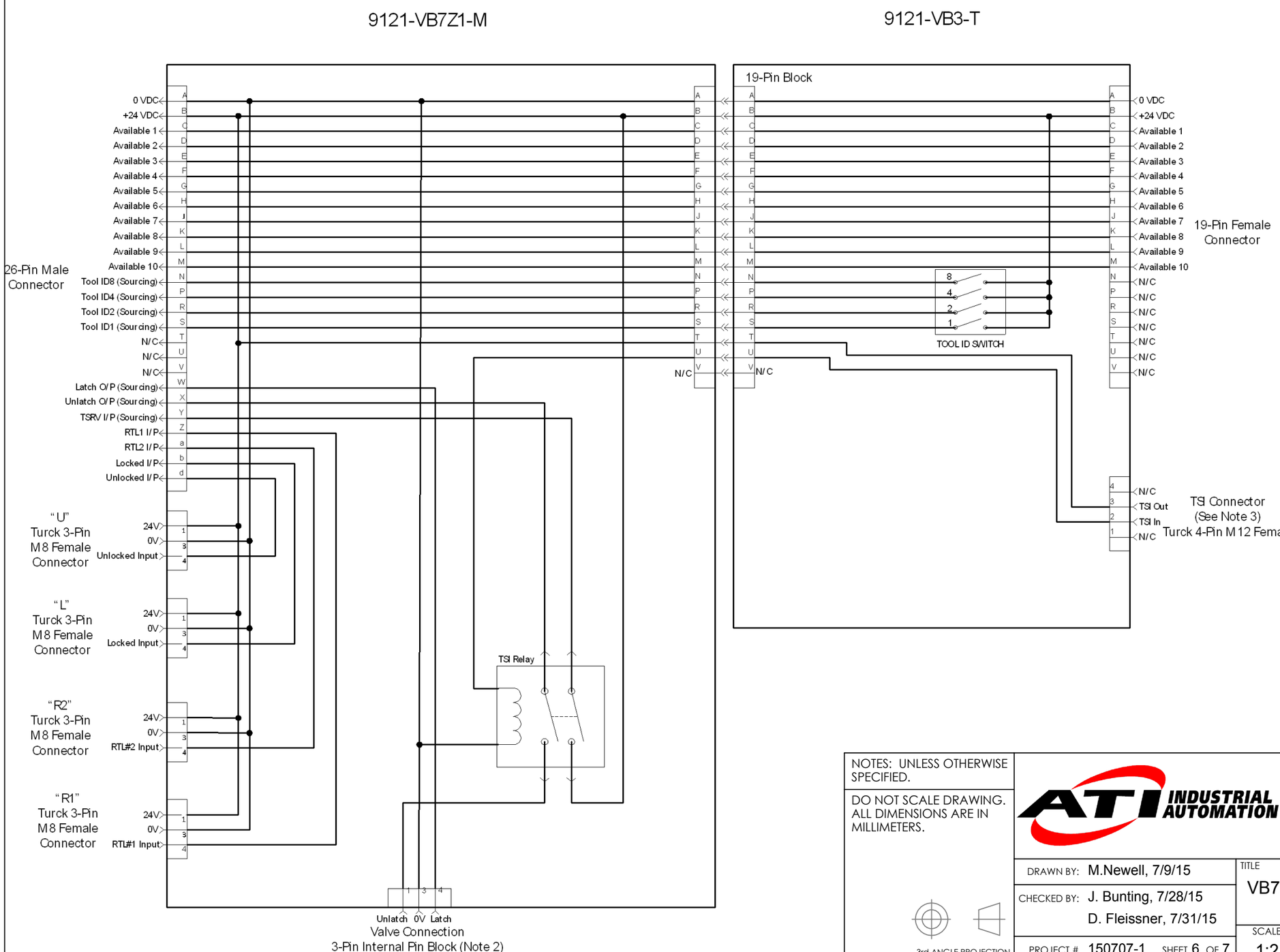
3rd ANGLE PROJECTION

1031 Goodworth Drive, Apex, NC 27539, USA
Tel: +1.919.772.0115 Email: info@ati-ia.com
Fax: +1.919.772.8259 www.ati-ia.com
ISO 9001 Registered Company

DRAWN BY:	M.Newell, 7/9/15
CHECKED BY:	J. Bunting, 7/28/15
	D. Fleissner, 7/31/15
PROJECT #	150707-1
SHEET	5 OF 7

TITLE: VB7Z1 Customer Drawing

SCALE	SIZE	DRAWING NUMBER	REVISION
1:2	B	9630-20-VB7Z1 Family	03



Notes:

1. The complete tool changer package comes equipped with external cables that are connected to the sensors.
2. An internal pin block is used to transmit the Latch/Unlatch signal to the valve adapter, as shown in the schematic.
3. The Tool Stand Interlock (TSI) circuit is provided to ONLY allow tool release while in the stand or storage location as indicated by actuation of a customer-integrated mechanical switch. It is suggested that the customer integrate a single-pole, single throw (Normally Open, 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.
4. The TSRV input is provided for fault monitoring of the TSI Circuit. Please consult the product manual for operation and fault monitoring recommendations..
5. Tool ID and TSRV I/P are sourcing inputs.
6. Pin "A" on the 19-Pin Block is the First-to-Mate Last-to-Break at the tool changer interface. This pin is recommended for use as 0VDC / ground reference.
7. The Available circuit pass throughs are rated to 6A, and 700V.

TABLE 10: 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

NOTES: UNLESS OTHERWISE SPECIFIED.

DO NOT SCALE DRAWING. ALL DIMENSIONS ARE IN MILLIMETERS.

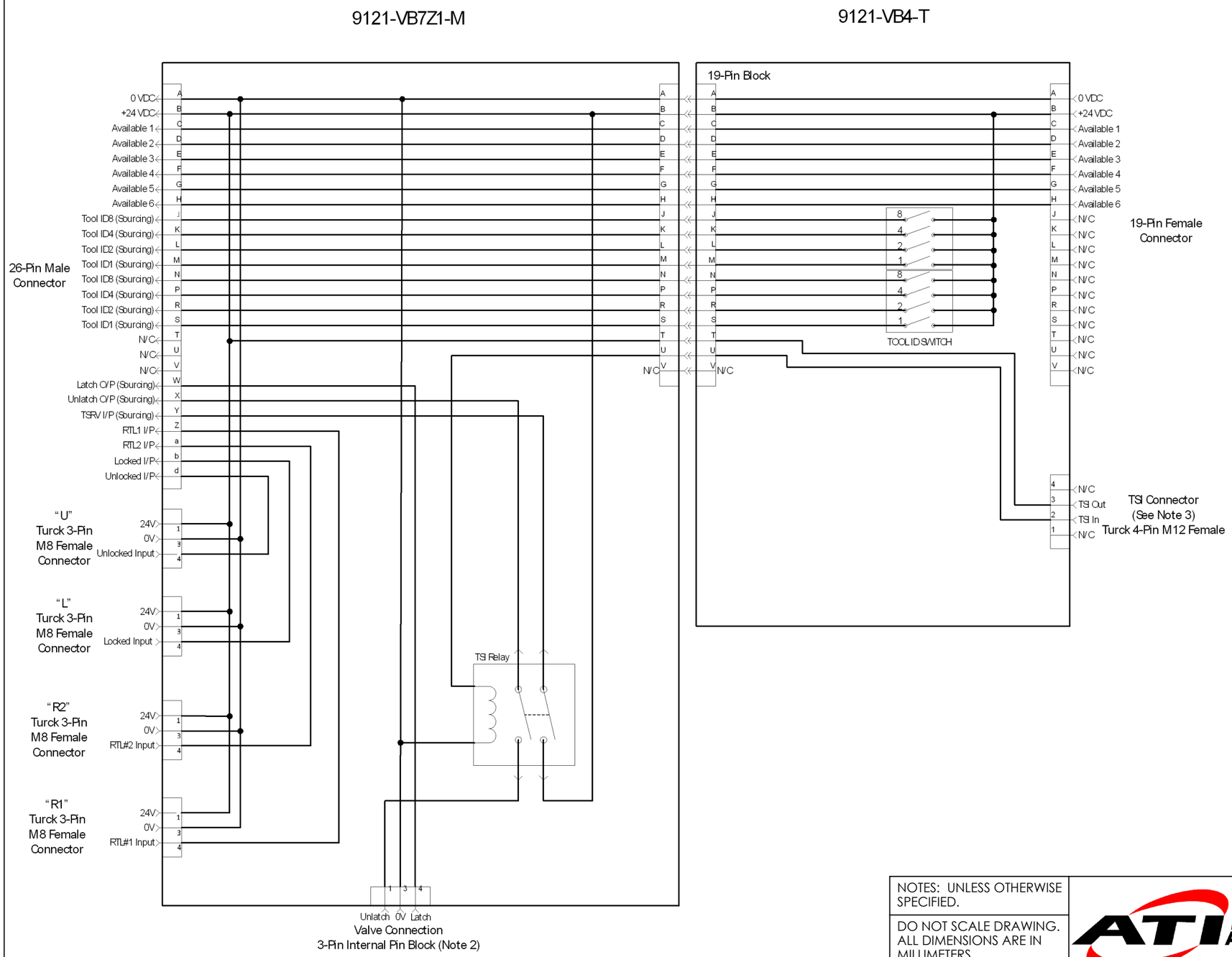
3rd ANGLE PROJECTION

ATI INDUSTRIAL AUTOMATION
1031 Goodworth Drive, Apex, NC 27539, USA
Tel: +1.919.772.0115 Email: info@ati-ia.com
Fax: +1.919.772.8259 www.ati-ia.com
ISO 9001 Registered Company

DRAWN BY: M.Newell, 7/9/15
CHECKED BY: J. Bunting, 7/28/15
D. Fleissner, 7/31/15
PROJECT # 150707-1 SHEET 6 OF 7

TITLE: VB7Z1 Customer Drawing

SCALE	SIZE	DRAWING NUMBER	REVISION
1:2	B	9630-20-VB7Z1 Family	03



Notes:

1. The complete tool changer package comes equipped with external cables that are connected to the sensors.
2. An internal pin block is used to transmit the Latch/Unlatch signal to the valve adapter, as shown in the schematic.
3. The Tool Stand Interlock (TSI) circuit is provided to ONLY allow tool release while in the stand or storage location as indicated by actuation of a customer-integrated mechanical switch. It is suggested that the customer integrate a single-pole, single throw (Normally Open, 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.
4. The TSRV input is provided for fault monitoring of the TSI Circuit. Please consult the product manual for operation and fault monitoring recommendations..
5. Tool ID and TSRV I/P are sourcing inputs.
6. Pin "A" on the 19-Pin Block is the First-to-Mate Last-to-Break at the tool changer interface. This pin is recommended for use as 0VDC / ground reference.
7. The Available circuit pass throughs are rated to 6A, and 700V.

TABLE 11: 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

NOTES: UNLESS OTHERWISE SPECIFIED.

DO NOT SCALE DRAWING. ALL DIMENSIONS ARE IN MILLIMETERS.

3rd ANGLE PROJECTION

ATI INDUSTRIAL AUTOMATION

1031 Goodworth Drive, Apex, NC 27539, USA
Tel: +1.919.772.0115 Email: info@ati-ia.com
Fax: +1.919.772.8259 www.ati-ia.com
ISO 9001 Registered Company

DRAWN BY: M.Newell, 7/9/15

CHECKED BY: J. Bunting, 7/28/15
D. Fleissner, 7/31/15

PROJECT # 150707-1 SHEET 7 OF 7

TITLE: VB7Z1 Customer Drawing

SCALE	SIZE	DRAWING NUMBER	REVISION
1:2	B	9630-20-VB7Z1 Family	03