

## TECHNICAL MANUAL

PANORAMIC ADAPTORS BC-1031-A, -B, -C, BC-1032-A, AND  
BC-1032-BCHANGES }  
No. 1 }DEPARTMENT OF THE ARMY  
WASHINGTON 25, D. C., 1 February 1952

TM 11-446, 28 December 1944, is changed as follows:

The title of the manual is changed to read: PANORAMIC ADAPTORS BC-1031-A, -B, -C, BC-1032-A, AND BC-1032-B.

Add "BC-1031-C" after "BC-1031-B" throughout the manual, *except* in the following places:

Page 13, par. 7*b*. Line 1.

Page 91, first column of chart.

Add "and Order No. 21797-Phila-50" after "Order No. 639-Phila-45" in the following places in the manual:

Page 5, par. 2*b*(1)(*d*), last sentence of *Note*.

Page 16, footnote 1.

Page 18, footnote 1.

Page 55, par. 21*b*, line 2 of *Note*.

Page 60, footnote 1.

Page 62, footnote 1.

Page 63, footnote 1.

Page 64, footnote 1.

Page 65, footnote 1.

Page 66, footnote 1.

Page 67, footnote 1.

Page 73, footnote 1.

Page 75, footnote 1.

Page 79, footnote 1.

Page 90, par. 33, heading.

Page 91, par. 33*e*, table heading.

Page 96, fig. 31, caption.

Page 1, supplement, second and last line.

## 7. Differences in Models

Signal Corps panoramic adaptor equipment consists of **five** models, BC-1031-A, BC-1031-B, **BC-1031-C**, BC-1032-A, and BC-1032-B.

\* \* \* \* \*

c. (Added) Model BC-1031-C contains modifications not found in models BC-1031-A and BC-1031-B.

## 21. Operating Controls

The operating controls of the B and C models are slightly different from the A models. See note.

a. I-F GAIN CONTROL. The i-f gain control on the B and C models cannot be adjusted from the front panel **because** it is located on the chassis directly in front of the reactor pad control. (Refer to figure \* \* \* is marked R119.)

b. LOCATION OF HORIZONTAL POSITIONING CONTROL. On the B and C models, the HOR. POSITION control is located behind one of the snap covers on the front panel (B of fig. 1) and is adjusted by means of a screw driver.

\* \* \* \* \*  
d. HORIZONTAL SIZE CONTROL. The control (HOR. \* \* \* models of adaptors. On the B and C models, however, this control R152 (fig. 30) has a different resistance value and is connected into the circuit differently. The HOR. SIZE \* \* \* oscillator tube V109. On the B and C models, the value of resistor R150 (fig. 30), a fixed resistor, permits the proper plate voltage to be applied to the blocking oscillator tube V111. The fixed grid resistor R143 (fig. 27) of the A models has been replaced by a potentiometer, R152, in the B and C models (fig. 30). This potentiometer permits \* \* \* tube V111 (fig. 30).

## 22. Cathode-ray Tube, Phase Inverter, and Automatic Amplitude Control

\* \* \* \* \*  
d. (Added) The following changes or additions have been made in Panoramic Adaptor BC-1031-C.

- (1) All resistors, except R101 and R102, have been changed to the nearest preferred values to conform to the latest JAN specifications.
- (2) R101 has been changed from 10K to 3.5K.
- (3) R102 has been changed from 150 ohms to 470 ohms.
- (4) All capacitors have been changed to the nearest preferred values to conform to the latest JAN specifications.
- (5) The lead connecting resistor R5 in i-f transformer Z-1031-A to C104 has been changed to a shielded coaxial cable with the shield grounded. The lead connecting R120 to R121 has been changed to a shielded coaxial cable with the shield grounded.

### 34. Modifications in Equipments Delivered on Order No. 21797-Phila-50

(Added)

- a. All resistors, except R101 and R102, have been changed to the nearest preferred values to conform to the latest JAN specifications.
- b. R101 has been changed from 10K to 3.5K.
- c. R102 has been changed from 150 ohms to 470 ohms.
- d. All capacitors have been changed to the nearest preferred value.
- e. The lead running from resistor R5 in i-f transformer Z-10301-A to C104 has been changed to a braided shield coaxial cable with the shield grounded.

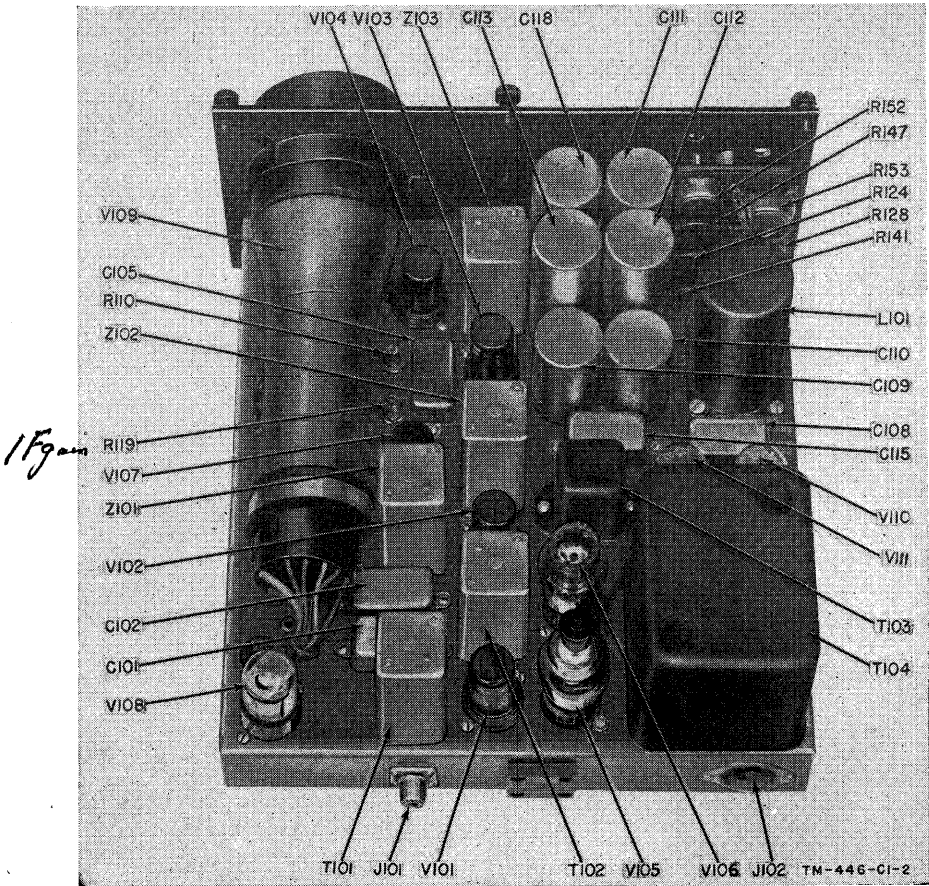


Figure 30.2 (Added) Panoramic Adaptor BC-1031-C, top view (equipment delivered on Order No. 21797-Phila-50).

## APPENDIX I

### 2. Identification Table of Parts for Panoramic Adaptor BC-1031-C (Added)

Ref symbol	Name of part and description	Function of part	Signal Corps stock No.
A127	INDICATOR, panoramic: Panoramic Adaptor BC-1031-C; input freq 450 to 470 kc; sweep wd 200 kc; resolution 4 de at max sweep wd; uses a 3BP1A cathode-ray tube; input impedance 25,000 to 150,000 ohms over the freq range of 355 to 555 kc, sensitivity $\frac{1}{4}$ " deflection from a 200 uv signal; power source 115/230 v single ph 50-70 cyc, 60 w; $13\frac{1}{2}$ " wd x $8\frac{3}{4}$ " h x 15" d o/a, 43 lb; used w/companion receiver w/50,000 ohm isolation resistor; Sig C spec MIL-P-10297.	-----	2C2831
CD807	BOOT: ctr cathode-ray tube in magnetic shield and protects it from shock; sponge rubber; 1 oz; tubular in slope w/small inside shoulder at 1 end; $3\frac{1}{2}$ " lg x $3\frac{1}{2}$ " diam x $\frac{1}{4}$ " wall thickness. CABLE ASSEMBLY, power: 10 ft lg, excl terminations; 1 end terminated w/male plug, Harvey-Hubbell #7545, the other end terminated w/female plug, Harvey-Hubbell #7484; U. S. Army spec 71-4945. CAPACITOR, fixed: paper dielectric; JAN type CP55B5DF104V, spec JAN-C-25 (4).	Protects cathode-ray tube-----  Power cord for panoramic adaptor-----	2Z760  3E1807
C101 A-C, C102 A-C, C103 A-C, C105 A-C, C108 A-C.		C101 A-C: R-f bypass for V101----- C102 A-C: R-f bypass for V102 and V109. C103 A-C: R-f bypass for V102 and V107. C105 A-C: R-f bypass for V103. C108 A-C: Line filter.	3DA100-126.2

C104	CAPACITOR, fixed: mica; JAN type CM20C511J; spec JAN-C-5 (3).	Avc bypass-----	3K2051122
C106, C107	CAPACITOR, fixed: mica; JAN type CM20B241J; spec JAN-C-5 (3).	C106: R-f bypass for cathode of V103. C107: Diode load for V104.	3K2024122
C109, C110	CAPACITOR, fixed: paper dielectric; JAN type CP41B1DH254K; spec JAN-C-25 (4).	H-v filters-----	3DA250-176
C111, C112, C113, C118.	CAPACITOR, fixed: paper dielectric; JAN type CP41B1DF405V; spec JAN-C-25 (4).	C111 through C113: L-v filters C118: R-f bypass for V102.	3DB4-282
C114	CAPACITOR, fixed: mica; JAN type CM40B103K; spec JAN-C-5 (3).	Grid capacitor V111-----	3K4010321
C115	CAPACITOR, fixed: paper dielectric; JAN type CP55B1FF254V; spec JAN-C-25 (4).	Sawtooth coupling-----	3DA250-469
C116	CAPACITOR, fixed: paper dielectric; JAN type CP54B1FF254V; spec JAN-C-25 (4).	Sweep coupling-----	3DA250-341
C117	CAPACITOR, fixed: mica; JAN type CM20B101K; spec JAN-C-5 (3).	R-f by pass for V107-----	3K2010121
A107	CLAMP: aluminum w/rubber covering on clamping surface; size range 2 $\frac{1}{4}$ "-2 $\frac{1}{2}$ ".	Holds cathode-ray tube base-----	2Z2642.57
E104	CLIP: fuse; phosphor-bronze; $\frac{1}{4}$ " diam; Littelfuse part #101001.	Holds spare fuse and aligning screw- driver-----	3Z1011
E128	CLIP: electron tube; black molded thermosetting plastic to JAN-P-14A (1); 920 v, 2 ma; one solder lug connection; fits $\frac{3}{8}$ " caps; Millen type 36012 plate cap.	Supplies protection from h-v plate cap of tube V105.	
E139	CLIP: electron tube; phenolic block 2" lg x $\frac{3}{4}$ " wd x $\frac{3}{16}$ " thk; 2 spring wires 16 ga x 4" lg; phenolic sheet.	Retains tube and plate cap in place-----	2Z2639-7
E146A	COIL, RF: 2 pie wd; shielded w/rectangular aluminum shield can; <del>part #101001</del> ; shield marked L2.	Mounts Allen wrench to chassis-----	3Z1371-1.2
Z101-01	CONNECTOR, male; Hubbell #7545 p/o CD-807. CONNECTOR, plug: Hubbell #7484; p/o CD-807.	Oscillator-reactor-----	2Z2831B/C3
P104	CONNECTOR: male; AN #PL-259; p/o CD-806-----	Plugs into standard a-c receptacle	2Z7238-3
P102		Plugs into a-c receptacle in rear of set-----	6Z7591-4.1
P101, P201		Terminate r-f input coaxial cable-----	2Z7226-259

Ref symbol	Name of part and description	Function of part	Signal Corps stock No.
J101	CONNECTOR, receptacle: AN SO-239; 1 round female cont; straight type; 1" lg x 1" sq o/a; 52 ohms impedance; pl.	Input connector	2Z8799-239
J102	CONNECTOR, male: twist-to-lock type connector, 2 parallel blades slightly curved, 1 round male connector in ctr for ground connection; straight type; 1" lg, max dia 2.062"; 10 amp, 250 v, 15 amp, 125 v; cadmium pl cylindrical steel case.	Power input receptacle	6Z7798-4
I126	FILTER, light: green w/JAN-P-15 light transmission; plastic type RPT-O-5-2 or RPT-OH-5-1; snap on mtg; 3" dia x .125" thk; w/engraved calibration scale.	Calibrated viewing screen for cathode-ray tube.	2Z8076-10
F101	FUSE, cartridge: 2 amp, 250 v; 1 time; glass body; ferrule term; Littelfuse #312002.	Line fuse	3Z1927
E103	HOLDER, fuse: extractor post type; holds single 1/4" lg x 1/4" dia cartridge fuse; black bakelite w/pl brass or copper cont and term; 125 v, 15 amp max; 2 solder lug term.	Holds and protects fuse	3Z3275-1
E101A	KNOB: round; black bakelite; 1/4" dia shaft; double #6-32 setscrews; arrow marking; brass insert; 1/2" shaft hole.	Control knobs on front panel	2Z5822-39
E101B	KNOB: round; black bakelite; 1/4" dia shaft; double #6-32 setscrew; brass insert; shaft hole 5/32" d; setr slot.	Screw-driver slot knob for recessed controls.	2Z5952
E102	LAMP, incandescent; 6 to 8 v; .150 amp; bulb T-3-1/4 clear; miniature bayonet base; tungsten fil; burn any position; GE #47.	Indicates power on	2Z5952

I101	LIGHT, indicator: w/1/2" dia. green convex glass lens; for miniature bayonet base, GE #47; 6 to 8 v .150 emp; encl shell; chrome pl steel shell; mtd horizontal, lamp replaceable from front; 2 solder lug term located extending from end of base; Dialco part #81410-112.	Holds pilot lamp E102-----
CD806	CABLE ASSEMBLY: RF; AN Cord CG-373A/U; 2 ft 9" lg excl term; 3 ft lg o/a; AN #PL-259.	R-f input cable----- 3E6015-373A.1
L101B	REACTOR: filter choke; dual; 6.5 hy at 40 ma; 200 ohm DC resistance; 1000 v RMS test; HS metal case.	L-v filter choke----- 3C323-6B
E144	RETAINER, tube: spring brass; lockwasher ring w/2 mtg holes; Cinch part #1033.	Holds tube V106 in socket X106-----
R101	RESISTOR, variable: comp; JAN type RV4ANFD352B; spec JAN-R-94.	Gain control-----
R102, R121, R144.	RESISTOR, fixed: comp; JAN type RC20BF471K; spec JAN-R-11 (3).	R102: Grid bias for V101.----- R121: Center frequency network. R144: Synchronous network. 3RC20BF471K
R103, R104, R105, R111, R112.	RESISTOR, fixed: comp; JAN type RC30BF473K; spec JAN-R-11 (3).	R103 through R105: Screen bleeders for V101. 3RC30BF473K
R106, R108.	RESISTOR, fixed: comp; JAN type RC30BF222K; spec JAN-R-11 (3).	R111 and R112: Screen drops for V103. R106: Plate isolation for V101.----- R108: Plate isolation for V102. 3RC30BF222K
R107	RESISTOR, fixed: comp; JAN type RC20BF223K; spec JAN-R-11 (3).	Oscillator grid resistor for V102.----- 3RC20BF223K
R109	RESISTOR, fixed: comp; JAN type RC20BF151K; spec JAN-R-11 (3).	Grid bias for V103----- 3RC20BF151K
R110	RESISTOR, variable: comp; JAN type RV4AVSD104B; spec JAN-R-94.	I-f pad for V103-----
R113	RESISTOR, fixed: comp; JAN type RC30BF472K; spec JAN-R-11 (3).	Plate isolation for V103.----- 3RC30BF472K
R114	RESISTOR, fixed: comp; JAN type RC20BF154K; spec JAN-R-11 (3).	Diode load, bias for V104.----- 3RC20BF154K

Ref symbol	Name of part and description	Function of part	Signal Corps stock No.
R115	RESISTOR, fixed: comp; JAN type RC20BF824K; spec JAN-R-11 (3).	Plate limiting for V104.	3RC20BF824K
R116	RESISTOR, fixed: comp; JAN type RC30BF273K; spec JAN-R-11 (3).	H-v filter.	3RC30BF273K
R117	RESISTOR, fixed: WW; JAN type RW33J712; spec JAN-R-26A (2).	Regulator drop for V106.	
R118, R138	RESISTOR, fixed: comp; JAN type RC20BF224K; spec JAN-R-11 (3).	R118: Grid return for V107 R138: Second anode network for V109.	3RC20BF224K
R119	RESISTOR, variable: comp; JAN type RV4AVSD-102B; spec JAN-R-94.	Reactor pad.	
R120, R141	RESISTOR, variable: comp; JAN type RV4AVSD-254B; spec JAN-R-94.	R120: Sweep width control. R141: Focus control.	
R122, R145	RESISTOR, fixed: comp; JAN type RC20BF221K; spec JAN-R-11 (3).	R122: Center frequency network R145: Synchronous network. Center frequency adjustment.	3RC20BF221K
R123	RESISTOR, variable: comp; JAN type RV4AVFD-501B; spec JAN-R-94.	Vertical positioning control.	
R124	RESISTOR, variable: comp; JAN type RV4AVSD-504B; spec JAN-R-94.		
R125, R126, R129, R136, R142.	RESISTOR, fixed: comp; JAN type RC30BF154K; spec JAN-R-11 (3).	R125: Bias network for V108B R126: Plate load for V108B. R129: Bias network for V108A. R136: Plate load for V104. R142: H-v bleeder.	3RC30BF154K
R127, R151	RESISTOR, fixed: comp; JAN type RC30BF274K; spec JAN-R-11 (3).	R127: Plate load for V108A R151: Plate load for V111B. Horizontal positioning control.	3RC30BF274K
R128	RESISTOR, variable: comp; JAN type RV4AVSD-504B; spec JAN-R-94.		



R147, R153	RESISTOR, variable: comp; JAN type RV4AVSD-105B.	R147: Synchronous control. R153: Sweep limiter.	3RC20BF104K
R130, R137	RESISTOR, fixed: comp; JAN type RC20BF104K; spec JAN-R-11 (3).	R130: Grid return for V108A. R137: Second anode network for V109.	3RC20BF562K
R131	RESISTOR, fixed: comp; JAN type RC20BF562K; spec JAN-R-11 (3).	Bias for V108A.	3RC20BF332K
R132	RESISTOR, fixed: comp; JAN type RC20BF332K; spec JAN-R-11 (3).	Bias for V108B.	3RC20BF225K
R133, R134	RESISTOR, fixed: comp; JAN type RC20BF225K; spec JAN-R-11 (3).	R133: Coupling for V108A. R134: Coupling for V108B.	3RC20BF823K
R135	RESISTOR, fixed: comp; JAN type RC20BF823K; spec JAN-R-11 (3).	Grid return for V108B.	3RC20BF102K
R139	RESISTOR, fixed: comp; JAN type RC20BF102K; spec JAN-R-11 (3).	Bias for V102.	3RC30BF474K
R140	RESISTOR, fixed: comp; JAN type RC30BF474K; spec JAN-R-11 (3).	H-v bleeder.	3RC20BF474K
R143	RESISTOR, variable: comp; JAN type RV4AVSD-503B; spec JAN-R-94.	Intensity control.	3RC20BF472K
R146	RESISTOR, fixed: comp; JAN type RC20BF474K; spec JAN-R-11 (3).	Grid resistor for V111A.	3RC20BF472K
R148	RESISTOR, fixed: comp; JAN type RC20BF472K; spec JAN-R-11 (3).	Bias for V111B.	3RC20BF273K
R149	RESISTOR, fixed: comp; JAN type RC20BF273K; spec JAN-R-11 (3).	Sweep network.	3RC20BF335K
R150	RESISTOR, fixed: comp; JAN type RC20BF335K; spec JAN-R-11 (3).	Sawtooth generator for V111A.	6R38473
R152	RESISTOR, variable: comp; JAN type RV4AVSD-205K; spec JAN-R-94.	Horizontal size control.	
E145	SCREW DRIVER: for slot drive; $\frac{3}{16}$ " blade; $5\frac{1}{16}$ " lg o/a; $\frac{3}{16}$ " dia shank; $\frac{3}{16}$ " wd x $\frac{1}{32}$ " thk; phenolic; made in 1 piece from $\frac{3}{16}$ " round phenolic rod.	For adjusting i-f and r-f transformers.	

Ref symbol	Name of part and description	Function of part	Signal Corps stock No.
A129A X1, X2, X3, X4, X6, X7, X8, X10, X11.	SCREW, thumb: knurled thumb head w/secr slot; brass, dull black; #10-32 thk; cone point. SOCKET, tube: 8 octal cont; JAN type TSB8T102; 1 piece saddle under chassis mtg; round ceramic 1 1/16" dia x 3/8" h.	Lock chassis and panel to cabinet. X1: Tube socket for V101. X2: Tube socket for V102. X3: Tube socket for V103. X4: Tube socket for V104. X6: Tube socket for V106. X7: Tube socket for V107. X8: Tube socket for V108. X10: Tube socket for V110. X11: Tube socket for V111. Tube socket for V105.	6L17010-15-3BN 2Z8678.326
X5	SOCKET, tube: 4 cont wafer; under chassis wafer mtg; oval ceramic 2 5/16" lg x 1 5/8" wd x 1/4" h excl term; brass, silver pl.		2Z8762
X9	SOCKET, tube: 14 cont diheptol; cont 4, 6, 12, and 13 clipped to shield of V109; round plastic 2 1/4" dia x 1" h; spring brass silver pl; for use with 3BP1 tube.	Tube socket for V109	2Z8684-7
S101	SWITCH, toggle: SPST; JAN type ST42A; spec JAN-S-23 (2).	Power switch	3Z9863-42A
T101-01	TRANSFORMER, RF: 455 kc input; shielded; 1 1/2" sq x 3 1/2" h o/s; powdered iron core; tuned pri and sec; adj iron core tuning.	R-f input transformer	2C2831B/C1
T102-01	TRANSFORMER, RF: 455 kc output; shielded; 1 1/2" sq x 3 1/2" h o/s; powdered iron core; tuned pri and sec; adj iron core tuning.	R-f output transformer	2C2831B/C2

T103	TRANSFORMER, AF: plate coupling type; impedance of pri 3140 ohms; impedance of secd 12,200 ohm; DC current rating less than 2 ma; HS steel case, core material silicon steel; 2 $\frac{5}{16}$ " lg x 1 $\frac{1}{2}$ " wd x 2 $\frac{3}{8}$ " h o/a; 2/1 ratio.	Blocking tube oscillator transformer.....	2Z9638-8
T104	TRANSFORMER, power: fil and plate type; MIL-T-27 (2), type designation TF1A03LB000; Sig C specs MIL-P-10297 and MIL-T-27 (2).	Supplies filament and plate power.....	2Z9608-11
Z102-01	TRANSFORMER, IF: 226 kc input; shielded; 1 $\frac{1}{32}$ " sq x 3 $\frac{1}{2}$ " h o/a; powdered iron core; tuned pri and secd; adj iron core tuning.	Input transformer for 226-kc i-f.....	2Z9641.42
Z103-01 <b>A</b>	TRANSFORMER, IF: 226 kc output; shielded; 1 $\frac{1}{32}$ " sq x 3 $\frac{1}{2}$ " h o/a; powdered iron core; tuned and secd; adj iron core tuning.	Output transformer for 226-kc i-f.....	2Z9641.42
V101, V107	TUBE, electron: JAN-6AC7W; pentode.....	V101: R-f input amplifier..... V107: Reactance tube.	2J6AC7W
V102	TUBE, electron: JAN-6SA7Y; pentagrid converter.....	Oscillator mixer.....	2J6SA7Y
V103	TUBE, electron: JAN-6SG7Y; pentode.....	I-f amplifier.....	2JSG7Y
V104	TUBE, electron: JAN-6SQ7; duodiode triode.....	Detector and video amplifier.....	2J6SQ7
V105	TUBE, electron: JAN-2X2A.....	Rectifier.....	2J2X2A
V106	TUBE, electron: JAN-0C3W.....	Regulator.....	2J0C3W
V108, V111	TUBE, electron: JAN-6SL7GT; dual triode.....	V108: Horizontal and vertical amplifier..... V111: Sawtooth generator and horizontal amplifier.	2J6SL7GT
V109	TUBE, electron: JAN-3BPIA.....	Panoramic indicator.....	2J3BPIA
V110	TUBE, electron: JAN-6X5WGT.....	L-v rectifier.....	2J6X5WGT
E146	WRENCH; Allen wrench, steel, hex shape; $\frac{1}{16}$ " across flats; 2" lg o/a; steel; 90 deg offset; 'L' handle; designed for #6 Allen setscrew.	To fit Allen-head screws on knobs and bushings.	6R-5700-6.1

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