

**SCHEMATIC DIAGRAM  
AND  
PARTS LIST**

**BK PRECISION**

**1420**

**15 MHz, AC/DC/Battery  
Dual-Trace  
MINI-SCOPE**

**PARTS LIST  
488-258-9-004C**

<b>SCHEMATIC SYMBOL</b>	<b>DESCRIPTION</b>	<b>DYNASCAN PART NO.</b>
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**RESISTORS**

Unless otherwise specified on schematic, unlisted resistors are  $\pm 5\%$ , 1/4 W. See schematic diagram for value of unlisted resistors.

R2, 27, 107, 108, 109	5 k $\Omega$ , 20% Trimmer Pot .....	008-231-9-001
R4	1.87 k $\Omega$ , 1/4 W, 1% Metal Film.....	015-141-1-871
R5	61.9 k $\Omega$ , 1/4 W, 1% Metal Film .....	015-141-6-192
R6	4.7 $\Omega$ , 1/2 W, 1% Wirewound .....	004-183-9-001
R11	2 k $\Omega$ , 20% Trimmer Pot .....	008-303-9-001
R32	1/4 $\Omega$ , 1 W, 1% Wirewound .....	004-185-9-001
R39	1/2 $\Omega$ , 1 W, 1% Wirewound .....	004-184-9-001
R40/R53	50 k $\Omega$ /1 k $\Omega$ , Dual Concentric Potenti- ometer (ASTIG/TRACE ROTATION)...	008-432-9-001
R45	5 M $\Omega$ , 1/4 W, 20% Potentiometer .....	008-392-9-001
R48, 69	50 k $\Omega$ , 20% Trimmer Pot .....	008-387-9-001
R51	10 k $\Omega$ , 1/4 W, 20% Potentiometer, Includes S1 .....	008-400-9-001
R104, 110	4.99 k $\Omega$ , 1/4 W, 1% Metal Film.....	015-141-4-991
R105	10.0 k $\Omega$ , 1/4 W, 1% Metal Film.....	015-141-1-002
R106	24.9 k $\Omega$ , 1/4 W, 1% Metal Film.....	015-141-2-492
R111	61.29 k $\Omega$ , 1/4 W, 1/4% Metal Film .....	011-182-9-001
R112	6.81 k $\Omega$ , 1/4 W, 1/4% Metal Film .....	011-181-9-001

**COMPOSITE  
499-189-9-001C**



**SCHEMATIC  
SYMBOL**

**DESCRIPTION**

**DYNASCAN  
PART NO.**

R115	10 kΩ, 1/4 W, 20% Potentiometer, Includes S106 .....	008-402-9-001
R124	10 kΩ, 1/4 W, 20% Potentiometer, Includes S102 .....	008-395-9-001
R136	250 Ω, 20% Trimmer Pot .....	008-229-9-001
R139, 235, 237	100 Ω, 20% Trimmer Pot .....	008-343-9-001
R152, 153	2.43 kΩ, 1/4 W, 1% Metal Film.....	015-141-2-431
R160, 161	4.75 kΩ, 1/4 W, 1% Metal Film.....	015-141-4-751
R163	1 kΩ, 20% Trimmer Pot .....	008-247-9-001
R201, 202	2.4 kΩ, 2 W, 5%, Glass.....	003-002-5-242
R218, 219	500 Ω, 20% Trimmer Pot .....	008-314-9-001
R220, 223	10 kΩ, 1/4 W, 20% Potentiometer, Includes S205 or S206 .....	008-391-9-001
R227, 231	499 Ω, 1/4 W, 1% Metal Film.....	015-141-4-990
R228, 232	301 Ω, 1/4 W, 1% Metal Film.....	015-141-3-010
R229, 233	200 Ω 1/4 W, 1% Metal Film .....	015-141-2-000
R248, 251	111 kΩ, 1/4 W, 1% Metal Film .....	011-201-9-001
R249, 252	10.1 kΩ, 1/4 W, 1% Metal Film.....	011-183-9-001
R250, 253	1.00 kΩ, 1/4 W, 1% Metal Film.....	015-141-1-001
R254, 257	900 kΩ, 1/4 W, 1% Metal Film .....	011-202-9-001
R255, 258	990 kΩ, 1/4 W, 1% Metal Film .....	011-186-9-001
R256, 259	999 kΩ, 1/4 W, 1% Metal Film .....	011-203-9-001

**CAPACITORS**

C1	3300 μF, 25 V, +50,-10% Electrolytic ....	022-207-9-001
C2, 114	150 pF, 500 V, 10% Ceramic Disc .....	020-031-9-001
C3, 13, 14, 15	330 μF, 25 V, 20% Low ESR Electrolytic.....	022-208-9-001
C4, 110, 117	1 μF, 50 V, 20%, Low Leakage Electrolytic.....	036-001-9-005
C5	10 μF, 25 V, 20% Tantalum .....	027-014-9-001
C6	.0047 μF, 400 V, 5% Polyester.....	025-152-9-001
C7, 120	.47 μF, 35 V, 20% Tantalum .....	027-006-9-001
C8, 9, 35, 215, 216	.001 μF, 500 V, 10% Ceramic Disc .....	020-016-9-001
C10	470 pF, 500 V, 10% Ceramic Disc .....	020-029-9-001
C11, 104	.0033 μF, 100 V, 5% Polyester.....	025-147-9-001
C12, 222, 240	100 pF, 500 V, 10% Ceramic Disc .....	020-044-9-001
C16, 18	2.2 μF, 20 V, 20% Tantalum .....	027-017-9-001
C17, 223, 227 228, 229	10 μF, 25 V, +80,-10% Electrolytic.....	022-121-9-001
C20	.005 μF, 500 V, 20 %, Ceramic Disc.....	020-018-9-001
C21	.047 μF, 630 V, 20% Polyester.....	025-018-9-001
C22, 23	.03 μF, 1000 V, +80,-20% Ceramic Disc..	020-093-9-001

<b>SCHEMATIC SYMBOL</b>	<b>DESCRIPTION</b>	<b>DYNASCAN PART NO.</b>
C25	4.7 $\mu$ F, 63 V, 20% Low ESR Electrolytic .....	022-215-9-001
C26	33 $\mu$ F, 100 V, 20% Low ESR Electrolytic .....	022-209-9-001
C27	33 $\mu$ F, 160 V, 20% Low ESR Electrolytic .....	021-068-9-001
C28, 34, 112, 121-126, 128, 217-220, 225, 233	.01 $\mu$ F, 100 V, +80,-20% Ceramic Disc ...	020-101-9-001
C29	.22 $\mu$ F, 35 V, 20% Tantalum .....	027-004-9-001
C30, 31	20 pF, 2000 V, 20% Ceramic Disc .....	020-311-9-001
C32	.01 $\mu$ F, 2000 V, +80,-20% Ceramic Disc..	020-247-9-001
C101	.1 $\mu$ F, 250 V, 20% Polyester .....	025-013-9-001
C102, 103, 107, 108	4.7 $\mu$ F, 25 V, 20% PC Low Leakage Electrolytic .....	022-112-9-001
C105	.33 $\mu$ F, 35 V, 20% Tantalum .....	027-043-9-001
C106	33 $\mu$ F, 6 V, 10% Tantalum .....	027-045-9-001
C109	.0033 $\mu$ F, 100 V, 20% Polyester .....	025-105-9-001
C113	.01 $\mu$ F, 500 V, 20% Ceramic Disc .....	020-008-9-001
C115	.1 $\mu$ F, 100 V, 20% Polyester .....	025-109-9-001
C116	.1 $\mu$ F, 100 V, 5% Polyester .....	025-075-9-001
C118	470 pF, 500 V, 10% Ceramic Disc .....	020-071-9-001
C119	.005 $\mu$ F, 500 V, 20% Ceramic Disc .....	020-064-9-001
C129	.1 $\mu$ F, 25 V, +80,-20% Ceramic Disc .....	020-110-9-001
C130	20 pF, 500 V, 10% NPO Ceramic Disc ...	031-010-9-001
C201, 202	.22 $\mu$ F, 250 V, 20% Polyester .....	025-113-9-001
C203, 205, 207, 209, 211, 213, 234-239	3-8 pF Ceramic Trimmer .....	028-062-9-001
C204, 210	68 pF, 500 V, 5% Silver Mica .....	023-066-9-001
C206, 212	680 pF, 50 V, 5% Monolythic Ceramic...	020-290-9-001
208, 214	.01 $\mu$ F, 63 V, 5%, Polypropylene Film ....	033-056-9-001
C221, 226	30 pF, 500 V, 5% Ceramic Disc .....	020-135-9-001
C224	47 pF, 100 V, NP0, Ceramic Disc .....	031-044-9-001
C231, 232	10-40 pF Ceramic Trimmer .....	028-064-9-001

### TRANSFORMERS

T1	Transformer, Switching .....	064-026-9-001
	BE-20 AC Adapter (120 V, 60 Hz Primary) .....	534-220-0-000
	BE-21 AC Adapter (220 V, 50/60 Hz Primary) .....	534-221-0-000

**SCHEMATIC  
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**DESCRIPTION**

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PART NO.**

**COILS**

L1	Inductor, Power .....	042-037-9-001
L2	Coil, TRACE ROTATION .....	See Note, Page 7
L201, 202	Coil, Variable.....	044-057-9-001

**SWITCHES**

S101	Rotary Switch (SWEEP TIME/DIV), Includes R102 .....	083-263-9-001
S103, 104	Slide Switch, DPDT .....	084-084-9-001
S105	Slide Switch, APDT .....	084-090-9-001
S201, 202	Slide Switch, DP3T.....	084-085-9-001
S203, 204	Rotary Switch (VOLTS/DIV), Includes R226 or R230 .....	083-264-9-001

**TRANSISTORS**

Q1	MJE3055 Silicon Transistor .....	172-055-9-001
Q2, 103	MPS2369 Silicon Transistor .....	176-049-9-001
Q3	D40D1 Silicon Transistor.....	172-005-9-001
Q4, 7, 8	MJE210 Silicon Transistor .....	173-009-9-001
Q5, 6	N-channel VMOS Power FET.....	182-060-9-001
Q9	High Voltage Silicon Transistor .....	172-056-9-001
Q10, 11, 107, 108	2N5550 Silicon Transistor .....	176-033-9-001
Q12, 102, 104	2N5087 Silicon Transistor .....	177-034-9-001
Q13, 110, 206, 207, 210-213	MPS6515 Silicon Transistor .....	176-050-9-001
Q101, 105	2N5210 Silicon Transistor .....	176-083-9-001
Q106, 111, 208, 209	2N3904 Silicon Transistor .....	176-084-9-001
Q109, 214	MPS6519 Silicon Transistor .....	177-015-9-001
Q201, 202	Dual FET .....	182-024-9-001
Q204, 205	D40N1 Silicon Transistor.....	172-020-9-001

**DIODES**

D1-5, 20, 22, 24	1A, 600 V Silicon .....	151-050-9-001
D6	Red LED.....	158-004-9-001
D7, 8, 10, 12, 23, 28, 29, 101-104 203-211	1N4148 Silicon.....	151-038-9-001
D9, 11	1A, 50 V Fast Switching Silicon.....	151-089-9-001
D13-15	0.5 A, 1.5 kV Fast Switching Silicon .....	151-090-9-001



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D16-18	1A, 200 V Fast Switching Silicon .....	151-091-9-001
D19	1N4759A (62 V, 1 W, 5%) Zener.....	152-117-9-001
D21	1N4733A (5.1 V, 1 W, 5%) Zener .....	152-030-9-001
D25, 26	1N4734A (5.6 V, 1 W, 5%) Zener .....	152-036-9-001
D27	1N4745A (16 V, 1 W, 5%) Zener.....	152-009-9-001
D105, 201, 202	Low Leakage Silicon .....	151-055-9-001

**INTEGRATED CIRCUITS**

IC1	723C .....	307-009-9-001
IC2	78L05 .....	307-129-9-001
IC3	4047B .....	308-187-9-001
IC4, 107	555 Timer.....	307-065-9-001
IC5	324 .....	307-060-9-001
IC6, 204	4001.....	308-072-9-001
IC8	7805.....	307-080 9-001
IC9	79M05.....	307-186-9-001
IC10	78L15 .....	307-130-9-001
IC11, 103, 108	74LS00 .....	307-100-9-001
IC101	358 .....	307-134-9-001
IC102	75107 .....	307-127-9-001
IC104, 203	74LS74 .....	307-119-9-001
IC105	96LS02.....	307-156-9-001
IC106	CA3086 .....	307-087-9-001
IC201, 202	733 .....	307-189-9-001

**MISCELLANEOUS**

F1, 2	Fuse, 7AG, 2A, 32 V.....	191-320-7-002
CRT-1	Cathode Ray Tube.....	See Note, Page 7
	CRT Socket.....	749-100-9-001
	CRT Shield .....	256-135-9-001
	Clamp, CRT .....	741-133-9-001
	Screw For CRT Clamp .....	707-824-1-117
	Sponge Pad (CRT neck) .....	388-049-9-001
	Graticule, CRT.....	See Note, Page 7
	Viewing Hood .....	380-387-9-001
	Case, Bottom .....	252-034-9-001
	Case, Top .....	253-108-9-001
	Front Bracket (sub-panel) .....	251-523-9-001
	Inlay, Main (front panel) .....	260-322-9-001
	Inlay, Logo & Model No. (front panel) ...	600-072-9-001
	Front Bezel, Black Plastic .....	380-412-9-001
	Support Bracket (Power Supply PCB) ....	380-415-9-001
	Heat Sink (For Q4, 7, 8) .....	747-083-9-001
	Bracket Assembly, Battery Tray & CRT Mount .....	523-329-9-001



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**DYNASCAN  
PART NO.**

Rear Overlay/Nameplate .....	600-073-9-001
Shield, Vertical Input (2 Req'd) .....	256-134-9-001
Shield, Vertical Inputs.....	256-140-9-001
Foot, Rear .....	380-120-9-001
Foot, Bottom .....	380-136-9-001
Handle Assembly .....	539-114-0-000
Includes:	
Detent Hub .....	746-062-9-001
Screw (For Hub) .....	628-509-1-917
Springs For Handle .....	767-118-9-001
Screw, Handle Mounting .....	706-916-1-901
Flat Washer, Handle Mounting.....	725-040-3-210
Felt Pad (Battery Pack), 2 Req'd .....	351-015-9-001
Spacer, Battery Mounting.....	759-106-9-001
Screw, Battery Mounting.....	628-027-1-101
Vinyl Cap (Battery Pack Screw Covers) .....	384-036-9-001
BNC Jack.....	772-024-9-001
Mounting Nut, For BNC Jack .....	691-216-1-306
Lock Washer Lug, For EXT TRIG Jack ..	740-014-9-001
Banana Jack, Black (GND Jack) .....	773-015-9-802
Mounting Nut, For GND Jack.....	653-049-9-001
3.5 mm Phone Jack (AC Input).....	773-104-9-001
Flat Washer, Phone Jack.....	347-088-9-001
Shoulder Washer, Phone Jack .....	347-089-9-001
DC Power Jack.....	775-054-9-001
Screw for DC Power Jack (2 Req'd) .....	634-134-9-001
Feed-Thru Jack (CAL Terminal).....	777-005-9-001
Knob, Small (VARIABLE, FOCUS, etc.) .....	751-202-9-001
Knob, Large (VOLTS/DIV, SWEEP TIME/DIV) .....	751-230-9-001
Knob, Concentric (ASTIG/TRACE ROTATION) .....	751-228-9-001
Instruction Manual .....	480-297-9-001

**NOTE:** We use two suppliers for the CRT. One version uses a dome faced CRT and the other uses a flat face CRT. The flat face CRT includes an integral trace rotation coil.

Units with the flat face CRT use the following replacement parts:  
CRT, Flat Face With Coil..... 523-646-9-001  
Window, CRT (Graticule) ..... 380-503-9-902

Units with the dome face CRT use the following replacement parts:  
CRT, Dome Face ..... 230-019-9-001  
Coil, Trace Rotation ..... 040-003-9-001  
Window, CRT (Graticule) ..... 380-380-9-001

### **U.S.A. PARTS ORDERING INFORMATION**

There is a minimum charge for each invoice. Orders will be shipped C.O.D. unless previous open account arrangements have been made or remittance accompanies order. Advance remittance must cover handling, postage or express charges. Specify model and serial number when ordering replacement parts.

### **ORDER REPLACEMENT PARTS FROM:**

**B & K-Precision, Dynascan Corporation**  
Factory Service Operations  
4050 North Ravenswood Avenue  
Chicago, Illinois 60613  
Telephone: (312) 327-7270  
Telex: 25-3475

### **ACCESSORIES SUPPLIED WITH MODEL 1420 MINI-SCOPE**

Two 10:1 Probes with Accessory Tips  
Viewing Hood  
120 VAC, 60 Hz AC Adapter  
or  
220 VAC, 50/60 Hz AC Adapter  
Instruction Manual  
Schematic Diagram & Parts List

**BK PRECISION DYNASCAN  
CORPORATION**

6460 West Cortland Street  
Chicago, Illinois 60635