



RAPID SENSE WITH BASE OPERATING INSTRUCTIONS

MODELS

RS1

(INCLUDES LOOP CONTROL RS1. 115VAC, 1PH, 60HZ)

RS-1 NON-CONTACT LOOP CONTROL

The RS-1 non-contact loop control is shipped ready to be put into service. It was tested at the factory before being shipped and has only the default parameters installed on program one or two. The default would make the parameters the same on each program. If different parameters are needed then they will have to be changed by a person at your facility.

The unit is very compact with the base being the largest part at approximately 2 foot square, The top of the unit being about 62 inches high. the sensor eye is 54.8 inches from the floor so there should be plenty of height to afford a smooth reel speed change due to the loop height variations. The unit has a 25 pin D-Sub as standard but can be ordered with a 14 pin Amp round plug to match up with our older reels and straighteners. If the unit seemed to be ordered wrong then we also sell short transition cords to match your needs so you will not have to rewire anything.

The control board that does all the work is mounted behind a movable cover plate attached with one screw and a rivet. The control should be covered at all times unless changes are being performed. Changes are implemented by pressing one of four buttons and reading the display mounted on the board. There are 21 different functions to choose from and will be explained later on. **Please do not attempt to make changes without first reading and understanding what each function does and how it affects the rest of the control.**

There is one contact that can be wired by the customer and that is the taut stock contact. It can be found on the wiring diagram labeled "Taut Stock". It is a dry contact suitable for 120 VAC/200 milli-amp and is settable by choosing the taut stock function on the display. Basically only the Maximum distance off the floor or from our point of view, the closest distance from the eye needs to be set by the customer if this function is to be used. If the contact is not needed then leave it set at it's current setting.

If all this seems confusing to you then the only two points you need to be concerned with is the (Max volt level and the Low level limit) and of these two only the Maximum volt level needs to be adjusted if the reel speed needs to change rate at a faster or slower rate to keep up with the material flow.

The only time that the sensor would have to be monitored is if a new job with a long feed length is used. The material speed and the speed in which the loop is used up could cause a problem if the reel cannot get up to speed quick enough to replenish the loop. This

would cause a taut stock condition in which the material becomes like a clothes line between the reel and the device pulling the material. If this condition exists for even seconds then the reel and sensor could be damaged. By testing and resetting the electrical end points of the loop controller, the loop controller could signal the reel to ramp up to speed faster or in a shorter time to alleviate the possible taut stock condition. This will be covered thoroughly in the manual.

The two switches on the front of the unit make this unit very versatile. The top switch marked "payout / rewind" does exactly what it suggests. If the reel and loop control is used for payout or feeding to a device then select the "Payout Mode". If the reel is to be used to rewind from a device then select the "Rewind Mode".

The next switch make this unit very versatile. It can be switched from program one to program two. It can be programmed to output from 0-6VDC on program#1 and 0-10VDC on program #2. or both 0-5 or both 0-10VDC. Program #1 can be programmed to output 0-6VDC from the floor to 12 inches from the eye and program #2 can be programmed to output 0-6VDC from the floor to 35 inches from the eye or vice versa.

*****TO SWITCH FROM PAYOUT TO REWIND OR VICE-VERSA, MOVE THE SWITCH TO THE DESIRED POSITION AND THEN CYCLE POWER TO THE RSB. YOU MUST ALSO CYCLE POWER WHEN CHANGING FROM PROGRAM 1 TO PROGRAM 2***

SETUP

- 1. ONCE THE UNIT IS PLUGGED INTO A REEL THEN**
 - A. REMOVE RS-1 COVER.**
 - 1. PRESS MODE SWITCH UNTIL "VIEW TARGETS "IS DISPLAYED.**
 - 2. READ DISPLAY NUMBERS**
 - 3. PRESS MODE SWITCH UNTIL "NOISE LEVEL" IS DISPLAYED.**
 - 4. ADD 10% TO READING TAKEN AND PUT IN THIS MODE.**
 - B. MEASURE TAUT STOCK HEIGHT FROM THE FLOOR.**
 - 1. SUBTRACT THIS NUMBER FROM THE DISTANCE THE EYE IS SEEING. RECORD THIS NUMBER**
 - 1. GO TO MODE 10 (TAUT STOCK TOP) AND ENTER THIS NUMBER. PUSH THE FARTHEST LEFT BUTTON TO FINALIZE THE ENTRY.**
 - C. DECIDE THE INCHES FROM EYE THAT FULL SPEED SHOULD BE IN PAYOUT MODE.**
 - 1. GO TO MODE 14 AND ENTER THIS NUMBER. PUSH THE FARTHEST LEFT BUTTON TO FINALIZE THE ENTRY.**

OPERATING INSTRUCTIONS
RS-1 (RAPID SENSE WITH BASE)
Part number 10900520 (with D-sub plug)
Part number 10900521 (with amp plug)

INSTALLATION:

The RS-1 unit, when received should be checked for shipping damage. If damage has occurred, contact the carrier that handled the shipment first and then Rapid-Air to report the damage.

The RS-1 unit is shipped pretested and adjusted to a working height of 54" and is set for payout operation. It should be set in place on a level surface, although each stand is provided with (4) base holes to level the stand. Base holes can be used as thru holes for 7/16 bolts if the unit is to be bolted to the floor or for leveling the stand. If the optional guide bar package was purchased, the bars should be mounted at this time.

Each RS-1 unit assembled is prewired to an Amp 14 pin circular plug or 25 pin D sub connector that matches a connector output on every Rapid-Air device capable of running from a non-contact loop controller. Optional cord adapters are available for interfacing each style. Contact Rapid-Air for details. The RS-1 gets its control power from the device that it is controlling. Once the plug is attached, the RS-1 is ready to run.

The RS-1 unit (10900520 and 10900521) consists of (4) major components.

- | | |
|--------------------|--|
| 1. Sonic Head | 69100343 |
| 2. Stand | 21400130 |
| 3a. Cable Assembly | 28900226 for 10900424 14 pin Amp connector |
| 3b. Cable Assembly | 28900227 for 10900427 25 pin D connector |
| 4. Rod Assembly | 10900326 |

SONIC HEAD:

The Sonic Head is the key component for the RS-1. It is preprogrammed at the factory for a working height of 54" from the floor. If the working height must be changed, refer to the "Adjustments" section of the manual.

STAND:

The stand was designed to be durable but not cumbersome. All of the components are designed for easy replacement if a component becomes non-repairable or fails. Access to the payout/rewind and prog 1/prog 2 switches are from the front of the RS-1. Access the minimum/maximum pots and program/set switches are provided behind a removable side panel.

CABLE ASSEMBLY:

The cable assembly was designed to make the installation of the RS-1 to a Rapid-Air Reel, Straightener, or Rapid Roll very easy. The power and control connection is accomplished through one of two types of connectors. Optional adapter cables are available for each type of conversion if required. Contact Rapid-Air for details or assistance. If connecting to other Rapid-Air equipment, consult Rapid-Air.

OPERATION:

PAYOUT MODE

With the RS-1 in place and electrically attached to the Reel, Straightener or Rapid Roll that is in the "ON" position the unit is ready for operation.

To start thread up, press the jog button of the Reel, Straightener, or Rapid Roll to feed material out so the operator has material to work with. Once there is enough material, the operator can release the jog button and put the Reel, Straightener or Rapid Roll in automatic and let the sensor take over.

With the material aligned between the two guide bars, the operator can now walk the material to its destination and the sensor will take care of the loop needed for the operation.

The RS-1 maximum voltage is factory set for 6 VDC. The RS-1 can provide a variable voltage of 0-10 VDC to a Reel or Straightener manufactured by others if required. This voltage is dependent on the height of the loop. The Rapid-Air device that received the variable voltage, although preset at the factory for optimum performance, might have to be readjusted in accell and decell to provide smooth operation of the material being handled. Consult with Rapid-Air prior to changing the maximum output voltage.

OPERATION:

REWIND MODE

With the RS-1 in place and electrically attached to a Reel, the unit is ready for operation.

Attach the material being run to the reel. Turn on the reel and press the jog button to start the material rewinding and take up the slack. The RS-1 will then take over the control.

The RS-1 can now provide a variable voltage to the Reel. This voltage is dependent on the height of the loop. The Rapid-Air device that received the variable voltage, although preset at the factory for optimum performance, might have to be readjusted in accell and decell to provide smooth operation of the material being handled. The RS-1 max voltage is factory set for 6 VDC. Consult with Rapid-Air prior to changing the max output voltage.

*****TO SWITCH FROM PAYOUT TO REWIND OR VICE-VERSA, MOVE THE SWITCH TO THE DESIRED POSITION AND THEN CYCLE POWER TO THE RSB.***

****YOU MUST ALSO CYCLE POWER WHEN CHANGING FROM PROGRAM 1 TO PROGRAM 2**

ADJUSTMENTS

PAYOUT/REWIND SWITCH:

In the payout mode, the device that is receiving the signal from the RS-1 will increase in speed as the depth of the loop becomes smaller.

In rewind mode, the device that is receiving the signal from the RS-1 will increase in speed as the depth of the loop becomes larger.

ISOLATION RELAY:

This relay has a contact controlled by switch 2 of the sensor. The isolation relay insures that the device connected to the RS-1 will not receive a signal unless the beam of the RS-1 is broken within the 13" to 47.8" range. Use program mode 13 & 14 to change this setting.

TAUT STOCK:

This relay has a contact which is controlled by software adjustment of mode 10 of the sensor. The taut stock relay is a customer interface contact rated at 0.5 amp. The taut stock height is adjustable if needed or used. The contact will close when the material is in the taut stock location. The taut stock adjustment is made in the sonic head using program mode 10.

IF THE UNIT DOES NOT FUNCTION

1. Check for lights on the sensor unit.
2. Put your hand under the sensor and listen for a ticking sound. This means that the sensor is working.

Connect a meter selected for DC volts to terminals #10 and #12 of the terminal strip. Voltage should change, increase or decrease, depending on material distance from sensor head. If there is change then connect the meter to the motor drive board in the reel to check that the voltage change is getting to the drive board.

Problem Solving:

1. If the RS1 is operating correctly and then seems to just quit working with the screen going funny then the problem could be in the grounds in your facility. One way to check this out is to turn off everything except the RS1 and the unit it is connected to. If the screen clears up then the RS1 is getting noise from the building.

The fix is to use filter a on the entrance voltage of the device that the RS1 is connected to. This could be either 120 VAC or 230 VAC, 1 ph. Rapid Air has expirmented and found a filter that seems to be a fix. The filter is made by KB Electronics and their number is 9945C or you can order it from Rapid Air and the number is 69100432.

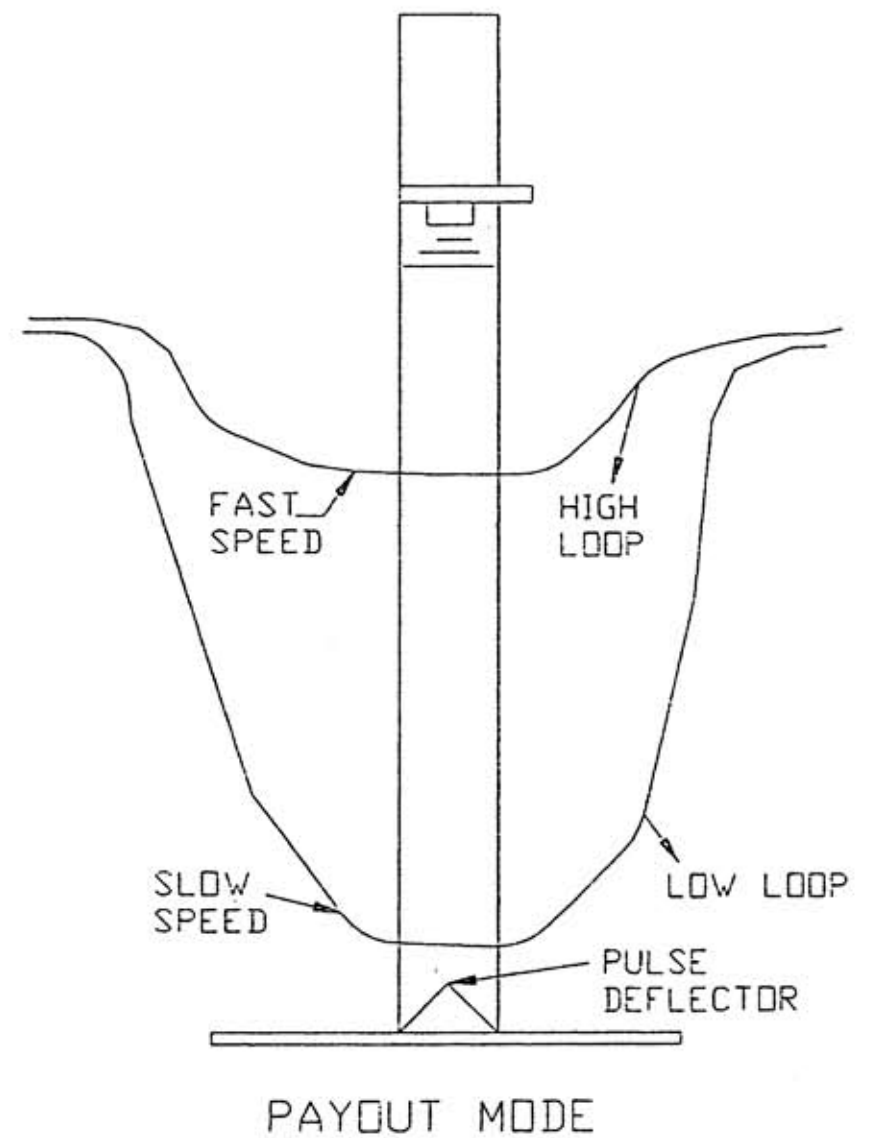
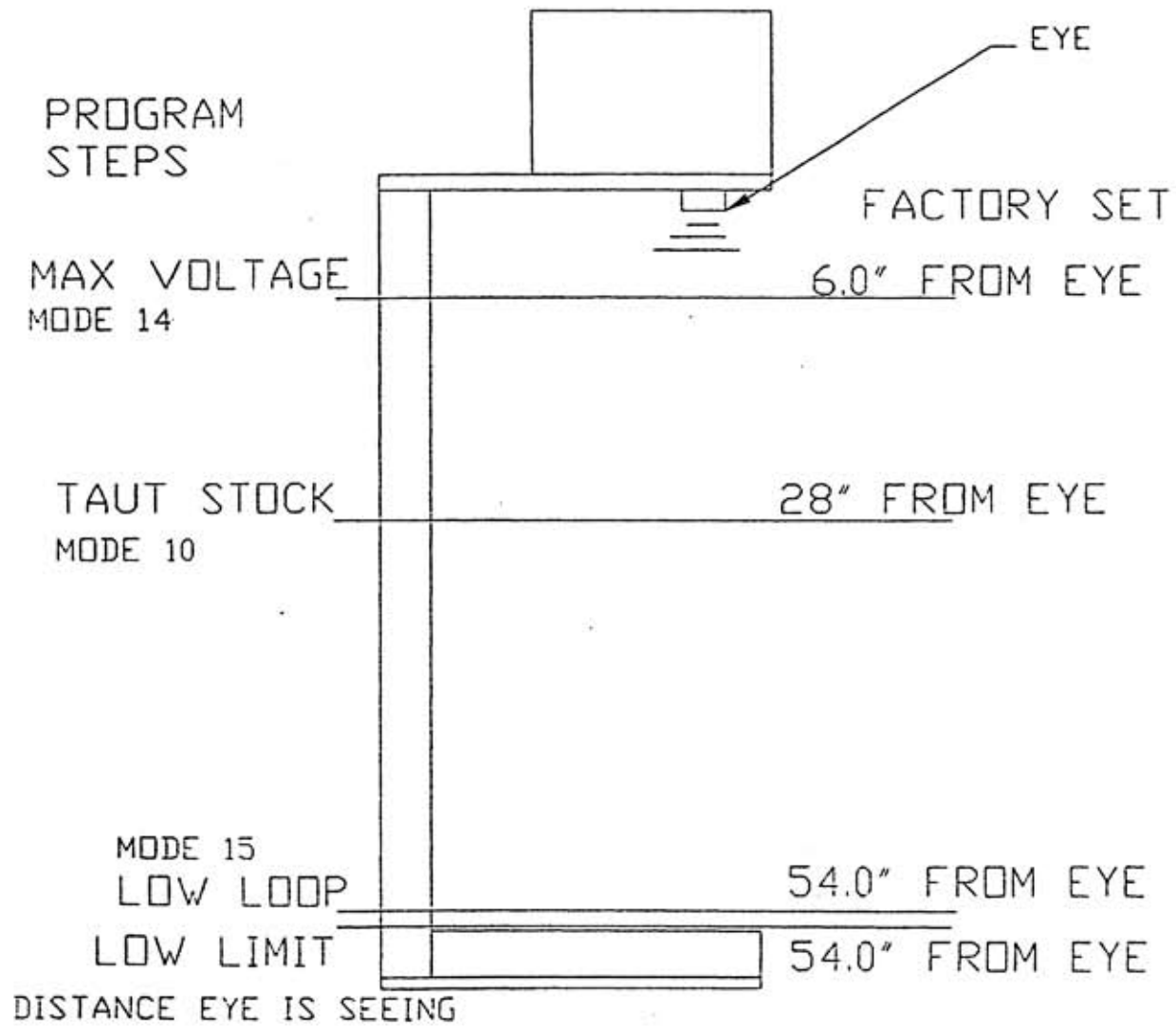
RS-2000 SETUP PARAMETERS---(D)--10/03/2000

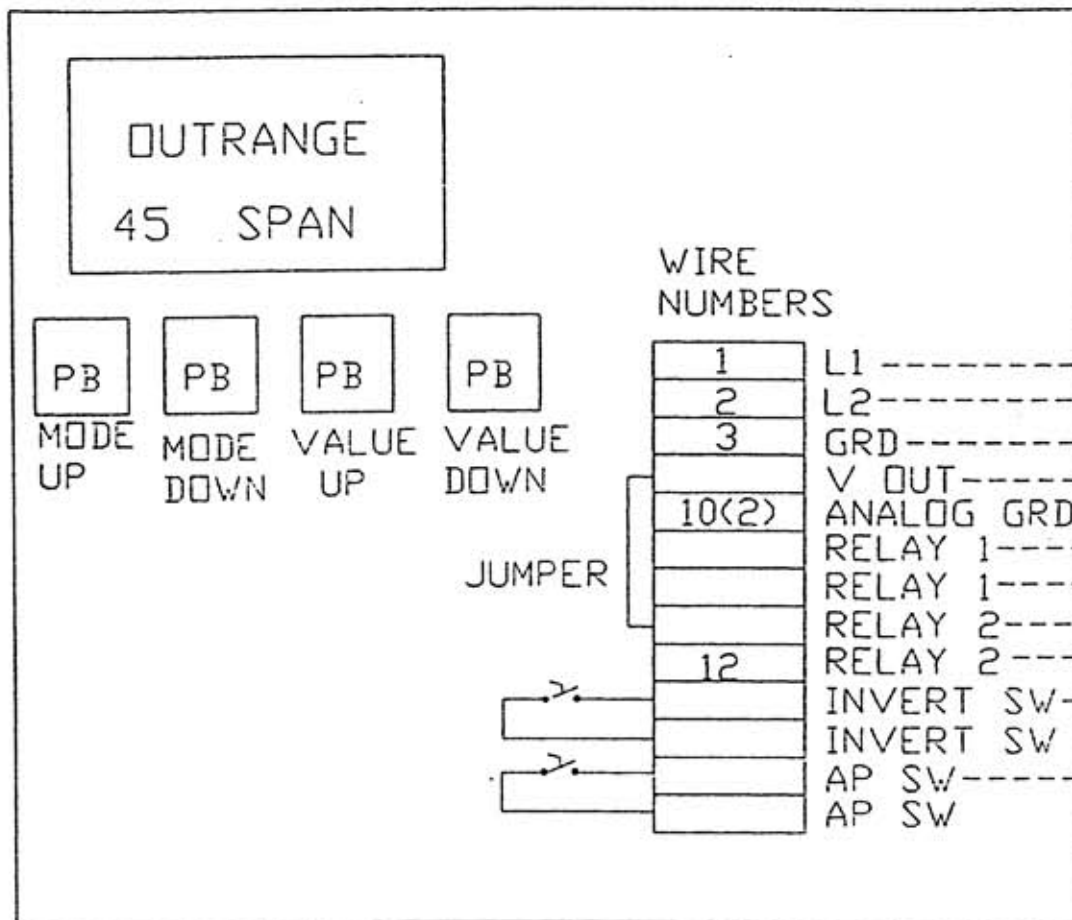
*FIRST DISPLAY=DISPLAYS DISTANCE (IN INCHES) THAT THE EYE IS SEEING. (54.8")

*TO ACCESS UTILITIES SECTION--PRESS AND HOLD THE RIGHT TWO VALUE BUTTONS FOR 10 SECONDS OR UNTIL THE DISPLAY FLASHES THEN MAKE THE NECESSARY CHANGES THEN CYCLE POWER.

*TO CHANGE FROM PAYOUT TO REWIND OR PROG 1 TO PROG 2---- SET SWITCH TO DESIRED POSITION THEN RECYCLE POWER.

MODE UP BUTTON	OPERATION	SETTINGS			MIN/MAX VALUES	EXPLANATION
		SENSOR DEFAULT	AS SENT #1	CUSTOMER PROGRAMMED #2		
1	SENSITIV	50			0 to 100%	HEARING AID, KEEP LOW AS POSSIBLE
2	BLANKING	6			INCHES	SETS DAD ZONE IN FRONT OF SENSOR HEAD
3	PULSES	10			1-20	QTY OF PULSES SENT AT ONE TIME
FILTERING						
4	SAMPLE RATE	75			4-120 MS	DELAY BETWEEN SENSOR SAMPLES
5	AVERAGE	5			1-20	QTY OF SAMPLES TO AVERAGE
6	OUTRANGE SAMP	10			1-50	# OF OUT OF RANGE SAMPLES IGNORED BEFORE ACCEPTING
7	OUTRANGE WIN	20			1-120 INCH	WINDOW OF ACCEPT., + OR - DIST. FROM CURRENT READING
8	VIEW TARGETS	10			0 TO 100	SET TO 10% ABOVE NOISE LEVEL
9	NOISE LEVEL	35				(NOISE LEVEL)W/ MATERIAL AT MAX HEIGHT [IF ABOVE 75, REDUCE SENSITIVITY]
OUTPUTS						
10	TAUT LEVEL TOP	28			INCHES	MAX HEIGHT FOR NO LOOP
11	TAUT LEVEL BOT	56			INCHES	SET SOMEWHAT ABOVE FLOOR LEVEL
12	REWINDLO LEVEL	52			INCHES	SET SOMEWHAT ABOVE FLOOR LEVEL
13	REWINDHI LEVEL	31			INCHES	
CALIBRATION-ANALOG						
14	MAX VOLT LEVEL	6			INCHES	DISTANCE FROM EYE FOR FULL SPEED
15	LOW LOOP LIMIT	52			INCHES	DISTANCE FROM EYE FOR ZERO[LIKE HEIGHT ADJ]
UTILITIES						
16	TYPE 1	4				
17	TYPE 2	2				
18	0V CALB	0				
19	MAX VOLT OUT	2351	2351		VDC	2351= 6VDC 4085=10VDC
20	TEMPCOMP	OFF	OFF	OFF		TEMPERATURE COMPENSATION ON/OFF
21	VIEW TEMP				DEGREE	
22	RESET	0	0	0	0	PUT IN A "1" TO RESET
23	CALIBRATION	1.016	DO NOT CHANGE			
24	MAX GAIN	7	DO NOT CHANGE			





RS-1 WIRING

D-SUB
PIN NUMBERS

1, 14
2, 15
3
4, 7
6

NEXT ASS'Y.			
STANDARD MFG TOLERANCES UNLESS OTHERWISE SPECIFIED			
DECIMALS			
ONE PLACE	.0	±.030	
TWO PLACE	.00	±.010	
THREE PLACE	.000	±.005	
FOUR PLACE	.0000	±.0005	
FRACTIONS		±1/64	
FINISH	53/	✓	
REV.	CHANGE	DATE	SCALE

RAPID-AIR CORPORATION			
ROCKFORD, IL • MADISON, SD			
PART NAME		NON CONTACT LOOP CONTROL RS-1 WIRING DIAGRAM	
MATERIAL		WEIGHT	
HEAT TREAT		HARDNESS	
DRAWN BY	GSM	CHECKED BY	FINAL FINISH
DATE		3-6-2000	DRAWING NUMBER
SCALE		FULL	85500294
			B