

Useful Notes:

PBI (RRI)

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PBI (RRI): USEFUL FAULTING GUIDE PART 1 OF 5		
RELAY	NORMALLY UP/DN	OPERATION
ALSR APPROACH LOCKING STICK R	UP	APPROACH LOCKING. PREVENTS SIGNAL RECLEARING IF REPLACED TO RED PREMATURELY UNTIL AFTER 120 SECONDS. (30 SECS FOR A SHUNT SIGNAL) (ENOUGH TIME FOR TRAIN TO STOP).
AJS/JR AUTO TIMER R	DN	TIMER USED FOR ALSR CIRCUIT.
TAR TRAIN APPROACH R	UP	(FOR LOOK BACK FEATURE) LOOKS BACK TO SIG IN REAR FOR TC'S CLEAR & FREE OF APPROACH (APP) LOCKING (ALSO NLR & RLR UP FOR THAT SIGNAL)
TASR TRAIN ARRIVED STICK R	DN	PROVES A TRAIN HAS ARRIVED AT SIG, BY BOTH 1 ST & 2 ND TC'S OCC & CLEAR BEYOND SIGNAL
ATSR APPROACH TRAIN STICK R	UP	(FOR LOOK BACK FEATURE) LOOKS BACK BEYOND SIG IN REAR; NO TRAIN IS APPROACHING (TAR UP) OR IS FREE OF APPROACH LOCKING (ALSR UP)
GR SIGNAL RELAY	DN	MAIN SIG RELAY; NEEDS TO BE ENERGISED TO ALLOW A PROCEED ASPECT IN MAIN SIGNAL
GSR SIGNAL STICK RELAY	UP	DISENGAGING RELAY. PREVENTS SIGNAL CLEARING AUTOMATICALLY BEHIND TRAIN
HR YELLOW RELAY	DN	SECONDARY SIG RELAY; WILL ONLY DISPLAY RED IF DOWN
NR (SIGNAL) NORMAL R	DN	WILL PICK WHEN ROUTE NORMALISED (ENTRANCE BUTTON PULLED)
NR (POINTS) NORMALISE R	DN	TO CALL POINTS TO NORMAL ON POINT SWITCH ONLY
RR (POINTS) REVERSE R	DN	TO CALL POINTS TO REVERSE ON POINT SWITCH ONLY
CR CENTRE RELAY	UP	USED TO PROVE POINT SWITCH IN CENTRE (INTERLOCKING CONTROLLED POINTS)
NLR (SIGNAL) NORMAL LOCK R	UP	(LATCHED). NEEDS TO BE UNLATCHED TO ALLOW RLR TO PICK AND CLEAR SIGNAL/MOVE POINTS
RLR (SIGNAL) REVERSE LOCK R	DN	SIGNAL CONTROL RELAY (INDIRECTLY MOVES POINTS & CLEARS SIGNAL WHEN PICKED)
NLR (POINTS) NORMAL LOCK R	UP*	(LATCHED).USED TO THROW POINTS TO NORMAL IF RLR UNLATCHED.
RLR (POINTS) REVERSE LOCK R	DN*	(LATCHED).USED TO THROW POINTS TO REVERSE IF NLR UNLATCHED
NCUR NORMAL CALLING ROUTE R	DN	INTERLOCKING CALLS POINTS NORMAL VIA THIS RELAY
RCUR REVERSE CALLING ROUTE R	DN	INTERLOCKING CALLS POINTS REVERSE VIA THIS RELAY
NKLPR NORMAL IND REPEAT R	**	PROVES POINTS ARE SET,LOCKED & DETECTED IN NORMAL
RKLPR REVERSE IND REPEAT R	**	PROVES POINTS ARE SET,LOCKED & DETECTED IN REVERSE
NZLPR NORMAL SPECIAL LOCK REP R	**	POINTS ARE IN REQ'D NORMAL POSITION OR FREE TO MOVE TO THAT POSITION
RZLPR REVERSE SPECIAL LOCK REP R	**	POINTS ARE IN REQ'D REVERSE POSITION OR FREE TO MOVE TO THAT POSITION
WZR POINTS SPECIAL RELAY	UP***	PROVES POINTS ARE AVAIL TO MOVE, ALL OTHER ROUTES THAT USE THE SAME POINTS ARE NOT SET
UZR ROUTE SPECIAL RELAY	UP***	PROVES THAT ROUTE IS VALID, NO OTHER ROUTE IS SET.
Notes: * RELAY COULD BE UP OR DN, DEPENDING ON WHICH WAY POINTS ARE NORMALLY SET. ** UP IF POINTS ARE SET, LOCKED & DETECTED, DOWN IF NOT. *** IF POINTS FREE TO MOVE ONLY/IF SIGNAL ROUTE AVAILABLE.		
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PBI (RRI): USEFUL FAULTING GUIDE PART 2 OF 5 MAIN INTERLOCKING RELAYS (ALL IN RELAY ROOM)		
RELAY	NORMALLY UP/DN	OPERATION
(S)R START RELAY	DN	STARTS OFF SIGNAL SET PROCESS (BUTTON FLASHES)
(S) PR START REPEAT R	DN	REPEATER OF ABOVE, CONTROLS FEED TO TFR RELAY
(F)R (<i>FOLLOWS BUTTON</i>) 'FROM' RELAY	DN	PICKS WHEN ITS ASSOCIATED START OR DESTINATION BUTTON PRESSED
(FM)R (<i>FOLLOWS BUTTON</i>) 'FROM MIDDLE' R	UP	CHECKS POSITION OF BUTTON (DROPS WHEN BUTTON PULLED ONLY)
(M)R (<i>FOLLOWS BUTTON</i>) 'MIDDLE' RELAY	DN	(<i>NOT ALWAYS USED</i>) USED TO SIGNIFY MIDDLE POSITION OF A BUTTON.
PBPR PUSH BUTTON PROVING R	DN	PROVES TO INTERLOCKING A BUTTON IS PRESSED
PBCR PUSH BUTTON REPEAT R	UP	PROVES TO INTERLOCKING THAT NO BUTTON IS PRESSED/STUCK IN.
(D)R DESTINATION RELAY	DN	PICKS WHEN A VALID DESTINATION BUTTON (EXIT) HAS BEEN PRESSED (ENT BUTTON GOES STEADY IF VALID & SIGNAL RLR PICKS)
(D)PR	DN	REPEATS (D)R, CONTROLS FEED TO DCR (DOWN TO PICK DCR)
TFR TRANSFER RELAY	UP/DN	STATES TO INTERLOCKING WHETHER THE BUTTON PRESSED IS AN ENTRANCE OR EXIT (<i>UP: ENTRANCE / DOWN: EXIT</i>)
DZR DESTINATION SPECIAL RELAY	DN	ONLY PICKS IF THE ROUTE CALLED IS INVALID (TWO ENTRANCE BUTTONS PRESSED)
DJR DEST TIMER RELAY	DN	NON-PRESETTING TIME DELAY RELAY SET AT 1 SECOND BY CAPACITOR & RESISTOR
DCR DEST PROVING RELAY	UP	NO DESTINATION REGISTERED, INTERLOCKING READY (REPICKS DJR)
Notes: A SIGNAL WILL NOT CLEAR UNLESS FOLLOWING CONDITONS MET FIRST : DJR(UP), TFR(DN), PBPR (UP), (S)PR DN, (F)R (FOR ENT BUTTON I.E: ENT BUTTON PRESSED TO START PROCESS). SEE GUIDE PART 3 FOR SIGNAL CLEARING SEQUENCE.		
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PBI (RRI): USEFUL FAULTING GUIDE PART 3 OF 5 SIGNAL SELECTION PROCESS (CLEARING A ROUTE)	
SIGNALLERS ACTIONS	INTERLOCKING ACTIONS
PUSHES ENTRANCE BUTTON	PBPR PICKS
	PBCR DROPS
	[ENTRANCE] (F)R PICKS
	(S)R PICKS [AND STICKS]
	(S)PR PICKS [STICKS BECAUSE OF (S)R STICKING]
ENTRANCE BUTTON RELEASED	PBPR DROPS
	PBCR PICKS
	TFR PICKS (ENTRANCE BUTTON DECIDED)
	[ENTRANCE] (F)R DROPS
DESTINATION BUTTON PRESSED	PBPR PICKS
	PBCR DROPS
	[EXIT] (F)R PICKS
	(D)R PICKS [VALID ROUTE]
	(D)PR PICKS
DESTINATION BUTTON RELEASED	PBPR DROPS
	PBCR PICKS
	DCR DROPS [(D)PR CUTS FEED]
	DJR DROPS (1 SEC TIMER)
	<i>(DJR DROPPING: (S)R, (S)PR, (D)R, (D)PR, & TFR ALL DROP) WHICH IN TURN REPICKS DCR WHICH THEN REPICKS DJR & INTERLOCKING READY FOR NEXT ROUTE.</i>
Notes: THE PROCESS HAPPENS IN MILLISECONDS. A 'DJR HOLD' KEY OPERATED SWITCH IS PROVIDED FOR FAULTING SIMPLIFICATION. THIS MUST NOT BE LEFT OPERATED, OR NO OTHER ROUTES CAN BE SET.	
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1PBI (RRI): USEFUL FAULTING GUIDE PART 4 OF 5 CALLING POINTS AND SIGNALS & TRAIN PASSING SIG OR ROUTE CANCELLED	
INTERLOCKING ACTIONS	POINT/SIGNAL RELAY ACTIONS
WITH (S)R UP & (D)R UP	SIGNAL NLR UNLATCHES
	USR'S DROP (<i>ROUTE LIGHTS UP</i>)
	SIGNAL RLR PICKS (<i>ENTRANCE BUTTON STEADY LIGHT</i>)
	POINTS NLR/RLR IS SELECTED DEPENDING ON WHICH WAY POINTS ARE REQUIRED (AND ALSO WZR UP SIGNIFIES IF POINTS ARE FREE TO MOVE)
	SIGNAL GR PICKS (& STICKS) [GSR UP FROM ROUTE BEING NORMAL & PREVIOUS TRAIN PASSED SIGNAL]
	SIGNAL HR PICKS (SIGNAL ASPECT OFF)
(S)R & (D)R DROP	SEQUENCE FINISHED
1. SIGNALLER CANCELS ROUTE PREMATURELY	
SIGNALLERS ACTIONS	INTERLOCKING ACTIONS
PULLS UP ENTRANCE BUTTON	(FM)R DROPS
Please note: several relays drop at once in quick succession, so some may appear to drop first and not in the order stated.	SIGNAL RLR DROPS
	NR PICKS (& STICKS) [ALSR UP & NR UP WILL RE-PICK NLR]
	NLR PICKING CUTS FEED TO NR & IT DROPS
	GR DROPS (<i>SIG BACK TO RED</i>)
SIGNAL WILL EITHER CANCEL STRAIGHT AWAY* (IF NO TRAIN APPROACHING) OR WILL TIME OUT (SEE LEFT OR RIGHT FOR CONDITION)	
ROUTE CANCELS STRAIGHT AWAY*	ROUTE TIMES OUT
TAR RELAY UP (<i>LOOK BACK sig in rear</i>)	'NR' DROPPING INITIALISES AJR/AJS (<i>BY ALSR BEING DOWN</i>)
ATSR UP (<i>LOOK BACK beyond sig in rear</i>)	AJR/AJS DROP
ALSR REPICKS & STICKS (ROUTE AVAIL)	AFTER 120SECS: AJR UP & AJS DOWN ALSR RE-PICKS & STICKS (ROUTE AVAIL)
2. OR TRAIN TAKES THE ROUTE NORMALLY (GSR CIRCUIT)**	
WHAT HAPPENS ON TRACK	RELAY ACTIONS
<i>Note: GSR RELAY IS INITIALLY UP BY PREVIOUS TRAIN, (RLR'S FOR THAT GSR ROUTE DOWN, NR DOWN, GSR THEN STICKS WITH EITHER SIGNAL AT RED OR CONTROL TC'S CLEAR).</i>	
SIGNAL CLEARED (RGPR DOWN)	PART 1 OF GSR STICK PATH LOST (GSR DOES NOT YET DROP)
BERTH TC OCCUPIED	PART 2 OF GSR STICK PATH LOST (GSR IS STILL UP)
OVERLAP TC OCCUPIED	PART 3 OF GSR STICK PATH LOST AND GSR DROPS (TRAIN HAS PASSED)
ROUTE CANCELLED NORMALLY (ENT BUTTON PULLED AFTER TRAIN)	
(FM)R PICKS	
NR PICKS (ALSR UP & NR UP RE-PICK NLR) [NLR RE-PICKING CUTS FEED TO NR & IT DROPS]	
WITH RLR'S DOWN, NR DOWN, THE GSR WILL RE-PICK AND STICK WITH RGPR UP (SIG PROVED TO BE AT RED) OR TC'S CLEAR [IN GSR CIRCUIT]	
ROUTE READY FOR NEXT TRAIN	
Notes: * Some installations do not have the 'look back feature' and will always time out. ** For last wheel replacement, the signal will return to red after berth TC has occupied and cleared (this is in the GR circuit).	
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PBI (RRI): USEFUL FAULTING GUIDE PART 5 OF 5
AJS/AJR TIMING CIRCUIT (TO PICK TIMER PATH OF ALSR RELAY) <i>(SEE DIAGRAM THIS TIMER CIRCUIT RELATES TO)</i>
SIGNALLER PULLS BUTTON TO PREMATURELY PLACE SIGNAL TO RED (A TRAIN IS APPROACHING)
B50 TO JS COIL (NEG ALREADY PRESENT)
JS PICKS, BX110 VOLTS NOW REACHES MOTOR & STARTS TIMING
START CONTACTS BREAK
FINISH CONTACTS MAKE AFTER TIMER FINISHES (<i>MAIN SIGNAL: 120 SECS</i>)
JR PICKS (NOW FED VIA SIGNAL NR FEED ON 'A1' & JR'S FRONT CONTACTS)
JR PICKING CUTS OFF FEED TO JS
JS DROPPING CUTS FEED OFF TO MOTOR
FINISH CONTACTS BREAK (START CONTACTS REMAKE)
JR UP & JS DOWN: PROVIDES B50 PATH TO PICK ALSR & IT STICKS
NR PICKS: ROUTE NORMALISES
NR PICKING BREAKS FEED TO JR
<i>(Note: ROUTE NORMALISING PICKS SIGNAL NLR'S WHICH BREAK FEED TO NR)</i>
JR & JS NOW BOTH DOWN PROVIDES N50 TO GR RELAY FOR NEXT TRAIN
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