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FINDING, CUTTING, WIRE-WRAPPING THE NPG JUMPER ON THE UNIBUS BACKPLANE OF THE VAX 11/780

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Finding, Cutting, Wire-wrapping the NPG Jumper on the UNIBUS Backplane of the VAX 11/780

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- I. Background of UNIBUS function
 - A. H/W developers primary interface to VAX 11/780
 - B. Types of devices that connect to UNIBUS
 - C. Asynchronous bi-directional bus
 - D. Function
 - 1. Prioritize arbitration among devices
 - 2. High speed communication path
 - 3. Links I/O devices to UNIBUS adapter (UBA)
 - 4. Handles all communication between UBA AND Synchronous Backplane Interface (SBI)
 - 5. Detects device generated interrupts

- II. Interrupts
 - A. UNIBUS sources of SBI interrupts
 - 1. The UNIBUS device
 - 2. The UNIBUS adapter
 - B. UNIBUS interrupt request levels
 - 1. Determined by the UNIBUS Bus Request (BR) lines
 - 2. Interrupts from UBA occur at one assigned request level set by a backplane jumper

- III. Bus Request levels
 - A. Device request levels for requesting bus control
 - 1. Non-processor Requests (NPR)
 - 2. Four BR levels BR7 BR6 BR5 BR4
 - B. Define NPR/NPG
 - 1. NPR- bus request from a device for a transfer not requiring CPU INTERVENTION (Direct Memory Access (DMA))
 - 2. NPG- Grant signal in response to NPR
 - C. NPR used when device requests a direct access data transfer to memory or another device
 - D. Bus lines associated with NPR priority level
 - 1. Two lines - Request issued on NPR
Grant issued on NPG
 - 2. NPR has highest priority

- IV. UNIBUS operation
 - A. UNIBUS NPR device memory transfers are completed by placing addresses in lower range on bus
 - B. UNIBUS device initiates request by asserting NPR
 - C. If memory not locked (CPU accessing memory), arbitrator asserts NPG to requesting device

- V. Communications and Control
 - A. Master/Slave relationship between devices on UNIBUS
 - B. Master- Device in control/Slave- Device being addressed

VI. Device examples

- A. DR11-W in DMA mode becomes master via NPR request & operates directly on memory
- B. DZ-11 is interrupt driven. DZ initiates interrupt, Interrupt service routine interprets & services interrupts

VII. Identify/Replace/Remove NPG wire

- A. Explain DEC alphabet
 - 1. A B C D E F H J K L M N P R S T U V
 - 2. Describe pinout on backplane
- B. Locate UNIBUS BA11-K
 - 1. Locate System units (SU)
 - 2. Describe Grant continuity modules (flip chips)
 - 3. Power switch
- C. Warning against hair, badges, pens, calculators etc.
- D. Locating CA1-CB1 pins on backplane
- E. Tools/materials required
 - 1. Wire wrap manual/electric
 - 2. Unwrap tool
 - 3. Wire AWG #30

VIII. Summary

- A. Overview of NPR/NPG signal
- B. Locating CA1-CB1
- C. Warnings

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Unannounced	<input type="checkbox"/>
Justification	
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A-1	