*DEFINE_CURVE_DRAWBEAD

Purpose: This keyword simplifies the definition of a draw bead, which previously required the use of many keywords.

> **NOTE:** This option has been deprecated in favor of *DEFINE_ MULTI_DRAWBEADS_IGES.

Card 1	1	2	3	4	5	6	7	8
Variable	CID	TCTYPE	VID	PID	BLKID	PERCT	LCID	
Type	I	I	I	I	I	F	I	
Default	none	none	none	none	none	0.0	none	

Point Cards. For TCTYPE=1 define points on the curve. Input is terminated at the next keyword ("*") card.

Card 2	1	2	3	4	5	6	7	8
Variable	CX	CY	CZ					
Type	F	F						
Default	0.0	0.0						

IGES Card. For TCTYPE=2 set an IGES file.

Card 2	1	2	3	4	5	6	7	8
Variable	FILENAME							
Type	C							
Default	none							

VARIABLE	DESCRIPTION
CID	Draw bead curve ID; must be unique.
TCTYPE	Flag to indicate input curve data format:
	EQ.1: XYZ data,
	EQ.2: IGES format data.
VID	Vector ID, as defined by *DEFINE_VECTOR. This vector is used to project the supplied curves to the rigid tool, defined by the PID below.
PID	Part ID of a rigid tool to which the curves are projected and attached.
BLKID	Part ID of the blank.
PERCT	Draw bead lock percentage or draw bead force.
	GT.0: Percentage of the full lock force for the bead defined. This is the ratio of desired restraining force over the full lock force. The value should be between 0.0 and 100.0.
	LT.0: Absolute value is the draw bead force.
LCID	Load curve ID defining material hardening curve of the sheet blank, BLKID.
CX, CY, CZ	Points on the curve.
FILENAME	IGES file name.

Remarks:

1. This keyword allows for the definition of a draw bead curve in either XYZ or IGES format; projects the curve to the rigid tool specified; creates extra node set and attaches it to the rigid tool. With supplied material hardening curve (LCID), full lock force is calculated. There is no need to define *CONTACT_DRAWBEAD and *CONSTRAINED_RIGID_ BODIES since they are treated internally within the code.

2. The "curve" menu in LS-PrePost can be used to break or join multiple disconnected curves, and output in either 'XYZ' or IGES format.

3. The following partial keyword example defines a draw bead curve ID 98 (IGES file "bead1.iges") to restrain blank part ID 63. Full lock force is calculated from the strain hardening curve ID 400. The draw bead is projected along vector ID 991, and is attached to a rigid tool of part ID 3.

    ```
    $---+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----8
    *KEYWORD
    ```

```
*DEFINE_VECTOR
991,0.0,0.0,0.0,0.0,0.0,10.0
*DEFINE_CURVE_DRAWBEAD
$      CID   TCTYPE       VID      PID    BLKID     PERCT      LCID
        98        2       991        3       63    52.442       400
bead1.iges
*MAT_037
$      MID       R0        E       PR     SIGY      ETAN        R     HCLID
         1  7.89E-09  2.00E+05      0.3    240.0               1.6      400
*DEFINE_CURVE
400
0.0,240.0
0.02,250.0
...
1.0, 350.0
*END
```

Revision information:

This feature is available starting in LS-DYNA R5 Revision 62464.