### Course in ANSYS

Example0101



#### **Objective:**

Display the moment curve

#### Tasks:

Obtain values in intermediate points?

Create an element table?

Display the moment curve?

#### **Topics:**

Start of analysis, Element table/output, intermediate points, saving/restoring

 $E = 210000 \text{N/mm}^2$   $\nu = 0.3$ L = 100 mm

- a = 10mm
- b = 10mm
- F = 100N

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# Example – Read input from

Load the example0100.lgw by File Menu > Read input from

### **Example - Solve**

#### Solution > Solve > Current LS



### **Example - PostProcessing**

#### **General Postproc > Plot Results > Deformed Shape**



### **Example - PostProcessing**



Read Maximum displacement: DMX

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## Example – Element Type

#### **Preprocessor > Element Type > Add/Edit/Delete**

Element Types	×	about	the element for u	use in the element ta	ble
Defined Element Types	▲Library of Element Typ	es			×
NONE DEFINED	Library of Element Types Element type reference number		Structural Mass Link Beam Pipe Rigid Solid Shell 1	<ul> <li>2D elastic 3         <ul> <li>plastic 23</li> <li>tapered 54</li> <li>3D finite strain</li> <li>2 node 188</li> </ul> </li> <li>2D elastic 3</li> </ul>	•
	ОК	Apply	Cancel	Help	
Add Optic	ns Delete		Press Add		

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## **Example - Element Type**

#### **Preprocessor > Element Type > Add/Edit/Delete**

Element Types		
Defined Element Types:		
		▲ BEAM3 element type options
		Options for BEAM3, Element Type Ref. No. 1
		Member force + moment output K6
		Output at extra intermed pts K9 No intermed pts 💌
		Load offset in terms of K10 Length units
		OK Cancel Help
Add Op	otions	Press Options
Close	Help	Press Help to learn more about the element. Find the table on the next page
ANSYS		Example0101 8

Find the following table for the element. Identify how to plot member forces in longitudinal direction of the beam element - MMOMZ

Name	Definition	0	R
EL	Element Number	Y	Y
NODES	Element nodes - I, J	Y	Y
MAT	Element material number	Y	Y
VOLU:	Element volume	N	Y
XC, YC	Location where results are reported	Y	3
TEMP	Temperatures T1, T2, T3, T4	Y	Y
PRES	Pressure P1 at nodes I,J; OFFST1 at I,J; P2 at I,J; OFFST2 at I, J; P3 at I; P4 at J	Y	Y
SDIR	Axial direct stress	1	1
SBYT	Bending stress on the element +Y side of the beam	1	1
SBYB	Bending stress on the element -Y side of the beam	1	1
SMAX	Maximum stress (direct stress + bending stress)	1	1
SMIN	Minimum stress (direct stress - bending stress)	1	1
EPELDIR	Axial elastic strain at the end	1	1
EPELBYT	Bending elastic strain on the element +Y side of the beam	1	1
EPELBYB	Bending elastic strain on the element -Y side of the beam	<u>1</u>	1
EPTHDIR	Axial thermal strain at the end	1	1
EPTHBYT	Bending thermal strain on the element +Y side of the beam	1	1
EPTHBYB	Bending thermal strain on the element -Y side of the beam	1	1
EPINAXL	Initial axial strain in the element	<u>1</u>	1
MFOR(X, Y)	Member forces in the element coordinate system X and Y direction	2	Y
MMOMZ	Member moment in the element coordinate system Z direction	2	Y

Find also the following table in the Help function

Table 3.2. BEAM3 Item and Sequence Numbers (KEYOPT(9) = 0) ●

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3 K9
Cancel Help
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3 4

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🗉 Failure Criteria	🕀 Failure Criteria								
	Dist Results								
	🗉 List Results								
Query Results	Query Results								
🔤 Options for Out	🖬 Options for Outp								
🔤 Results Viewer	🔤 Results Viewer								
🔤 Write PGR File	🔤 Write PGR File 🔄	_							
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🗆 Element Table	Element Table								
🔤 Define Table	🧰 Define Table 🛑								
📰 Plot Elem Tab	🧱 Plot Elem Table								
🧱 List Elem Tab	🧱 List Elem Table								
🔤 Abs Value Op	🔜 Abs Value Option								
🔤 Sum of Each 🛛	🔜 Sum of Each Item								
🔤 Add Items	📰 Add Items							· · · · · ·	_
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🔤 Cross Produc	Cross Product			Clor	-		Ho	n l	
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🔤 Erase Table	🔤 Erase Table								
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▲ Define Additional Element Table Item	15 🔀
[AVPRIN] Eff NU for EQV strain	
[ETABLE] Define Additional Element Table Items	
Lab User label for item	
Item,Comp Results data item	DOF solution       Image: Constraint of the solution o
(For "By sequence num", enter seq	uence
no. in Selection box. See Table 4.	.хх-З
in Elements Manual for seq. numb	ers.) Cancel Help

Scroll down in this menu to find the line "By sequence number" -



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## Example – Plot Line-Element



### Example – Plot Line-Element



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