

# SPAN: Getting Started

Start SPAN by selecting: **Start ▶ Programs ▶ GTSoft ▶ SPAN**



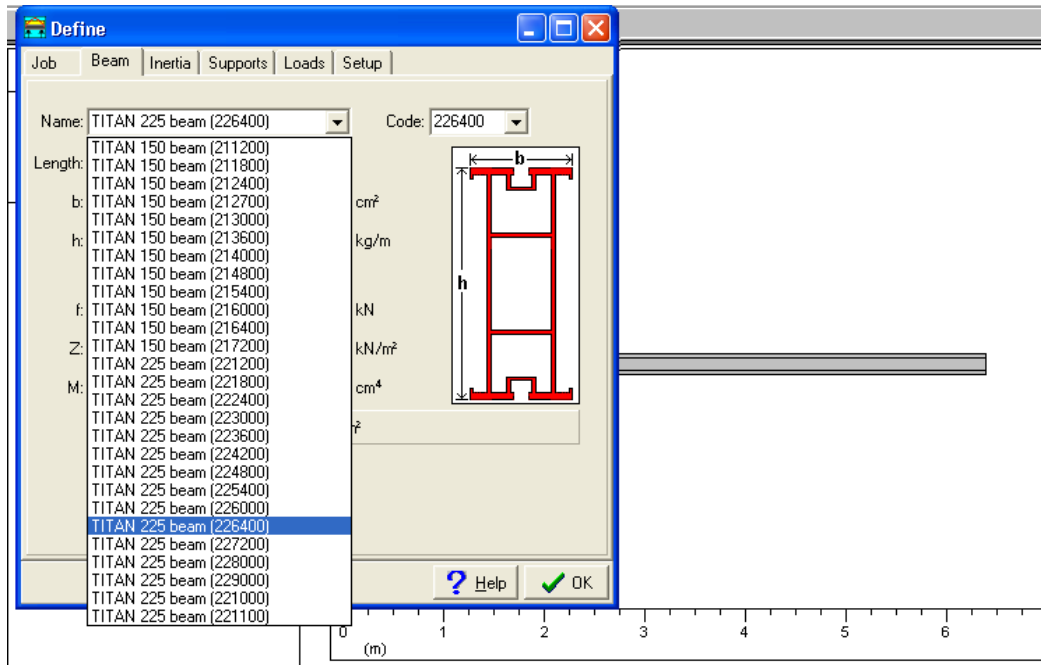
Select the **Help** button, or press the **F1** key on your keyboard at any time to view the online **Help** file.



Click the **New** button on the toolbar to open the main design window.



Follow the instructions below to see how easy it is to create a design:



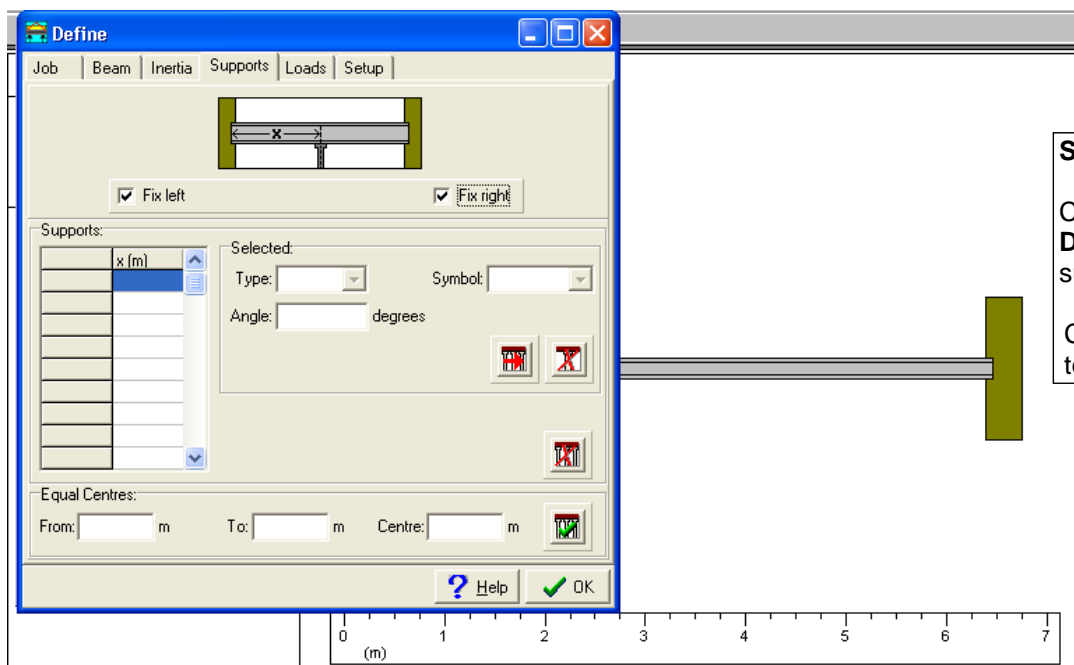
**Step 1: Open Define Box.**  
Double-click anywhere in the main window to open the **Define Box**. The **Define Box** is used to create and edit your design.

Drag the **Define Box** to the side to let you see what is happening in the main window.

Click the **Beam** tab of the **Define Box**.

Click the arrow beside the **Name** box and select **Titan 225 beam (226400)** from the drop-down list.

The main diagram changes after any entry in the **Define Box**.



**Step 2: Fix ends of beam.**

Click the **Supports** tab of the **Define Box** to define the supports.

Click **Fix left** and **Fix right** to fix the ends of the beam.

**Define ( )**

Job | Beam | Inertia | Supports | Loads | Setup

Fix left       Fix right

Supports:

x (m)
3.000

Selected:

Type: Standard      Symbol: Arrow

Angle: 0.0 degrees

Equal Centres:

From: \_\_\_\_\_ m      To: \_\_\_\_\_ m      Centre: \_\_\_\_\_ m

? Help      OK

0 (m) 1 2 3 4 5 6 7

**Step 3: Add a support.**

Click the **Supports** tab of the **Define Box** to define the supports.

Enter a support at **3.0m** using the **Supports** grid.

**Define**

Job | Beam | Inertia | Supports | Loads | Setup

Point

x (m)	L (kN)
-------	--------

Distributed

x (m)	w (m)	L1 (kN/m)	L2 (kN/m)
0.000	3.000	70.0	70.0
3.000	3.400	35.0	35.0

Custom

x (m)	L (kN/m)
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? Help      OK

0 (m) 1 2 3 4 5 6 7

**Step 4: Define loads.**

Click the **Loads** tab of the **Define Box** to define the loads.

Click the **Distributed** grid to enter uniformly distributed loads.

Make the entries shown to define a UDL of **70.0kN/m** from **0.0m** to **3.0m** and a UDL of **35.0kN/m** from **3.0m** to **6.4m**.

Main | Input/Output | Graphs | Tables

Page: 1  
Date: 24.2.02

Beam: TITAN 225 beam (226400)

L = 6.400 m  
I = 2241.0 cm<sup>4</sup>  
E = 6.89E+07 kN/m<sup>2</sup>  
EI = 1544.0 kNm<sup>2</sup>

Maximum	x (m)
□ 57.19 kNm	0.000
● 11.430 mm	1.568
R 163.5 kN	3.000

109.8kN      163.5kN      55.7kN

0 (m) 1 2 3 4 5 6 7

**Step 5: Toolbar.**

Superimpose various items on the main diagram using the toolbar buttons. Click a button again to remove the superimposed item.

Main **Input/Output** Graphs Tables

Page: 2  
Date: 24.2.02

Input Data

Beam	Name	L (m)	b (mm)	h (mm)	A (cm <sup>2</sup> )	W (kg/m)	E (kN/m <sup>2</sup> )	I <sub>y</sub> (cm <sup>4</sup> )	EI (kNm <sup>2</sup> )	r (cm)	Z (cm <sup>3</sup> )	M (kNm)	S (kNm)
TITAN 225 beam (226400)		6.400	100.000	225.000	32.83	8.89	6.89E+07	2241.0	1544.0	143.0	199.2	29.50	71.3

Distributed Loads

x (m)	w (m)	L <sub>1</sub> (kN/m)	L <sub>2</sub> (kN/m)
0.000	3.000	70.0	70.0
3.000	3.400	35.0	35.0

Solution

Supports

x (m)	Type	R (kN)	M (kNm)
0.000	Fixed	109.8	57.2
3.000	Standard	163.5	42.1
6.400	Fixed	55.7	29.4

Maxima

	Maximum	x (m)
Reaction	163.5 kN	3.000
Shear Force	109.8 kN	0.000
Sagging Moment	29.94 kNm	1.555
Hogging Moment	-57.19 kNm	0.000
Sagging Deflection	11.430 mm	1.555
Hogging Deflection	-0.471 mm	3.194

**Step 6: Change view.**  
Vary the view using the tabs above the main window.

Open the **Input/Output** page. This lists the design input and solution.



Click the **Zoom** button to read the text more clearly.



Click the **Zoom** button again to return to full screen mode.

Main **Input/Output** **Graphs** Tables

Page: 3  
Date: 24.2.02

Beam: TITAN 225 beam (226400)  
L = 6.400 m  
I = 2241.0 cm<sup>4</sup>  
E = 6.89E+07 kN/m<sup>2</sup>  
EI = 1544.0 kNm<sup>2</sup>

Maximum	x (m)
57.19 kNm	0.000
109.8 kN	0.000
11.430 mm	1.558
R 163.5 kN	3.000

Bending Moment (kNm) x 10

Deflection (mm)

Shear Force (kN) x 10

**Step 7: Change view.**

Open the **Graphs** page.



This displays bending moment, deflection and shear force graphs.

Main **Input/Output** **Graphs** **Tables**

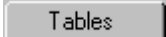
Page: 4  
Date: 24.2.02

Beam: TITAN 225 beam (226400)  
L = 6.400 m  
I = 2241.0 cm<sup>4</sup>  
E = 6.89E+07 kN/m<sup>2</sup>  
EI = 1544.0 kNm<sup>2</sup>

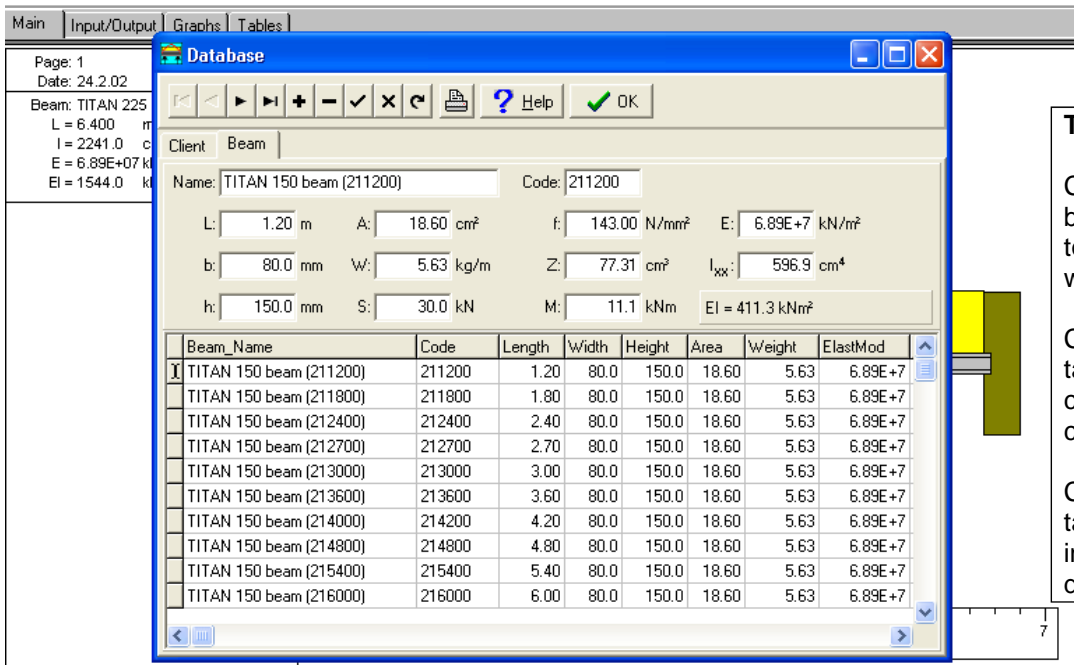
x (m)	W (kN/m)	D (mm)	F (kN)	x (m)	W (kN/m)	D (mm)	F (kN)	x (m)	W (kN/m)	D (mm)	F (kN)
0.000	-57.19	0.000	109.8	2.154	16.84	-8.402	-41.2	4.309	10.59	-4.724	17.5
0.063	-50.30	-0.067	105.3	2.219	14.06	-7.770	-45.6	4.372	11.64	-5.001	15.2
0.127	-43.71	-0.269	100.8	2.281	11.32	-7.168	-49.7	4.436	12.54	-5.248	13.0
0.190	-37.40	-0.596	96.3	2.345	7.99	-6.470	-54.2	4.499	13.30	-5.462	10.8
0.253	-31.37	-1.006	91.9	2.409	4.39	-5.751	-59.6	4.562	13.92	-5.641	8.6
0.317	-25.63	-1.510	87.4	2.471	0.49	-5.019	-63.1	4.626	14.40	-5.793	6.4
0.380	-20.21	-2.024	83.4	2.535	-3.89	-4.294	-67.8	4.689	14.73	-5.927	4.2
0.444	-15.32	-2.649	79.9	2.599	-8.16	-3.559	-72.1	4.752	14.91	-6.052	2.0
0.507	-10.82	-3.315	74.4	2.661	-12.92	-2.850	-76.6	4.816	14.96	-6.177	0.0
0.570	-6.00	-4.011	69.9	2.725	-17.98	-2.181	-81.0	4.879	14.87	-6.297	-2.0
0.634	-1.86	-4.724	65.4	2.789	-23.29	-1.555	-85.5	4.943	14.65	-6.419	-4.0
0.697	2.39	-5.443	61.0	2.851	-28.91	-0.999	-90.0	5.006	14.28	-6.529	-6.0
0.760	6.14	-6.156	56.5	2.915	-34.21	-0.544	-94.0	5.069	13.76	-6.700	-8.0
0.824	9.82	-6.855	52.0	2.979	-40.37	-0.135	-98.5	5.133	13.10	-6.840	-10.0
0.887	12.80	-7.529	47.5	3.042	-39.69	0.179	-101.8	5.196	12.30	-6.942	-12.0
0.950	15.70	-8.199	43.0	3.105	-35.79	0.268	-99.6	5.259	11.36	-7.011	-14.0
1.014	18.06	-8.711	39.0	3.168	-32.05	0.459	-97.4	5.322	10.27	-7.050	-16.0
1.077	20.42	-9.269	34.5	3.232	-29.45	0.664	-95.1	5.386	9.04	-7.061	-18.0
1.141	22.49	-9.772	30.1	3.295	-24.99	0.290	-92.9	5.450	7.81	-7.049	-20.0
1.204	24.27	-10.216	25.6	3.358	-21.68	0.255	-90.8	5.513	6.30	-6.999	-24.0
1.267	25.76	-10.597	21.1	3.422	-18.51	0.059	-88.4	5.576	4.85	-6.900	-28.0
1.331	26.97	-10.910	16.6	3.485	-15.48	-0.187	-86.2	5.640	2.96	-6.759	-32.0
1.394	27.99	-11.151	12.1	3.549	-12.98	-0.444	-84.1	5.703	0.93	-6.589	-36.0
1.457	28.52	-11.319	7.7	3.612	-10.10	-0.760	-82.0	5.766	-1.15	-6.497	-40.0
1.521	28.87	-11.411	3.2	3.675	-7.52	-1.110	-80.7	5.830	-3.37	-6.377	-44.0
1.584	29.00	-11.427	-1.3	3.739	-5.05	-1.478	-79.4	5.893	-5.73	-6.228	-48.0
1.648	28.74	-11.276	-5.3	3.802	-2.70	-1.859	-78.2	5.956	-8.24	-6.050	-52.0
1.711	28.26	-11.248	-9.8	3.865	-0.55	-2.248	-76.9	6.020	-10.89	-5.843	-56.0
1.774	27.49	-11.042	-14.3	3.929	1.49	-2.640	-75.7	6.083	-13.40	-5.622	-60.0
1.838	26.43	-10.784	-18.8	3.992	3.38	-3.028	-74.5	6.147	-16.32	-5.398	-64.0
1.901	25.09	-10.416	-23.2	4.055	5.10	-3.407	-73.2	6.210	-19.39	-5.163	-68.0
1.964	23.45	-10.001	-27.7	4.119	6.74	-3.774	-72.0	6.273	-22.60	-4.919	-72.0
2.028	21.54	-9.534	-32.2	4.182	8.06	-4.098	-70.8	6.337	-25.95	-4.668	-76.0
2.091	19.33	-8.999	-36.7	4.246	9.40	-4.418	-69.7	6.400	-29.38	0.000	0.0

**Step 8: Tables page.**

Open the **Tables** page.



This displays bending moment, shear force and deflection tables.

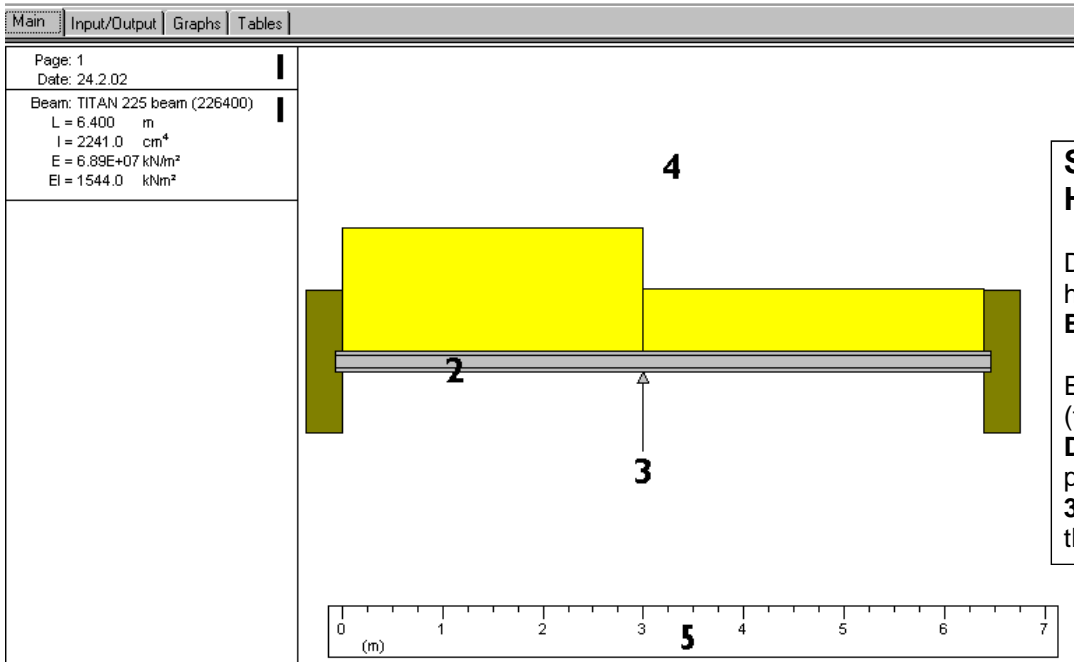


**The Databases.**

Click the **Database** button on the toolbar to open the database window.

Click the **Client** tab to edit customers in the client database.

Click the **Beam** tab to edit beams in the beam database.



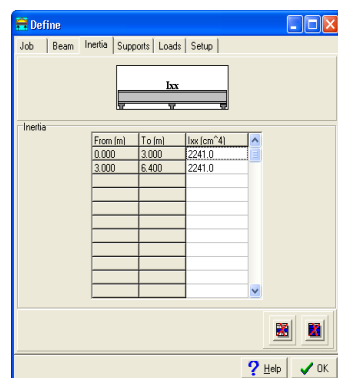
**Shortcuts and Screen Hotspots.**

Double click on the indicated hotspots to open the **Define Box** at the appropriate page.

Eg. Double click region 2 (the beam) to open the **Define Box** at the **Beam** page. Double click in region 3 to open the **Define Box** at the **Supports** page.

### The Define Box.

The **Define Box** pages are explained in greater depth in the **SPAN** manual and the online **Help**, including those not mentioned in this brief introduction:



The **Job** page is used to enter customer details.

The **Inertia** page is used to define beams of varying Moment Of Inertia.

The **Equal Centres** section of the **Supports** page is used to define equally spaced supports.

The **Point** and **Custom** grids of the **Loads** page are used to define different load types.

The **Setup** page is used to enter user contact details, select units and set various other display options.

Read the online **Help** file or the **SPAN** manual for more information on using **SPAN**.

For further details or assistance, see [www.GTSoft.org](http://www.GTSoft.org) or email:

**Info@GTSoft.org**