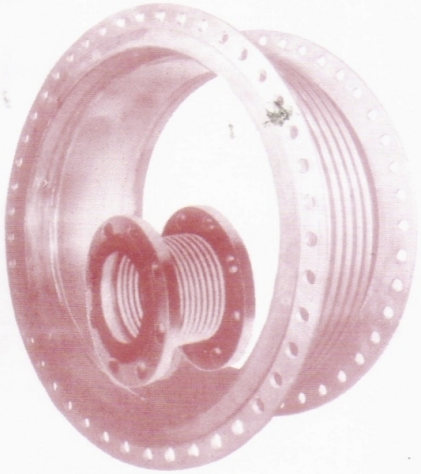
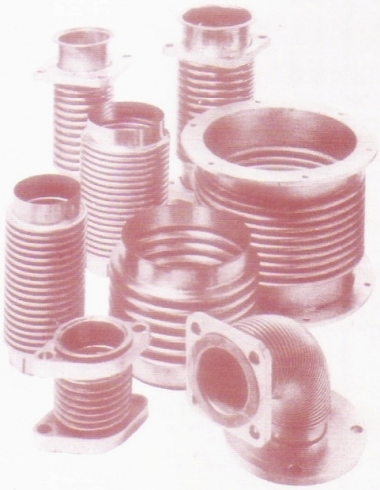
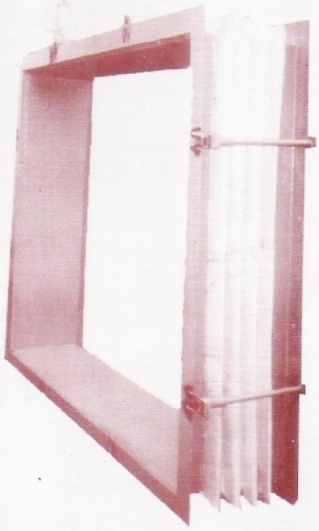
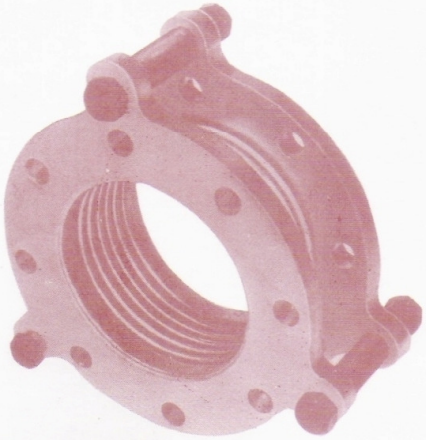
GANSAN

BELLOWS

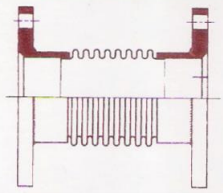
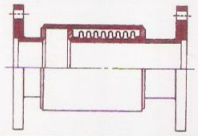
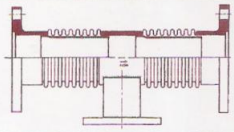
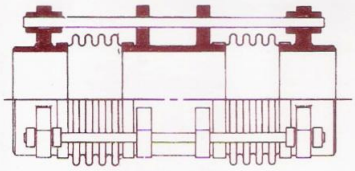
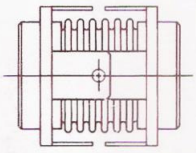
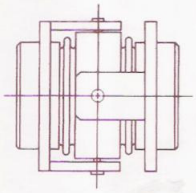
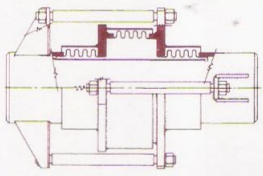
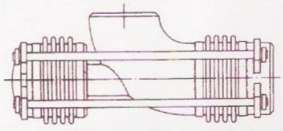


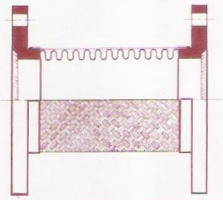
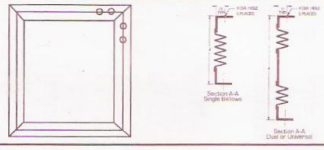
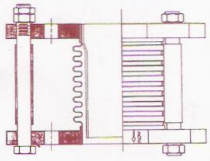
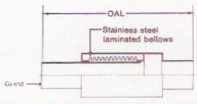
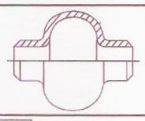
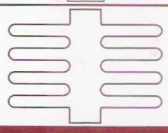






EXPANSION JOINT SELECTION GUIDE

	DESIGN	TYPES OF MOTION	PRINCIPAL USE
	**SINGLE**	Primarily Axial Limited Lateral Offset Angular Rotation Vibration Isolation	1. Absorption of thermal expansion or contraction of straight pipe runs where proper anchoring and guiding are feasible. 2. Addition of flexibility in short complex piping on machinery and vessels. 3. Isolation of mechanical vibration from piping and ducting. 4. Sealing of piping penetrations in bulkheads of contaminant vessels heat exchangers and ships
	**SINGLE, EXTERNALLY PRESSURIZED, GUIDED**	Axial only.	Absorption of thermal expansion or contraction of straight pipe runs where proper anchoring and guiding are feasible and installations that require 1. High axial travel. 2. High safety. 3. External protection of the bellows.
	**DUAL WITH CENTER ANCHOR BASE**	Axial only.	Absorption of high thermal expansion or contraction of straight pipes when the joint can be located near the centre of the run, and proper anchor and guides must be provided.
	**UNIVERSAL**	mainly lateral offset. may also be used for combination of lateral, axial and angular rotation when systems include anchors.	Installation in "Floating Systems" such as elevated pipe runs which cannot provide extensive guiding and anchoring and where motion is absorbed by lateral offset through introduction of 90° elbows. Tie rods must be included for these installations. Connection of tanks and vessels to stationary pipe where motion is primarily lateral but axial angular displacements also occur. ..... connections between buildings and tanks where relative motion occurs during an earthquake. Installations where multi-directional motions occur.
 	**IN-LINE PRESSURE BALANCED**	Standard Hinge : Angular rotation in one plane. Slotted Hinge : Axial and angular motion in one plane. Gimbal : Angular rotation in all planes. Hinges and gimbals may be used in various combinations of two or three joints to absorb axial, lateral and angular movements.	Standard Hinge : Primarily used in floating systems that can utilize two joints separated by a pipe spool and lateral motion is absorbed by lateral offset of the assemblies-the system must corporate at 900 turn. May also be used in "Loop" incorporating two dual hinge assemblies separated by an intermediate anchor. Slotted Hinge : Installations requiring axial travel and angulation in one plane only or systems that can utilize two joints separated by a pipe spool and lateral offset is absorbed by the assembly. The assembly can absorb axial, angular and offset without external guides and supports when anchors are available-such as tank setting applications. Gimbal : Two joints separated by a pipe spool and used for floating requiring multi-plane motions normal to the joint centerline. When a hinge joint is added in a 900 run a complete stress-free system is provided. Hinge and gimbal joints can be designed to react axial and transverse loading.
	**HINGE AND GIMBAL**	Axial only.	Installations that consist of straight runs that cannot provide main anchors to react pressure thrust. Intermediate anchors are required to react the bellows spring force. Externally pressurized configurations are recommended for axial travel 4" and greater.ts can be designed to react axial and transverse loading.
	**PRESSURE BALANCED ELBOW**	i.e. Primarily axial (parallel to bellows centerline) limited lateral and angular. Universal: Axial, lateral offset and angular.	Items which incorporated 900 elbows can utilize pressure balanced assemblies that permit the elbow float free of pressure thrust forces. Frequently attached to vessel, nozzles, condensers, turbines and pipes where low nozzle loading is essential. Universal units are used where offset motion exists.

	DESIGN	TYPES OF MOTION	PRINCIPAL USE
	**CONNECTORS**	Vibration Limited axial, lateral and angular movements resulting from installation and operation of mechanicalequipment. Braided connectors may be used for lateral offset if sufficient length is available.	Connectors are used to compensate for small installation misalignment and to absorb motion and vibration emanating from mechanical equipment. They are installed between the equipment and anchor in the piping system.
	**RECTANGULAR**	Axial, lateral and angular. Rectangular joints are available in similar configurations as circular joints, i.e. hinge, pressure balanced and restrained.	Rectangular joints are most commonly used in low pressure ducting to absorb thermal growth, addition of flexibility in short runs and as vibration absorbers adjacent to fans, blowers and other mechanical equipment. In general, they are used in the same manner as the corresponding circular joint.
	**BELLOW PUMP CONNECTORS**	Vibrations of Equipments	Bellow Pump Connectors are compact, extremely flexible assemblies designed to protect critical mechanical equipments and reduce noise created by vibration and fluid pulsation. Permits high pressure and temperature service while absorbing multiple plain motions and vibrations. In addition to this, it also provides misalignment compensation which saves labour during installation.
	**COPPER TUBE END EXPANSION COMPENSATOR**	Axial & Vibratory	Copper tube end compensators are used in heating and ventilation system piping which compensates for thermal growth and reduce noise & vibration.
	**HEAT EXCHANGER SHELL BELLOW**	Axial	These bellows are used to compensate thermal expansion of Heat Exchanger Shell, available in welded end connection material equivalent to shell.
	**DIAPHRAGM BELLOW**	Axial, Angular	Very high Axial movement in short length, low spring rate bellow, annular welded design.
	**DEEP GROOVE BELLOW**	Axial, Angular	Very Low spring rate deep grooved bellow used for high sensivity instruments.

FEATURES and ACCESSORIES

"GANSAN" offers

- ★ Various end connections viz. Threaded & Butwelded pipe ends, Grooved pipe ends, Flange ends, Stub end flanges, Blind ends, Angle flange ends etc. in various material specifications.
- ★ External covers or shrouds in standard, removable and telescoping types.
- ★ Flow liners or internal sleeves to prevent flow induced vibrations or erosion and to reduce pressure drop.
- ★ Entire range of accessories viz. Anchor base, Tie rods, Limit rods, Pipe guides shipping bars, Multiply bellows, Braided bellows etc. are also offered.

"GANSAN" manufactures a comprehensive line of standard and custom built expansion bellows & accessories for piping and duet system. The proven design of "GANSAN" covers the entire spectrum of applications.

Quality assurance system as adopted by "GANSAN" conforms to EJMA & ASME code Sec V, VIII Div I. The testing parameters are carefully controlled by a Quality Assurance Plan, which is strictly adhered to, ensuring a high level of commitment on quality. The plant is equipped with all necessary testing machines including NDT test equipments. The product thus offers outstanding quality and trouble free performance.

Over a period of 1 $^{1}/_{2}$ decades, "GANSAN" has establised their eredentials with clients viz. ONGC, BARC, BHEL, HINDUSTAN ZINC, LARSEN & TOUBRO and many others.

The product range covers 1" to 6 mtrs. I.D. bellows square and rectangular bellows. Bigger sizes can also be made to customers requirements as the technology upgradation is a continuous process at "GANSAN". "GANSAN" today offers pressure range from high vacuum to 70 kg/cm^2 with various end connections and material of construction. S.S. 321 / 304 /316/304L/316L/Inconel/Incoloy/Monel/Non-ferrous metal etc. Bellows in Rubber/PTFE & fabric are also offered against specific demands.

QUALITY ASSURANCE & TEST

1.	Material Test	:	Chemical / Physical / Grain Structure / IGC / Hardness, etc.
2.	NDT Test	:	a) Radiography b) D. P. Test c) Magnetic Particle d) Ultra Sonic
3.	Pressure & Leak Test	:	a) Hydraulic Test b) Pneumatic Test c) Halogen Leak Test d) Helium Leak Test.
4.	Working Test	:	a) Deflection Test for i) Axial ii) Lateral iii) Angular
			b) Spring Rate i) Axial ii) Lateral iii) Torsion
5.	Destructive Test	:	a) Squirum Test b) Yeild & Rupture Test c) Cycle Life Test

OTHER PRODUCTS

i)	Bellow Type Flexible Coupling.	ii)	Pipe Line Guides.
iii)	Pipe Clamps.	iv)	Bellow Seal Valves & Bellow Actuator.
v)	Pipe Line Spring Support & Hangers.	vi)	Silencer & Exhaust Systems.

APPLICATIONS

★ Petroleum & Petrochemicals	★ Chemical & Pharmaceutical Plants	★ Automobiles Industry
★ Cement	★ Flight Kitchens	★ Bellow Seal Valves
★ Steel & Metal	★ Heat Exchangers	★ Sugar Industry
★ Power Plants	★ Heating & Ventillation Systems	★ Steam Lines
★ D. G. Set & Engine Exhaust Systems.	★ Shipping & Ship Building Industry	★ Nuclear Industry
★ Fertilizers	★ Oil & Gas Production	★ Instrumentation

Manufactured by
GANDHI ENGINEERING CO.

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