TFL

EXTENDED SURFACES

TUBE FINS

'G' FIN

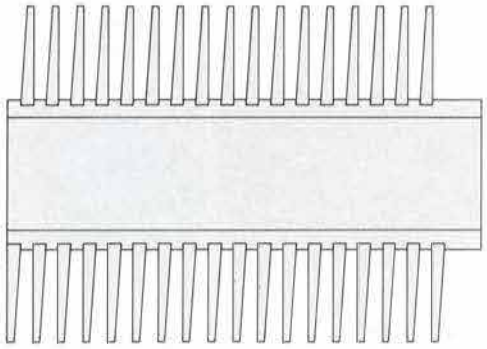
High conductivity fin tube for high temperature applications up to 450°C.

'G' fins have a helical groove formed in the tube surface with an uplift of metal each side which, when peened back into the fin, produces a firm mechanical bond.

MANUFACTURING DETAILS

ALUMINIUM 'G' FIN

Max. Fin Height	: 0·75 ins (19·1mm)
Max. Fin Density	: 13 · 5 fins/inch (531 fins/m)
Max. Tube Diam.	: 2 ins OD (50·8mm)
Base Tube Material	: Carbon Steel, Stainless Steel, Copper, Copper Alloys.
Max. Tube Length	: 49 feet (15m)



COPPER 'G' FIN

Max. Fin Height	: 0·75 ins (19·1mm)
Max. Fin Density	: 12·4 fins/inch (488 fins/m)
Max. Tube Diam.	: 2 ins OD (50·8mm)
Base Tube Material	: Carbon Steel, Stainless Steel, Copper, Copper Alloys.
Max. Tube Length	: 49 feet (15m)

CARBON STEEL 'G' FIN

Max. Fin Height	: 0·625 ins (15·88mm)
Max. Fin Density	: 11 fins/inch (433 fins/m)
Max. Tube Diam.	: 2 ins OD (50·8mm)
Base Tube Material	: Carbon Steel
Max. Tube Length	: 49 feet (15m)

Steel fin tube is supplied in the following alternatives:

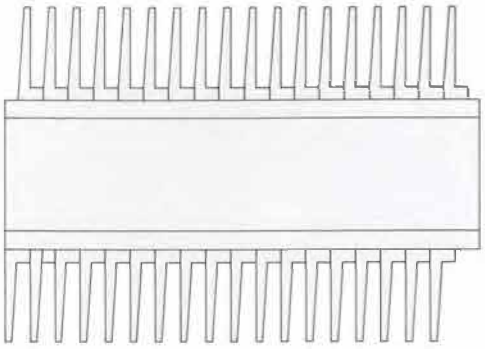
a) Natural Finish
b) Electro Galvanised for corrosion protection
c) Hot Dipped Galvanised for extra corrosion protection.

'L' FIN

Economically produced fin tube for moderate working temperature up to 150°C.

'L' fins rely on maximum surface contact between fin and tube which is ensured by tension forming fin strip helically around the base tube.

A considerable degree of protection is given to the tube by the foot at the base of the fin.



MANUFACTURING DETAILS

ALUMINIUM 'L' FIN

Max. Fin Height	:	0 875ins (22· 2 mm)
Max. Fin Density	:	13 · 5 fins/inch (531 fins/m)
Max. Tube Diam.	:	2 ins OD (50 · 8mm)
Base Tube Material	:	Carbon Steel, Stainless Steel, Copper, Copper Alloys, Titanium
Max. Tube Length	:	49 feet (15m)

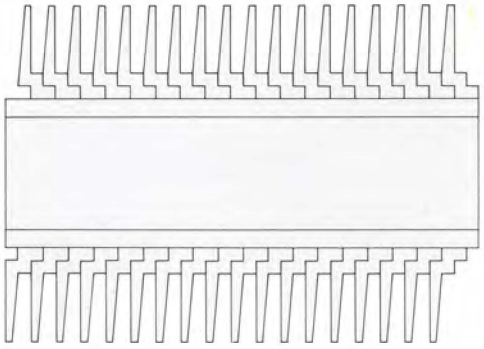
COPPER 'L' FIN

Max. Fin Height	:	0 · 875 ins (22 · 2 mm)
Max. Fin Density	:	13 · 5 fins/inch (531 fins/m)
Max. Tube Diam.	:	2 ins OD (50 · 8mm)
Base Tube Material	:	Carbon Steel, Stainless Steel, Copper, Copper Alloys.
Max. Tube Length	:	49 feet (15m)

'LL' FIN

Double 'L' fin is used on applications requiring additional protection to the surface of the base tube. It is similarly produced to the foregoing 'L' fin but has a wider fin base which is overlapped during the winding process.

Maximum operating temperature 175°C.



MANUFACTURING DETAILS

ALUMINIUM 'LL' FIN

Max. Fin Height	:	0 · 875ins (22 · 2 mm)
Max. Fin Density	:	15 · 8 fins/inch (622 fins/m)
Max. Tube Diam.	:	2 ins OD (50 · 8mm)
Base Tube Material	:	Carbon Steel, Stainless Steel, Copper, Copper Alloys, Titanium
Max. Tube Length	:	49 feet (15m)

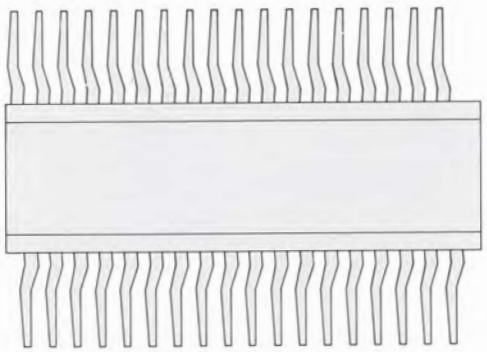
COPPER 'LL' FIN

Max. Fin Height	:	0 875 ins (22· 2 mm)
Max. Fin Density	:	15 · 8 fins/inch (622 fins/m)
Max. Tube Diam.	:	2 ins OD (50 · 8mm)
Base Tube Material	:	Carbon Steel, Stainless Steel, Copper, Copper Alloys.
Max. Tube Length	:	49 feet (15m)

CRIMP FIN

As the name implies Crimp fin has the inner edge crimped during the helical winding on to the base tube. This gives substantial support to the fin at the root which is then soft soldered to the base tube. Standard fin material is copper and the normal maximum working temperature 150°C although for higher temperature special solders may be used.

This tube has a higher heat transfer rate for a given surface area due to the turbulence created by the crimp at the fin root, but this also promotes higher pressure loss characteristics.



MANUFACTURING DETAILS

Max. Fin Height	:	0·35 ins (8·9mm)
Max. Fin Density	:	13 fins/inch (512 fins/m)
Max. Tube Diam.	:	1 inch OD (25·4mm)
Base Tube Material	:	Copper and Copper Alloys
Max. Tube Length	:	16 feet (5m)

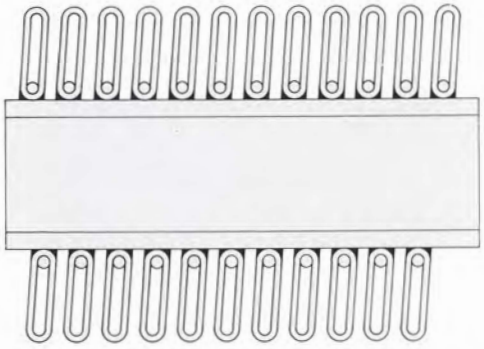
WIRE FIN

WIRE FIN is a high efficiency tube consisting of a series of elongated wire loops, spirally wound on to the tube wall and held in position with a binding wire at the base of the loops. The loops and binding wire are then soft soldered to the tube wall to give a metallic bond between the wire fins and the tube.

The loop density and wire diameter can be varied to give the optimum surface for specific heat transfer and pressure drop requirements.

The wire loop secondary surface gives excellent heat transfer characteristics because of its ability to promote turbulence in the fluid passing over it and thereby reducing the tendency for boundary layer formation.

Maximum operating temperature 250°C.



MANUFACTURING DETAILS

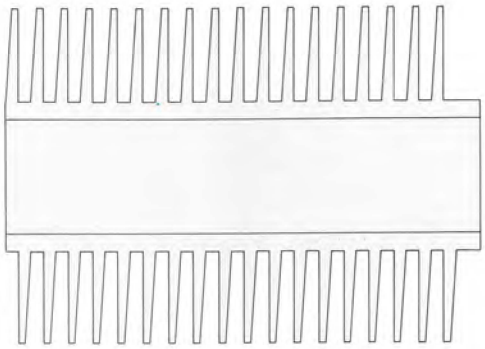
Max. Fin Height	:	0·75 ins (19·1mm)
Max. Tube Diam.	:	1·25 ins OD (31·75mm)
Base Tube Material	:	Copper, Copper Alloys, Mild Steel, Stainless Steel.
Standard Wire Mat.	:	Copper, Tinned Steel
Max. Tube Length	:	30 feet (9m)

EXTRUDED FIN

Integral fin tube produced by rolling and extruding from a thick wall tube of aluminium or copper which is easily cold formed.

Where internal corrosion resistance is required the tube is rolled down on to an inner sleeve tube which provides excellent thermal conductivity between the tubes. The sleeve tube can be arranged to protrude at each end to facilitate fixing into headers.

Maximum operating temperature 250°C.



MANUFACTURING DETAILS

EXTRUDED COPPER FIN

Max. Fin Height	:	0·437 ins (11·1mm)
Max. Fin Density	:	7 fins/inch (276 fins/m)
Max. Tube Diam.	:	1 inch OD (25·4mm)
Base Tube Material	:	Copper
Max. Tube Length	:	49 feet (15m)

EXTRUDED ALUMINIUM FIN

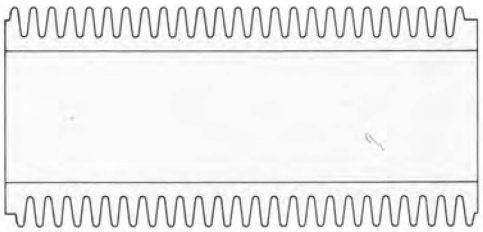
Max. Fin Height	:	0·625 ins (15·9mm)
Max. Fin Density	:	10 fins/inch (394 fins/m)
Max. Tube Diam.	:	2 ins (50·8mm)
Base Tube Material	:	Aluminium
Max. Tube Length	:	49 feet (15m)

ROLLED LOW FIN

Integral fin tube produced by form rolling from a plain thick wall tube.

The rolling process forms a high strength fin with the plain ends remaining in the original condition suitable for expanding, welding or brazing into headers.

For shell and tube applications the outside diameter of the plain ends is larger than the over fins diameter.



MANUFACTURING DETAILS

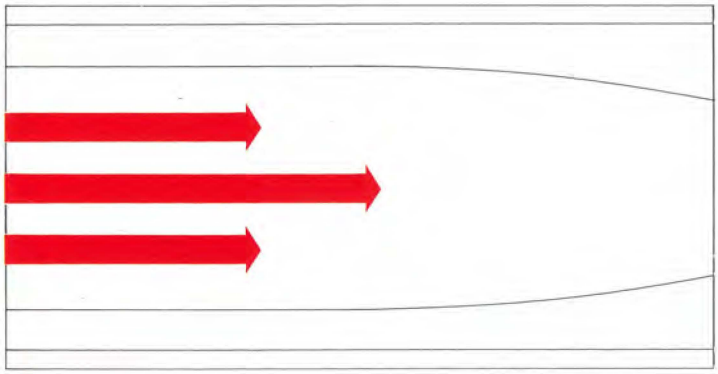
Max. Fin Density	:	26 fins/inch (1024 fins/m)
Max. Tube Diam	:	1 inch (25·4mm)
Base Tube Material	:	Copper and Copper Alloys.
Max. Tube Length	:	49 feet (15m)

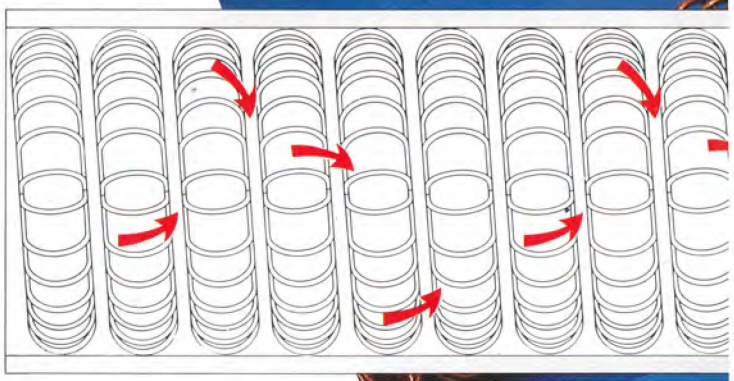
TURBULATOR INSERTS

In plain tubes (no insert), fluid flow is essentially laminar, and skin friction retards the flow of fluid in contact with the tube wall. At the same time this outer fluid cools faster and becomes more viscous, further retarding flow.

The result is a build-up of concentric fluid layers, with the hot fast-flowing inner fluid surrounded by cooler, slower flowing outer fluid. These outer layers – boundary layers – insulate the hotter fluid from the cool tube wall. Since there is almost no transfer of particles between layers, heat transfer is very low.

Laminar flow results in boundary layer build-up in a plain tube (no insert). Layers form as the fluid in contact with tube wall cools and viscosity increases. These layers severely restrict heat transfer from inner fluid.





Wire loop inserts eliminate boundary layers by completely disrupting laminar flow. The insert is made from a continuous wire which is formed into loops. The loops are spirally wound around a small-diameter rod and solder-bonded in place.

When installed in a tube, the insert makes the formation of thick boundary layers physically impossible. The wire loops keep the fluid in a constant state of turbulence, continually presenting hot fluid to the cool tube wall.

Even with the viscous fluids at low velocities, the wire-loop insert provides extremely efficient "mixing".

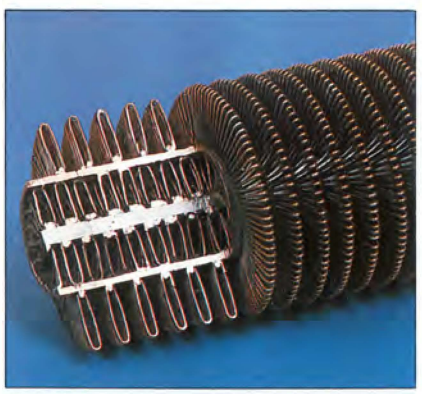
Wire loop inserts completely eliminate laminar flow. Turbulence prevents formation of thick boundary layers as hot fluid is continuously presented to cool tube wall for maximum heat transfer.

Wire loop inserts can be bonded to the inside tube wall using a special soldering process. When this is done, the insert substantially increases the surface area available to conduct heat to the outside of the tube. This additional surface area increases the heat transfer performance even further. It is not unusual to achieve coefficients 30 times greater than plain tube for similar flow rates.

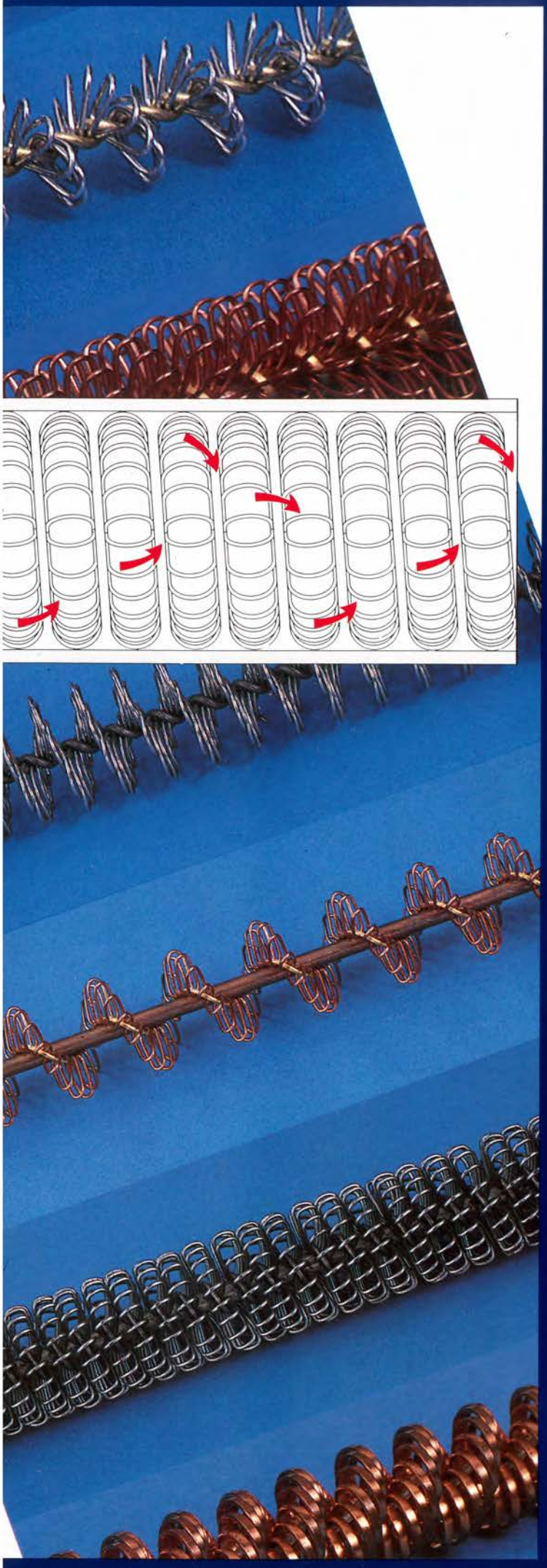
Also, pressure loss is no problem for although the rise in turbulence with wire loop inserts obviously does lead to higher pressure losses, the increase in heat transfer is so effective that tube length and number of tube passes can be reduced significantly which in many cases actually reduces the overall pressure drop through the exchanger.

In normal operating conditions fouling presents no problems. The wire loop insert is largely self-cleaning via the agitating action created by the inherent turbulence.

Wire loop inserts can be fitted into any externally finned tube with wire geometries and densities to suit particular heat transfer and pressure loss requirements.



TUBE FINS



This literature introduces our standard range of extended surface tubes.

If you require further information on specific materials, sizes, performance characteristics and applications please contact our Technical Department.

We can supply Finned 'U' Tubes to suit your requirements.

Tube Fins products are manufactured to comply with major International Inspection Authorities.

PLEASE NOTE
We have taken great care in compiling this literature but cannot accept responsibility for any errors or omissions.

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