

ISO - (Infrared Space Observatory)



The Infrared Space Observatory (ISO) was the world's first true orbiting infrared observatory. Equipped with four highly-sophisticated and versatile scientific instruments, it was launched by Ariane in November 1995 and provided astronomers world-wide with a facility of unprecedented sensitivity and capabilities for a detailed exploration of the Universe at infrared wavelengths.

The mission was a great technical, operational and scientific success with most satellite sub-systems operating far better than specifications and with its scientific results impacting practically all fields of astronomy. During its routine operational phase, which lasted until April 1998 - almost a year longer than specified, ISO successfully made some 30,000 individual imaging, photometric, spectroscopic and polarimetric observations ranging from objects in our own solar system right out to the most distant extragalactic sources.

ISO was finally launched into orbit on November 17, 1995 on board an Ariane-44P launch vehicle.

On April 8, 1998 flight controllers at VILSPA noticed a rise in temperature of the telescope. This was a clear sign that the load of superfluid helium coolant had depleted. At 23:07 UTC the same day, the temperature of the science instruments had risen above 4.2 K and science observations were ceased.

ISO's orbit was lowered sufficiently enough to ensure ISO will burn up in Earth's atmosphere in 20 to 30 years after shutdown. ISO was then permanently switched off on May 16, 1998.

☒ ISO detected the presence of water vapour in starforming regions, in the vicinity of stars at the end of their lives, in sources very close to the galactic centre, in the atmospheres of planets in the Solar System and in the Orion Nebula.

☒ Planet formation was detected around old, dying stars. This discovery contradicted theories that planet formation was only possible around young stars.

☒ Hydrogen fluoride gas was for the first time detected in interstellar gas clouds.

☒ The first ever detection of the earliest stages of stellar formation. The pre-stellar core L1689B was found and studied in great detail with ISO's LWS instrument.

☒ ISO discovered large amounts of cosmic dust in the previously thought empty space between galaxies.

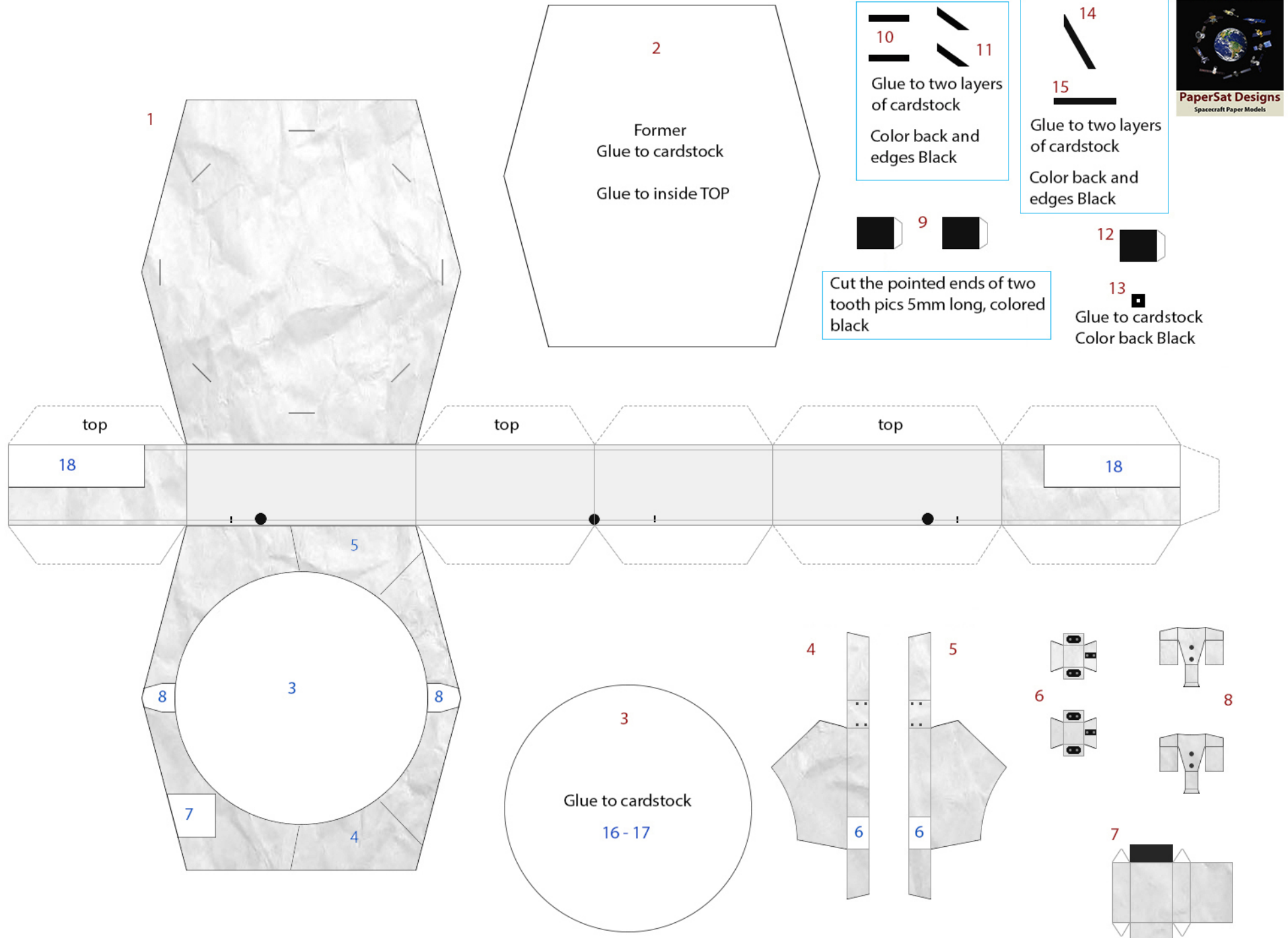
☒ Observations of the most-luminous object in the universe, Arp 220, revealed that the source for its enormous emission of infrared radiation is an outburst of star formation.

☒ Observations with the LWS instrument confirmed the previous discovery by IRAS of large cloud-like structures of very cold hydrocarbons radiating primarily in the infrared. These infrared cirrus clouds affect the energy balance of the entire universe, acting as a kind of galactic refrigerator.

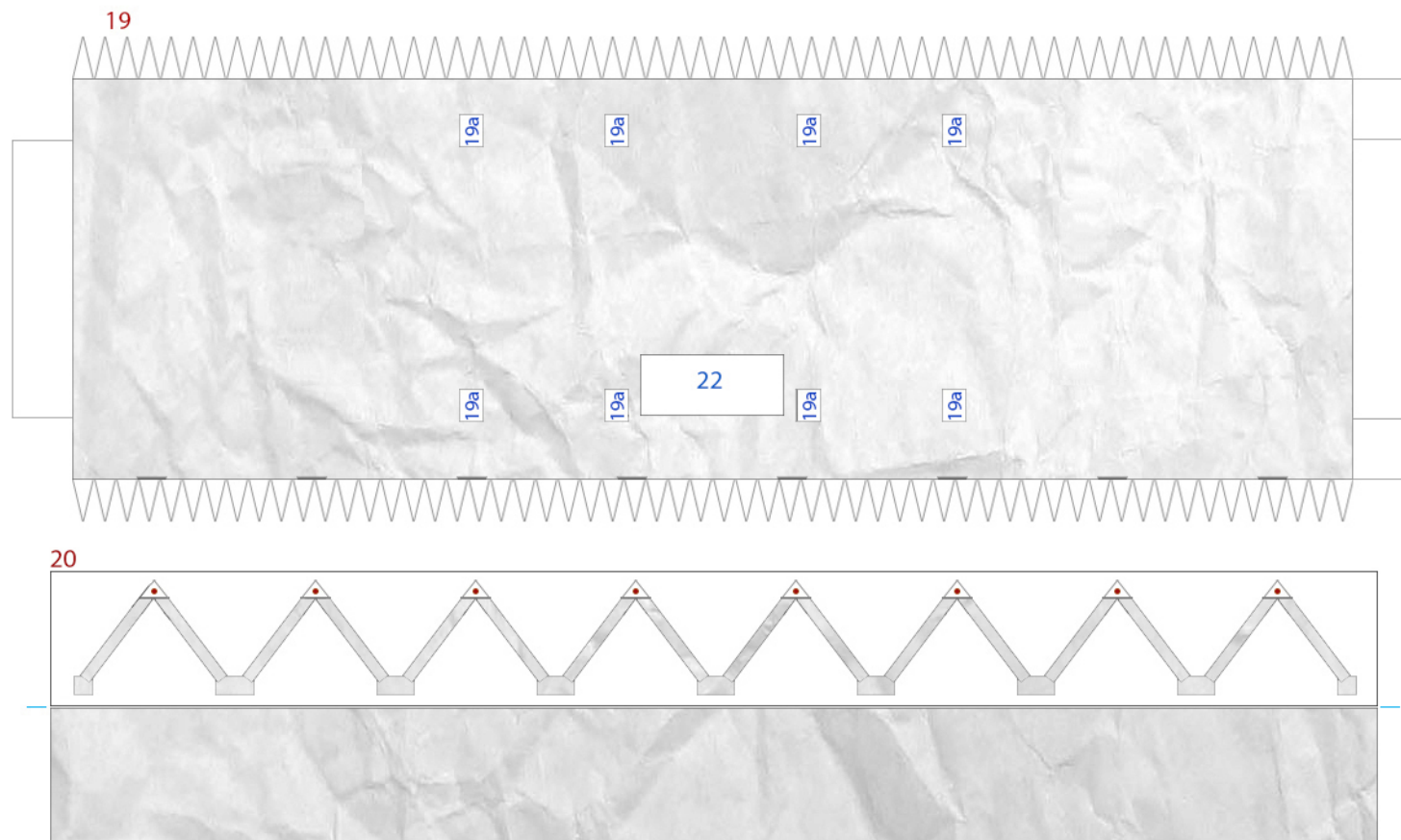
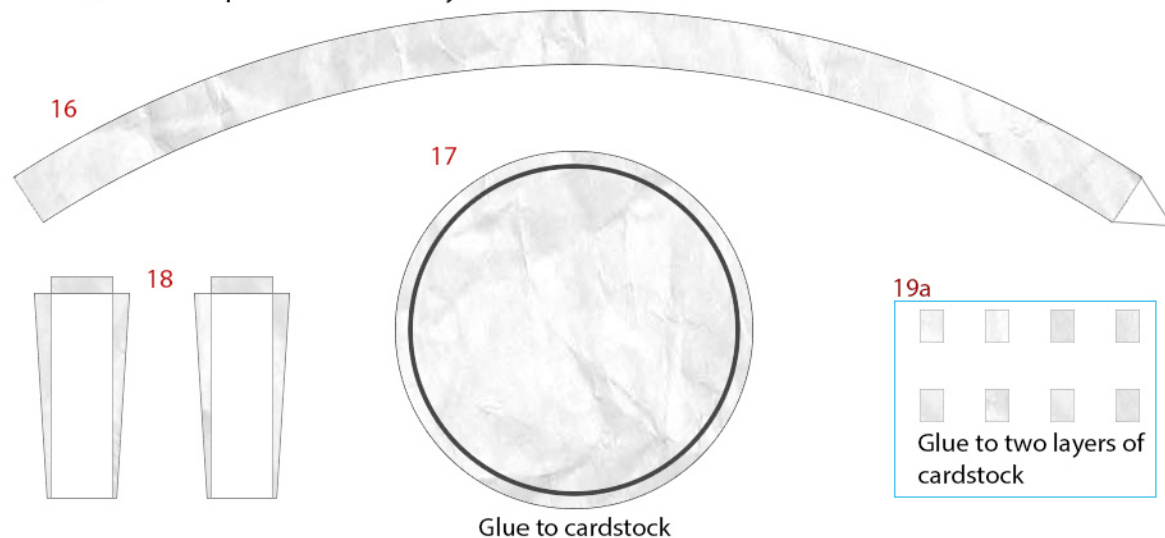
☒ ISO searched for, and found several protoplanetary disks: rings or disks of material around stars which are considered to be the first stage of planet formation.



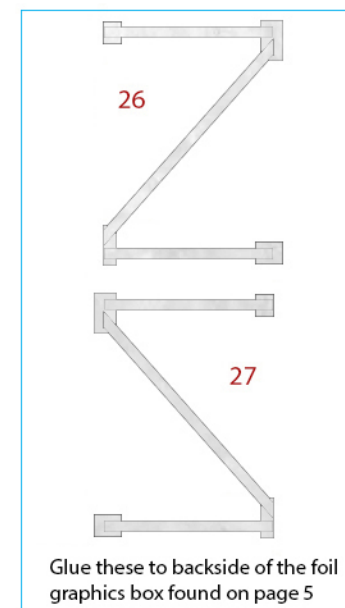
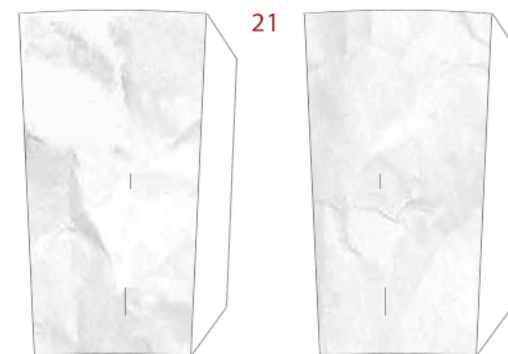
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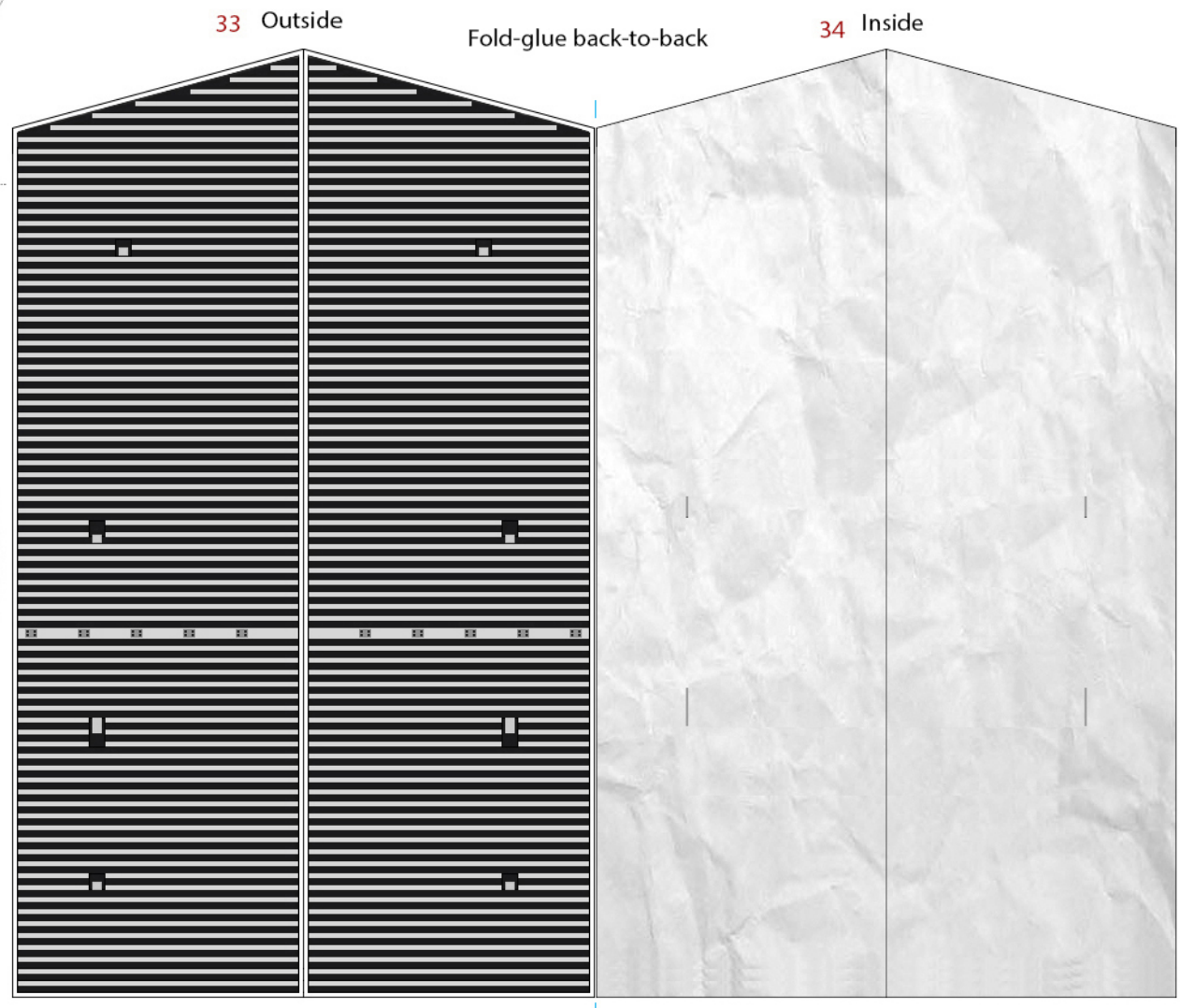
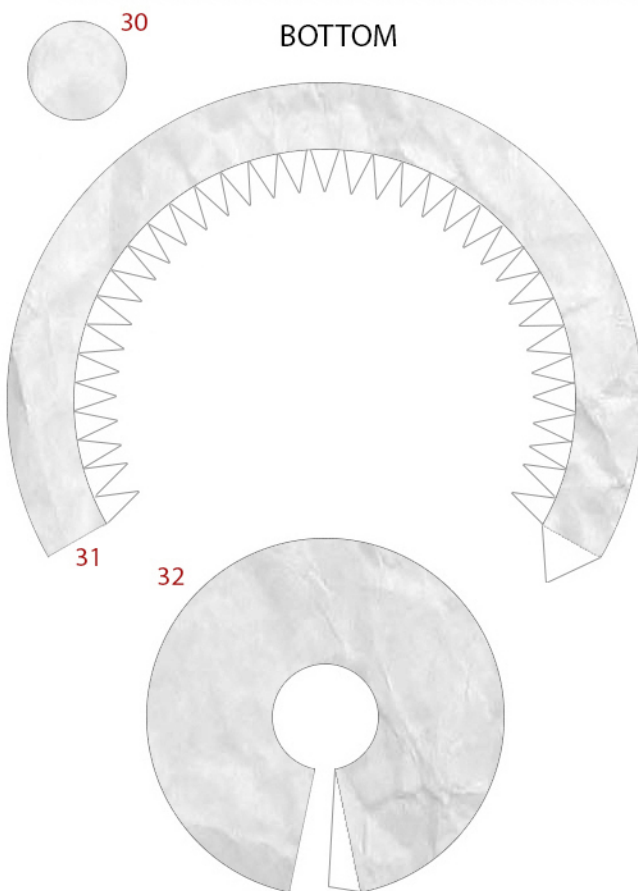
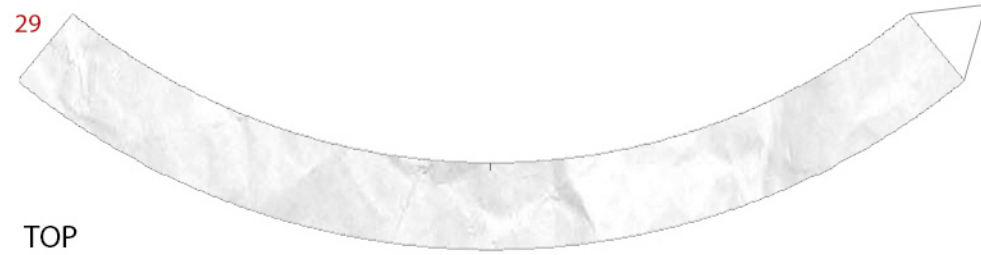
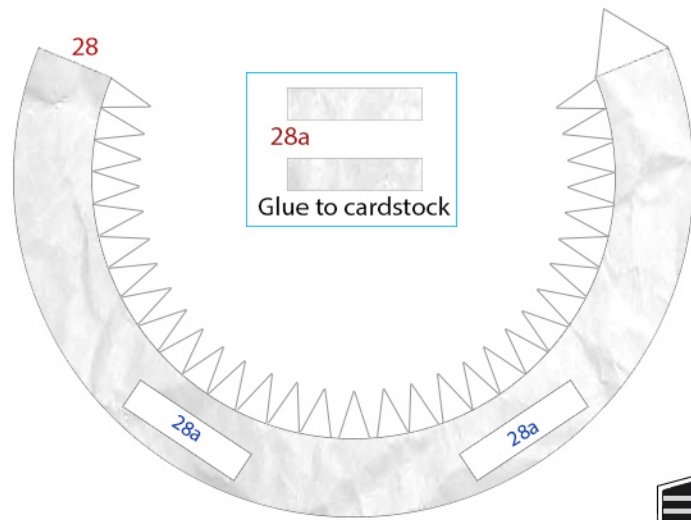
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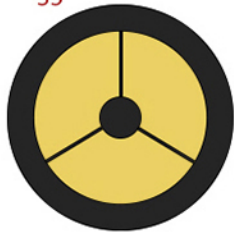
Fold-glue back-to-back Then fold the glue tabs (red dots) down



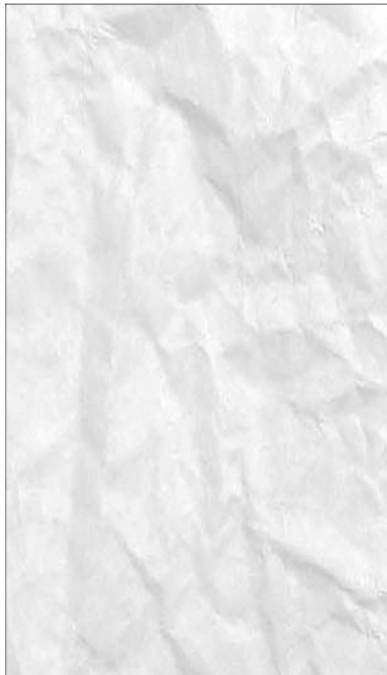
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Foil graphics for the backside
of parts 26 and 27

36



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